



Ultimate Power – Perfect Control

Vehicle Safety, Body and Powertrain Applications



For a comprehensive and reliable portfolio of products for automotive and other applications, look no further than the product range from Infineon. We have used our 40 years of experience of developing and producing products to meet the demands of the automotive market, and our innovative technologies to design and produce a large number of power products that meet all requirements of the automotive industry and also the transportation, lighting and motor-drive industries.

Our commitment to quality is demonstrated through our focus on Automotive Excellence, the most rigorous zero defect program in the industry.

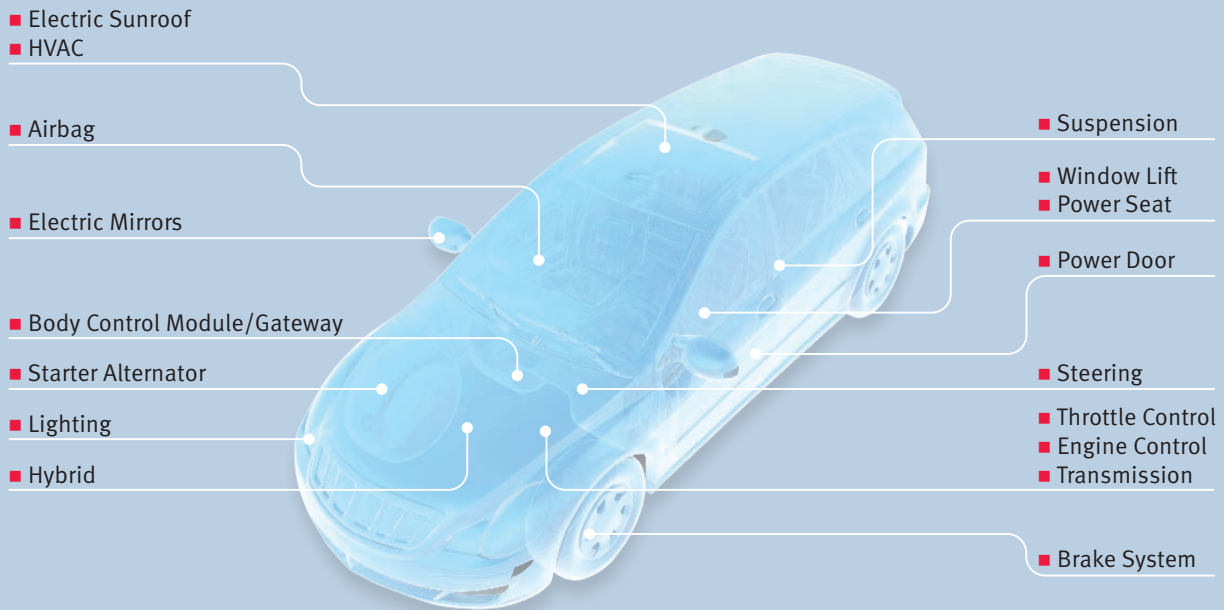
This Selection Guide provides an overview of our ICs and their packages, which are automotive qualified and available for your current and future electronic system designs.

The ultimate power to control your applications including automotive, transportation, industrial, lighting and motor control.

Symbols

I_D	DC Drain Current	R_{thJC}	Thermal Resistance Junction to Case
$I_{GS(TH)}$	Gate Source Threshold Voltage	V_{CE}	Collector Emitter Voltage
I_{IS}	Current Sense Output Current	$V_{CE(sat)}$	Saturation Collector Emitter Voltage
$I_{L(lim)}$	Load Current Limit	V_{DS}	Drain Source Voltage
$I_{L(NOM)}$	Load Current ($T_a = 85^\circ\text{C}$, specified PCB)	$V_{DS(AZ)}$	Drain Source Voltage (Active Zener)
$I_{L(sat)}$	Saturation Load Current	$V_{GS(th)}$	Gate Threshold Voltage
I_q	Quiescent Current in OFF-State	V_Q	Output Voltage
I_Q	Output Current	V_S	Supply Voltage
Q_G	Total Gate Charge	$V_{S(AZ)}$	Supply Voltage (Active Zener)
R_{IS}	Current Sense Resistor	$V_{S(op.)}$	Operation Supply Voltage
$R_{DS(on)}$	Typical Drain Source Resistance in ON-State @ 25°C (multiply by 2 for Max @ 150°C)	Inverse	Normal V_S Polarity and Inverse Load Current
$R_{DS(on) \text{ path}}$	Typical Drain Source Resistance in ON-State @ 25°C of both High-Side and Low-Side	PWM	Pulse Width Modulation
		Reverse	Reverse V_S Polarity and Reverse Load Current

Automotive Applications



Automotive Power Components Used in Other Applications

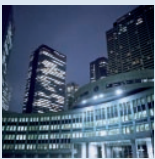
Agriculture



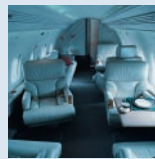
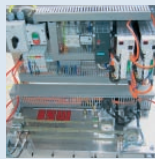
Transportation/Navigation



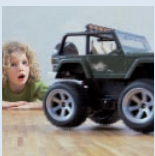
Lighting



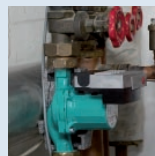
Automation/Industrial



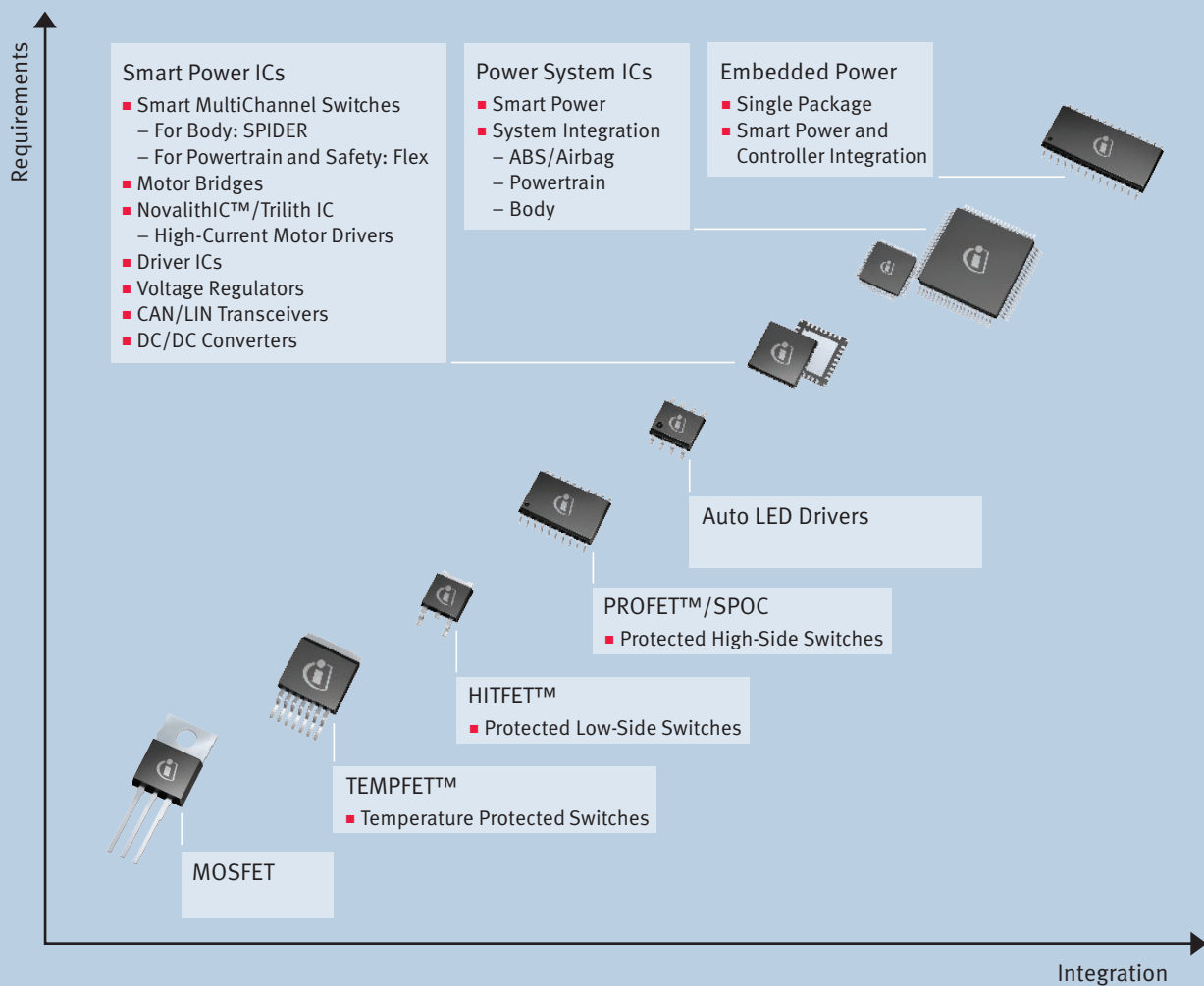
Toys/Games



Electric Tools/Home Appliance/Heating Pump



We meet all requirements for cost-effective application solutions

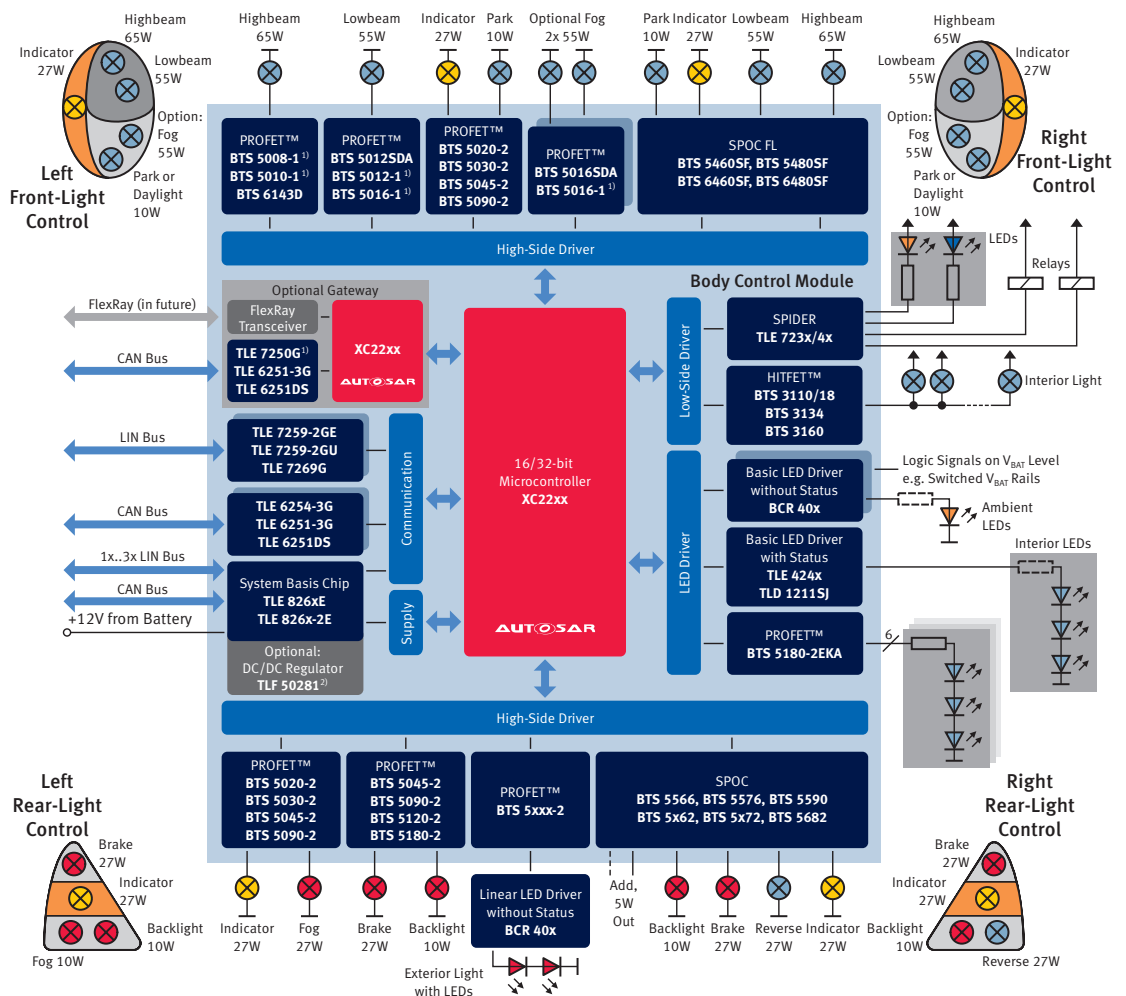


Contents

Typical Body Applications	6
Typical Powertrain Applications	8
Typical Safety Applications	10
Automotive MOSFETs	12
Small Signal MOSFETs	22
TEMPFET™: Temperature Protected Switches	26
HITFET™: Low-Side Protected Switches	27
Smart MultiChannel Switches	30
For Body: SPIDER	30
For Powertrain and Safety: Flex	34
PROFET™: Smart High-Side Switches	38
SPOC: SPI Power Controller	46
Auto LED Drivers	50
Motor Drivers	54
Integrated Smart Power Motor Drivers	55
Integrated High-Current Motor Drivers	59
Gate Driver ICs for External MOSFETs	62
Power Supply	64
Automotive Transceivers	72
System Basis Chips (SBCs)	76
Powertrain System ICs	78
Airbag System ICs	81
Embedded Power	82
Glossary	84
Packages	92

Body Applications

Body Control Module



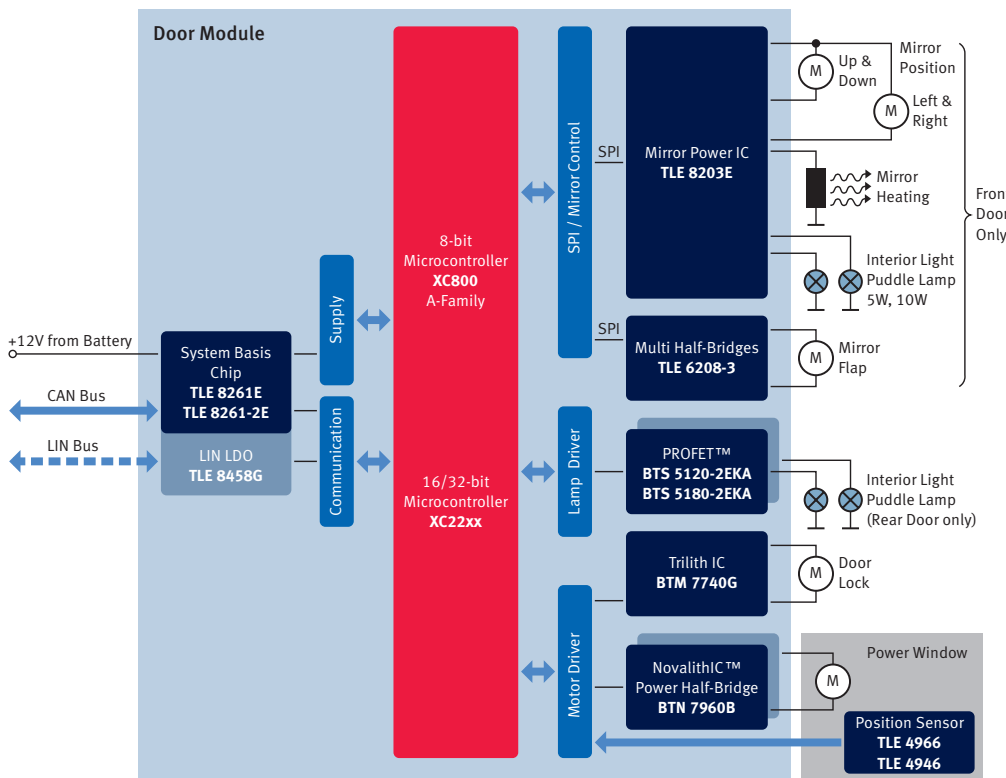
System Benefits

- Reduced board space due to integrated functionality
- Protected load control with sophisticated diagnostic features
- Supports the “Limp Home” functional safety concept
- High scalability and benchmark short-circuit robustness of power semiconductors (PROFET™)
- Supports a smooth transition to LEDs for interior and exterior lighting

1) In development, samples available

2) In development

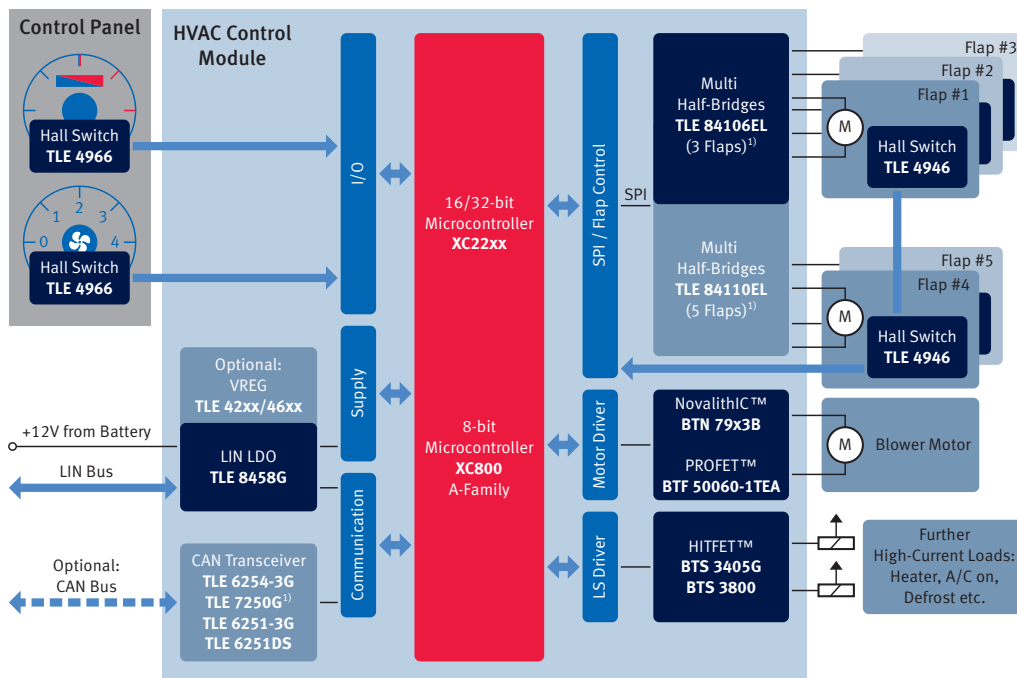
Full Featured Door Module Including Door Lock and Mirror Control



System Benefits

- Integrated motor control with diagnostics
- Door module IC integrating several functions in a single device as an option
- Dedicated solutions for rear door also available

HVAC Control Module Low to Mid-End/Manual + Semi-Automatic



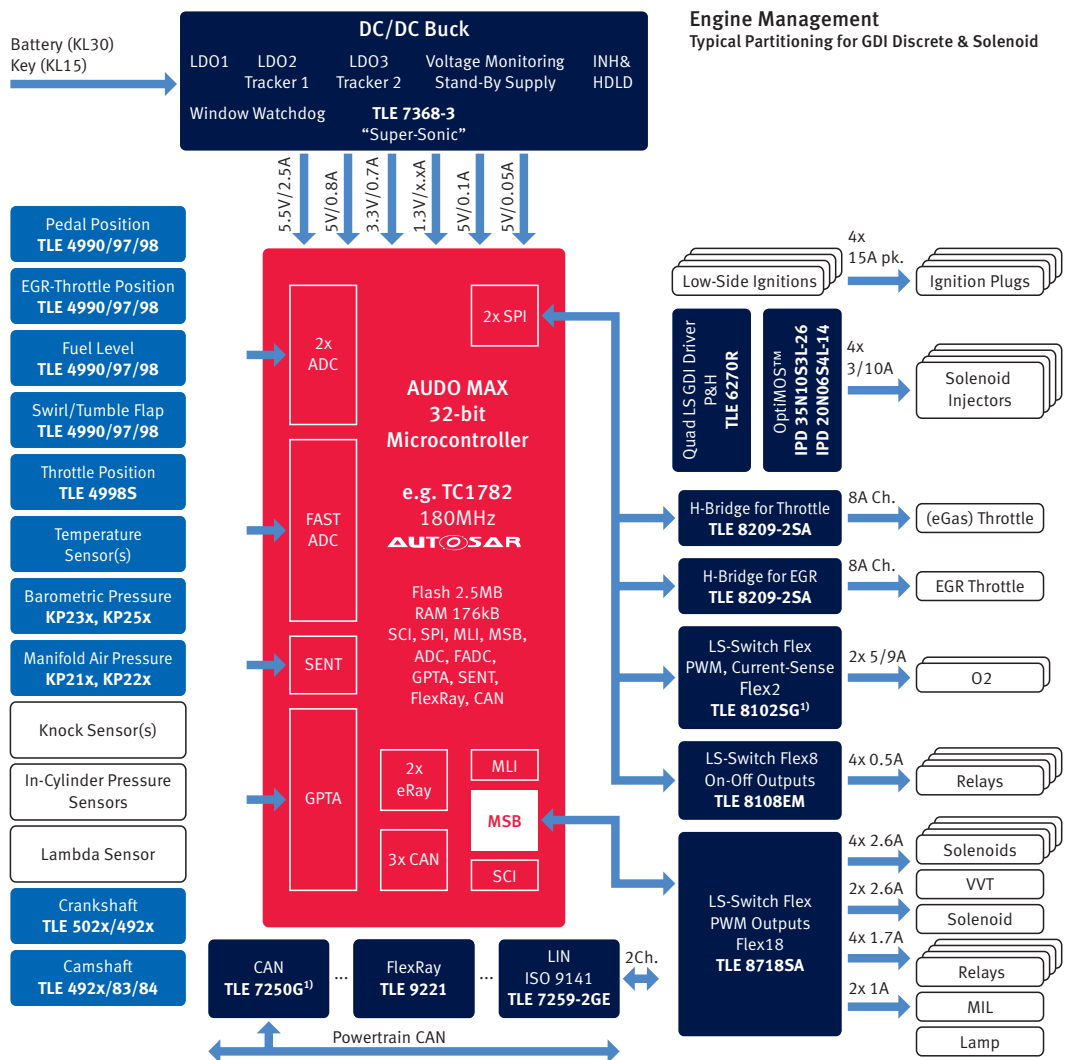
System Benefits

- High-performance, scalable microcontroller family for various classes of HVAC control algorithms
- Dedicated multi half-bridge devices for flap motor control with potentiometer feedback
- Powerful half-bridge devices (NovalithIC™) with high-frequency PWM capability for the blower control

1) In development, samples available

Powertrain Applications

Gasoline Engine Management

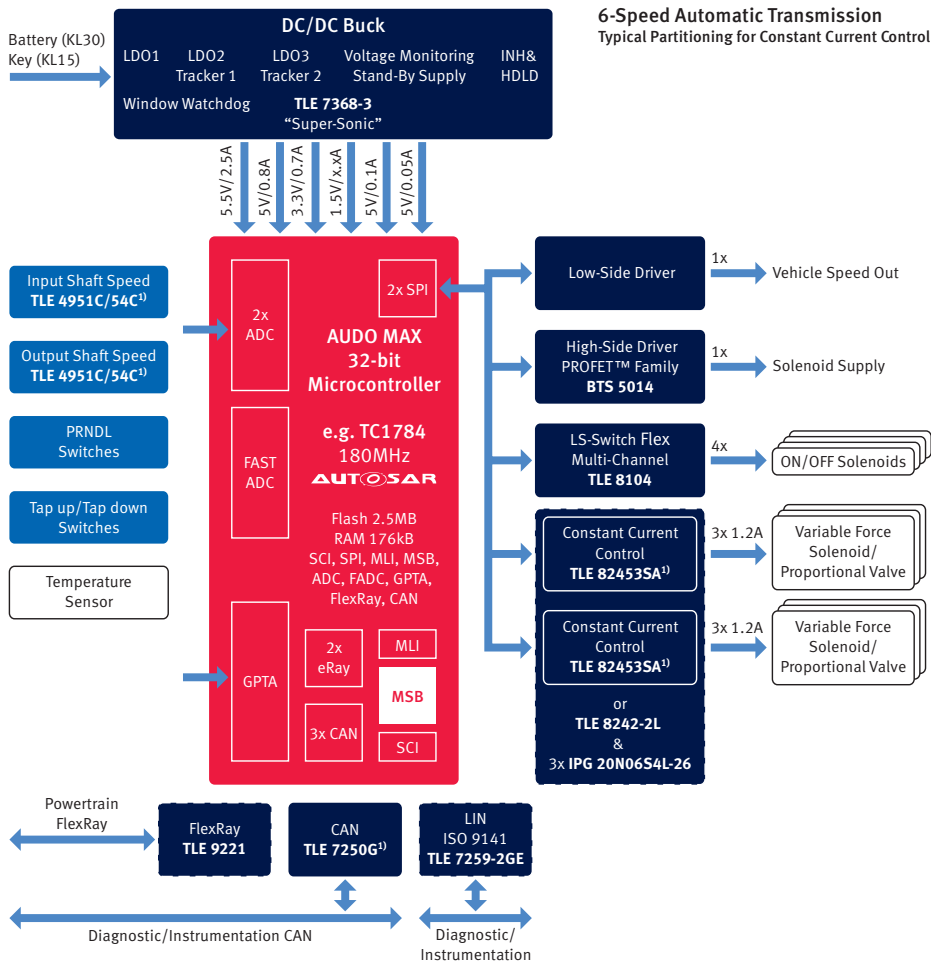


System Benefits

- Flexible and scalable product portfolio tailored to the performance and real-time needs of the premium and value segment
- Conforming with the latest emission legislation at the highest possible fuel efficiency and maximum driving pleasure (e.g. reduces fuel consumption by 20% from 160g to 128g CO₂/km)
- Benchmark-setting real-time performance facilitates down-sizing, direct injection, turbo charging and highly-efficient after-treatment
- New sensor families provide enhanced measurement precision (e.g. ignition control, misfire detection)

1) In development, samples available

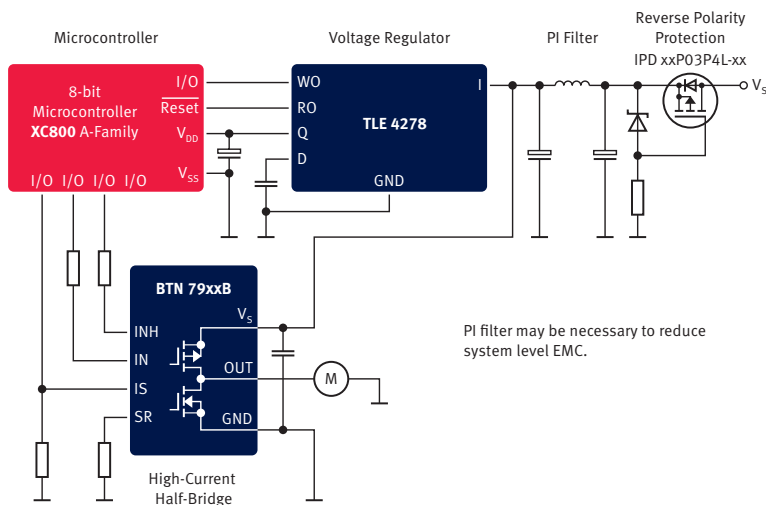
Automatic Transmission – Hydraulic Control



System Benefits

- Full range of products ranging from voltage regulators, transceivers, sensors, microcontrollers and smart power drivers
- Valve actuator ICs supporting highest precision current control
- Optimized sensors providing enhanced disturbance immunity (e.g. vibration) and direction detection
- High-temperature bare die IC supporting integrated transmission control up to the highest torque rates
- Reduces fuel consumption compared to manual transmission (e.g. by 2% from 160g to 156.8g CO₂/km)

Fuel Pump



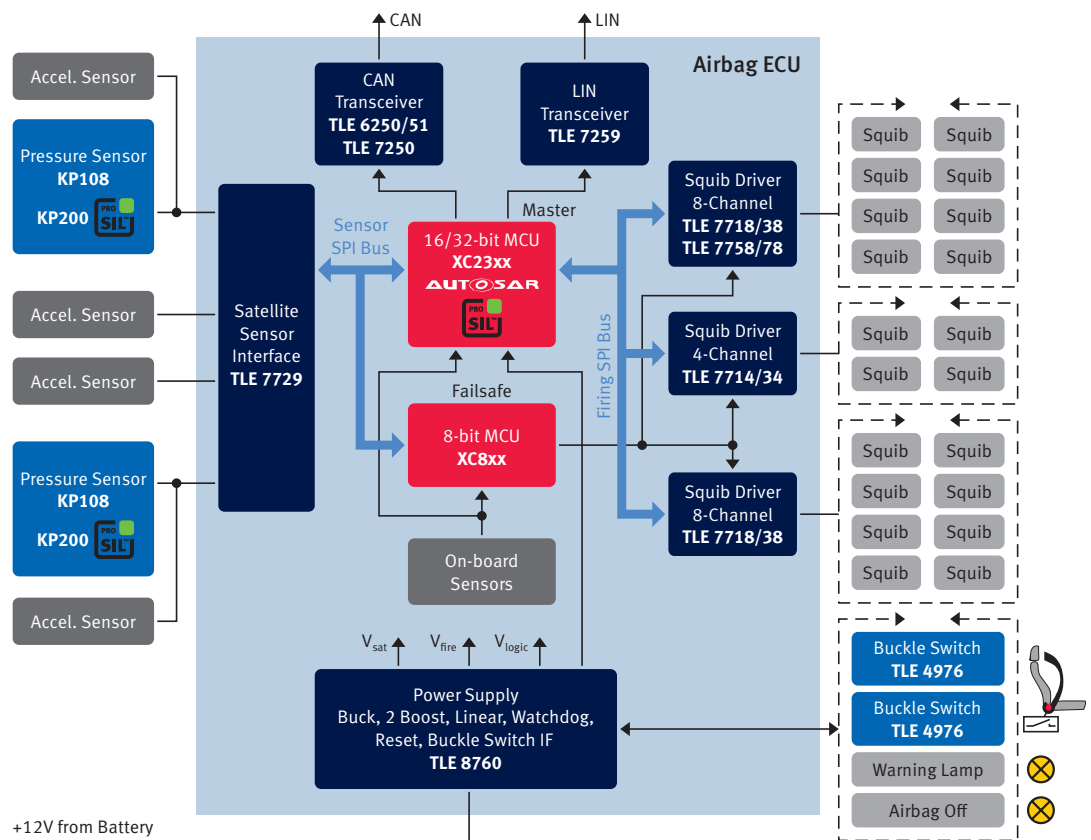
System Benefits

- Runs at full speed only when necessary
- Power consumption reduced by 40% on average
- Lower hydrocarbon emissions
- Increased lifetime

1) In development, samples available

Safety Applications

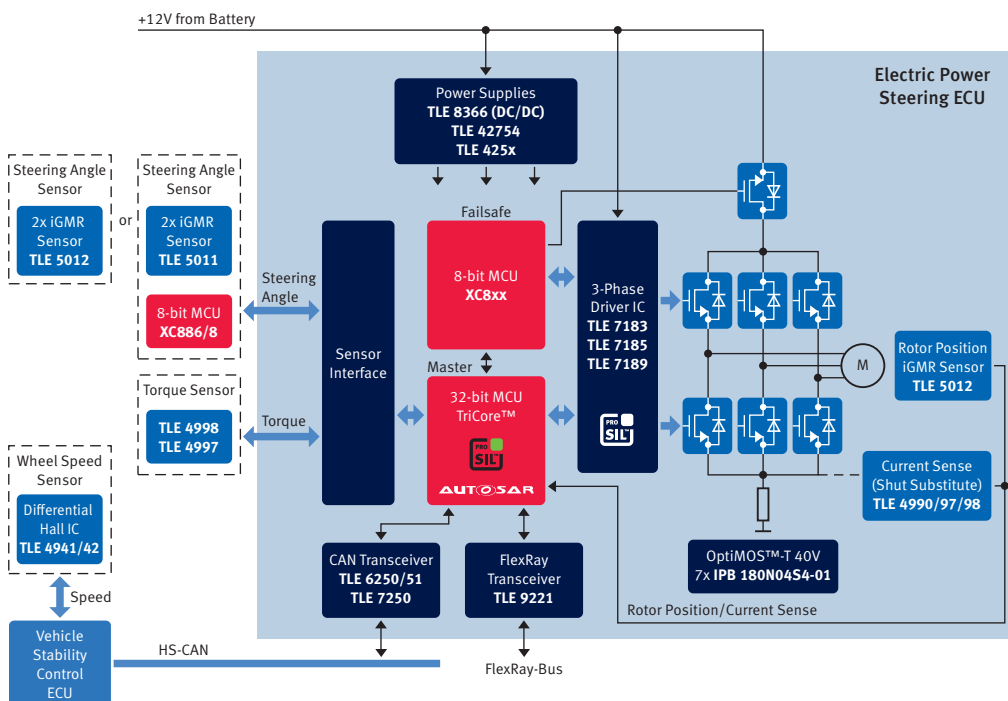
Airbag System (Advanced)



System Benefits

- Infineon's broad product spectrum supports scalability and flexibility for building systems with 4 up to more than 20 firing loops
- Full range of airbag ASSPs ranging from pressure sensors for side crash detection to driver and transceiver ICs
- 16/32-bit microcontrollers with dedicated safety functions
- The parts are optimized in terms of system interoperability as well as best price/performance in this extremely price-sensitive application

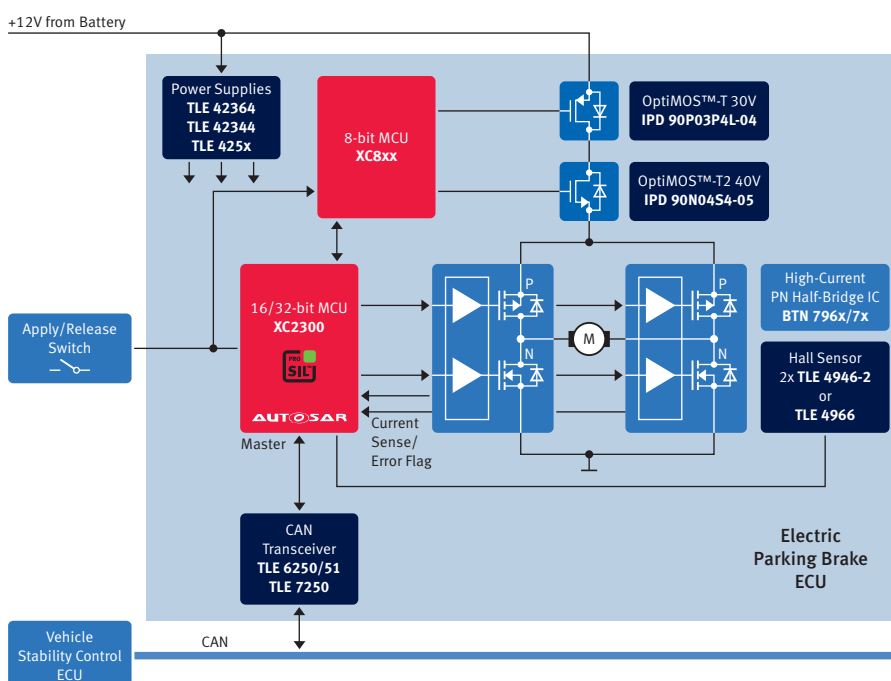
Electric Power Steering (EPS)



System Benefits

- EPS increases fuel efficiency by approximately 3% while improving car handling and the driving experience
- These EPS systems combine a compact design and reduced mounting costs with the ability to be adapted by software to suit diverse car models as well as dedicated driving modes
- EPS is the steering technology needed to enable advanced driver assist systems such as side-wind compensation, lane assist/keeping and parking aid assist systems
- Infineon has over ten years of experience in this exciting application and provides the full range of ICs, from sensor to microcontroller, from bridge driver to world-class MOSFETs

Electric Parking Brake



System Benefits

- The electric parking brake provides many more comfort and convenience features to drivers than the standard mechanical system
- Hill hold, launch control, roll-away prevention
- These convenience features are also safety-relevant, so they must be implemented using safety-capable hardware (according ISO26262)
- With its CIC61508 safety watchdog IC, Infineon offers a broad range of SIL-supporting functions to enable system designs that have to meet the new SIL and ASIL challenges

Automotive MOSFETs



Infinion OptiMOS™ – Benchmark for Automotive MOSFETs

OptiMOS™ Products are Best in Class

OptiMOS™ superior performance is based on Infineon's leading MOSFET technology combined with the unsurpassed quality of robust package:

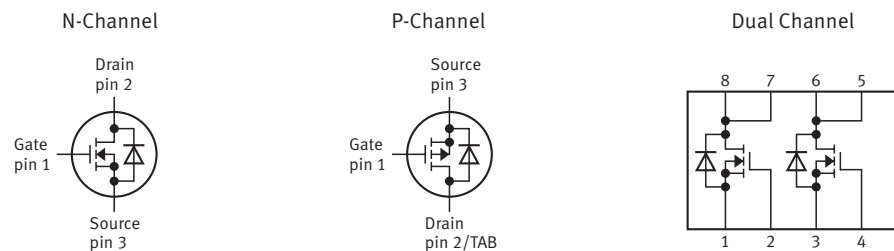
- Best in class $R_{DS(on)}$ performance for increased system efficiency
- Highest current DPAK + D²PAK on the market for reduced ECU module size
- Lowest switching and conduction power losses for increased thermal system reliability
- Robust green package for easy process handling

New OptiMOS™-T2 Product Family

New OptiMOS™-T2 trench technology is the benchmark for applications in energy efficiency, CO₂ reduction, electric drives, etc.. The new OptiMOS™-T2 product family extends the existing families of OptiMOS™-T and OptiMOS™.

OptiMOS™ Robust Green Package

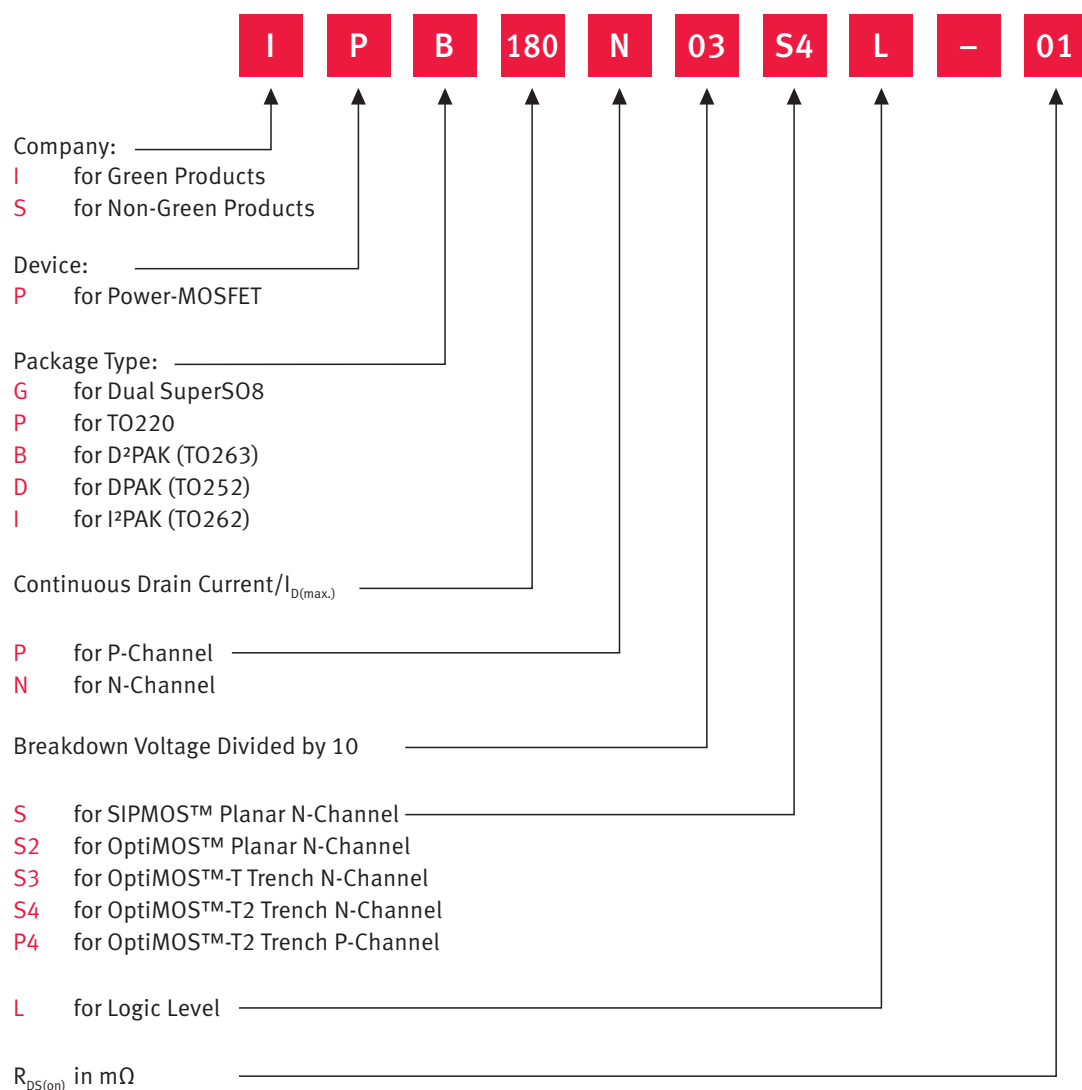
OptiMOS™ robust package is the benchmark for quality and reliability. Robust package sustains 260°C GREEN reflow processes at MSL1 combined with automotive qualification. No special handling or dry-pack is needed. All green packages are in compliance with RoHS/WEEE guidelines.



	Voltage Class [V]	OptiMOS™-T2 (Trench)	OptiMOS™-T (Trench)	OptiMOS™ (Planar)
Single MOSFET				
N-Channel	30	•		•
NEW! N-Channel	40	•	•	•
N-Channel	55			•
NEW! N-Channel	60	•		
N-Channel	75			•
N-Channel	100		•	
P-Channel	30	•		
NEW! P-Channel	40	•		
Dual MOSFET				
NEW! Dual N-Channel	2 x 55		•	•
P+N-Channel	30 + 55		•	



Naming System



Automotive N-Channel MOSFETs

OptiMOS™ 30V (Planar)

Product Type	$R_{DS(on)}$ [mΩ]	I_D [A]	R_{thJC} (max) [K/W]	$V_{GS(th)}$ (min-max) [V]	Q_G (typ) [nC]	Package ¹⁾
IPD 50N03S2L-06	6.4	50	1.1	1.2 ... 2.0	50	(32)
IPD 30N03S2L-07	6.7	30	1.1	1.2 ... 2.0	51	(32)
IPD 50N03S2-07	7.3	50	1.1	2.1 ... 4.0	52	(32)
IPD 30N03S2L-10	10.0	30	1.5	1.2 ... 2.0	31	(32)
IPD 30N03S2L-20	20.0	30	2.5	1.2 ... 2.0	14	(32)

OptiMOS™ 40V (Planar)

Product Type	$R_{DS(on)}$ [mΩ]	I_D [A]	R_{thJC} (max) [K/W]	$V_{GS(th)}$ (min-max) [V]	Q_G (typ) [nC]	Package ¹⁾
IPB 160N04S2L-03	2.7	160	0.5	1.2 ... 2.0	230	(38)
IPB 160N04S2-03	2.9	160	0.5	2.1 ... 4.0	123	(38)
IPB 100N04S2L-03	3.0	100	0.5	1.2 ... 2.0	170	(34)
IPB 100N04S2-04	3.3	100	0.5	2.1 ... 4.0	172	(34)
IPB 80N04S2L-03	3.4	80	0.5	1.2 ... 2.0	170	(34)
IPB 80N04S2-04	3.4	80	0.5	2.1 ... 4.0	127	(34)
IPB 80N04S2-H4	3.7	80	0.5	2.1 ... 4.0	103	(34)
IPI 80N04S2-04	3.7	80	0.5	2.1 ... 4.0	170	(56)
IPI 80N04S2-H4	4.0	80	0.5	2.1 ... 4.0	148	(56)
IPP 100N04S2L-03	3.3	100	0.5	1.2 ... 2.0	163	(49)
IPP 80N04S2L-03	3.4	80	0.5	1.2 ... 2.0	163	(49)
IPP 100N04S2-04	3.6	100	0.5	2.1 ... 4.0	172	(49)
IPP 80N04S2-04	3.7	80	0.5	2.1 ... 4.0	127	(49)
IPP 80N04S2-H4	4.0	80	0.5	2.1 ... 4.0	103	(49)

1) See packages on page 92

OptiMOS™ 55V (Planar)

Product Type	$R_{DS(on)}$ [mΩ]	I_D [A]	R_{thJC} (max) [K/W]	$V_{GS(th)}$ (min-max) [V]	Q_g (typ) [nC]	Package ¹⁾
IPD 50N06S2L-13	12.7	50.0	1.1	1.2 ... 2.0	52	(32)
IPD 30N06S2L-13	13.0	30.0	1.1	1.2 ... 2.0	52	(32)
IPD 50N06S2-14	14.4	50.0	1.1	2.1 ... 4.0	39	(32)
IPD 30N06S2-15	14.7	30.0	1.1	1.2 ... 2.0	39	(32)
IPD 30N06S2L-23	23.0	30.0	1.5	1.2 ... 2.0	33	(32)
IPD 30N06S2-23	23.0	30.0	1.5	2.1 ... 4.0	25	(32)
IPD 26N06S2L-35	35.0	30.0	2.2	1.2 ... 2.0	10	(32)
IPD 25N06S2-40	40.0	29.0	2.2	2.1 ... 4.0	14	(32)
IPD 15N06S2L-64	64.0	19.0	3.2	1.2 ... 2.0	11	(32)
IPD 14N06S2-80	80.0	17.0	3.2	2.1 ... 4.0	8	(32)
IPB 100N06S2L-05	4.4	100.0	0.5	1.2 ... 2.0	170	(34)
IPB 80N06S2L-05	4.5	80.0	0.5	1.2 ... 2.0	170	(34)
IPB 100N06S2-05	4.7	100.0	0.5	2.1 ... 4.0	130	(34)
IPB 80N06S2L-H5	4.7	80.0	0.5	1.2 ... 2.0	145	(34)
IPB 80N06S2-05	4.8	80.0	0.5	2.1 ... 4.0	130	(34)
IPB 80N06S2-H5	5.2	80.0	0.5	2.1 ... 4.0	116	(34)
IPB 80N06S2L-06	6.0	80.0	0.6	1.2 ... 2.0	114	(34)
IPB 80N06S2-07	6.3	80.0	0.6	2.1 ... 4.0	86	(34)
IPB 80N06S2L-07	6.7	80.0	0.7	1.2 ... 2.0	95	(34)
IPB 80N06S2-08	7.7	80.0	0.7	2.1 ... 4.0	72	(34)
IPB 80N06S2L-09	8.2	80.0	0.8	1.2 ... 2.0	82	(34)
IPB 80N06S2-09	8.8	80.0	0.8	2.1 ... 4.0	60	(34)
IPB 80N06S2L-11	10.7	80.0	0.95	1.2 ... 2.0	62	(34)
IPB 77N06S2-12	11.7	77.0	0.95	2.1 ... 4.0	45	(34)
IPI 80N06S2L-05	4.8	80.0	0.5	1.2 ... 2.0	170	(56)
IPI 80N06S2-07	6.6	80.0	0.6	2.1 ... 4.0	86	(56)
IPI 80N06S2-08	8.0	80.0	0.7	2.1 ... 4.0	72	(56)
IPI 80N06S2L-11	11.0	80.0	0.95	1.2 ... 2.0	62	(56)
BSP 603S2L	33.0	5.2	20.0	1.2 ... 2.0	31	(26)
IPP 100N06S2L-05	4.7	100.0	0.5	1.2 ... 2.0	170	(49)
IPP 80N06S2L-05	4.8	80.0	0.5	1.2 ... 2.0	170	(49)
IPP 100N06S2-05	5.0	100.0	0.5	2.1 ... 4.0	130	(49)
IPP 80N06S2L-H5	5.0	80.0	0.5	1.2 ... 2.0	145	(49)
IPP 80N06S2-05	5.1	80.0	0.5	2.1 ... 4.0	130	(49)
IPP 80N06S2-H5	5.5	80.0	0.5	2.1 ... 4.0	116	(49)
IPP 80N06S2L-06	6.3	80.0	0.6	1.2 ... 2.0	114	(49)
IPP 80N06S2-07	6.6	80.0	0.6	2.1 ... 4.0	86	(49)
IPP 80N06S2L-07	7.0	80.0	0.7	1.2 ... 2.0	95	(49)
IPP 80N06S2-08	8.0	80.0	0.7	2.1 ... 4.0	72	(49)
IPP 80N06S2L-09	8.5	80.0	0.8	1.2 ... 2.0	82	(49)
IPP 80N06S2-09	9.1	80.0	0.8	2.1 ... 4.0	60	(49)
IPP 80N06S2L-11	11.0	80.0	0.95	1.2 ... 2.0	62	(49)
IPP 77N06S2-12	12.0	77.0	0.95	2.1 ... 4.0	45	(49)

1) See packages on page 92

Automotive N-Channel MOSFETs

OptiMOS™ 75V (Planar)

Product Type	$R_{DS(on)}$ [mΩ]	I_D [A]	R_{thJC} (max) [K/W]	$V_{GS(th)}$ (min-max) [V]	Q_g (typ) [nC]	Package ¹⁾
IPD 30N08S2L-21	20.5	30	1.1	2.1 ... 4.0	43	(32)
IPD 30N08S2-22	21.5	30	1.1	2.1 ... 4.0	44	(32)
IPD 22N08S2L-50	50.0	22	2.0	1.2 ... 2.0	21	(32)
IPB 100N08S2L-07	6.5	100	0.5	1.2 ... 2.0	185	(34)
IPB 100N08S2-07	6.8	100	0.5	2.1 ... 4.0	153	(34)
IPB 80N08S2L-07	6.8	80	0.5	1.2 ... 2.0	186	(34)
IPB 80N08S2-07	7.1	80	0.5	2.1 ... 4.0	182	(34)
IPI 100N08S2-07	7.1	100	0.5	2.1 ... 4.0	144	(56)
IPI 80N08S2-07	7.4	80	0.5	2.1 ... 4.0	144	(56)
IPP 100N08S2L-07	6.8	100	0.5	1.2 ... 2.0	182	(49)
IPP 100N08S2-07	7.1	100	0.5	2.1 ... 4.0	144	(56)
IPP 80N08S2L-07	7.1	80	0.5	1.2 ... 2.0	183	(49)
IPP 80N08S2-07	7.4	80	0.5	2.1 ... 4.0	144	(56)

OptiMOS™-T 100V (Trench)

Product Type	$R_{DS(on)}$ [mΩ]	I_D [A]	R_{thJC} (max) [K/W]	$V_{GS(th)}$ (min-max) [V]	Q_g (typ) [nC]	Package ¹⁾
IPB 100N10S3-05	4.8	100	0.5	2.0 ... 4.0	135	(34)
IPB 70N10S3-12	11.3	70	1.2	2.0 ... 4.0	51	(34)
IPB 70N10S3L-12	11.8	70	1.2	1.2 ... 2.4	60	(34)
IPB 50N10S3L-16	15.4	70	1.5	1.2 ... 2.4	49	(34)
IPD 70N10S3-12	11.1	70	1.2	2.0 ... 4.0	51	(32)
IPD 70N10S3L-12	11.5	70	1.2	1.2 ... 2.4	60	(32)
IPD 50N10S3L-16	15.0	50	1.5	1.2 ... 2.4	49	(32)
IPD 35N10S3L-26	24.0	35	2.1	1.2 ... 2.4	39	(32)
IPD 30N10S3L-34	31.0	30	2.6	1.2 ... 2.4	24	(32)
IPI 100N10S3-05	5.1	100	0.5	2.0 ... 4.0	135	(56)
IPI 70N10S3-12	11.6	70	1.2	2.0 ... 4.0	51	(56)
IPI 70N10S3L-12	12.1	70	1.2	1.2 ... 2.4	60	(56)
IPI 50N10S3L-16	15.7	50	1.5	1.2 ... 2.4	49	(56)
IPP 100N10S3-05	5.1	100	0.5	2.0 ... 4.0	135	(49)
IPP 70N10S3-12	12.1	70	1.2	2.0 ... 4.0	51	(49)
IPP 70N10S3L-12	12.1	70	1.2	1.2 ... 2.4	60	(49)
IPP 50N10S3L-16	15.7	50	1.5	1.2 ... 2.4	49	(49)

1) See packages on page 92

OptiMOS™-T2 30V (Trench)

Product Type	$R_{DS(on)}$ [mΩ]	I_D [A]	R_{thJC} (max) [K/W]	$V_{GS(th)}$ (min-max) [V]	Q_g (typ) [nC]	Package ¹⁾
IPD 90N03S4L-02	2.2	90	1.1	1.0 ... 2.2	110	(32)
IPD 90N03S4L-03	3.3	90	1.6	1.0 ... 2.2	60	(32)
IPD 70N03S4L-04	4.3	70	2.2	1.0 ... 2.2	37	(32)
IPD 50N03S4L-06	5.5	50	2.7	1.0 ... 2.2	24	(32)
IPD 40N03S4L-08	8.0	40	3.6	1.0 ... 2.2	15	(32)
IPD 30N03S4L-09	9.0	30	3.6	1.0 ... 2.2	15	(32)
IPD 30N03S4L-14	13.6	30	4.9	1.0 ... 2.2	11	(32)
IPB 180N03S4L-H0	0.95	180	0.6	1.0 ... 2.2	230	(38)
IPB 180N03S4L-01	1.05	180	0.8	1.0 ... 2.2	187	(38)
IPB 80N03S4L-02	2.4	80	1.1	1.0 ... 2.2	110	(34)
IPB 80N03S4L-03	3.4	80	1.6	1.0 ... 2.2	60	(34)
IPB 22N03S4L-15	14.6	22	4.9	1.0 ... 2.2	11	(34)
IPI 80N03S4L-03	2.7	80	1.1	1.0 ... 2.2	110	(56)
IPI 80N03S4L-04	3.6	80	1.6	1.0 ... 2.2	60	(56)
IPI 22N03S4L-15	14.9	22	4.9	1.0 ... 2.2	11	(56)
IPP 80N03S4L-03	2.7	80	1.1	1.0 ... 2.2	110	(49)
IPP 80N03S4L-04	3.7	80	1.6	1.0 ... 2.2	60	(49)
IPP 22N03S4L-15	14.9	22	4.9	1.0 ... 2.2	11	(49)

OptiMOS™-T2 40V (Trench)

Product Type	$R_{DS(on)}$ [mΩ]	I_D [A]	R_{thJC} (max) [K/W]	$V_{GS(th)}$ (min-max) [V]	Q_g (typ) [nC]	Package ¹⁾
IPD 100N04S4-02	2.0	100	1.0	2.0 ... 4.0	91.0	(32)
IPD 90N04S4-02	2.4	90	1.0	2.0 ... 4.0	91.0	(32)
IPD 90N04S4-03	3.2	90	1.6	2.0 ... 4.0	51.0	(32)
IPD 90N04S4L-04	3.8	90	2.1	1.2 ... 2.0	46.0	(32)
IPD 90N04S4-04	4.1	90	2.1	2.0 ... 4.0	33.0	(32)
IPD 90N04S4-05	5.2	90	2.3	2.0 ... 4.0	33.0	(32)
IPD 75N04S4-06	5.9	75	2.6	2.0 ... 4.0	24.5	(32)
IPD 50N04S4L-08	7.3	50	3.3	1.2 ... 2.0	23.0	(32)
IPD 50N04S4-08	7.9	50	3.3	2.0 ... 4.0	17.2	(32)
IPD 50N04S4-10	9.3	50	3.7	2.0 ... 4.0	14.0	(32)
IPB 180N04S4-00	0.98	180	0.5	2.0 ... 4.0	220.0	(38)
IPB 180N04S4-H0	1.1	180	0.6	2.0 ... 4.0	173.0	(38)
IPB 180N04S4-01	1.3	180	0.8	2.0 ... 4.0	135.0	(38)
IPB 120N04S4-01	1.5	120	0.8	2.0 ... 4.0	135.0	(34)
IPB 160N04S4-H1	1.6	160	0.9	2.0 ... 4.0	105.0	(38)
IPB 120N04S4-02	1.8	120	0.95	2.0 ... 4.0	103.0	(34)
IPB 90N04S4-02	2.1	90	1.0	2.0 ... 4.0	91.0	(34)
IPB 100N04S4-H2	2.4	100	1.3	2.0 ... 4.0	70.0	(34)
IPB 80N04S4-03	3.3	80	1.6	2.0 ... 4.0	51.0	(34)

1) See packages on page 92

Automotive N-Channel MOSFETs

OptiMOS™-T2 40V (Trench) (cont'd)

Product Type	$R_{DS(on)}$ [mΩ]	I_D [A]	R_{thJC} (max) [K/W]	$V_{GS(th)}$ (min-max) [V]	Q_g (typ) [nC]	Package ¹⁾
IPB 80N04S4L-04	4.0	80	2.1	1.2 ... 2.0	46.0	(34)
IPB 80N04S4-04	4.2	80	2.1	2.0 ... 4.0	33.0	(34)
IPB 70N04S4-06	6.2	70	2.6	2.0 ... 4.0	24.5	(34)
IPB 45N04S4L-08	7.6	45	3.3	1.2 ... 2.0	23.0	(34)
IPI 120N04S4-01	1.9	120	0.8	2.0 ... 4.0	135.0	(56)
IPI 120N04S4-02	2.1	120	0.95	2.0 ... 4.0	103.0	(56)
IPI 90N04S4-02	2.5	90	1.0	2.0 ... 4.0	91.0	(56)
IPI 100N04S4-H2	2.7	100	1.3	2.0 ... 4.0	70.0	(56)
IPI 80N04S4-03	3.7	80	1.6	2.0 ... 4.0	51.0	(56)
IPI 80N04S4L-04	4.3	80	2.1	1.2 ... 2.0	46.0	(56)
IPI 80N04S4-04	4.6	80	2.1	2.0 ... 4.0	33.0	(56)
IPI 70N04S4-06	6.5	70	2.6	2.0 ... 4.0	24.5	(56)
IPP 120N04S4-01	1.9	120	0.8	2.0 ... 4.0	135.0	(49)
IPP 120N04S4-02	2.1	120	0.95	2.0 ... 4.0	103.0	(49)
IPP 90N04S4-02	2.5	90	1.0	2.0 ... 4.0	91.0	(49)
IPP 100N04S4-H2	2.7	100	1.3	2.0 ... 4.0	70.0	(49)
IPP 80N04S4-03	3.7	80	1.6	2.0 ... 4.0	51.0	(49)
IPP 80N04S4L-04	4.3	80	2.1	1.2 ... 2.0	46.0	(49)
IPP 80N04S4-04	4.6	80	2.1	2.0 ... 4.0	33.0	(49)
IPP 70N04S4-06	6.5	70	2.6	2.0 ... 4.0	24.5	(49)

OptiMOS™-T2 60V (Trench)

Product Type	$R_{DS(on)}$ [mΩ]	I_D [A]	R_{thJC} (max) [K/W]	$V_{GS(th)}$ (min-max) [V]	Q_g (typ) [nC]	Package ¹⁾
IPD 100N06S4-03	3.5	100	1.0	2.0 ... 4.0	99.0	(32)
IPD 90N06S4L-03	3.5	90	1.0	1.2 ... 2.0	133.0	(32)
IPD 90N06S4-04	3.8	90	1.0	2.0 ... 4.0	99.0	(32)
IPD 90N06S4L-05	4.6	90	1.4	1.2 ... 2.0	83.0	(32)
IPD 90N06S4-05	5.1	90	1.4	2.0 ... 4.0	62.0	(32)
IPD 90N06S4L-06	6.3	90	1.9	1.2 ... 2.0	58.0	(32)
IPD 90N06S4-07	6.9	90	1.9	2.0 ... 4.0	43.0	(32)
IPD 50N06S4L-08	7.8	50	2.1	1.2 ... 2.0	49.0	(32)
IPD 50N06S4-09	9.0	50	2.1	2.0 ... 4.0	36.0	(32)
IPD 50N06S4L-12	12.0	50	3.0	1.2 ... 2.0	30.0	(32)
IPD 30N06S4L-23	23.0	30	4.2	1.2 ... 2.0	16.1	(32)
IPD 25N06S4L-30	30.0	25	5.1	1.2 ... 2.0	12.5	(32)
IPB 180N06S4-H1	1.7	180	0.6	2.0 ... 4.0	208.0	(38)
IPB 120N06S4-H1	2.0	120	0.6	2.0 ... 4.0	208.0	(34)
IPB 120N06S4-02	2.4	120	0.8	2.0 ... 4.0	150.0	(34)
IPB 120N06S4-03	2.8	120	0.9	2.0 ... 4.0	125.0	(34)
IPB 90N06S4L-04	3.4	90	1.0	1.2 ... 2.0	133.0	(34)
IPB 90N06S4-04	3.7	90	1.0	2.0 ... 4.0	99.0	(34)
IPB 80N06S4L-05	4.8	80	1.4	1.2 ... 2.0	83.0	(34)

1) See packages on page 92

OptiMOS™-T2 60V (Trench) (cont'd)

Product Type	$R_{DS(on)}$ [mΩ]	I_D [A]	R_{thJC} (max) [K/W]	$V_{GS(th)}$ (min-max) [V]	Q_g (typ) [nC]	Package ¹⁾
IPB 80N06S4-05	5.4	80	1.4	2.0 ... 4.0	62.0	(34)
IPB 80N06S4-07	5.4	80	1.4	2.0 ... 4.0	62.0	(34)
IPB 80N06S4L-07	6.4	80	1.9	1.2 ... 2.0	58.0	(34)
IPB 45N06S4L-08	7.9	45	2.1	1.2 ... 2.0	49.0	(34)
IPB 45N06S4-09	9.1	45	2.1	2.0 ... 4.0	36.0	(34)
IPI 120N06S4-H1	2.4	120	0.6	2.0 ... 4.0	208.0	(56)
IPI 120N06S4-02	2.8	120	0.8	2.0 ... 4.0	150.0	(56)
IPI 120N06S4-03	3.2	120	0.9	2.0 ... 4.0	125.0	(56)
IPI 90N06S4L-04	3.4	90	1.0	1.2 ... 2.0	133.0	(56)
IPI 90N06S4-04	4.0	90	1.0	2.0 ... 4.0	99.0	(56)
IPI 80N06S4L-05	4.8	80	1.4	1.2 ... 2.0	83.0	(56)
IPI 80N06S4-05	5.4	80	1.4	2.0 ... 4.0	62.0	(56)
IPI 80N06S4L-07	6.4	80	1.9	1.2 ... 2.0	58.0	(56)
IPI 80N06S4-07	7.1	80	1.9	2.0 ... 4.0	43.0	(56)
IPI 45N06S4L-08	8.2	45	2.1	1.2 ... 2.0	49.0	(56)
IPI 45N06S4-09	9.1	45	2.1	2.0 ... 4.0	36.0	(56)
IPP 120N06S4-H1	2.4	120	0.6	2.0 ... 4.0	208.0	(49)
IPP 120N06S4-02	2.8	120	0.8	2.0 ... 4.0	150.0	(49)
IPP 120N06S4-03	3.2	120	0.9	2.0 ... 4.0	125.0	(49)
IPP 90N06S4L-04	3.4	90	1.0	1.2 ... 2.0	133.0	(49)
IPP 90N06S4-04	3.7	90	1.0	2.0 ... 4.0	99.0	(49)
IPP 80N06S4L-05	4.8	80	1.4	1.2 ... 2.0	83.0	(49)
IPP 80N06S4-05	5.4	80	1.4	2.0 ... 4.0	62.0	(49)
IPP 80N06S4L-07	6.4	80	1.9	1.2 ... 2.0	58.0	(49)
IPP 80N06S4-07	7.1	80	1.9	2.0 ... 4.0	43.0	(49)
IPP 45N06S4L-08	8.2	45	2.1	1.2 ... 2.0	49.0	(49)
IPP 45N06S4-09	9.1	45	2.1	2.0 ... 4.0	36.0	(49)

OptiMOS™-T2 30V P-Channel (Trench)

Product Type	$R_{DS(on)}$ [mΩ]	I_D [A]	R_{thJC} (max) [K/W]	$V_{GS(th)}$ (min-max) [V]	Q_g (typ) [nC]	Package ¹⁾
IPD 90P03P4L-04	4.5	-90	1.1	-2.0 ... -1.0	100	(32)
IPD 90P03P4-04	4.5	-90	1.1	-4.0 ... -2.0	100	(32)
IPD 80P03P4L-07	6.8	-80	1.7	-2.0 ... -1.0	80	(32)
IPD 50P03P4L-11	10.5	-50	2.6	-2.0 ... -1.0	42	(32)
IPB 80P03P4L-04	4.1	-80	1.1	-2.0 ... -1.0	125	(34)
IPB 80P03P4-05	4.7	-80	1.1	-4.0 ... -2.0	100	(34)
IPB 80P03P4L-07	6.9	-80	1.7	-2.0 ... -1.0	63	(34)
IPB 45P03P4L-11	10.8	-45	2.6	-2.0 ... -1.0	42	(34)
IPI 80P03P4L-04	4.4	-80	1.1	-2.0 ... -1.0	125	(56)
IPI 80P03P4L-07	7.2	-80	1.7	-2.0 ... -1.0	63	(56)
IPI 45P03P4L-11	11.1	-45	2.6	-2.0 ... -1.0	42	(56)

1) See packages on page 92

Automotive P-Channel MOSFETs

OptiMOS™-T2 30V P-Channel (Trench) (cont'd)

Product Type	$R_{DS(on)}$ [mΩ]	I_D [A]	R_{thJC} (max) [K/W]	$V_{GS(th)}$ (min-max) [V]	Q_g (typ) [nC]	Package ¹⁾
IPP 80P03P4L-04	4.4	-80	1.1	-2.0 ... -1.0	125	(49)
IPP 80P03P4L-07	7.2	-80	1.7	-2.0 ... -1.0	63	(49)
IPP 45P03P4L-11	11.1	-45	2.6	-2.0 ... -1.0	42	(49)

OptiMOS™-P2 40V P-Channel (Trench)

Product Type	$R_{DS(on)}$ [mΩ]	I_D [A]	R_{thJC} (max) [K/W]	$V_{GS(th)}$ (min-max) [V]	Q_g (typ) [nC]	Package ¹⁾
IPB 180P04P4L-02	2.4	-100	1.0	-2.2 ... -1.7	220	(38)
IPB 180P04P4-03	2.8	-100	1.0	-4.0 ... -2.0	190	(34)
IPB 120P04P4L-03	3.0	-120	1.1	-2.2 ... -1.7	180	(34)
IPB 120P04P4-04	3.6	-120	1.1	-4.0 ... -2.0	158	(34)
IPB 80P04P4L-04	4.2	-90	1.2	-2.2 ... -1.7	135	(34)
IPB 80P04P4-05	4.9	-80	1.2	-4.0 ... -2.0	118	(34)
IPB 80P04P4L-06	6.4	-80	1.7	-2.2 ... -1.7	71	(34)
IPB 80P04P4-07	7.3	-80	1.7	-4.0 ... -2.0	71	(34)
IPB 70P04P4L-08	7.5	-70	2.0	-2.2 ... -1.7	63	(34)
IPB 70P04P4-09	9.3	-70	2.0	-4.0 ... -2.0	54	(34)
IPD 90P04P4L-04	4.3	-90	1.2	-2.2 ... -1.7	135	(32)
IPD 90P04P4-05	4.7	-90	1.2	-4.0 ... -2.0	118	(32)
IPD 85P04P4L-06	6.4	-85	1.7	-2.2 ... -1.7	80	(32)
IPD 85P04P4-07	7.3	-85	1.7	-4.0 ... -2.0	69	(32)
IPD 70P04P4L-08	7.8	-70	2.0	-2.2 ... -1.7	63	(32)
IPD 70P04P4-09	8.9	-70	2.0	-4.0 ... -2.0	54	(32)
IPD 50P04P4L-11	10.6	-50	2.6	-2.2 ... -1.7	45	(32)
IPD 50P04P4-13	12.7	-50	2.6	-4.0 ... -2.0	39	(32)
IPP 120P04P4L-03	3.4	-120	1.1	-2.2 ... -1.7	180	(49)
IPP 120P04P4-04	3.9	-120	1.1	-4.0 ... -2.0	158	(49)
IPP 80P04P4L-04	4.7	-80	1.2	-2.2 ... -1.7	16	(49)
IPP 80P04P4-05	5.2	-80	1.2	-4.0 ... -2.0	14	(49)
IPP 80P04P4L-06	6.7	-80	1.7	-2.2 ... -1.7	71	(49)
IPP 80P04P4-07	7.6	-80	1.7	-4.0 ... -2.0	71	(49)
IPP 70P04P4L-08	8.2	-70	2.0	-2.2 ... -1.7	63	(49)
IPP 70P04P4-09	9.4	-70	2.0	-4.0 ... -2.0	54	(49)
IPI 120P04P4L-03	3.4	-120	1.1	-2.2 ... -1.7	180	(56)
IPI 120P04P4-04	3.9	-120	1.1	-4.0 ... -2.0	135	(56)
IPI 80P04P4L-04	4.7	-80	1.2	-2.2 ... -1.7	16	(56)
IPI 80P04P4-05	5.2	-80	1.2	-4.0 ... -2.0	14	(56)
IPI 80P04P4L-06	6.7	-80	1.7	-2.2 ... -1.7	71	(56)
IPI 80P04P4-07	7.6	-80	1.7	-4.0 ... -2.0	71	(56)
IPI 70P04P4L-08	8.2	-70	2.0	-2.2 ... -1.7	63	(56)
IPI 70P04P4-09	9.4	-70	2.0	-4.0 ... -2.0	54	(56)

1) See packages on page 92

Automotive Dual MOSFETs

OptiMOS™ Dual N-Channel 55V

Automotive MOSFETs in Dual SuperS08

Product Type	$R_{DS(on)}$ (max) @ 10V [mΩ]/channel	I_D [A]/channel	R_{thJC} (max) [K/W]	$V_{GS(th)}$ (min-max) [V]	Q_g (typ) [nC]	Package ¹⁾
IPG 20N06S2L-35	2 x 35.0	20	2.3	1.2 ... 2.2	18.0	(31)
IPG 20N06S2L-50	2 x 50.0	20	2.9	1.2 ... 2.2	12.4	(31)
IPG 20N06S2L-65	2 x 65.0	20	3.5	1.2 ... 2.2	10.0	(31)

OptiMOS™-T2 Dual N-Channel 40V

Automotive MOSFETs in Dual SuperS08

Product Type	$R_{DS(on)}$ (max) @ 10V [mΩ]/channel	I_D [A]/channel	R_{thJC} (max) [K/W]	$V_{GS(th)}$ (min-max) [V]	Q_g (typ) [nC]	Package ¹⁾
IPG 20N04S4-08	2 x 7.5	20	2.3	2.0 ... 4.0	28.0	(31)
IPG 20N04S4-09	2 x 8.6	20	2.8	2.0 ... 4.0	21.7	(31)
IPG 20N04S4-12	2 x 12.2	20	3.7	2.0 ... 4.0	14.0	(31)
IPG 20N04S4L-07	2 x 7.2	20	2.3	1.2 ... 2.2	39.0	(31)
IPG 20N04S4L-08	2 x 8.1	20	2.8	1.2 ... 2.2	30.0	(31)
IPG 20N04S4L-11	2 x 11.6	20	3.7	1.2 ... 2.2	20.0	(31)

OptiMOS™-T2 Dual N-Channel 60V

Automotive MOSFETs in Dual SuperS08

Product Type	$R_{DS(on)}$ (max) @ 10V [mΩ]/channel	I_D [A]/channel	R_{thJC} (max) [K/W]	$V_{GS(th)}$ (min-max) [V]	Q_g (typ) [nC]	Package ¹⁾
IPG 20N06S4-15	2 x 15.5	20	3.0	2.0 ... 4.0	22.0	(31)
IPG 20N06S4L-11	2 x 11.1	20	2.3	1.2 ... 2.2	41.0	(31)
IPG 20N06S4L-14	2 x 13.7	20	3.0	1.2 ... 2.2	30.0	(31)
IPG 20N06S4L-26	2 x 26.0	20	4.5	1.2 ... 2.2	20.0	(31)

1) See packages on page 92

Small Signal MOSFETs

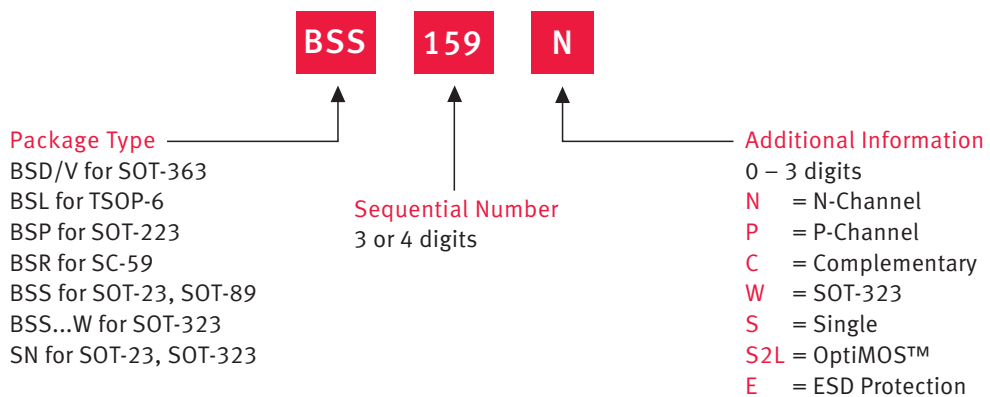
Infineon offers a full range of Small Signal MOSFETs qualified according AEC Q101.

The portfolio includes:

- Polarity: N-Channel enhancement, N-Channel depletion and P-Channel MOSFETs
- Voltage classes: -250 ... 800V
- V_{GS} rating: 10V(Normal Level), 4.5V (Logic Level), 2.5V (Super Logic Level), 1.8V (Ultra Logic Level)
- Packages:
 - SOT-223, SOT-89, TSOP-6 (single and dual), SC-59, SOT-23, SOT-323, SOT-363 (single and dual)
- Configuration: single, dual, complementary (n+p pairs)
- Additional features: the products with names ending by "E" have an integrated ESD protection

SC-59 is an enhanced version of the SOT-23: it's footprint compatible with SOT-23, but allows a bigger chip inside, therefore a lower $R_{DS(on)}$.

Naming System



[www.infineon.com/smallsignalmosfets]

[www.infineon.com/complementary]

[www.infineon.com/pchannel]

[www.infineon.com/depletion]

N-Channel MOSFETs

Voltage	Product Type	$R_{DS(on)}$ (max) [mΩ]	I_D [A]	$V_{GS(th)}$ (min-max) [V]	Q_g (typ) [nC]	Technology	Package ¹⁾
20V	BSL 802SN	–	7.5	0.3 ... 0.75	4.7	OptiMOS™2	④2
	BSL 202SN	–	7.5	0.7 ... 1.2	5.8	OptiMOS™2	④2
	BSL 205N	–	2.5	0.7 ... 1.2	2.1	OptiMOS™2	④2 (dual)
	BSL 214N	–	1.5	0.7 ... 1.2	0.8	OptiMOS™2	④2 (dual)
	BSL 207N	–	2.1	0.7 ... 1.2	2.1	OptiMOS™2	④2 (dual)
	BSL 806N	–	2.3	0.3 ... 0.75	1.7	OptiMOS™2	④2 (dual)
	BSR 202N	–	3.8	0.7 ... 1.2	5.8	OptiMOS™2	①8
	BSR 802N	–	3.7	0.3 ... 0.75	4.7	OptiMOS™2	①8
	BSS 205N	–	2.5	0.7 ... 1.2	2.1	OptiMOS™ 2	②1
	BSS 214N	–	1.5	0.7 ... 1.2	0.8	OptiMOS™ 2	②1
	BSS 806N	–	2.3	0.3 ... 0.75	1.7	OptiMOS™ 2	②1
	BSS 816NW	–	1.4	0.3 ... 0.75	0.6	OptiMOS™2	②5
	BSS 214NW	–	1.5	0.7 ... 1.2	0.8	OptiMOS™2	②5
	BSD 214NW	–	1.5	0.7 ... 1.2	0.8	OptiMOS™2	②7
	BSD 816SN	–	1.4	0.3 ... 0.75	0.6	OptiMOS™2	②7
	BSD 235N	–	0.95	0.7 ... 1.2	0.32	OptiMOS™2	②7 (dual)
30V	BSD 840N	–	0.88	0.3 ... 0.75	0.26	OptiMOS™2	②7 (dual)
	BSR 302N	23	3.7	1.2 ... 2.0	4.4	OptiMOS™2	①8
	BSL 302SN	25	7.1	1.2 ... 2.0	4.4	OptiMOS™2	④2
	BSL 306N	57	2.3	1.2 ... 2.0	1.6	OptiMOS™2	④2 (dual)
	BSS 306	57	2.3	1.2 ... 2.0	1.5	OptiMOS™ 2	②1
	BSS 316N	160	1.4	1.2 ... 2.0	0.6	OptiMOS™ 2	②1
55V	BSD 316SN	160	1.4	1.2 ... 2.0	0.6	OptiMOS™2	②7
	BSS 670S2L	650	0.54	1.2 ... 2.0	1.7	OptiMOS™	②1
60V	BSS 606N	60	3.2	1.3 ... 2.3	6.1	OptiMOS™3 ²⁾	②2
	BSL 606SN	60	4.5	1.3 ... 2.3	6.1	OptiMOS™3 ²⁾	④2
	BSR 606N	60	2.4	1.3 ... 2.3	6.1	OptiMOS™3 ²⁾	①8
	BSP 318S	90	2.6	1.2 ... 2.0	14.0	SIPMOS™	②4
	BSP 320S	120	2.9	2.1 ... 4.0	9.7	SIPMOS™	②4
	BSP 295	300	1.8	0.8 ... 1.8	14.0	SIPMOS™	②4
	2N7002DW	3,000	0.3	1.5 ... 2.5	0.4	OptiMOS™	②7 (dual)
	BSS 138N	3,500	0.23	0.6 ... 1.4	1.0	SIPMOS™	②1
	BSS 138W	3,500	0.28	0.6 ... 1.4	1.0	SIPMOS™	②4
	SN7002N	5,000	0.2	0.8 ... 1.8	1.0	SIPMOS™	②1
	BSS 7728N	5,000	0.2	1.3 ... 2.3	1.0	SIPMOS™	②1
	SN7002W	5,000	0.23	0.8 ... 1.8	1.0	SIPMOS™	②5
100V	BSP 372	–	1.7	0.8 ... 2.0	–	SIPMOS™	②4
	BSP 373	300	1.7	2.1 ... 4.0	–	SIPMOS™	②4
	BSP 296	700	1.1	0.8 ... 1.8	13.80	SIPMOS™	②4
	BSP 123	6,000	0.37	0.8 ... 1.8	1.60	SIPMOS™	②4
	BSS 123	6,000	0.17	0.8 ... 1.8	1.78	SIPMOS™	②1
	BSS 119	6,000	0.17	1.3 ... 2.3	1.67	SIPMOS™	②1
200V	BSP 297	1,800	0.66	0.8 ... 1.8	12.9	SIPMOS™	②4

1) See packages on page 92

2) Coming soon

[www.infineon.com/smallsignalmosfets][www.infineon.com/complementary][www.infineon.com/pchannel][www.infineon.com/depletion]

Small Signal MOSFETs

N-Channel MOSFETs (cont'd)

Voltage	Product Type	$R_{DS(on)}$ (max) [mΩ]	I_D [A]	$V_{GS(th)}$ (min-max) [V]	Q_g (typ) [nC]	Technology	Package ¹⁾
240V	BSP 89	6,000	0.35	0.8 ... 1.8	4.3	SIPMOST™	②4
	BSP 88	6,000	0.35	0.6 ... 1.4	4.5	SIPMOST™	②4
	BSS 87	6,000	0.26	0.8 ... 1.8	3.7	SIPMOST™	②2
	BSS 131	14,000	0.11	0.8 ... 1.8	2.1	SIPMOST™	②1
400V	BSP 298	3,000	0.5	2.1 ... 4.0	–	SIPMOST™	②4
	BSP 324	25,000	0.17	1.3 ... 2.3	4.5	SIPMOST™	②4
500V	BSP 299	4,000	0.4	2.1 ... 4.0	–	SIPMOST™	②4
600V	BSP 125	45,000	0.12	1.3 ... 2.3	4.4	SIPMOST™	②4
	BSS 225	45,000	0.09	1.3 ... 2.3	3.9	SIPMOST™	②2
	BSS 127	500,000	0.023	1.4 ... 2.6	1.4	SIPMOST™	②1
800V	BSP 300	20	0.19	2.1 ... 4.0	–	SIPMOST™	②4

P-Channel MOSFETs

Voltage	Product Type	$R_{DS(on)}$ (max) @ $V_{GS} = -10V$ [mΩ]	I_D [A]	$V_{GS(th)}$ (min-max) [V]	Q_g (typ) [nC]	Technology	Package ¹⁾
-20V	BSL 207SP	–	-6.0	-1.2 ... -0.6	-13.3	OptiMOST™2 P	④2
	BSL 211SP	–	-4.7	-1.2 ... -0.6	-8.3	OptiMOST™2 P	④2
	BSL 215P	–	-1.5	-1.2 ... -0.6	-3.55	OptiMOST™2 P	④2 (dual)
	BSS 215P	–	-1.5	-1.2 ... -0.5	-3.6	OptiMOST™2 P	②1
	BSS 209PW	–	-0.58	-1.2 ... -0.6	-0.92	OptiMOST™2 P	②5
	BSS 223PW	–	-0.39	-1.2 ... -0.6	-0.5	OptiMOST™2 P	②5
	BSV 236SP	–	-1.5	-1.2 ... -0.6	-3.8	OptiMOST™P	②7
	BSD 223P	–	-0.39	-1.2 ... -0.6	-0.5	OptiMOST™2 P	②7 (dual)
-30V	BSL 307SP	43	-5.5	-2.0 ... -1.0	-23.4	OptiMOST™2 P	④2
	BSL 308PE	80	-2.1	-2.0 ... -1.0	-2.9	OptiMOST™3 P + integrated ESD diode	④2 (dual)
	BSL 314PE	140	-1.5	-2.0 ... -1.0	-2.3	OptiMOST™3 P + integrated ESD diode	④2 (dual)
	BSL 315P	150	-1.5	-2.0 ... -1.0	-2.3	OptiMOST™2 P	④2 (dual)
	BSS 308PE	80	-2.1	-2.0 ... -1.0	-5.2	OptiMOST™3 P + integrated ESD diode	②1
	BSS 314PE	140	-1.5	-2.0 ... -1.0	-2.9	OptiMOST™3 P + integrated ESD diode	②1
	BSS 315P	150	-1.5	-2.0 ... -1.0	-2.3	OptiMOST™2 P	②1
	BSD 314SPE	140	-1.5	-2.0 ... -1.0	-2.9	OptiMOST™3 P + integrated ESD diode	②7

1) See packages on page 92

[www.infineon.com/smallsignalmosfets]

[www.infineon.com/complementary]

[www.infineon.com/pchannel]

[www.infineon.com/depletion]

P-Channel MOSFETs (cont'd)

Voltage	Product Type	$R_{DS(on)}$ (max) @ $V_{GS} = -10V$ [mΩ]	I_D [A]	$V_{GS(th)}$ (min-max) [V]	Q_G (typ) [nC]	Technology	Package ¹⁾
-60V	BSP 613P	130	-2.9	-4.0 ... -2.1	-22.0	SIPMOST™	Ⓓ ²⁴
	BSP 170P	300	-1.9	-4.0 ... -2.1	-10.0	SIPMOST™	Ⓓ ²⁴
	BSP 171P	300	-1.9	-2.0 ... -1.0	-13.0	SIPMOST™	Ⓓ ²⁴
	BSP 315P	800	-1.17	-2.0 ... -1.0	-5.2	SIPMOST™	Ⓓ ²⁴
	BSR 315P	800	-0.62	-2.0 ... -1.0	-4.0	SIPMOST™	Ⓓ ¹⁸
	BSS 83P	2,000	-0.33	-2.0 ... -1.0	-2.38	SIPMOST™	Ⓓ ²¹
	BSS 84P	8,000	-0.17	-2.0 ... -1.0	-1.0	SIPMOST™	Ⓓ ²¹
-100V	BSP 322P	800	-1.0	-2.0 ... -1.0	-12.4	SIPMOST™	Ⓓ ²⁴
	BSP 321P	900	-0.98	-4.0 ... -2.1	-9.0	SIPMOST™	Ⓓ ²⁴
	BSP 316P	1,800	-0.68	-2.0 ... -1.0	-5.1	SIPMOST™	Ⓓ ²⁴
	BSR 316P	1,800	-0.36	-2.0 ... -1.0	-3.0	SIPMOST™	Ⓓ ¹⁸
	BSP 317P	4,000	-0.43	-2.0 ... -1.0	-11.6	SIPMOST™	Ⓓ ²⁴
-250V	BSP 92P	12,000	-0.26	-2.0 ... -1.0	-4.3	SIPMOST™	Ⓓ ²⁴
	BSS 192P	12,000	-0.19	-2.0 ... -1.0	-4.9	SIPMOST™	Ⓓ ²²
	BSR 92P	11,000	-0.14	-2.0 ... -1.0	-3.6	SIPMOST™	Ⓓ ¹⁸

Complementary MOSFETs

Voltage	Product Type	$R_{DS(on)}$ (max) @ $V_{GS} = -10V$ [mΩ]	I_D [A]	$V_{GS(th)}$ (min-max) [V]	Q_G (typ) [nC]	Technology	Package ¹⁾
20V	BSL 215C /n-ch	–	1.5	0.7 ... 1.2	0.73	OptiMOST™2	Ⓓ ⁴² (dual)
-20V	BSL 215C /p-ch	–	-1.5	-1.2 ... -0.6	-3.0	OptiMOST™2 P	Ⓓ ⁴² (dual)
20V	BSD 235C / n-ch	–	0.95	-1.2 ... -0.6	0.34	OptiMOST™2	Ⓓ ²⁷ (dual)
-20V	BSD 235C / p-ch	–	-0.53	0.7 ... 1.2	-0.4	OptiMOST™2 P	Ⓓ ²⁷ (dual)
30V	BSL 316C /n-ch	160	1.4	-2.0 ... -1.0	0.6	OptiMOST™2	Ⓓ ⁴² (dual)
-30V	BSL 316C /p-ch	150	-1.5	1.2 ... 2.0	-2.4	OptiMOST™2 P	Ⓓ ⁴² (dual)
30V	BSL 308C /n-ch	57	2.3	1.2 ... 2.0	1.5	OptiMOST™2	Ⓓ ⁴² (dual)
-30V	BSL 308C /p-ch	80	-2.1	-2.0 ... -1.0	-2.9	OptiMOST™3 P	Ⓓ ⁴² (dual)

Depletion MOSFETs

Voltage	Product Type	$R_{DS(on)}$ (max) @ $V_{GS} = 0V$ [mΩ]	I_D [A]	Q_G (typ) [nC]	Technology	Package ¹⁾
60V	BSS 159N	8.0	0.13	2.2	SIPMOS™	Ⓓ ²¹
100V	BSS 169	12.0	0.09	2.1	SIPMOS™	Ⓓ ²¹
200V	BSP 149	3.5	0.14	11.0	SIPMOS™	Ⓓ ²⁴
240V	BSP 129	20.0	0.05	3.8	SIPMOS™	Ⓓ ²⁴
250V	BSS 139	30.0	0.03	2.3	SIPMOS™	Ⓓ ²¹
600V	BSP 135	60.0	0.02	3.7	SIPMOS™	Ⓓ ²⁴
	BSS 126	700.0	0.007	1.4	SIPMOS™	Ⓓ ²¹

[www.infineon.com/smallsignalmosfets]

[www.infineon.com/complementary]

[www.infineon.com/pchannel]

[www.infineon.com/depletion]



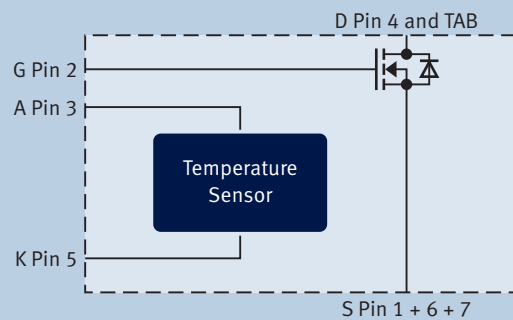
TEMPFET™: Temperature Protected Switch

TEMPFET™ provides the first level of temperature and current protection via its temperature sensor (available on external pins). Additionally, it enables direct gate access and flexible temperature response control.

Features

- Logic level input
- Analog driving capability
- Potential-free temperature sensor
- High-speed switching (100kHz)
- Overload protection and thermal shutdown with external circuit
- Avalanche rated

Block Diagram



Product Table TEMPFET™: Temperature Protected Switch

Product Type	V_{DS} [V]	$R_{DS(on)}$ [mΩ]	I_D [A]	$V_{GS(th)}$ (min-max) [V]	Q_G (typ) [nC]	Package ¹⁾
BTS 282Z	49	6.5	80	1.2 ... 2.0	155	(39) (53)
BTS 244Z	55	13.0	35	1.2 ... 2.0	85	(37) (50) (51)
BTS 247Z	55	18.0	33	1.2 ... 2.0	60	(37) (50) (51)

1) See packages on page 92

HITFET™: Low-Side Protected Switches

HITFET™ provides a high level of protection for overtemperature, short-circuit, overcurrent, overvoltage, open-load and ESD-sensitive circuits. HITFET™ combines all these protection features in one easy-to-use device. Infineon has recently expanded its HITFET™ portfolio into low range $R_{DS(on)}$ (BTS 3160D and BTS 3256D) and into 24V parts (BTS 3xxxSDx).

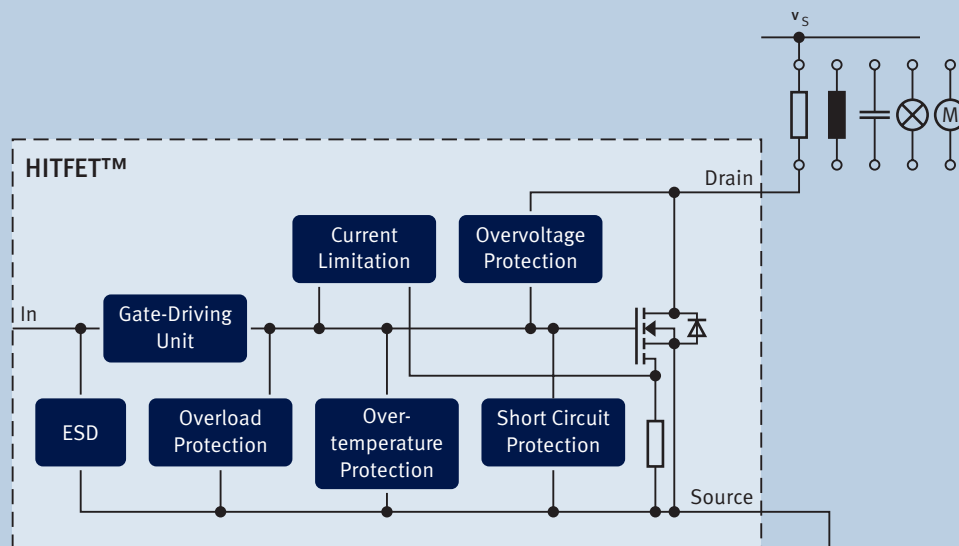
Features

- Overtemperature protection
- Overload protection
- Current limitation
- Short-circuit protection
- Open-load detection
- Thermal shutdown with auto-restart or latch behavior
- Overvoltage protection
- Logic level input
- Electrostatic Discharge (ESD) protection
- Linear drive capability
- Status feedback
 - Digital flag or with external resistor
 - Analogous with external resistor at input

Automotive and Industrial Applications

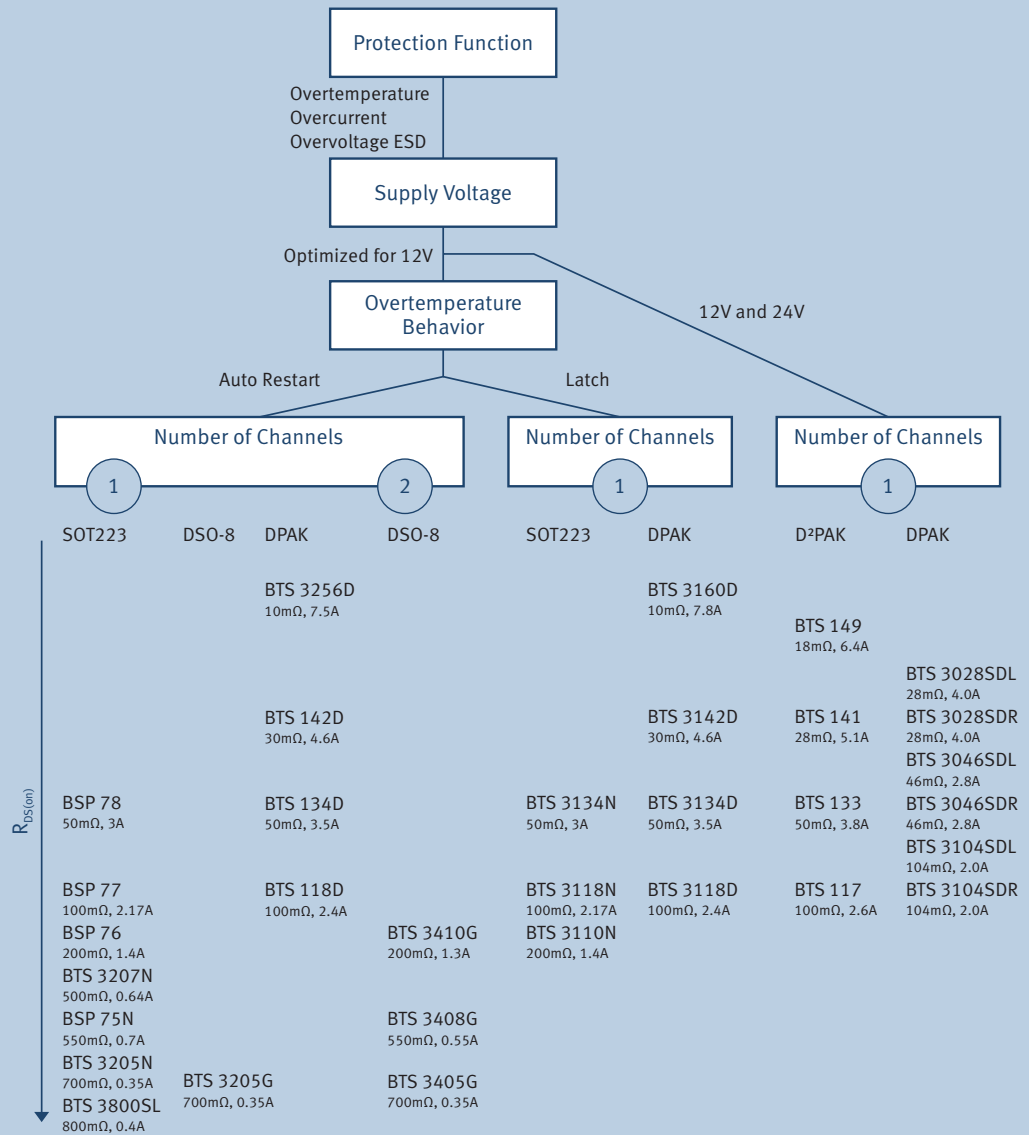
- Relays
- Fans and pumps
- Solenoids
- Valves
- Heating element
- Bulbs and LEDs
- Fuses
- Line drivers and supply switches

Block Diagram HITFET™



HITFET™: Low-Side Protected Switches

Selection Tree HITFET™



Product Table HITFET™: Low-Side Protected Switches

Product Type	R _{DS(on)} [mΩ]	Channels	V _{DS(AZ)} [V]	I _{L(nom)} [A]	I _{L(lim)} [A]	PWM [kHz]	Diagnostic	Package ³⁾
BTS 3160D	10	1	40	7.8	70.0	1	digital	③③
BTS 3256D	10	1	40	7.5	42.0	10	digital	③③
BTS 3142D	28	1	42	4.6	24.0	1	through input pin	③②
BTS 142D	30	1	42	4.6	30.0	1	through input pin	③②
BTS 3134N	50	1	42	3.0	18.0	1	through input pin	②④
BTS 3134D	50	1	42	3.5	18.0	1	through input pin	③②
BSP 78	50	1	42	3.0	18.0	1	through input pin	②④
BTS 134D	50	1	42	3.5	7.1	1	through input pin	④⑨
BTS 3118D	100	1	42	2.4	15.0	1	through input pin	③②
BTS 3118N	100	1	42	2.2	10.0	1	through input pin	②④
BSP 77	100	1	42	2.2	10.0	1	through input pin	②④
BTS 118D	100	1	42	2.4	10.0	1	through input pin	③②
BSP 76	200	1	42	1.4	5.0	1	through input pin	②④
BTS 3410G	200	2	42	1.3	5.0	1	through input pin	①
BTS 3110N	220	1	42	1.4	5.0	1	through input pin	②④
BTS 3207N	500	1	42	0.7	5.0	1	through input pin	②④
BTS 3205G	700	1	42	0.35	0.6	1	through input pin	①
BTS 3405G	700	2	42	0.35	0.6	1	through input pin	①
BTS 3205N	700	1	42	0.35	0.6	1	through input pin	②④
BTS 3800SL ²⁾	800	1	42	0.35	0.6	10	through input pin	②⑩
BTS 149 ¹⁾	20	1	60	6.4	30.0	1	through input pin	④⑨
BTS 141TC	30	1	60	5.1	25.0	1	through input pin	③④
BTS 3028SDL	30	1	60	5.0	18.0	1	through input pin	③②
BTS 3028SDR	30	1	60	5.0	18.0	1	through input pin	③②
BTS 133TC	50	1	60	3.8	21.0	1	through input pin	③④
BTS 3046SDL	50	1	60	3.6	10.0	1	through input pin	③②
BTS 3046SDR	50	1	60	3.6	10.0	1	through input pin	③②
BTS 117TC	100	1	60	3.5	7.0	1	through input pin	③④
BTS 3104SDL	104	1	60	2.0	6.0	1	through input pin	③②
BTS 3104SDR	104	1	60	2.0	6.0	1	through input pin	③②
BSP 75N	550	1	60	0.7	1.0	5	through input pin	②④
BTS 3408G	550	2	60	0.55	1.0	1	through input pin	①

1) Non green

2) Available in Q2/2011

3) See packages on page 92

Smart MultiChannel Switches for Body: SPIDER – SPI Driver for Enhanced Relay Control



SPIDER stands for SPI Driver for Enhanced Relay control. SPIDER products are the smallest relay drivers in the market with innovative features and packages.

With the SPIDER family Infineon offers a wide choice of integrated MultiChannel switches specially designed for the control of small loads like relays, LEDs and small motors.

The new modular family is scaled by $R_{DS(on)}$, packages and add-on features. They come in 4- and 8-channel low-side configurations (SPIDER Low-Side), as well as configurable 8-channel high-/low-side configurations (SPIDER High-/Low-Side).

It offers not only the scalability through the number of channels and the current density, but also flexibility regarding enhanced features like parallel inputs for PWM, limp home and low-voltage cranking.

A variety of packages is available in order to serve different applications.

Applications

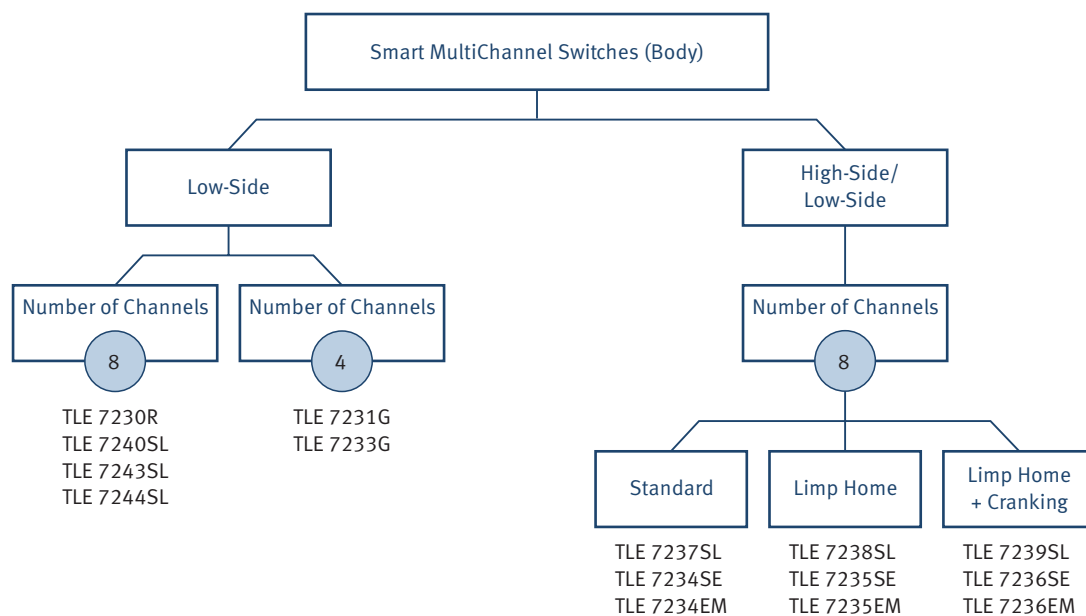
- Relays
- Small LEDs
- Valves
- Solenoids
- DC and Stepper Motors

Features

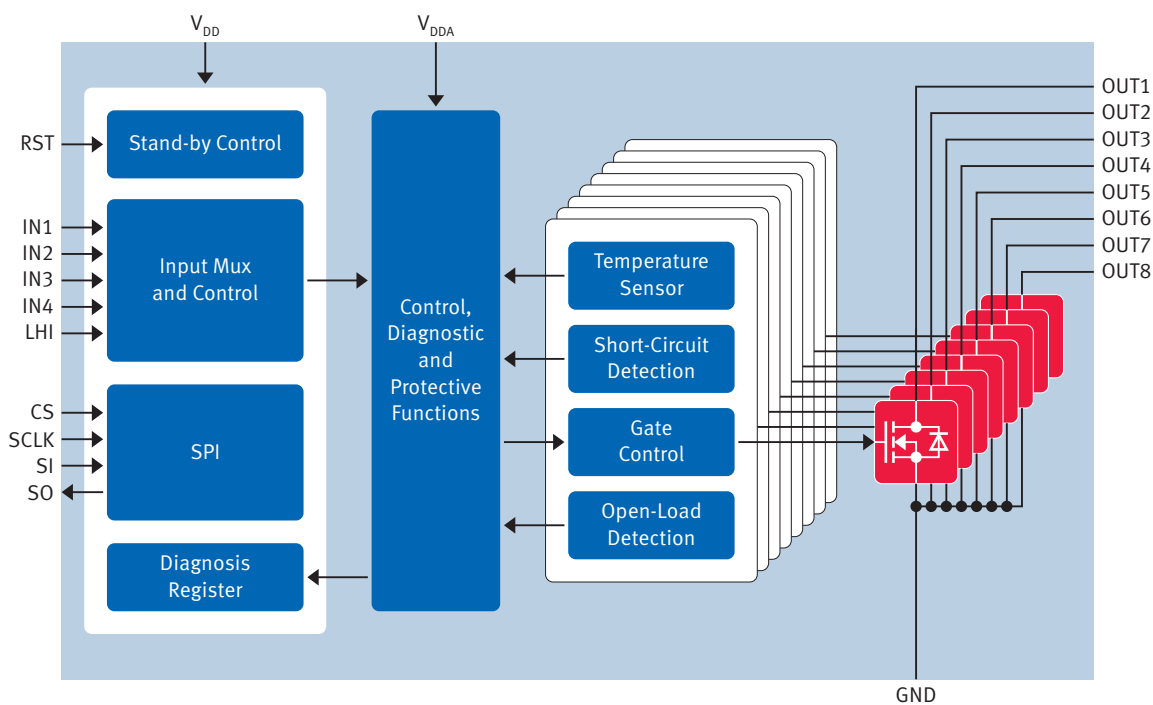
- SPI (Serial Peripheral Interface)
- Daisy-chain and detailed diagnostics via SPI
- Small package
- Four different packages
- Short-circuit, overload protection configurable behavior (limitation or shutdown), thermal shutdown configurable behavior (latch or restart)
- Fail safe mode (Limp Home)
- Low battery voltage operation (cranking)
- AEC-qualified green robust product (RoHS-compliant)
- Undervoltage shutdown
- Overload shutdown
- Short to GND detection
- Open-load detection
- Stand-by mode
- Daisy-chain capability



Selection Tree SPIDER



Block Diagram TLE 7244SL





Smart MultiChannel Switches for Body: SPIDER – SPI Driver for Enhanced Relay Control

SPIDER Product Table

	Product Type	High-Side	Small High-Side	Low-Side	Configurable
SPIDER LS	TLE 7230R			8	
	TLE 7240SL			8	
	TLE 7243SL			8	
	TLE 7244SL			8	
	TLE 7231G			4	
	TLE 7233G			4	
SPIDER HS/LS	TLE 7237SL	2	2	2	2
	TLE 7238SL	2	2	2	2
	TLE 7239SL	2	2	2	2
	TLE 7234SE	2	2	2	2
	TLE 7235SE	2	2	2	2
	TLE 7236SE	2	2	2	2
	TLE 7234EM	2	2	2	2
	TLE 7235EM	2	2	2	2
	TLE 7236EM	2	2	2	2

1) See packages on page 92



$R_{DS(on)}$ (typ) @ 25°C [Ω]	Cranking Mode [V]	$V_{DS(AZ)}$ [V]	Limp Home	$I_{L(nom)}$ [mA]	Number of Direct Inputs	Package ¹⁾
0.8	–	48		500	4	(14)
1.5	–	41	•	210	4	(29)
1.2	–	41	•	260	4	(29)
0.8	–	41	•	290	4	(29)
1.0	–	41		320	1	(4)
1.0	–	41	•	390	4	(29)
6 x 0.9; 2 x 1.6	–	41		6 x 260; 2 x 130	3	(29)
6 x 0.9; 2 x 1.6	–	41	•	6 x 260; 2 x 130	2	(29)
6 x 0.9; 2 x 1.6	4	41	•	6 x 260; 2 x 130	2	(29)
6 x 0.85; 2 x 1.6	–	41		6 x 280; 2 x 140	3	(7)
6 x 0.85; 2 x 1.6	–	41	•	6 x 280; 2 x 140	2	(7)
6 x 0.85; 2 x 1.6	4	41	•	6 x 280; 2 x 140	2	(7)
6 x 0.9; 2 x 1.6	–	41		6 x 350; 2 x 175	3	(30)
6 x 0.9; 2 x 1.6	–	41	•	6 x 350; 2 x 175	2	(30)
6 x 0.9; 2 x 1.6	4	41	•	6 x 350; 2 x 175	2	(30)

Smart MultiChannel Switches for Powertrain and Safety: Flex



The Flex MultiChannel Low-Side Switches family for powertrain, safety and industrial applications is specially designed to drive a various range of loads from relays, injector valves, oxygen probe heaters and general purpose solenoids, through to unipolar stepper motors. We offer a complete family concept with full scalability from 2 to 18 channels and leading edge technology.

All Flex MultiChannel Switches have full certification and are equipped with embedded protection functions and enhanced diagnosis which are used in numerous industry platforms.

Application

- Engine management systems
- Diesel direct injection
- Gasoline direct injection
- Multi port injection
- 2 Cylinder motorcycle/car
- 3 Cylinder MPI/DI
- 4 Cylinder MPI/DI

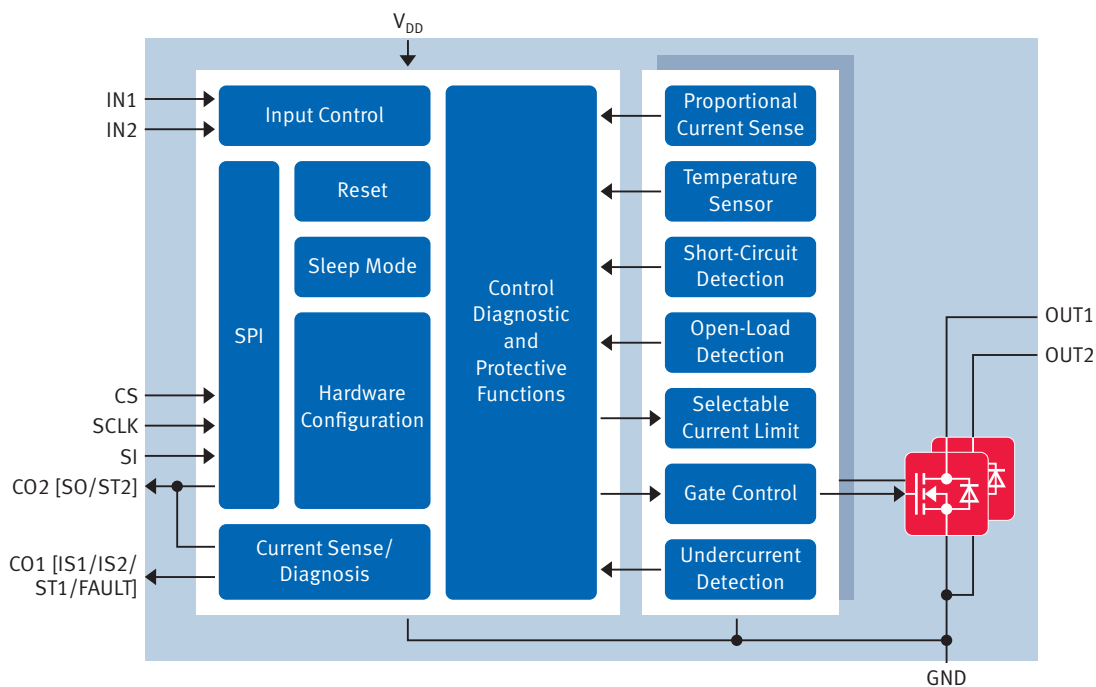
Features

- Overload protection
- Current limitation
- Overtemperature detection
- Overvoltage protection
- Active zener clamping
- Short-circuit protection
- Diagnostic feedback
- 5V and 3.3V μ C compatible inputs and outputs
- Overcurrent shutdown
- Electrostatic Discharge (ESD) protection
- 8/16-bit SPI interface
- 2-bit diagnosis per channel
 - Open-load detection
 - Short to battery
 - Short to ground
 - Normal operation
- Direct input control (PWM)
 - Supply voltage 4.5 ... 5.5V
 - Undervoltage shutdown
 - $V_{DS(AZ)} = 60V$
 - Auto restart
 - Latch after shutdown
 - Current limitation
 - Overtemperature shutdown
 - Open-load detection in OFF-State detection
 - Short to ground detection
 - Short to battery detection
 - General fault flag

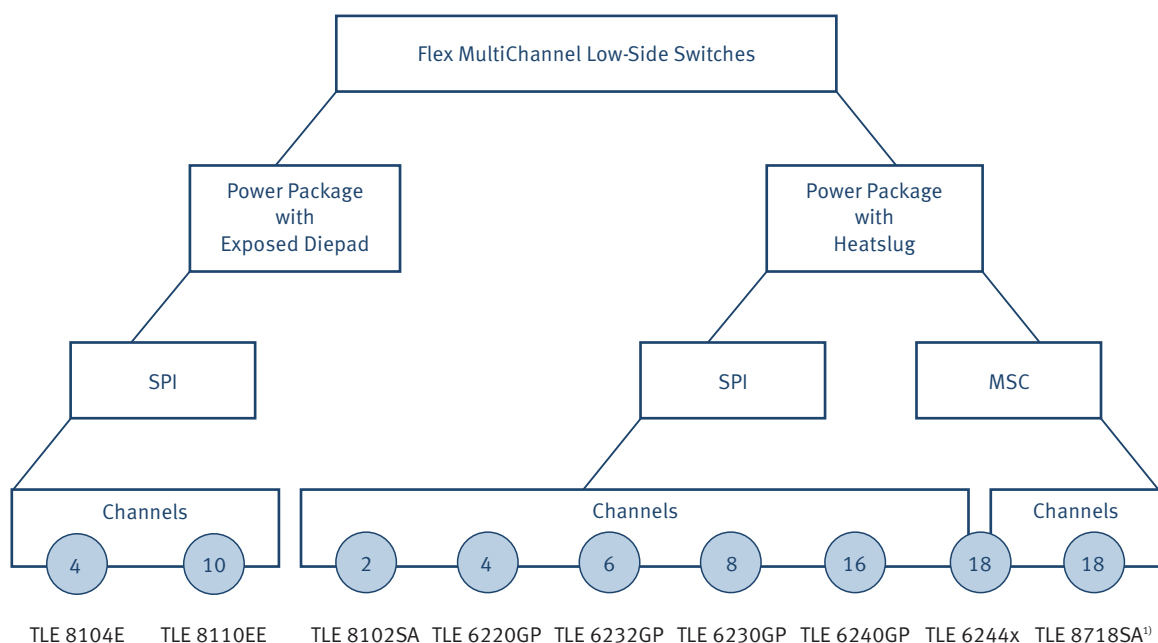
Benefits

- One family concept
- Designed for dedicated applications, but also available for off-the-shelf use as standard products
- Integrated self-protection and diagnosis
- Enhanced error detection for improved system reliability
- Control via standard SPI Bus or MicroSecond Channel (TLE 6244X, TLE 8718SA) or direct inputs.
- Suitable for daisy-chain configuration to save I/O ports
- Support of safety-critical applications by overvoltage protection on all pins (TLE 6244X, TLE 8718SA)
- High quality ensured with automotive excellence program on Zero Defect strategy

Block Diagram Flex (TLE 8102SG)



Selection Tree Flex MultiChannel Low-Side Switches



1) Under development

Smart MultiChannel Switches for Powertrain and Safety: Flex

Product Table

	Electrical Specification		Supply	Control		
	$R_{DS(on)}$ [mΩ]	$I_{L(lim)}$ [A]	Stand-by Mode	SPI Interface	Daisy Chain Capability	Microsecond Bus
TLE 8102SG	2 x 180	2 x 9.0	•	8-bit	•	
TLE 8104E	4 x 320	4 x 3.0	•	8-bit	•	
TLE 6217G ³⁾	2 x 200 2 x 350	2x 5.0 2 x 3.0	•			
TLE 6220GP	4 x 320	4 x 3.0	•	8-bit	•	
TLE 6232GP	4 x 250 2 x 500	4 x 3.0 2 x 1.5	•	16-bit	•	
TLE 6230GP	8 x 800	8 x 1.0		16-bit	•	
TLE 8110EE	2 x 250 4 x 300 4 x 600	4 x 2.6 4 x 1.7 2 x 3.7	•	16-bit	•	
TLE 6240GP	4 x 300 4 x 350 8 x 1000	8 x 3.0 8 x 1.0	•	16-bit	•	
TLE 6244x	2 x 220 8 x 300 4 x 320 4 x 620	4 x 1.1 2 x 3.0 12 x 2.2	•	16-bit	•	•
TLE 8718SA ²⁾	4 x 190 4 x 270 6 x 310 4 x 1000	2 x 3.0/6.0 2 x 3.0 10 x 2.2 4 x 0.6	•	NA		•

1) See packages on page 92

2) Under development

3) Optimized for ABS application

Direct Input Control	Active high/low programmable input	Protection		Diagnosis		Channel	Package ¹⁾
		Overload Shutdown	Overvoltage Protection	Open-load Detection in ON-State	Status Outputs		
2		•		•	•	2	③
4				•		4	⑦
4		•	< 45V	•	•	4	⑧
4				•		4	⑧
6	•	•		•		6	⑭
8	•			•		8	⑭
10		•		•		10	⑬
12		•		•		16	⑭
16		•		•		18	⑰
0		•	< 36V all pins	•		18	⑭



PROFET™: Smart High-Side Switches



The highly integrated PROFET™ family (PROtected FET) incorporates a broad range of smart features, like diagnosis and protection. PROFET™ intelligent power switches consist of DMOS power transistor and CMOS logic circuitry for complete built-in protection.

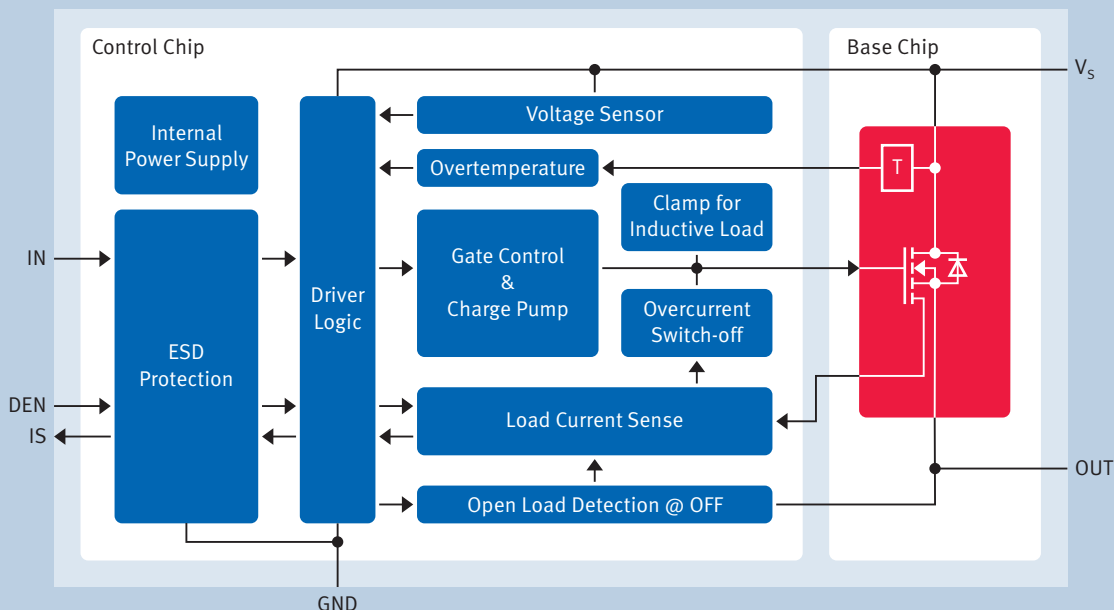


The PROFET™ family offers protection against overload, overvoltage, short-circuit, excessive temperature, ground loss, power supply loss and Electrostatic Discharge (ESD). The PROFET™ family products are also capable of protecting against dynamic overvoltage such as load dump and inductive load turn-off. For the benefits and the functionality of the protection features, please refer to www.infineon.com/profet.

The PROFET™ diagnostics offer the choice of either status or current sense features, or a combination of both. In the event of a malfunction, the status feature is able to diagnose overtemperature or open-load. The PROFET™ diagnostic features also provide the user with precise information about switch and load. Diagnostic feedback and load current sensing minimize risks by eliminating the need for additional discrete circuitry and assembly.

This vast range of smart features makes the PROFET™ ideal for a variety of automotive (12V), trucks & agriculture (24V) and industrial applications.

Block Diagram BTS 500x0-1EGA



Application Examples

- Lighting
- Heating
- Power distribution
- HVAC

Application Ranges

- Automotive (12V)
- Transportation (24V)
- Industrial

Load

- Capacitive like lamps and glow plugs
- Resistive like PTC
- Inductive like solenoids
- Electronic like ECU

Basic Features

- High-side switches (0.5 ... 45A load current)
- RoHS compliant & AEC qualified
- Very low stand-by current
- ESD protection, optimized EMC
- PWM capability
- Very low power DMOS leakage current in OFF
- 3.3V and 5V compatible logic inputs

Protection Features

- Load dump
- Current limitation
- Thermal shutdown with restart
- Loss of ground/battery protection
- Stable behavior at undervoltage
- Overvoltage protection (ext. components)
- Voltage dependent current limitation
- Reverse polarity compliant (ext. components)

Diagnostic Features

- Proportional load current sense
- Open-load in ON- and OFF-State
- Short-circuit to battery and ground
- Overtemperature sense

PROFET™: Smart High-Side Switches

No Diagnosis

Basic Features

- Single channel

Protection Features

- Restart
- Loss of inductive load

Product Type	$R_{DS(on)}$ @ $T_j = 25^\circ\text{C}$ [mΩ]	$R_{DS(on)}$ (max) @ $T_j = 150^\circ\text{C}$ [mΩ]	Typical Load Current [A]	E_{AS} [mJ]	Recommended Operating Voltage Range [V]
BTS 4140N	1000.0	3000.0	0.9	1000 @ 0.15A	4.9 ... 60.0
BSP 742T	350.0	700.0	1.1	100 @ 0.5A	5.0 ... 34.0
BTS 4141N	200.0	320.0	0.7	700 @ 0.5A	12.0 ... 45.0
BTS 4142N	200.0	320.0	1.4	160 @ 1A	12.0 ... 45.0
BTS 452T	200.0	380.0	1.3	150 @ 1A	6.0 ... 52.0
BSP 452	200.0	400.0	0.7	500 @ 0.5A	5.0 ... 34.0
BSP 752T	200.0	380.0	1.3	125 @ 1A	6.0 ... 52.0
BSP 762T	100.0	200.0	2.4	870 @ 1A	5.0 ... 34.0
BTS 462T	100.0	200.0	4.4	4400 @ 1A	5.0 ... 34.0
BTS 730	70.0	140.0	3.0	N/A	5.9 ... 16.9
BSP 772T	60.0	120.0	3.1	900 @ 1.5A	5.0 ... 34.0
BTS 441T	20.0	37.0	17.0	700 @ 21A	4.75 ... 41.0

Digital Diagnosis

Basic Features

- 12V capable

Diagnosis Features

- Open drain status feedback
- Overtemperature

Protection Features

- Restart
- Loss of inductive load

Product Type	$R_{DS(on)}$ @ $T_j = 25^\circ\text{C}$ [mΩ]	Typical Load Current [A]	E_{AS} [mJ]	Recommended Operating Voltage Range [V]	I_{LSC} (typ) [A]	Number of channels	24V capable
BSP 742R	350.0	0.4	800 @ 300mA	5.0 ... 34.0	1.2	1	
BSP 742RI ¹⁾	350.0	0.4	800 @ 300mA	5.0 ... 34.0	1.2	1	
BTS 4300SGA	300.0	0.4	800 @ 300mA	5.0 ... 34.0	1.2	1	
BTS 452R	150.0	1.3	150 @ 1A	6.0 ... 52.0	6.5	1	•
BSP 752R	200.0	1.3	125 @ 1A	6.0 ... 52.0	6.5	1	•
BTS 712N1	200.0	1.9	150 @ 1.9A	5.0 ... 34.0	7.5	4	
BTS 711L1	200.0	1.9	150 @ 1.9A	5.0 ... 35.0	7.5	4	
BTS 4880-R	200.0	0.4	10 000 @ 0.625mA	11.0 ... 45.0	1.4	8	•
BTS 4175SGA	175.0	1.3	125 @ 1A	6.0 ... 52.0	6.5	1	•

1) See packages on page 92

2) Inversed logic for diagnosis

$I_{L(SQ)}$ (typ) [A]	12V capable	24V capable	High-current limit	Low-current limit	Package ¹⁾
0.9	•	•		•	②④
4.0	•		•		①
2.1		•	•		②④
3.0		•		•	②④
6.5	•	•	•		③③
1.5	•			•	②④
6.5	•		•		①
10.0	•			•	①
14.0	•		•		③③
20.0	•		•		⑦
17.0	•		•		①
65.0	•		•		③⑥ ⑤③ ⑤⑤

High-current limit	Low-current limit	Overvoltage shutdown	Short-circuit diagnosis		Open-load diagnosis			Package ¹⁾
			To GND	To battery	In OFF-State with test current	In OFF-State with external pull-up	In ON-State	
	•		•	•	•			①
	•							①
	•		•	•	•			①
	•		•	•	•			③③
•			•	•	•			①
•		•		•		•		⑦
•		•					•	⑦
								⑬③
•			•	•	•			①

PROFET™: Smart High-Side Switches

Digital Diagnosis (cont'd)

Product Type	$R_{DS(on)}$ @ $T_j = 25^\circ\text{C}$ [mΩ]	Typical Load Current [A]	E_{AS} [mJ]	Recommended Operating Voltage Range [V]	$I_{L(SC)}$ (typ) [A]	Number of channels	24V capable
BTS 4160DGA	160	1.7	65 @ 2.9A	5.5 ... 20.0	9	2	
BTS 5210 G	140	1.7	65 @ 2.9A	5.5 ... 40.0	9	2	
BTS 5210 L	140	1.7	65 @ 2.9A	5.5 ... 40.0	9	2	
BTS 716G	140	1.2	76 @ 2.3A	5.5 ... 40.0	9	4	
BTS 716GB	140	1.3	76 @ 2.3A	5.5 ... 40.0	9	4	
BTS 4130QGA	130	1.7	76 @ 2.3A	5.5 ... 20.0	9	4	
BTS 723GW	105	2.0	123 @ 2.5A	7.0 ... 58.0	9	2	•
BTS 721L1	100	2.9	300 @ 2.9A	5.0 ... 34.0	14	4	
BTS 5215L	90	2.1	178 @ 3.5A	5.5 ... 40.0	15	2	
BTS 724G	90	1.6	120 @ 3.3A	5.5 ... 40.0	15	4	
BTS 428L2	60	5.8	190 @ 7A	4.75 ... 41.0	22	1	
BTS 432E2	38	5.0	1700 @ 11A	4.5 ... 42.0	44	1	•
BTS 441R	20	17.0	700 @ 21A	4.75 ... 41.0	65	1	
BTS 442E2	18	7.5	2100 @ 21A	4.5 ... 42.0	95	1	•

Current Sense, Current Input

Basic Features

- 12V capable
- Single channel

Diagnosis Features

- Analog signal proportional to load current
- Overtemperature
- Short-circuit to GND

Protection Features

- Multiple level current limitation
- Loss of inductive load with additional external diode
- Reversave

Product Type	$R_{DS(on)}$ @ $T_j = 25^\circ\text{C}$ [mΩ]	Typical Load Current [A]	E_{AS} @ 20A [mJ]	Recommended Operating Voltage Range [V]	$I_{L(SC)}$ (typ) [A]
BTS 6163D	20	6.5	250	5.5 ... 62.0	70
BTS 443P	16	7.6	150	5.0 ... 36.0	65
BTS 5016SDA	16	6.5	120	5.5 ... 20.0	75
BTS 5014SDA	14	7.0	150	5.5 ... 20.0	90
BTS 6142D	12	8.5	250	5.5 ... 24.0	100
BTS 5012SDA	12	8.0	200	5.5 ... 20.0	90
BTS 6143D	10	10.0	300	5.5 ... 38.0	105
BTS 6133D	10	10.0	300	5.5 ... 38.0	105

1) See packages on page 92

High-current limit	Low-current limit	Overvoltage shutdown	Short-circuit diagnosis		Open-load diagnosis			Package ¹⁾
			To GND	To battery	In OFF-State with test current	In OFF-State with external pull-up	In ON-State	
•				•		•		④
•				•		•		④
•				•		•		③
•				•		•		⑦
•				•		•		⑦
•				•		•		⑦
	•		•	•	•			④
•		•		•		•		⑦
•				•		•		③
•				•		•		⑦
•							•	③③
•		•	•				•	③③
•				•		•		③⑥ ⑤②
•		•	•				•	③⑥ ⑤②

24V capable	Short-circuit to GND protection		Overtemperature protection		Inverse current operation capability	Open-load in ON-State detection	Package ¹⁾
	latch	restart	latch	restart			
•	•			•		•	③③
		•		•		•	③③
	•			•		•	③③
	•			•		•	③③
	•			•		•	③③
	•			•		•	③③
	•			•		•	③③
	•			•	•	•	③③

PROFET™: Smart High-Side Switches

Current Sense, Current Input (cont'd)

Product Type	$R_{DS(on)}$ @ $T_j = 25^\circ\text{C}$ [mΩ]	Typical Load Current [A]	E_{AS} @ 20A [mJ]	Recommended Operating Voltage Range [V]	$I_{L(SC)}$ (typ) [A]
BTS 50085-1TMB	9.0	11.1	1200	5.0 ... 58.0	90
BTS 50085-1TMA	9.0	11.1	1200	5.5 ... 58.0	90
BTS 50080-1TMB	8.0	12.0	400	5.5 ... 38.0	130
BTS 50080-1TMA	8.0	12.0	400	5.5 ... 38.0	130
BTS 50080-1TEB	8.0	10.0	300	5.5 ... 30.0	75
BTS 50080-1TEA	8.0	10.0	300	5.5 ... 30.0	75
BTS 50070-1TMA	7.0	12.0	400	5.5 ... 30.0	95
BTS 50070-1TMB	7.0	12.0	400	5.5 ... 30.0	95
BTS 50055-1TMC	6.0	17.0	1500	5.5 ... 34.0	95
BTS 50055-1TMB	6.0	17.0	1500	5.0 ... 34.0	130
BTS 50055-1TMA	6.0	17.0	1500	5.0 ... 34.0	130
BTS 550P	3.6	35.0	3000	5.0 ... 34.0	220
BTS 555	2.5	45.0	3000	5.0 ... 34.0	400

Current Sense, Voltage Input

Basic Features

- 12V capable

Protection Features

- Restart
- Loss of inductive load

Diagnosis Features

- Analog signal proportional to load current
- Overtemperature
- Short-circuit to GND
- Short-circuit to battery
- Open-load in OFF-State

Product Type	$R_{DS(on)}$ @ $T_j = 25^\circ\text{C}$ [mΩ]	Typical Load Current [A]	E_{AS} [mJ]	Recommended Operating Voltage Range [V]	$I_{L(SC)}$ (typ) [A]
BTS 5180-2EKA ³⁾	180	1.0	30 @ 1A	4.1 ... 28.0	11
BTS 5120-2EKA ³⁾	120	2.0	15 @ 2A	4.1 ... 28.0	12
BTS 5090-2EKA ³⁾	90	2.5	42 @ 3A	4.1 ... 28.0	30
BTS 5045-2EKA ³⁾	45	3.0	35 @ 4A	4.1 ... 28.0	32
BTS 5030-2EKA ³⁾	30	4.0	50 @ 6A	4.1 ... 28.0	47
BTS 5020-2EKA ³⁾	20	5.0	75 @ 6A	4.1 ... 28.0	65
BTS 640S2G	30	4.5	410 @ 12.6A	5.0 ... 34.0	50
BTS 740S2	30	4.0	370 @ 5.5A	5.0 ... 34.0	50
BTS 50080-1EGA	8	13.0	125 @ 50A	6.0 ... 28.0	150
BTS 50070-1EGA	7	14.0	145 @ 50A	6.0 ... 28.0	150
BTS 50060-1TEA	6	16.5	280 @ 20A	4.7 ... 28.0	75
BTS 50060-1EGA	6	15.0	170 @ 50A	6.0 ... 28.0	150
BTF 50060-1TEA ²⁾	6	16.5	280 @ 20A	4.7 ... 28.0	75
BTS 50050-1EGA	5	16.0	200 @ 50A	6.0 ... 28.0	150

1) See packages on page 92

2) PWM switching capability of 25 kHz

3) PROFET™+ Features

- Package footprint compatibility
- High k_{LIS} accuracy for detecting low currents
- Benchmark short-circuit robustness (100 k cycles)

								MOSFETs
								TEMPFET™ HITFET™
								Smart MultiChannel Switches
24V capable	Short-circuit to GND protection		Overtemperature protection		Inverse current operation capability	Open-load in ON-State detection	Package ¹⁾	PROFET™
	latch	restart	latch	restart				
•	•			•		•	(53)	
	•			•		•	(39)	
	•			•		•	(55)	
				•		•	(39)	
	•			•		•	(33)	
	•			•	•	•	(33)	
	•			•		•	(39)	
	•			•		•	(55)	
		•		•	•		(33)	
	•			•	•		(53)	
				•			(33)	
	•			•	•	•	(48)	
	•		•		•	•	(48)	LED Drivers
								Motor Drivers
								Power Supply
Number of channels	Load current		Overvoltage shutdown	Sense enable	Latch	Reversave	Package ¹⁾	Automotive Transceivers
	limit	trip						
2	•			•			(5)	
2	•			•			(5)	
2	•			•			(5)	
2	•			•			(5)	
2	•			•			(5)	
2	•			•			(5)	
1	•		•				(39)	
2	•		•				(7)	
1		•		•	•	•	(3)	
1		•		•	•	•	(3)	
1		•			•		(33)	
1		•		•	•	•	(3)	
1		•			•		(33)	
1		•		•	•	•	(3)	
								Glossary



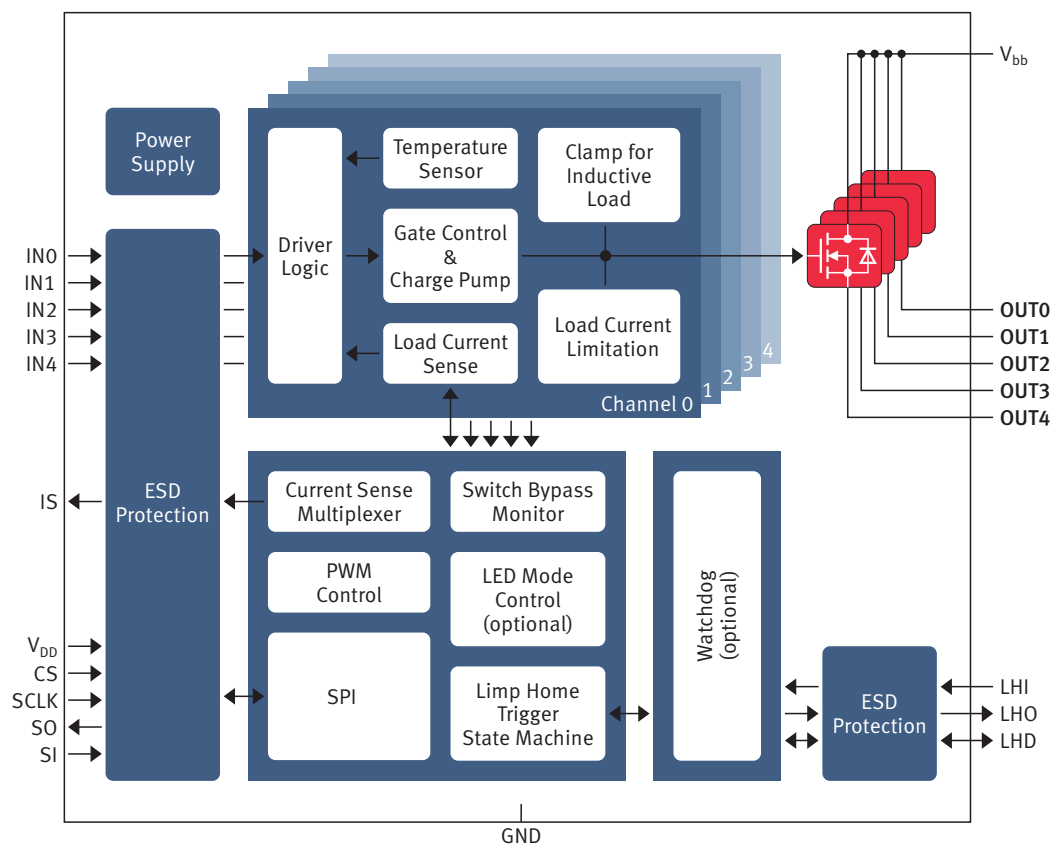
SPI Power Controller (SPOC) for Advanced Light Control

SPOC devices are high-side smart power MultiChannel switches providing embedded protective functions and diagnosis. They are specially designed for standard exterior lighting and LED equivalent loads in automotive applications.

The unique selling point of the SPOC is the pin, function and package compatibility within a SPOC family and the ability to drive a bulb or LED with the same device (except SPOC-DUO family), enabling customers to develop a modular and scalable platform with only one PCB.

Configuration and diagnosis are carried out via SPI. Additionally, there is a current sense signal available for each channel that is routed via a multiplexer to one diagnostic pin.

Block Diagram (SPOC I Example)



Basic Features

- Serial Peripheral Interface (SPI) (daisy-chain capable) for control and diagnosis
- CMOS-compatible parallel input pins provide straightforward PWM operation and FailSafe
- Very low stand-by current
- Optimized electromagnetic compatibility
- Suitable for bulbs as well as LEDs

Protective Functions

- Reverse battery protection
- Short-circuit and overload protection
- Multistep current limitation (SPOC I/II) or tripping (SPOC FL)
- Selectable current tripping (SPOC DUO)
- Thermal shutdown with latch
- Overvoltage protection
- Reverse polarity protection (SPOC DUO and SPOC FL)
- Loss of ground protection

Diagnosis Functions

- Multiplexed proportional load current sense signals
- High accuracy of current sense signal at wide load current range
- Latching feedback on overtemperature and overload via SPI
- Diagnosis PWM with small duty cycle possible
- LED mode (not for SPOC DUO)
- Fail-safe activation via LHI pin and configuration via input pins

Options

- **Watchdog (BTS 5590G):** Adjustable watchdog timer
- **LED mode (SPOC I/II/FL):** Load type configuration between bulbs and LEDs for products featuring the LED mode option (current sense ratio configurable, very fast diagnosis in LED mode)
- **Adjustable slew rate (SPOC DUO):** allows customers to optimize switching losses and electromagnetic compatibility performance for the design
- **Cranking mode (BTS 5682E):** Provide extended operative voltage range for channel 5 (min V_{bb} of 3.2V) for enhanced relay control
- **PWM engine (SPOC FL):** autonomous PWM generator to reduce micro controller loading
- **External drive capability (SPOC FL):** ability to control two smart power drivers to reduce the I/O usage of the micro controller

Bulb vs. LED Mode (example: BTS 5xx2E and BTS 55xxG)

Load Type Configuration via SPI

Channel 0, 1, 2	BULB Mode	LED Mode
Nominal load	21W (27W)	typ. 420mA max. 700mA
k _{ILIS} (current sense ratio)	3,000	1,000
Current limitation	24 ... 48A	7 ... 16A
Slew rate	0.1 ... 0.5V/μs	0.3 ... 1.5V/μs
Turn on times	< 250μs	< 100μs
IIS settling time	< 300μs	< 115μs

SPI Power Controller (SPOC) for Advanced Light Control

Product Type	Channel count				Channel mix (in mΩ)
	65W	27W	10W	5W	
SPOC-DUO					
BTS 5264SF	2	0	0	0	2 x 4.5
BTS 5274SF	2	0	0	0	2 x 4.5
BTS 5266SF	2	0	0	0	2 x 6
BTS 5276SF	2	0	0	0	2 x 6
BTS 5268SF	2	0	0	0	2 x 8
BTS 5278SF	2	0	0	0	2 x 8
SPOC FL (Front Light)					
BTS 5460SF	2	2	0	0	2 x 3.5 + 2 x 11
BTS 5480SF	2	2	0	0	2 x 3.5 + 2 x 11
BTS 6460SF	2	2	0	0	2 x 3.5 + 2 x 11
BTS 6480SF	2	2	0	0	2 x 3.5 + 2 x 11
SPOC II					
BTS 5562E	0	3	2	0	3 x 50 + 2 x 110
BTS 5572E	0	3	2	0	3 x 50 + 2 x 110
BTS 5662E	0	3	2	1	3 x 50 + 2 x 110 + 1 x 200
BTS 5672E	0	3	2	1	3 x 50 + 2 x 110 + 1 x 200
BTS 5682E	0	3	2	1	3 x 50 + 2 x 110 + 1 x 200
SPOC I					
BTS 5566G	0	3	2	0	2 x 22 + 1 x 25 + 2 x 73
BTS 5576G	0	3	2	0	2 x 22 + 1 x 25 + 2 x 73
BTS 5590G	0	3	2	0	2 x 22 + 1 x 25 + 2 x 73

1) See packages on page 92



LED mode (27W channels)	Cranking mode	Watchdog	Adjustable slew rate	PWM engine integrated	External drive capability	Package ¹⁾
Standard						
						(12)
			•			(12)
						(12)
			•			(12)
						(12)
			•			(12)
Standard						
•						(12)
•					•	(12)
•				•		(12)
•				•	•	(12)
Exposed Pad						
						(13)
•						(13)
						(13)
•						(13)
•	•					(13)
Standard						
						(12)
•						(12)
•		•				(12)

MOSFETs

TEMPFET™
HITFET™

Smart
MultiChannel
Switches

PROFET™

SPOC
SPI Power
Controller

LED Drivers

Motor Drivers

Power Supply

Automotive
Transceivers

Automotive
System ICs

Embedded
Power

Glossary



Infineon® Auto LED Drivers

Infineon offers a broad range of LED driver solutions for automotive applications, going from highly integrated switches like PROFET™, SPOC (SPI Power Controller) and SPIDER to power supply, specifically developed to drive any kind of LEDs.

Infineon® Auto LED Drivers are the best solutions to benefit from the advantages of LEDs providing full protection to your lighting application in automotive.

Features

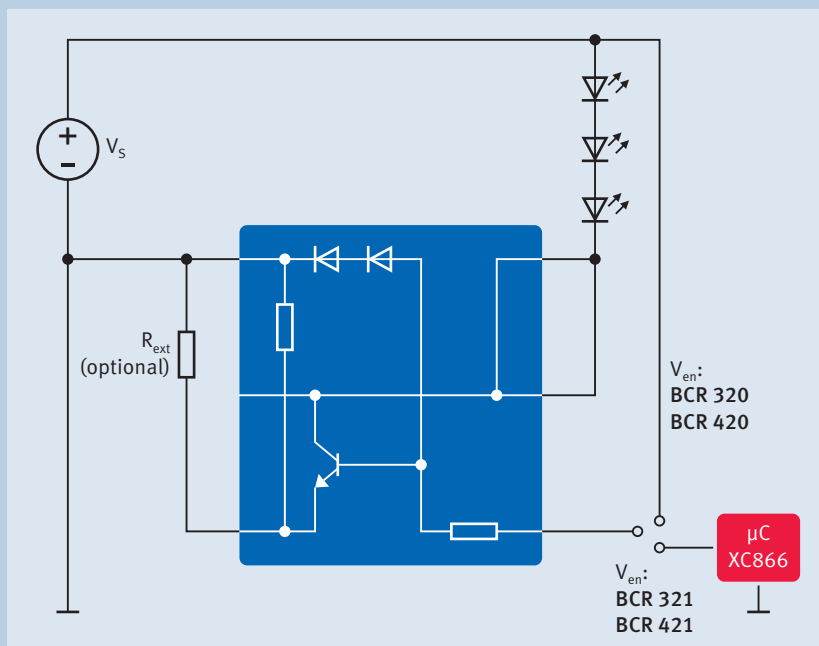
- Constant output current, therefore constant brightness and extended LED lifetime
- Wide input voltage range
- Low drop voltage
- Open-load detection
- Overtemperature protection
- Short-circuit proof
- Reverse polarity proof
- Wide temperature range
- Very small SMD packages



Linear LED Driver of BCR 400 Series

The most cost effective solution to drive small LEDs with accurate current source.

Block Diagram BCR 42x-U



Product Table

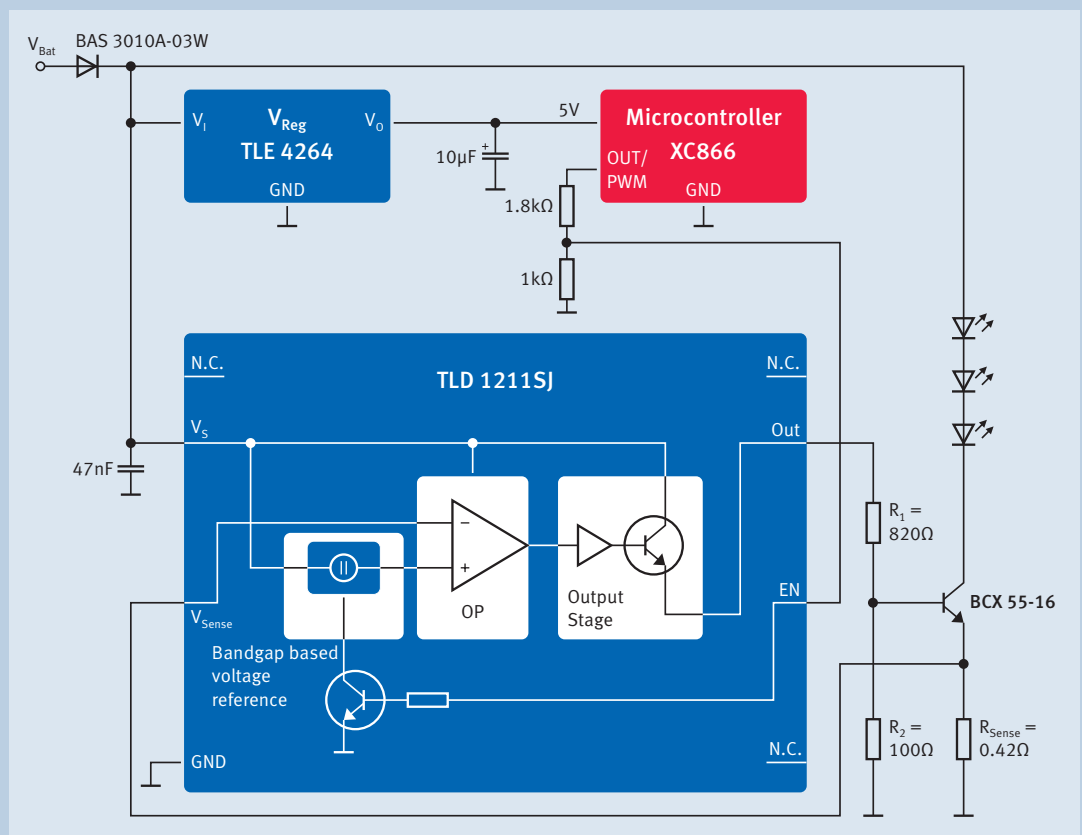
Product Type	Max. Output Current [mA]	Adjustable output current	Max. Supply Voltage [V]	Inhibit	PWM enable	P_{tot} [mW]	Package ¹⁾
BCR 401U	65	•	40			750	(19)
BCR 401W	65	•	18			500	(26)
BCR 401R	65	•	18			330	(23)
BCR 402U	65	•	40			750	(19)
BCR 402W	65	•	18			500	(26)
BCR 402R	65	•	18			330	(23)
BCR 405U	65	•	40			750	(19)
BCR 320U	250	•	27			1000	(19)
BCR 321U	250	•	27	•	•	1000	(19)
BCR 420U	150	•	40			1000	(19)
BCR 421U	150	•	40	•	•	1000	(19)

1) See packages on page 92

Infineon® Basic LED Driver

LED drivers designed to supply constant current up to 500mA, which enables constant LED brightness and ensures extended LED lifetime, independently from supply voltage or LED forward voltage class.

Block Diagram TLD 1211SJ



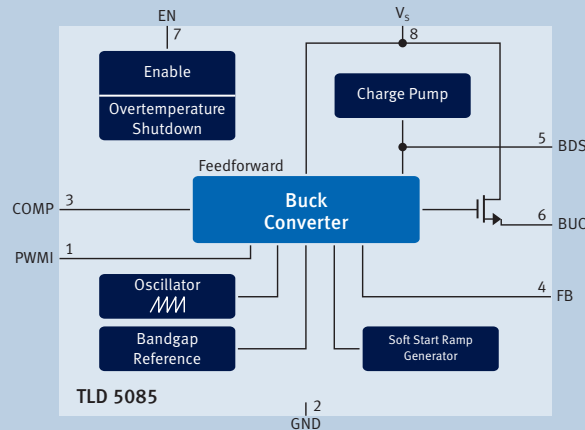
Product Table

Product Type	Typical output current [mA]	Adjustable	Driver for external transistor	Open-load detection	PWM/enable input	High-Low Current Switch	Package ¹⁾
TLD 1211SJ	85	•	•		•		①
TLE 4240-2M	58						②③
TLE 4240-3M	58			•			②③
TLE 4241GM	60	•		•	•	•	①
TLE 4242G	450	•		•	•		③④

1) See packages on page 92

Infineon® Power LED Driver

New generation of DC/DC converters, especially designed to drive 1 to 5W high-brightness LEDs in standard usage in automotive applications such as headlights, taillights, daytime running lights, interior lighting, and infotainment backlighting.



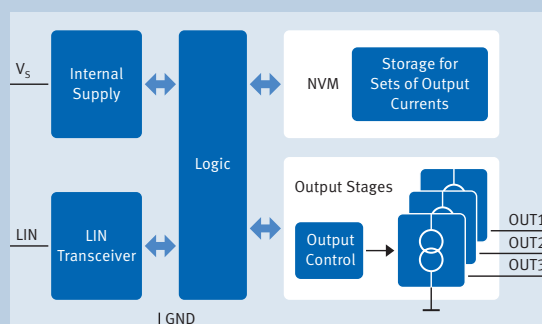
Block Diagram
TLD 5085

Product Table

Product Type	Topology	Internal/External MOSFET	Maximum Current [A]	Switching Frequency [kHz]	Analogue Dimming	Maximum boost voltage in boost to ground mode [V]	Package ¹⁾
TLD 5085EJ	DC/DC buck converter	Internal	1.8	370		–	②
TLD 5045EJ ²⁾	DC/DC buck converter	Internal	0.7	Flexible 50 ... 300	•	–	②
TLD 5095EL	DC/DC boost controller	External	–	Flexible 100 ... 500		45	②⑧
TLD 5098EL	DC/DC boost controller	External	–	Flexible 100 ... 500	•	60	②⑧

Infineon® LIN LED Driver

The Infineon® LIN LED Driver family is the enabler for multicolor and especially for the challenging RGB Ambient Lighting. The device family members combine logic, memory, LIN Interface and a three channel linear current source in one device. By using the integrated memory to store calibration points of the used LED a stable color point can be achieved.



Block Diagram
TLD 7306EK

Product Type	LIN Interface	Max. Output Current Capability	External Driver Capability	Package ¹⁾
TLD 7305EK	SAE-J2602	48mA		⑤
TLD 7306EK	LIN 2.1	48mA		⑤
TLD 7395EK	SAE-J2602	dependend on external Bipolar Transistor	•	⑤
TLD 7396EK	LIN 2.1		•	⑤

1) See packages on page 92

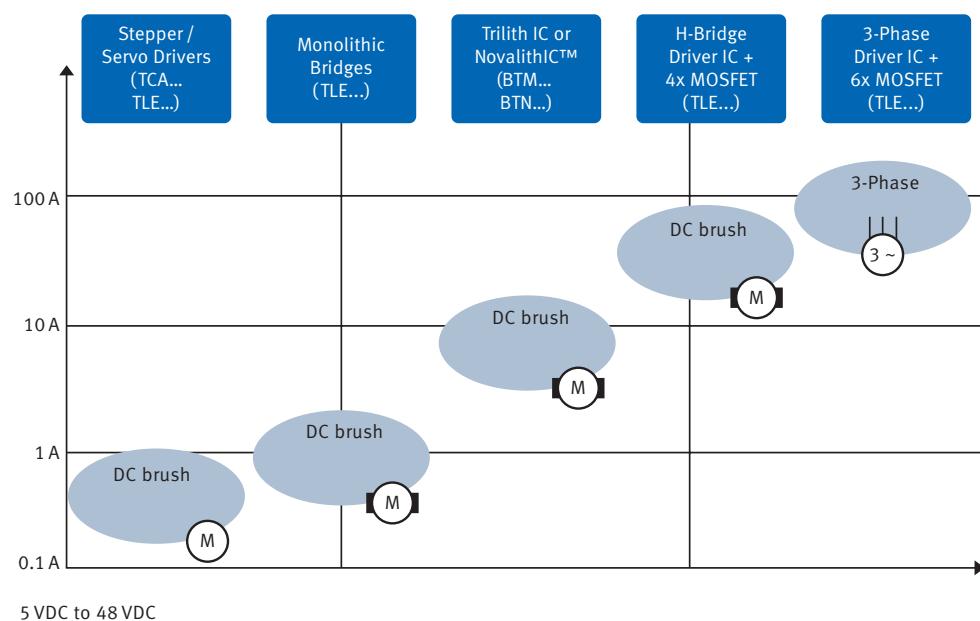
2) In development, samples available



Motor Drivers

The Right Driver for Every Motor

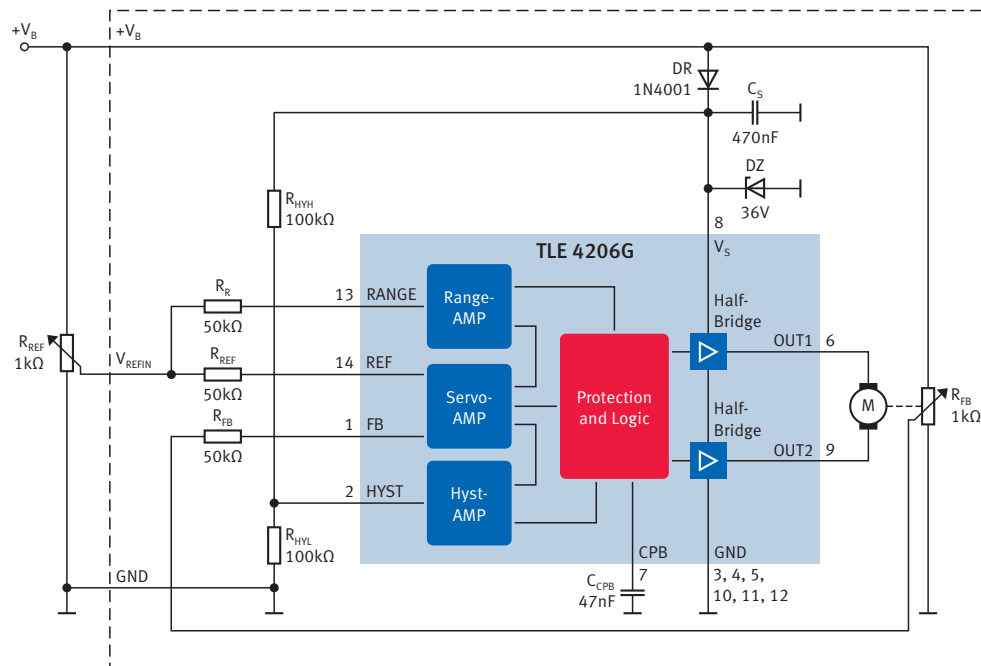
The search for a solution to drive applications powered by low-voltage motors ends with Infineon. From 0.1 to 100A, and from steppers to 3-Phase drivers, we offer the right solution for every current range and application requirement.



Integrated Smart Power Motor Drivers

Servo Drivers

The TLE 4205, TLE 4206 and TLE 4209 are protected H-Bridge drivers for automotive applications like headlight beam control and industrial servo control applications. The part is built using DOPL, Infineon's robust bipolar technology.



Product Type	$I_{L(NOM)}$	$I_{L(lim)}$	I_q [μA]	$V_{S(op)}$	Protection	Inhibit	Highlights	$V_{sat path}$	Package ¹⁾
TLE 4205G	0.6	1.0	0.01	6 ... 32	SC	•	Dual power comparator for higher voltage	2.1V at 0.6A ²⁾ supply voltage	⑦ ④⑥
TLE 4206G	0.8	1.5	12	8 ... 18	OT, OV, UV, LO, SC		Servo driver with current peak blanking	1.2V at 0.4A ²⁾	④
TLE 4206-2G	0.8	1.5	12	8 ... 18			Switching hysteresis on range input	1.2V at 0.4A ²⁾	④
TLE 4206-4G	0.9	1.6	13	8 ... 19			Adapted range input	1.2V at 0.4A ²⁾	⑥
TLE 4209A	0.8	1.5	12	8 ... 18			Servo driver	1.2V at 0.4A ²⁾	④⑤
TLE 4209G	0.8	1.5	12	8 ... 18			Servo driver	1.2V at 0.3A ²⁾	④

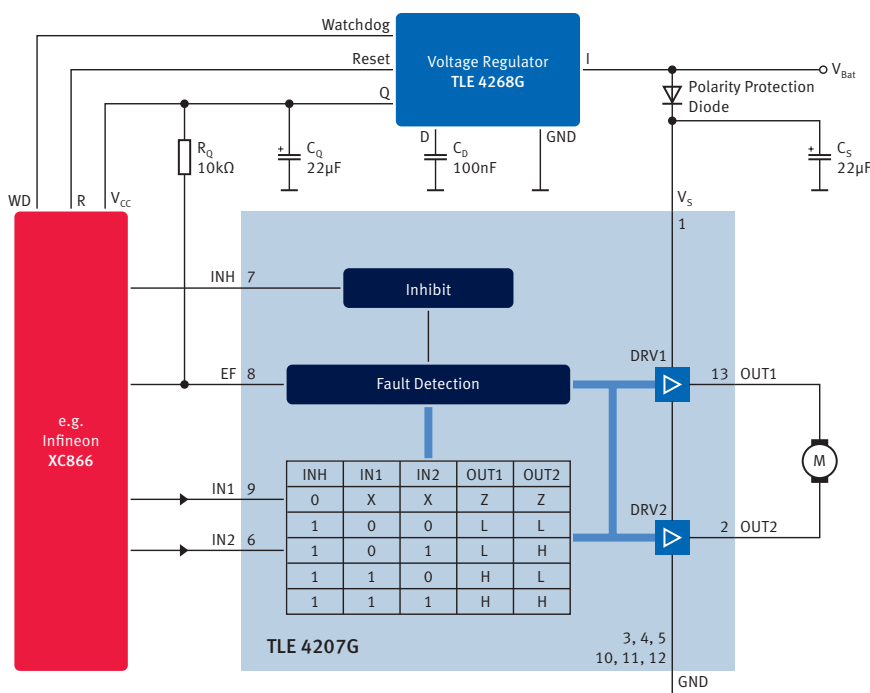
1) See packages on page 92
2) Total drop saturation voltage
typ. value @ 25°C

LO = Lockout
OL = Open-Load
OV = Overvoltage

UV = Undervoltage
OT = Overtemperature
SC = Short-Circuit

Motor Control ICs

The TLE 4207, TLE 4208, TLE 6208-3/-6 are multipurpose bridges designed to drive DC brush motors with nominal load currents <1A for automotive and industrial applications. The TLE 4207 and TLE 4208 parts are built using Infineon's robust bipolar technology DOPL. TLE 6208-3/-6 and TLE 84xxx use SPT, a technology combining bipolar, CMOS and DMOS cells.



Basic Features

- OV = Overvoltage
- UV = Undervoltage
- OT = Overtemperature
- SC = Short-Circuit

Product Type	Config.	$I_{L(NOM)}$	$I_{L(LIM)}$	I_q	$V_{S(op)}$	Protection	Diagnostic Interface	Highlights	$V_{CE(sat)}/R_{DS(on)}$ path	Package ¹⁾
TLE 4207G	2x Half-bridge	2 x 0.8	2 x 1.5	20	8 ... 18	LO	Status flag	Error det.	1.2V ²⁾	④
TLE 4208G	4x Half-bridge	4 x 0.8	4 x 1.5	20	8 ... 18	LO	Status flag	Error det.	1.2V ²⁾	⑩
TLE 8444SL	4x Half-bridge	4 x 0.5	4 x 0.9	1	8 ... 18	OL	Status flag	Open-load detection in ON-State	600mΩ/switch	②⑨
TLE 6208-3G	3x Half-bridge	3 x 0.8	3 x 1.0	10	8 ... 40	LO	16-bit SPI	Detailed diagnosis via SPI	800mΩ ³⁾ /switch	④
TLE 6208-6G	6x Half-bridge	6 x 0.8	6 x 1.0	12	8 ... 40	LO	16-bit SPI	Single switch usage possible	800mΩ ³⁾ /switch	⑩
TLE 84106EL ⁴⁾	6x Half-bridge	6 x 0.3	6 x 0.5	2	7 ... 18	OL	16-bit SPI	Pin compatible to TLE 84110EL	800mΩ/switch	③⑩
TLE 84110EL ⁴⁾	10x Half-bridge	10 x 0.3	10 x 0.5	2	7 ... 18	OL	16-bit SPI	Pin compatible to TLE 84106EL	800mΩ/switch	③⑩

1) See packages on page 92

2) Total drop saturation voltage
typ. value @ 25°C and 0.4A

3) $R_{DS(on)}$ is typical and specified
operating range @25°C

4) Product in development,
SoP planned for Q2/2011

LO = Lockout
OL = Open-Load

Integrated Smart Power Motor Drivers

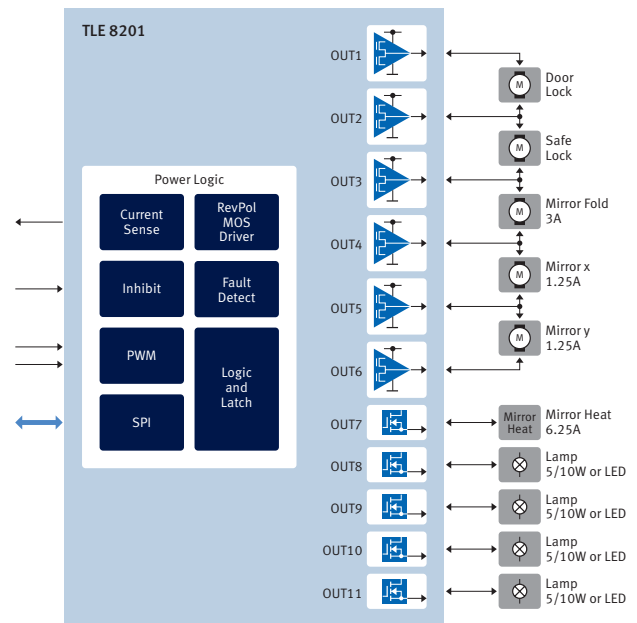
Door Module ICs

The TLE 8201R is an ASSP for door-module applications. It includes those power stages necessary to drive the following loads in a typical front door: Central lock, mirror fold, mirror position, mirror defrost plus 5 and 10W lamps. It is designed as a monolithic circuit in Infineon's latest version of mixed technology SPT which combines bipolar and CMOS control circuit with DMOS power devices.

The TLE 8203E is a derivative of the TLE 8201R for automotive mirror control applications. The following output stages are included in this monolithic device, mirror position, mirror defrost and one lamp driver for 5 or 10W.

Standard Features

- SPI Interface
- $I_Q = 3\mu A$
- Operating Range: 8–20VS



Product Type	Outputs	$I_{L(lim)}$	$R_{DS(on)}$	Driver Stage	Operating Range [VS]	Protect	Diagnosis	Target Load	Package ¹⁾
TLE 8201R	1, 2	8.0	130	Half-bridge	8–20	OC, OT, OV, UV	CS	Central lock	(14)
	3, 4	3.0	350	Half-bridge			CS	Mirror folding	
	5, 6	1.25	650	Half-bridge			OC, OT	Mirror X-Y	
	7	6.25	85	High-side switch (mirror defrost)			CS	Mirror defrost	
	8–11	1.8	400	Lamp driver			OC, OT	Repeater	
TLE 8203R	4	3.0	350	Half-bridge	8–20	OC, OT, OV, UV	CS	Mirror folding	(12)
	5, 6	1.25	650	Half-bridge			OC, OT	Mirror X-Y	
	7	6.25	85	High-side switch (mirror defrost)			CS	Mirror defrost	
	8, 10	1.8	400	Lamp driver			OC, OT	Repeater	

1) See packages on page 92

LO = Lockout
OL = Open-Load
OV = Overvoltage
OC = Overcurrent

UV = Undervoltage
OT = Overttemperature
SC = Short-Circuit

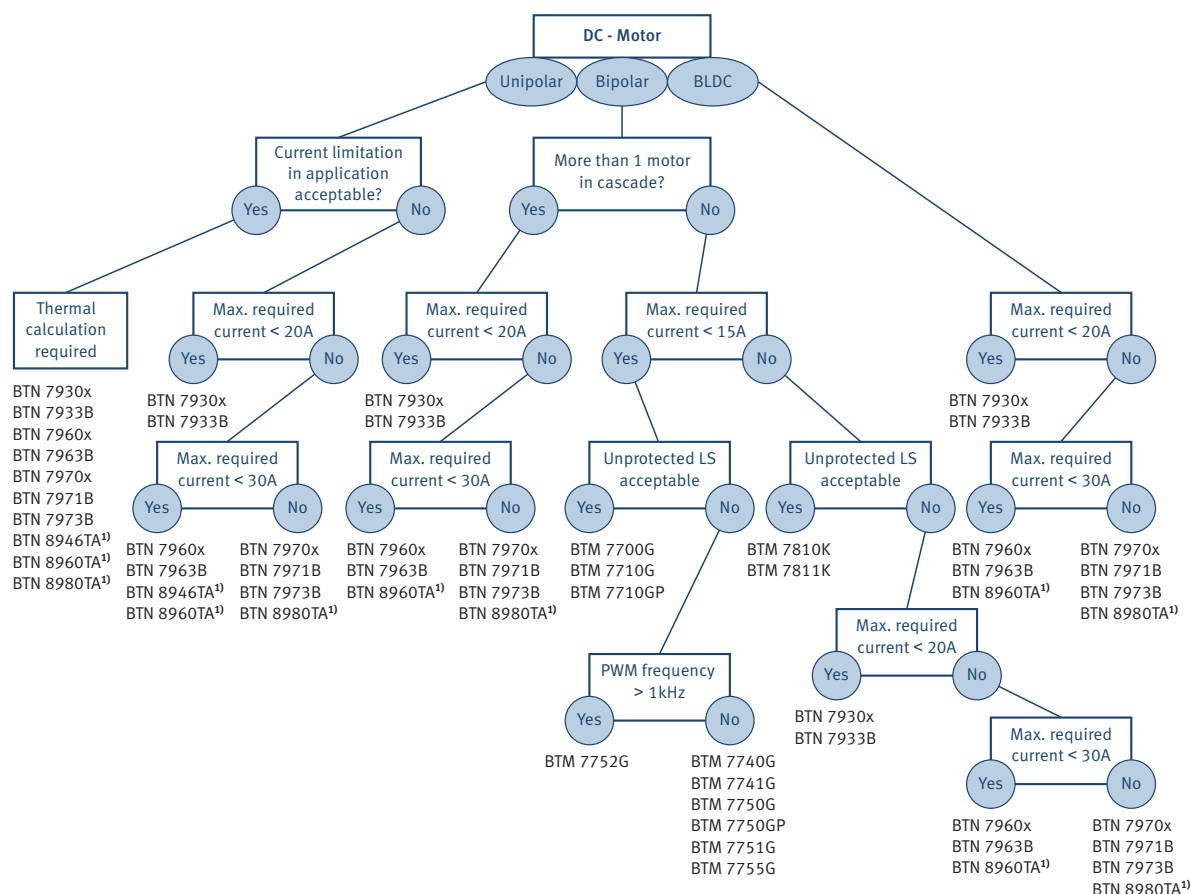
Integrated High-Current Motor Drivers

NovalithIC™/Trilith IC

A NovalithIC™ provides a complete low-ohmic-protected half-bridge in a single package. It can be combined with an additional NovalithIC™ to create an H-bridge or 3-phase bridge as well. The NovalithIC™ family has the capability to switch to up to 25kHz while providing overcurrent, overvoltage and overtemperature protection. Current sense is optionally available to monitor load current. The NovalithIC™ family offers cost-optimized solutions for protected high-current PWM motor drives with very low board-space consumption—scaled to your needs.

The Trilith IC family members combine two high-side and two low-side switches in one package. They are geared to driving high-current DC motors in an H-bridge configuration but can also be used as single independent switches. All Trilith ICs include overcurrent and overtemperature protection for the high-side switches. For the low-side switches the user can choose between unprotected switches as well as protected switches.

Selection Tree NovalithIC™ (BTN xxxx)/Trilith IC (BTM xxxx)



1) In development

Integrated High-Current Motor Drivers



Trilith IC – Integrated H-Bridge

Basic Features

- Low quiescent current
- Capable for high PWM frequency

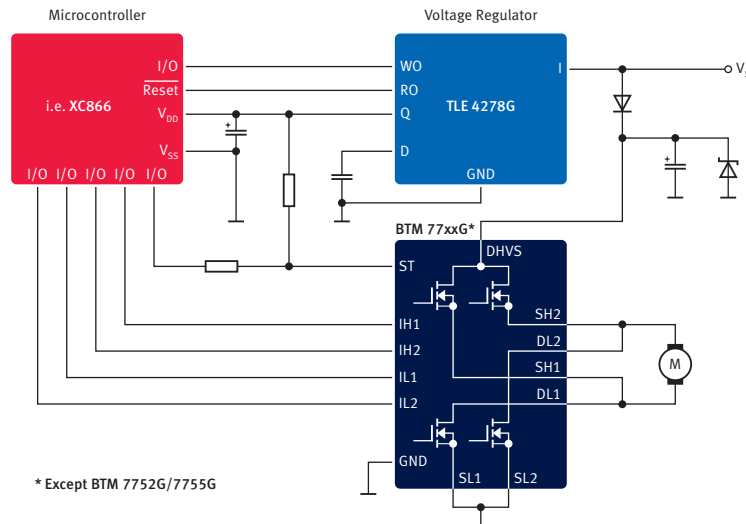
Diagnostic Features

- Overvoltage
- Overtemperature
- Short-circuit/overcurrent
- Current sense/status
- Open-load

Protection Features

- Overvoltage
- Undervoltage
- Overtemperature
- Short-circuit/overcurrent

Application Example Trilith IC



Trilith IC Product Overview

Product Type	Operating Range [V]	$R_{DS(on)}$ path (typ) @25°C [mΩ]	$I_{D(lim)}$ (typ) [A]	I_q (typ) [μA]	Switch freq. (typ) [kHz]	Diagnosis	Protect	Package ¹⁾
BTM 7740G	4.8 ... 42.0	210	8.0	5	1	OT	OT, SC	(10)
BTM 7741G	4.8 ... 42.0	210	8.0	5	1	OT, OL	OT, SC	(10)
BTM 7700G	4.8 ... 42.0	190	9.5	5	1	OT	OT, SC	(10)
BTM 7750G	4.8 ... 42.0	115	12.0	5	1	OT	OT, SC	(10)
BTM 7750GP ²⁾	4.8 ... 42.0	115	12.0	5	1	OT	OT, SC	(40)
BTM 7751G	4.8 ... 42.0	115	14.0	5	1	OT, OL	OT, SC	(10)
BTM 7710GP ²⁾	4.8 ... 42.0	110	15.0	5	1	OT	OT, SC	(40)
BTM 7710G	4.8 ... 42.0	110	15.0	5	1	OT	OT, SC	(10)
BTM 7810K ²⁾	5.0 ... 42.0	40	42.0	4	1	OT, OL	OT, SC	(40)
BTM 7811K ²⁾	5.0 ... 42.0	40	42.0	4	20	OT, OL	OT, SC	(40)
BTM 7752G	5.5 ... 28.0	150	12.0	5	25	OV, OT, SC/OC, CS	OV, UV, OT, SC/OC	(12)
BTM 7755G	5.5 ... 28.0	150	12.0	5	1	OV, OT, SC/OC	OV, UV, OT, SC/OC	(12)

1) See packages on page 92

2) AEC std. grade 3, $T_j(max) = 110^\circ C$

CS = Current Sense
OL = Open-Load
OV = Overvoltage

UV = Undervoltage
OT = Overtemperature
SC = Short-Circuit
OC = Overcurrent

NovalithIC™ – Integrated Half Bridge



Basic Features

- Low quiescent current
- Capable for high PWM frequency (e.g. 25kHz)
- Logic level input
- Adjustable slew rate
- Cross current protection

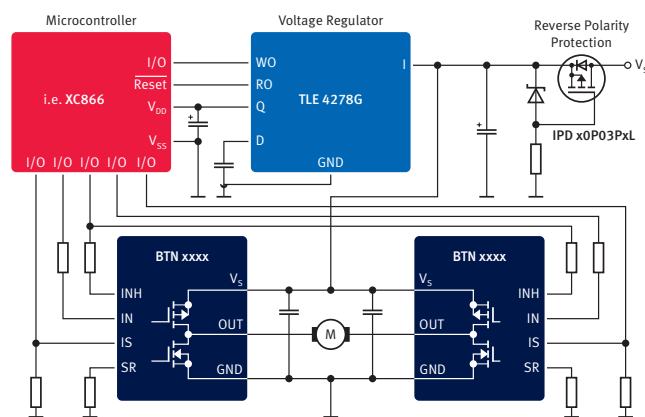
Diagnostic Features

- Overtemperature
- Overvoltage
- Overcurrent
- Current sense and status

Protection Features

- Overtemperature shutdown
- Overvoltage (lockout or smart clamp)
- Undervoltage
- Overcurrent

Application Example NovalithIC™



NovalithIC™ Product Overview

Product Type	Operating Range [V]	$R_{DS(on)}$ path (typ) [mΩ]	$I_{D(lim)}$ (typ) [A]	I_q (typ) [μA]	Switch time (typ) [μs]	Diagnosis	Protect	Package ¹⁾
BTN 7930B	5.5 ... 28.0	28.0	32	7	1.0	OV, OT, OC, CS	OV, UV, OT, OC	(39)
BTN 7930P	5.5 ... 28.0	29.6	32	7	1.0	OV, OT, OC, CS	OV, UV, OT, OC	(53)
BTN 7930S	5.5 ... 28.0	28.2	32	7	1.0	OV, OT, OC, CS	OV, UV, OT, OC	(53)
BTN 7960B	5.5 ... 28.0	16.0	47	7	1.0	OV, OT, OC, CS	OV, UV, OT, OC	(39)
BTN 7960P	5.5 ... 28.0	17.6	47	7	1.0	OV, OT, OC, CS	OV, UV, OT, OC	(53)
BTN 7960S	5.5 ... 28.0	16.2	47	7	1.0	OV, OT, OC, CS	OV, UV, OT, OC	(53)
BTN 7970B	5.5 ... 28.0	16.0	70	7	1.0	OV, OT, OC, CS	OV, UV, OT, OC	(39)
BTN 7970P	5.5 ... 28.0	17.6	70	7	1.0	OV, OT, OC, CS	OV, UV, OT, OC	(53)
BTN 7970S	5.5 ... 28.0	16.2	70	7	1.0	OV, OT, OC, CS	OV, UV, OT, OC	(55)
BTN 7971B	4.5 ... 28.0	16.0	70	7	0.5	OV, OT, OC, CS	OV, UV, OT, OC	(39)
BTN 7933B	4.5 ... 28.0	28.0	32	7	0.5	OV, OT, OC, CS	OV(SCL), UV, OT, OC	(39)
BTN 7963B	4.5 ... 28.0	16.0	47	7	0.5	OV, OT, OC, CS	OV(SCL), UV, OT, OC	(39)
BTN 7973B	4.5 ... 28.0	16.0	70	7	0.5	OV, OT, OC, CS	OV(SCL), UV, OT, OC	(39)
BTN 8946TA ²⁾	4.5 ... 40.0	5.3 ⁴⁾	42	7	0.5 ³⁾	OT, OC, CS	UV, OT, OC	(39)
BTN 8960TA ²⁾	4.5 ... 40.0	13.5	42	7	0.5 ³⁾	OT, OC, CS	UV, OT, OC	(39)
BTN 8980TA ²⁾	4.5 ... 40.0	9.0	70	7	0.5 ³⁾	OT, OC, CS	UV, OT, OC	(39)

1) See packages on page 92

2) Product in development, electrical values specified must be considered as target values

3) Target values calculated

4) Target value for the HS switch only

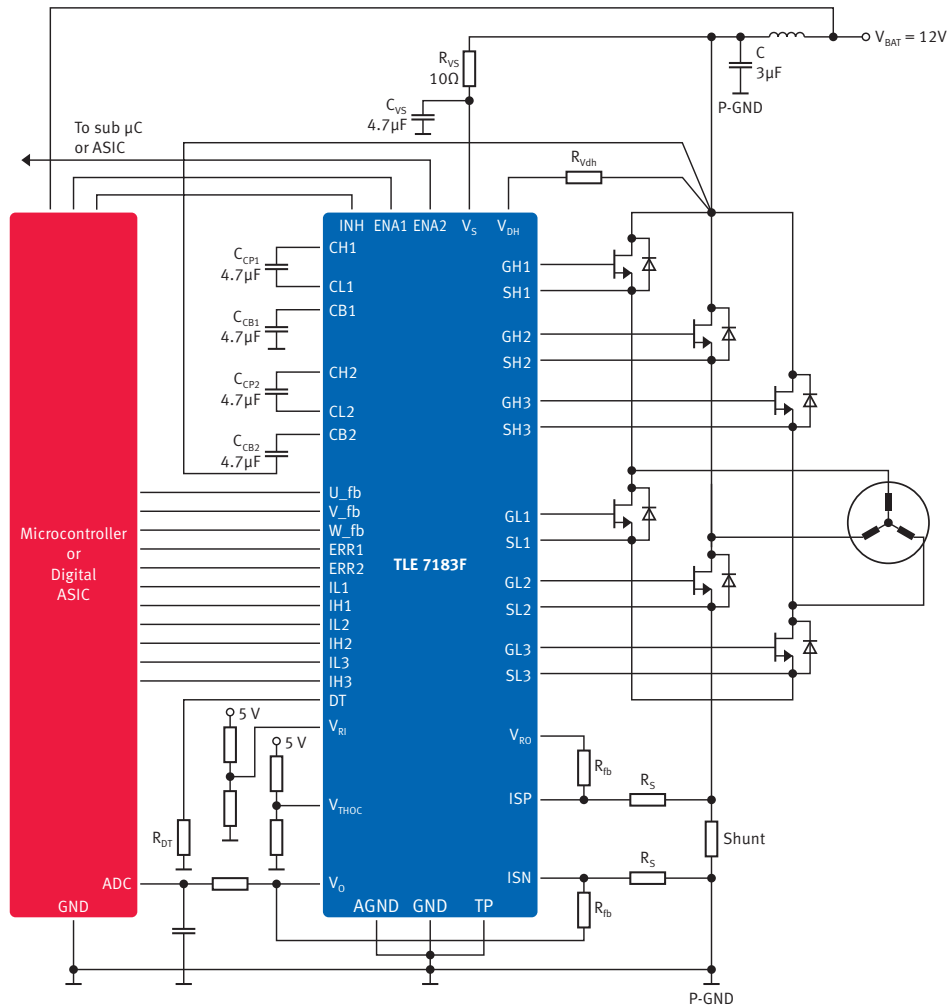
OV = Overvoltage
OC = Overcurrent
CS = Current Sense

UV = Undervoltage
OT = Overtemperature
SCL= Short Clamping

Gate Driver ICs for External MOSFETs



The trend towards greater efficiency in automotive applications also applies to electric motors. Applications such as power steering, HVAC compressors and engine cooling fans will be controlled by electronic motors in the future. Infineon's family of configurable, H-bridge and 3-phase gate driver ICs can be combined with MOSFETs to provide the power and efficiency these systems demand.



Applications

- Power Steering
- Fan and pump control
- Starter Alternator
- Seat Belt Pretensioner
- VVT
- Electric park brake
- ECMT

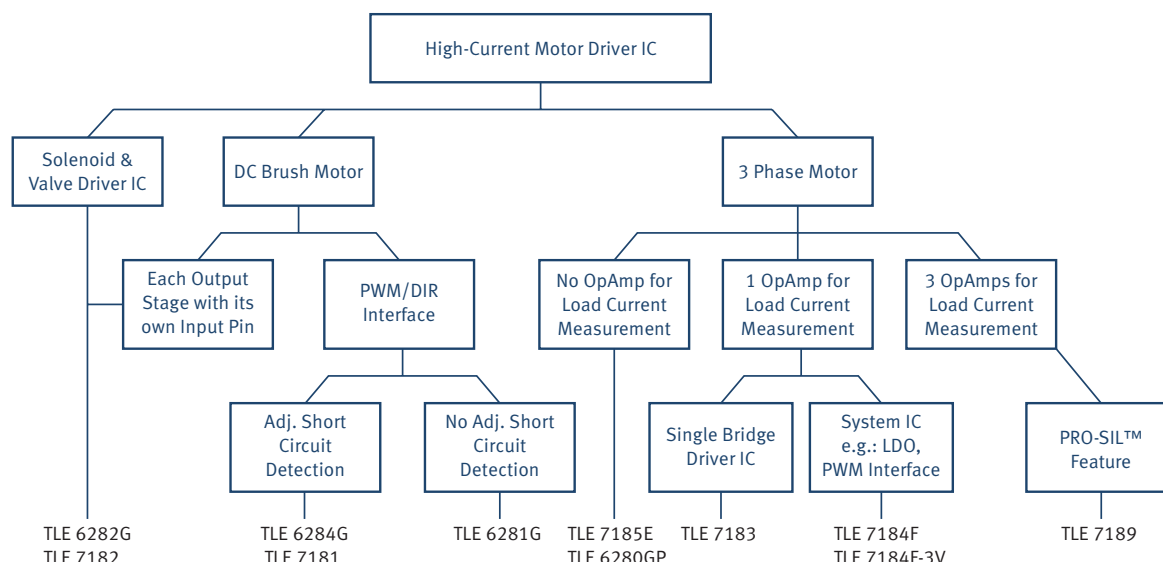
Basic Features

- Strong output stage up to 1.5A
- Precise OpAmp for current shut monitoring
- Operation down to 5.5V
- Duty cycle adjustable up to 100%

Diagnostic Features

- Undervoltage
- Short-Circuit
- Overtemperature
- Overvoltage

Selection Tree Gate Drivers



H-Bridge/ Dual Half-Bridge Drivers Family

Product Type	Operating Range [V]	OpAmp	PWM/DIR Input	Reverse Polarity Protection	Diagnostic	Package ¹⁾
TLE 6281G	7.5 ... 60.0	0	•		UV, OT, SCD	(7)
TLE 6282G	7.5 ... 60.0	0			UV, SCD	(7)
TLE 6284G	7.5 ... 60.0	0	•		UV, OT, SCD	(7)
TLE 7181EM	7.0 ... 34.0	1	•	•	UV, OV, OC, SCD, OT	(29)
TLE 7182EM	7.0 ... 34.0	1		•	UV, OV, OC, SCD, OT	(29)

3-Phase Bridge Driver IC

Product Type	Operating Range [V]	Drives Stage	D.C.-Range @ 20kHz [%]	Numbers of integrated OpAmps for load current measurement	Adjustable dead time	SIL3 features	Diagnosis	Package ¹⁾
TLE 6280GP	8.0 ... 36.0	0.9/0.85A	0 ... 95	0	•		UV, SCD, OT	(14)
TLE 7183F	5.5 ... 28.0	1.5/1.5A	0 ... 100	1	•		OT, UV, OV, OC, OCD	(44)
TLE 7184F TLE 7184F-3V ²⁾	7.0 ... 32.0	13.5/9.0Ω 13.5Ω	0 ... 95	1	•		UV, OV, OC, SCD, OT, VDD supervision	(44)
TLE 7185E	5.5 ... 32.0	13.5/9.0Ω	0 ... 95	0	•		UV, OV, SCD, OT	(13)
TLE 7188F	5.5 ... 28.0	1.5/1.5A	0 ... 100	3			UV, OV, OC, SCD, OT	(44)
TLE 7189F	5.5 ... 28.0	1.5/1.5A	0 ... 100	3		•	UV, OV, SCD, OT, VDD supervision	(44)
TLE 7189QK	5.5 ... 28.0	1.5/1.5A	0 ... 100	3		•	UV, OV, SCD, OT, VDD supervision	(16)
TLE 7183QU	5.5 ... 28.0	1.5/1.5A	0 ... 100	1	•		OT, UV, OV, OC, SCD	(41)

1) See packages on page 92

2) System IC for fans and pumps with integrated LDO and PWM interface

LO = Lockout
OL = Open-Load
OV = Overvoltage
OC = Overcurrent

UV = Undervoltage
OT = Overtemperature
SCD = Short-Circuit Detection



Power Supply

Linear Voltage Regulators: Voltage Regulators, Trackers and DC/DC Converters

Infineon Technologies offers a comprehensive portfolio of linear voltage regulators and voltage trackers fitting a broad range of automotive applications. We are the global market leader with over 15 years of experience in the automotive regulator segment. We are continuously expanding our portfolio to meet our customers' present and future application requirements.

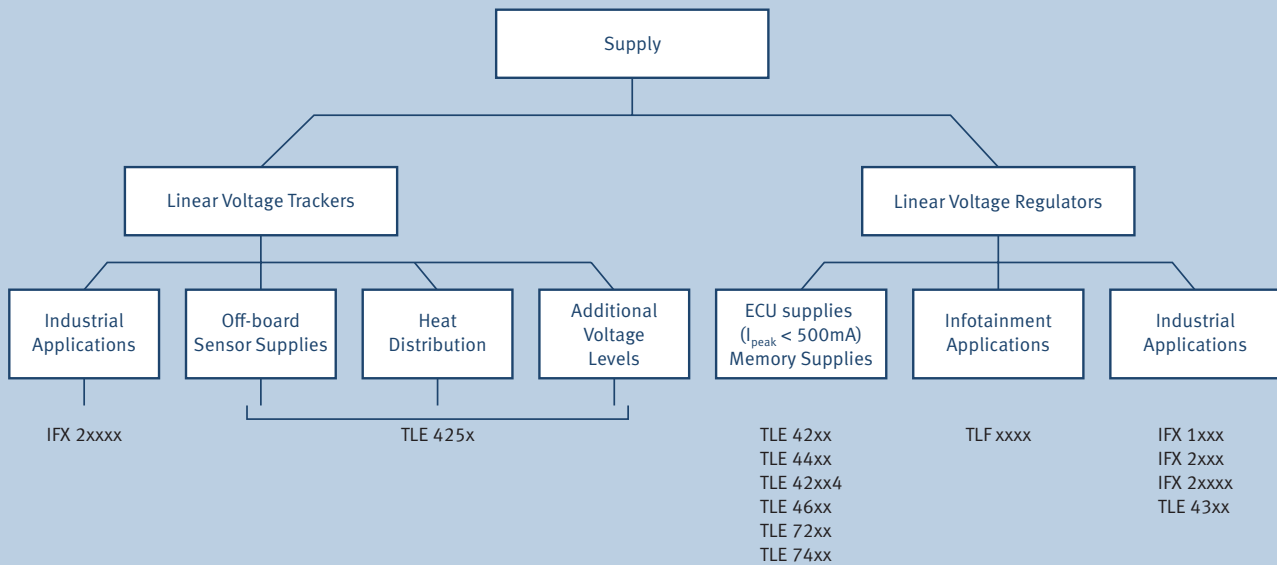
Our devices are especially designed for use in harsh automotive environments and are offered in the highest quality level. Our robust design approach ensures delamination-free ICs and long-term reliability.

Basic Features

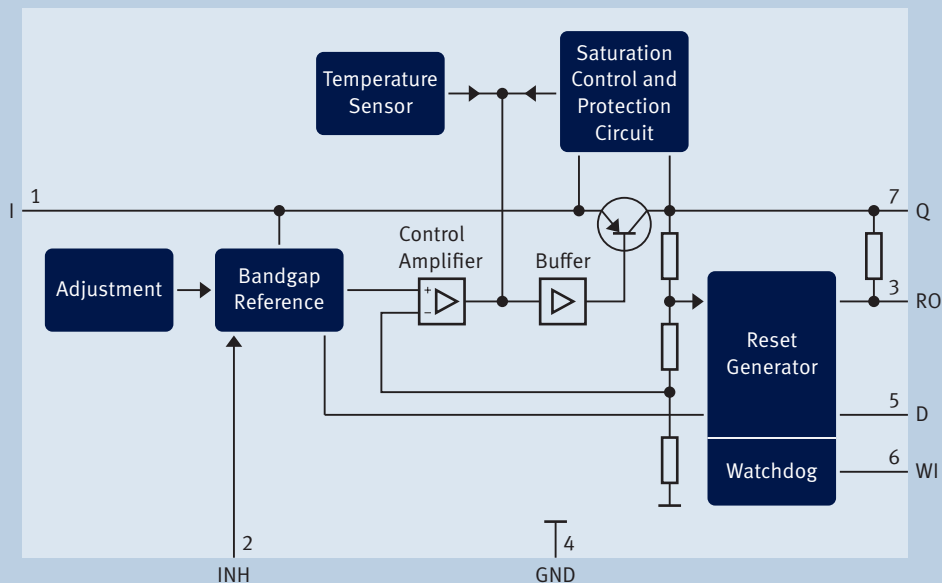
- Wide operation range: Up to 45V
- Very low dropout
- Wide temperature range: -40°C up to +150°C
- Short-circuit protection
- Reverse polarity protection
- Overtemperature protection
- Overload protection



Infiniteon's Power Supplies Address a Broad Range of Applications



Block Diagram Single Regulators



Additional Features

- Low quiescent current consumption in stand-by mode
- Disable function for main output
- Adjustable threshold reset
- Standard and window watchdog
- Power-on reset circuit sensing the stand-by voltage
- Early warning comparator for supply undervoltage

Linear Voltage Regulators: Voltage Regulators and Trackers

Power Supply by Output Current

Product Type	I _Q	I _q	V _s	V _Q	Drop voltage [V]	Accuracy (%)
TLE 4285	15	100	42	5.0	0.8	4
TLE 4286	15	60	42	5.0	0.8	2
TLE 4294	30	120	45	5.0	0.25	4
TLE 4295	30	120	45	2.6; 3.0; 3.3; 5.0	0.25	4
TLE 4296	30	110	45	3.0; 3.3; 5.0	0.25	4
TLE 4296-2	30	130	45	3.3; 5.0	0.25	4
TLE 42344	120	300	45	5.0	0.25	2
TLE 42364	120	300	45	5.0; 10.0	0.25	2
TLE 4264	120	300	45	5.0	0.25	2
TLE 4266	120	300	45	5.0; 10.0	0.25	2
TLE 4264-2	150	40	45	5.0	0.22	2
TLE 42644	150	40	45	5.0	0.22	2
TLE 4266-2	150	40	45	3.3; 5.0	0.25	2
TLE 42664	150	40	45	5.0	0.25	2
TLE 42694	150	210	45	5.0	0.25	2
TLE 42794	150	150	45	5.0	0.25	2
TLE 42994G	150	65	45	5.0	0.25	2
TLE 42994GM/E	150	65	45	3.3; 5.0	0.25	2
TLE 4268	180	300	45	5.0	0.25	2
TLE 7273-2	180	28	45	2.6; 3.3; 5.0	0.25	2
TLE 7278-2	180	28	45	5.0	0.25	2
TLE 7279-2	180	28	45	2.6; 3.3; 5.0	0.25	2
TLE 4262	200	900	45	5.0	0.35	2
TLE 4263/-2	200	900	45	5.0	0.35	2
TLE 4278	200	180	45	5.0	0.25	2
TLE 4678	200	60	45	5.0	0.25	2
TLF 4277 ⁴⁾	200	150	45	adj.	0.25	2
TLE 4287	250	1,000	42	5.0	1.8	2
TLE 7270-2	300	20	42	5.0	0.2	2
TLE 7272-2	300	20	42	5.0	0.25	2
TLE 7274-2	300	20	42	5.0	0.25	2
TLE 7276-2	300	20	42	5.0	0.25	2
TLE 4267	400	1,300	40	5.0	0.3	2
TLE 42744	400	100	45	3.3; 5.0	0.25	2
TLE 42754	400	150	42	3.3; 5.0	0.25	2
TLE 42764	400	100	40	adj.; 5.0	0.25	2
TLE 4675	400	65	45	5.0	0.25	2
TLE 4290	450	200	42	5.0	0.25	2
TLE 4270-2	550	1,000	42	5.0	0.35	2
TLE 4271-2	550	800	40	5.0	0.35	2
TLE 4284	1,000	1,000	40	adj.; 1.5; 1.8; 2.6; 3.3; 5.0	1.0	3

1) See packages on page 92

2) Power Good

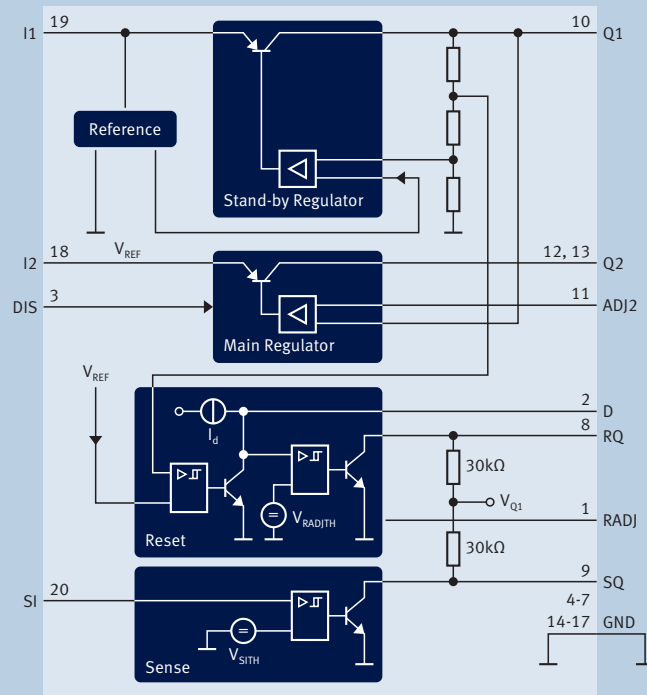
3) Power Fail

4) LDO with current monitor and status output

							MOSFETs
							TEMPFET™ HITFET™
							Smart MultiChannel Switches
Leakage off-mode(max) [μA]	Reset Output	Adjustable reset threshold	Enable	Watchdog	Early warning	Package ¹⁾	PROFET™
	• ³⁾					(20)	
1			•			(20)	
						(20)	
	• ³⁾					(20)	
1			•			(20)	
1			•			(20)	
						(24)	
10			•			(24)	
						(24)	
10			•			(24)	
						(24)	
			•			(24)	
			•			(24)	
	•	•			•	(1) (4) (28)	
	•	•			•	(1) (4) (28)	
	•	•			•	(1)	
1	•	•	•		•	(4) (28)	
	•	•		•		(1) (7)	
3	•		•	•		(4) (28)	
3	•		•	•		(4) (28)	
3	•		•		•	(4) (28)	
50	•	•	•			(4) (7)	
50	•	•	•	•		(1) (2) (4) (7)	
	•	•		•		(4)	
	•	•		•		(4) (28)	
3			•			(28)	
10	•		•			(4)	
	•					(33) (37) (28)	
9	•		•			(33) (28)	
						(32) (35) (28)	
9			•			(33) (28)	
10	•		•			(4) (39) (53) (54)	
						(32) (35) (28) (24)	
	•					(33) (37) (28)	
10			•			(33) (37)	
	•					(33) (37)	
					• ²⁾	(33) (37) (50)	
	•					(33) (37) (50) (52)	
6	•		•	•		(39) (53) (55)	
						(32)	
							Glossary

Linear Voltage Regulators: Voltage Regulators and Trackers

Block Diagram Multiple Output Regulators



Additional Feature

- Inhibit Input

Power Supply Multiple Output Regulators

Product Type	I_{Q1} [mA]	$I_{Q2/3}$ [mA]	V_S [V]	V_{Q1} [V]	$V_{Q2/3}$ [V]	Drop Voltage [V]	Accuracy (%)
TLE 4470	350	180	45	5	adj.	0.3	2
TLE 4471	450	100/50	40	5	5 and 5	0.25	2
TLE 4473	300	180	42	5	3.3 or 2.6 or 5	0.3	2
TLE 4476	430	350	42	5	3.3	0.3	4
TLE 7469	215	215	45	5	3.3 or 2.6	0.3	2

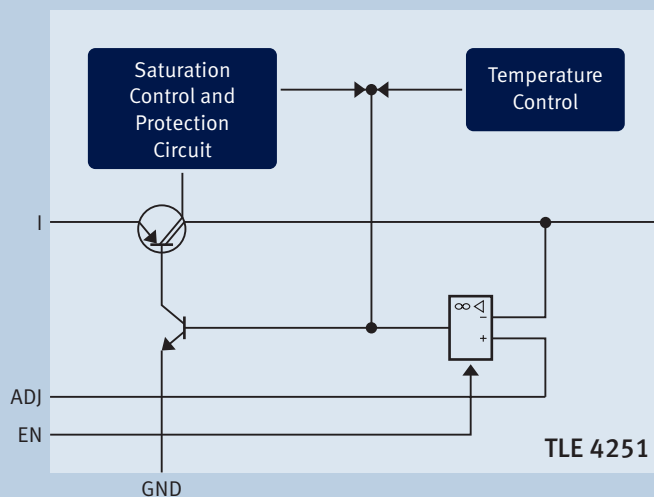
Trackers

Product Type	I_Q [mA]	V_S [V]	V_Q [V]	Drop Voltage [V]
TLE 4250-2	50	45	adj.	0.1
TLE 4251	400	45	adj.	0.28
TLE 4252	250	40	adj.	0.28
TLE 4253	250	45	adj. ²⁾	0.28
TLE 4254	70	45	adj. ²⁾	0.28

1) See packages on page 92

2) $V_Q > V_{ref}$ possible

Block Diagram Trackers



Additional Feature

- Inhibit Input

Leakage Current [μA]	I_q	Overvoltage Protection	Reset Output	Adjustable Reset Threshold	Watchdog	Early warning	Package ¹⁾
	180		•	•		•	④ ⑦
20	1100	•	•	•	•		⑧
1	200		•		•		③
100	300	•					③③
9	55		•		•		③

Accuracy (%)	Leakage Current [μA]	I_q	$V_Q > V_{ref}$ Possible	Package ¹⁾
0.5	20	140		②①
0.2	2	230		③③ ③⑦
0.2	2	100		③③ ③⑦
0.1	2	100	•	① ②
0.1	5	50	•	① ②

DC/DC Converters

Infineon Technologies offers several switching converters serving applications with extended requirements like supply for 32-bit microcontrollers and airbag applications. In our portfolio you can find step-up (Boost) and step-down (Buck) converters as well as converters cascaded internally with linear regulators and trackers.

Features

- Step-up and step-down converters
- High-efficiency regulators
- Wide supply voltage operation range
- Very low current consumption operation
- Suitable for standard 12V/24V PowerNets
- Output undervoltage reset with delay
- Overtemperature shutdown
- Wide ambient operation range
-40°C up to +125°C
- Short-circuit protection
- Overtemperature protection

Product Type	V _{S(op)} [V]	V _Q [V]	V _{Q 2} [V]	V _{Q 3} [V]	V _{Q 4} [V]	V _Q Additional [V]	I _Q [mA]	I _{Q 2} [mA]	I _{Q 3} [mA]	I _{Q 4} [mA]	I _Q Additional [mA]
Buck											
TLE 6365	8.0 ... 40.0	5.0					400				
TLE 6389-2GV	5.0 ... 60.0	adj.					2300				
TLE 6389-2GV50	5.0 ... 60.0	5.0					2300				
TLE 6389-3GV50	5.0 ... 60.0	5.0					2300				
TLE 8366	4.75 ... 45.0	adj., 3.3, 5.0					1800				
Buck plus linear											
TLE 7368	4.5 ... 45.0	5.5	5	2.6 or 3.3	1.5	2 x 5	2500	800	700	adj.	105 and 50
TLE 7368-2	4.5 ... 45.0	5.5	5	2.6 or 3.3	1.2	2 x 5	2500	800	700	adj.	105 and 50
TLE 7368-3	4.5 ... 45.0	5.5	5	2.6 or 3.3	1.3	2 x 5	2500	800	700	adj.	105 and 50
TLE 6368	5.5 ... 60.0	5.5	5	2.6 or 3.3	2.6 or 3.3	6 x 5	1500	800	500	350	6 x 17
Boost											
TLE 8386 ³⁾	4.75 ... 45.0	adj. (max 9-times of V _Q)					dep. on V _Q				
TLE 8386-2 ⁴⁾	4.75 ... 45.0	adj (max 9-times of V _Q)					dep. on V _Q				
Boost plus buck											
TLE 6711	4.0 ... 40.0	adj. up to 33	5				1000	250			

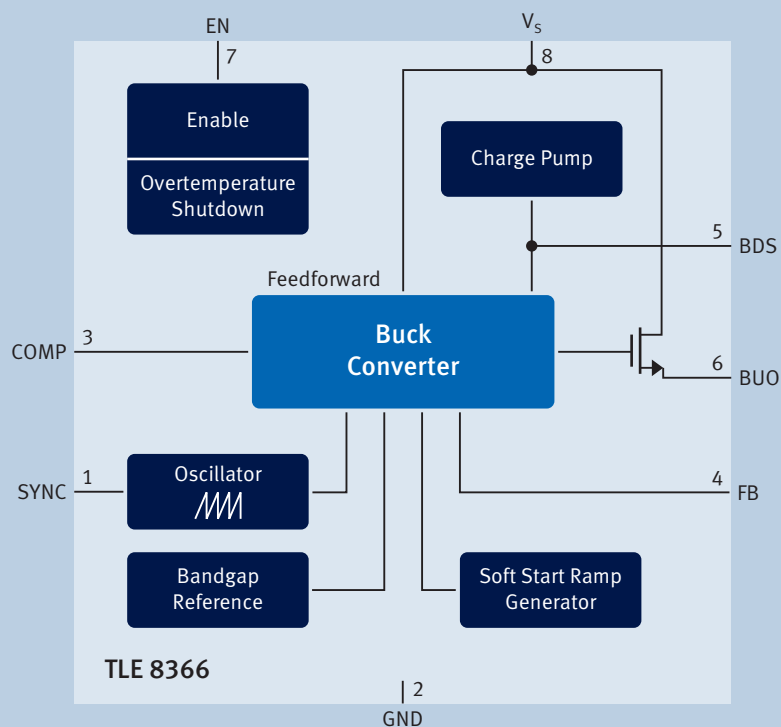
1) See packages on page 92

2) Different voltage reset hysteresis

3) HS-sense-booster (preferred as current source)

4) LS-sense-booster

Block Diagram TLE 8366



Accuracy 1 (%)	Accuracy 2 (%)	Accuracy 3 (%)	Accuracy 4 (%)	Additional Output Accuracy	I _q [mA]	Stand-by regulator	PFM operation	Reset	Window Watchdog	SPI and Add. Logic	Enable/ Disable Possibility	Early Warning	Package ¹⁾
2					1500			•					①
3					140		•	•			•	•	④
3					140		•	•			•	•	④
3					130		•	• ²⁾			•	•	④
4					4000						•		②
9	2	2	2	2	120	•		•	•		•		⑬ ⑭
9	2	2	2	2	120	•		•	•		•		⑬
9	2	2	2	2	120	•		•	•		•		⑬
10	2	5	4	2	30	•		•	•	•	•		⑭
4					7000						•		⑳
4					7000						•		⑳
10	2				1500			•	•				④ ⑦



Automotive Transceivers

Because of the ever-increasing demand for information exchange in modern vehicles, the automotive industry implemented in vehicle networks (IVN) using the CAN (Controller Area Network), LIN (Local Interconnect Network) and FlexRay protocol-based bus systems.

Transceivers are the link between the protocol unit (the controller) and the physical transmission medium (bus cable). In addition to their driving function (reception/transmission of signals from the bus to ECU) the transceivers also provide a wide range of protective and fault-diagnosis functions.

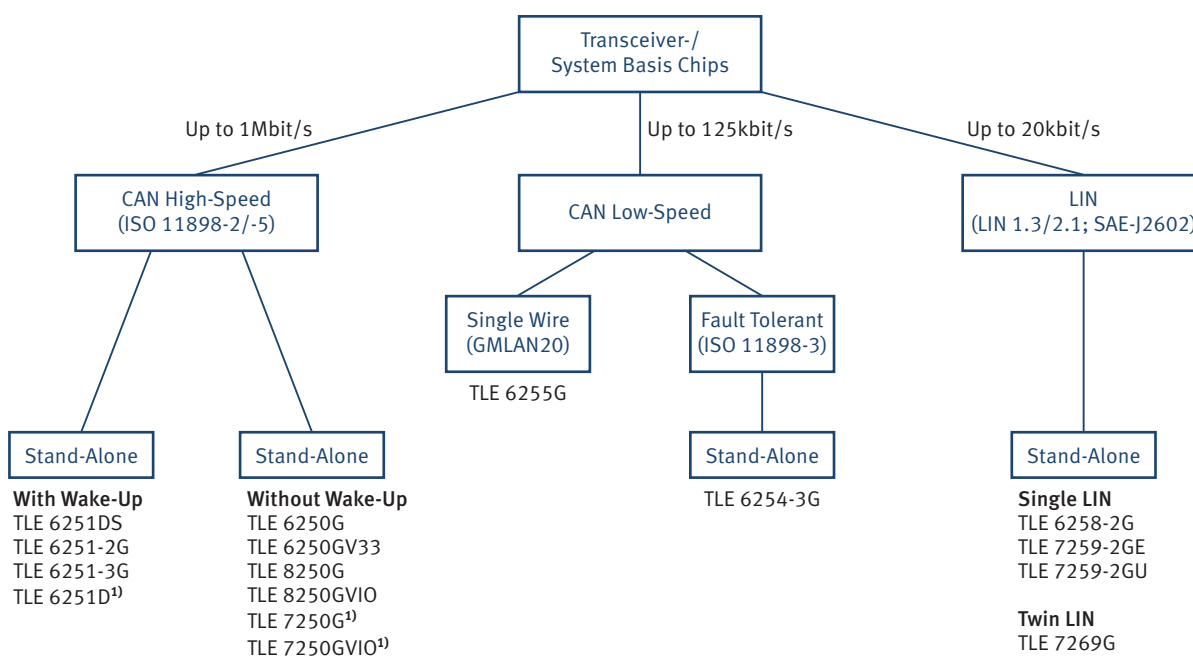
Features

- Excellent EMC
- Outstanding ESD robustness
- Highest quality standard
- Family concept





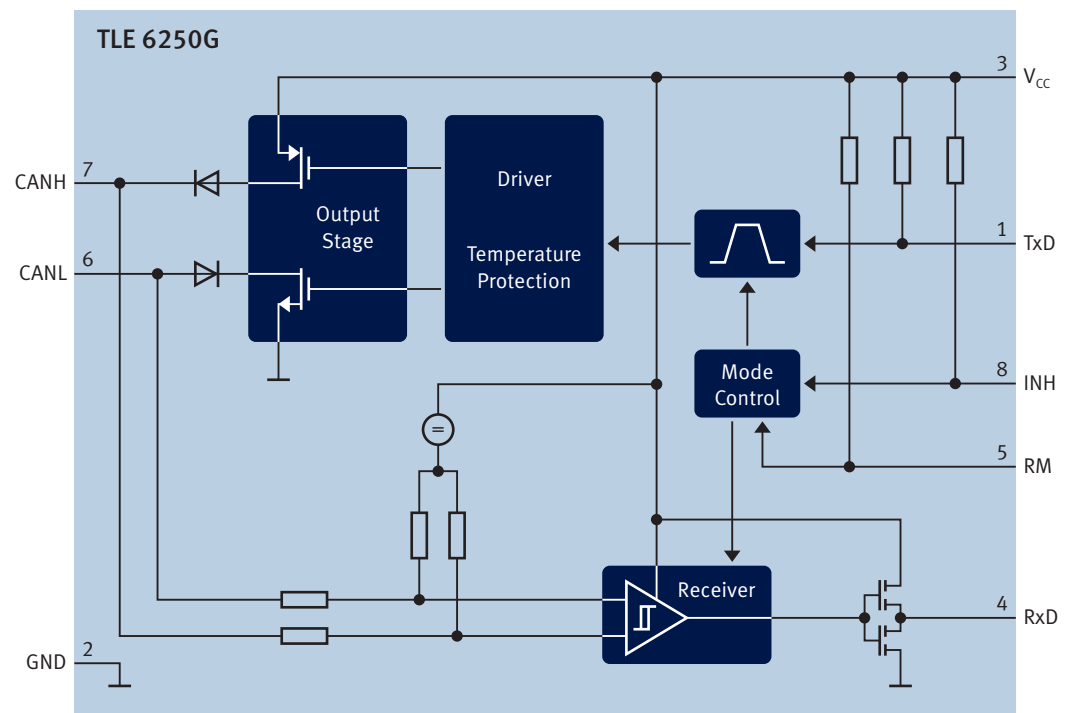
Selection Tree Automotive Transceivers



1) In development

Automotive Transceivers

Block Diagram TLE 6250G



Product Table

Product Type	Transmission Rate (max)	I_q	Bus Wake-up Capability	Suitable for Applications	Wake-up inputs	Number of channel	Bus Failure Management	Package ¹⁾
High-speed CAN ISO11898-2								
TLE 6250G	1Mbit/s	< 10µA @ 5V stand-by		12 + 24V applications		1		①
TLE 6250GV33	1Mbit/s	< 10µA @ 5V stand-by		12 + 24V applications		1		①
TLE 7250G	1Mbit/s	< 10µA @ 5V stand-by		12 + 24V applications		1		①
TLE 7250GVIO	1Mbit/s	< 10µA @ 5V stand-by		12 + 24V applications		1		①
TLE 8250G	1Mbit/s	< 10µA @ 5V stand-by		12 + 24V applications		1		①
TLE 8250GVIO	1Mbit/s	< 10µA @ 5V stand-by		12 + 24V applications		1		①
High-speed CAN ISO11898-5								
TLE 6251-2G	1Mbit/s	< 30µA sleep mode	•	12 + 24V applications	•	1	•	④
TLE 6251-3G	1Mbit/s	< 30µA sleep mode	•	12 + 24V applications	•	1	•	④
TLE 6251DS	1Mbit/s	< 30µA @ 5V stand-by	•	12 + 24V applications		1		①
Fault-tolerant CAN ISO 11898-3								
TLE 6254-3G	125kbit/s	< 65µA sleep mode	•	12V applications	•	1	•	④
LIN/ SAE J2602/k-line								
TLE 6258-2G	20kbit/s	< 40µA stand-by mode		12V applications		1		①
TLE 7259-2GE	20kbit/s	< 10µA sleep mode	•	12 + 24V applications	•	1	•	①
TLE 7259-2GU	10.4kbit/s	< 10µA sleep mode	•	12 + 24V applications	•	1	•	①
TLE 7269G	20kbit/s/ 10.4kbit/s	< 10µA sleep mode	•	12 + 24V applications	•	2	•	④

1) See packages on page 92

System Basis Chips (SBCs)



The latest generations of Infineon System Basis Chips (SBC) are monolithic integrated circuits in an enhanced power package. The TLE 826x family provides a pin and software compatible solution with different numbers of LIN transceiver and Limp Home outputs. In addition the TLE 7263E provides input monitoring with cyclic sense feature.

The devices are designed for automotive applications using CAN and LIN communication e.g. body controller, gateway applications, HVAC.

The SBC provide HS-CAN transceiver and LIN transceivers, multiple low dropout voltage regulators (LDO) for 5V supply, and a 16-bit SPI to control and monitor the device. Also implemented are a configurable Watchdog, Limp Home outputs, and configurable undervoltage detections.

The devices offer low power modes in order to support applications that are connected permanently to the battery.

The devices are designed to withstand the severe conditions of automotive applications, especially the ESD and EMC requirements of the OEMs.

Features

- Family concept
- Fully ESD protected
- Excellent EMC performance
- Very low quiescent current
- Supervision/FailSafe management
- “Bus Wake-up capability”

Applications

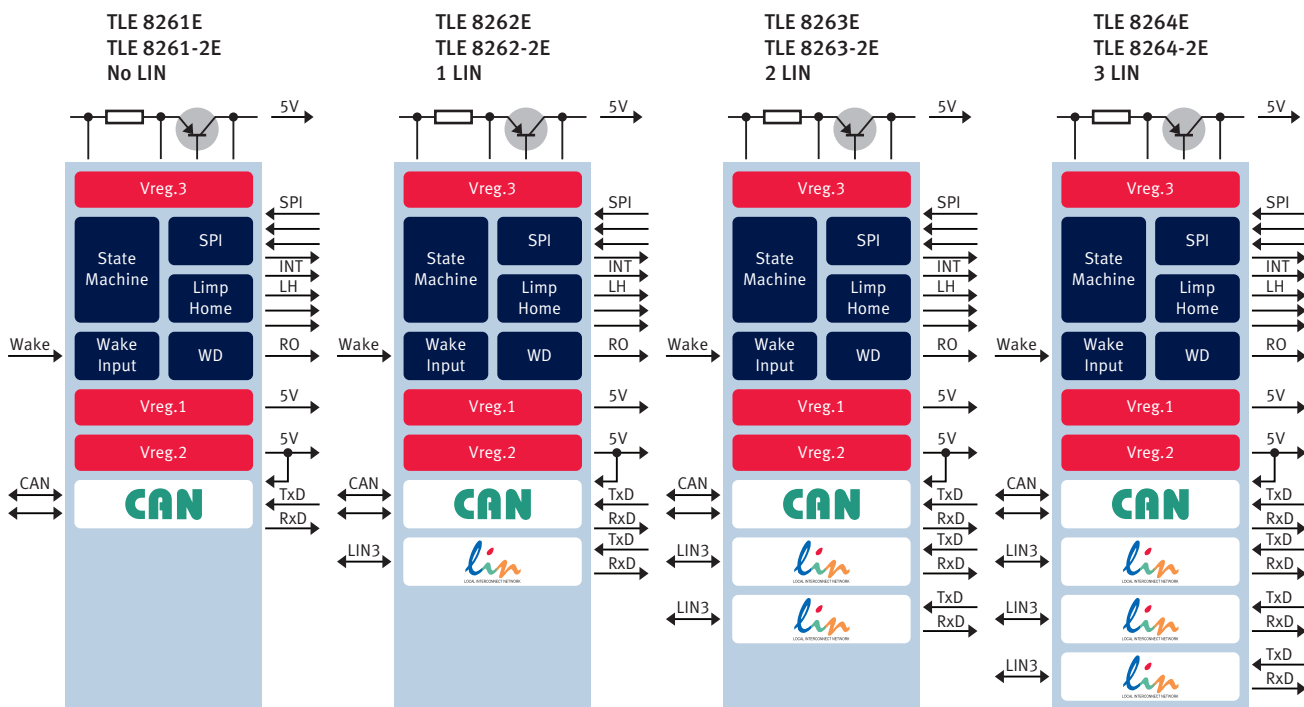
- HVAC
- BCM/Gateway
- Door module
- Lighting module
- Seat module

Body System ICs – System Basis Chips Product Overview

Product Type	Transmission Rate	I_q	I_q	$V_{reg\ 1}$	$V_{reg\ 2}$
Fault-tolerant CAN / ISO 11898-3					
TLE 6263-3G	125kbit/s	< 85µA sleep mode	< 500µA, @ 5V stand-by	120mA, @ 5V	
TLE 6266G	125kbit/s	–	< 85µA, @ 5V stand-by	45mA, @ 5V	
High-speed CAN / ISO 11898-5 / LIN 1.3; 2.0 / SAE J2602					
TLE 7263E	1Mbit/s (CAN) 20kbit/s 10.4kbit/s (LIN)	49µA (typ) sleep mode 5V Off	68µA (typ) stop mode 5V On	200mA, @ 5V	200mA, @ 5V
TLE 826x	1Mbit/s (CAN) 20kbit/s 10.4kbit/s (LIN)	28µA (typ) sleep mode 5V Off	58µA (typ) stop mode 5V On	200mA, @ 5V	200mA, @ 5V
LIN/ SAE / J2602/k-line					
TLE 6285G	20kbit/s	< 40µA sleep mode	< 140µA, @ 5V stand-by	150mA, @ 5V	
TLE 6286G	20kbit/s	< 80µA sleep mode	< 1.3mA, @ 5V stand-by	150mA, @ 5V	
TLE 8458	20kbit/s 10.4kbit/s	< 10µA sleep mode	40µA	50mA, @ 5V/3.3V	

1) See packages on page 92

Overview



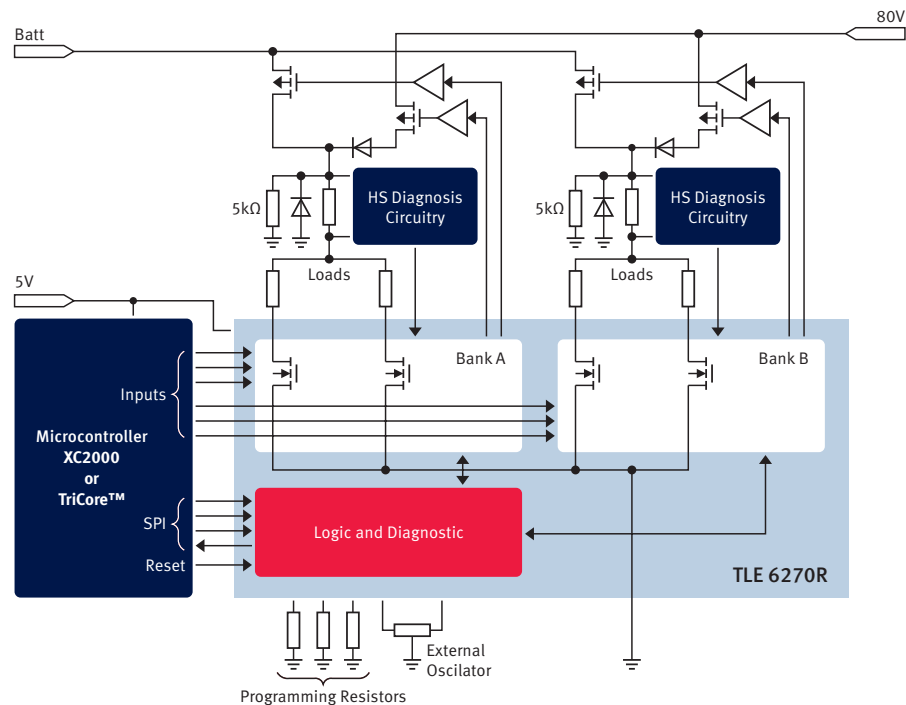
V _{reg.3}	Wake-up inputs	Watchdog	Output Drivers	Package ¹⁾
	2	•	1 high-side switch 150mA	⑩
	1	•	2 low-side relay drivers 3 high-side drivers	⑩
	4	•	1 high-side switch 150mA	⑬
400mA, @ 5V	1	•		⑬
	1			⑥
	1	•		⑥
	1			①

Powertrain System ICs

Gasoline Direct Injection

The TLE 6270R is tailored for solenoid based Gasoline Direct Injection (GDI-)systems in automotive applications. The device controls external high-side transistors. The injector voltage can be varied in the range from battery voltage (for pre-charge and hold phases) up to 80V (for peak phase), resulting in fast opening of the injectors. With programmable current levels and peak time, the TLE 6270R provides a high flexibility for the adjustment of peak-and-hold current waveforms for four injector channels.

Application Example TLE 6270R



Features

- Four integrated low-side switches, control logic and outputs for external high-side switches
- Programmable peak and hold output current control to adapt to application requirements.
- Detailed diagnostic of defective or missing injector connections
- Serial Peripheral Interface (SPI) for diagnostics and control of the device
- Short-circuit, ESD and overtemperature protection
- Undervoltage reset

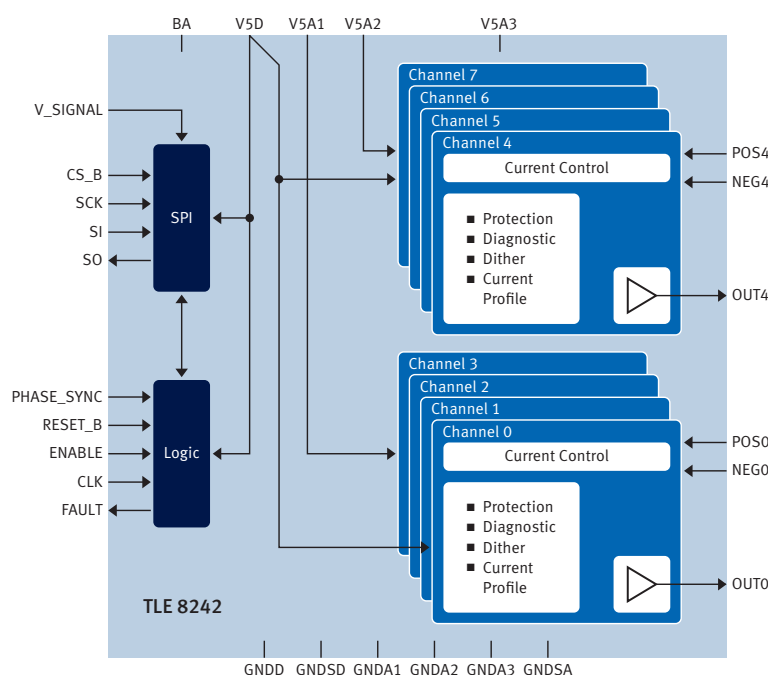
Product Type	Halogen-free	Max Clam Voltage V_{CLP1} [V]	$R_{DS(on)}$ (max) @150°C [mΩ]	Peak current range [A]	Hold current range [A]	Quiescent Current (max) [mA]	Package ¹⁾
TLE 6270R	•	94	300	9 ... 13	1.8 ... 3.5	0.1	(14)

1) See packages on page 92

Constant Current Control ICs

Infineon's solution for variable force or constant current controlled solenoids typically used in automatic transmissions, idle speed-/valve-/suspension control or Exhaust Gas Recirculation (EGR) applications

Block Diagram TLE 8242L



Features

- Shorted load detection
- Open-load detection in ON-/OFF-State
- Short to ground detection
- Max. output average current approx. 1.2A

Product Type	Number of Channels	Output Current	$R_{DS(on)}$ [mΩ]	Quiescent Current [mA]	Operational Range V_s [V]	SPI	Comment	Package ¹⁾
TLE 6288R ²⁾	6	2	150	0.05	6.0 ... 16.0	16-bit	Smart 6 Channel Peak & Hold Switch	(14)
TLE 6288R	6	2	150	0.05	6.0 ... 16.0	16-bit	Smart 6 Channel Peak & Hold Switch	(14)
TLE 7241E	2	1.2	240	1.0	9.0 ... 18.0	16-bit	Dual Channel Constant Current Control Solenoid Driver	(7)
TLE 7242-2G	4	NA	NA	0.005	5.5 ... 42.0	32-bit	4 Channel Fixed Frequency Constant Current Control IC	(10)
TLE 8242L	8	NA	NA	0.005	5.5 ... 42.0	32-bit	8 Channel Fixed Frequency Constant Current Control IC	(16)
TLE 82543 ³⁾	3	1.6	250 (max)	0.01	5.5 ... 17.0	32-bit	3 Channel Constant Current Control IC	(13)

1) See packages on page 92

2) Non Green

3) In development

Powertrain System ICs

Powertrain H-Bridges for Electronic Throttle Controls

Infineon H-bridge portfolio addresses the broad range of DC brush motor applications. Designed and optimized for Electronic Throttle Control (ETC), in addition the H-bridges can be used for Exhaust Gas Recirculation (EGR), valve control, idle control swirl and tumble flaps variable intake, manifold turbo charger waste gate, variable turbo geometry, but also industrial DC-brush motor applications.

Product Type	$I_{L(NOM)}$	$I_{L(LIM)}$	I_q [μA]	$V_{S(op)}$ [V]	$R_{DS(on)}$ [m Ω]	Diagnostic I/F	Package ¹⁾
TLE 5205-2	4	5	10	6.0 ... 40.0	220	Status Flag	(53)
TLE 5205-2G	4	5	10	6.0 ... 40.0	220	Status Flag	(38)
TLE 5205-2GP	4	5	10	6.0 ... 40.0	220	Status Flag	(8)
TLE 5205-2S	4	5	10	6.0 ... 40.0	220	Status Flag	(8)
TLE 5206-2	4	5	10	6.0 ... 40.0	220	Status Flag	(53)
TLE 5206-2G	4	5	10	6.0 ... 40.0	220	Status Flag	(38)
TLE 5206-2GP	4	5	10	6.0 ... 40.0	220	Status Flag	(8)
TLE 5206-2S	4	5	10	6.0 ... 40.0	220	Status Flag	(8)
TLE 6209R	6	7	50	5.0 ... 40.0	150	SPI & Status Flag	(8)
TLE 7209-2R	6	7	20	5.0 ... 28.0	150	SPI & Status Flag	(8)
TLE 8209-2SA	1.5 ... 8.6	6.5 ... 17.4	20	4.5 ... 28.0	150	SPI & Status Flag	(8)

Flex MultiChannel Low-Side Switches (Powertrain & Safety)

Multi channel low-side switches are designed for multi purpose loads (solenoids, relays and resistive loads). The so-called Flex products serve in a flexible way the engine requirements with a different number of low-side drivers.

Please refer to page 36 for the product table.

1) See packages on page 92

Airbag System ICs

Infineon, a world leading supplier of Airbag ICs with more than 15 years experience, offers several complete solutions, enabling cost efficiency over the entire range from basic up to high end airbag systems. With a product portfolio ranging from high content integrated System ICs, over Smart Firing ICs and Power Supplies to Satellite Receiver ICs, Infineon is well positioned to meet the market's requirements for cost efficiency, high quality and flexibility.

Features

- 16-bit Serial Peripheral Interface (SPI)
- Squib diagnosis via resistance measurement

Product Type	Channels	Warning lamp output driver	Digital output for firing current detection	3.3V compatible I/O	Buckle switch detection	Number of analog output for signal monitoring	Firing loop enable inputs	Maximum firing current	Programmable deployment firing timer	Buck/Boost	Package ¹⁾
Airbag Firing ICs											
TLE 6710 ²⁾	4	2	•			4	0	0	0	•	(17)
TLE 6712 ²⁾	2	0	•		•	1	2	2	0		(9)
TLE 6714 ²⁾	4	0	•	•	•	1	2	4	0		(10)
TLE 7714	4	0				1	1	0	4		(15)
TLE 7718	8	0		•		1	1	0	8		(15)
TLE 7734	4	0		•		1	1	0	4		(15)
TLE 7738	8	0		•		1	1	0	8		(15)

Product Type	Channels	Independent channel	Number of Digital output	3.3V compatible I/O	Data rate	Number of supply	Package ¹⁾
Satellite Receiver IC							
TLE 7729	4	4	4	•	125kbit/s	4	(43)



1) See packages on page 92
2) Non green

Embedded Power



Embedded power is a single package solution for space constrained intelligent LIN-based applications. It incorporates an 8-bit microcontroller of our XC800 family which is compatible with the standard 8051 core including On-Chip Debug Support (OCDS), non-volatile memory and System-Basis Chip (SBC). The SBC functionality offers a LIN 2.1, 2.0, 1.3/SAEJ2602 compliant LIN transceiver, a low-dropout voltage regulator (LDO), two low-side switches (relay driver) and a supply for sensors, e.g. Hall sensor TLE 4966. In addition, high-side drivers are also available for driving LEDs or for providing a cyclic wake up function via integrated high voltage wake up inputs for quiescent current sensitive applications.

The first product generation is realized as a Multi-Chip-Module (MCM) in a DSO-28, while the second generation is based on a monolithic chip design in an advanced Smart Power Technology offered in a space saving VQFN-48 package.

Basic Features – first generation

General Characteristics

- AEC (Automotive Electronics Council) qualified (TLE 7810/24/26)
- Thermal resistance $R_{th} = 65K/W$
- Wide temperature range $T_j = -40 \dots +150^\circ C$ (TLE 7810/24/26)
- Sleep mode current $< 40\mu A$ (max)

System Basis Chip (SBC) Functionality

- Voltage regulator with reset
- LIN transceiver (single wire), compliant with LIN Spec. 2.1, 2.0, 1.3/SAE J2602
- Protected low-side drivers, e.g. for relays
- High-voltage wake-up inputs, e.g. for switch panel applications
- Protected high-side switch, e.g. LEDs, cyclic wake
- Sensor supply with overvoltage protection
- Programmable window watchdog
- Overtemperature protection

Features of 8-bit Microcontroller, XC8xx

- 256byte RAM and up to 3072byte XRAM
 - First generation: 16 to 32kB flash memory for code and data
 - Second generation: 24 to 64kB flash memory for code and data
- 10-bit A/D converter, multiple channels (temperature & $+V_s$ supervision)
- Multiple 16-bit timers
- Capture/compare unit (PWM)

Applications

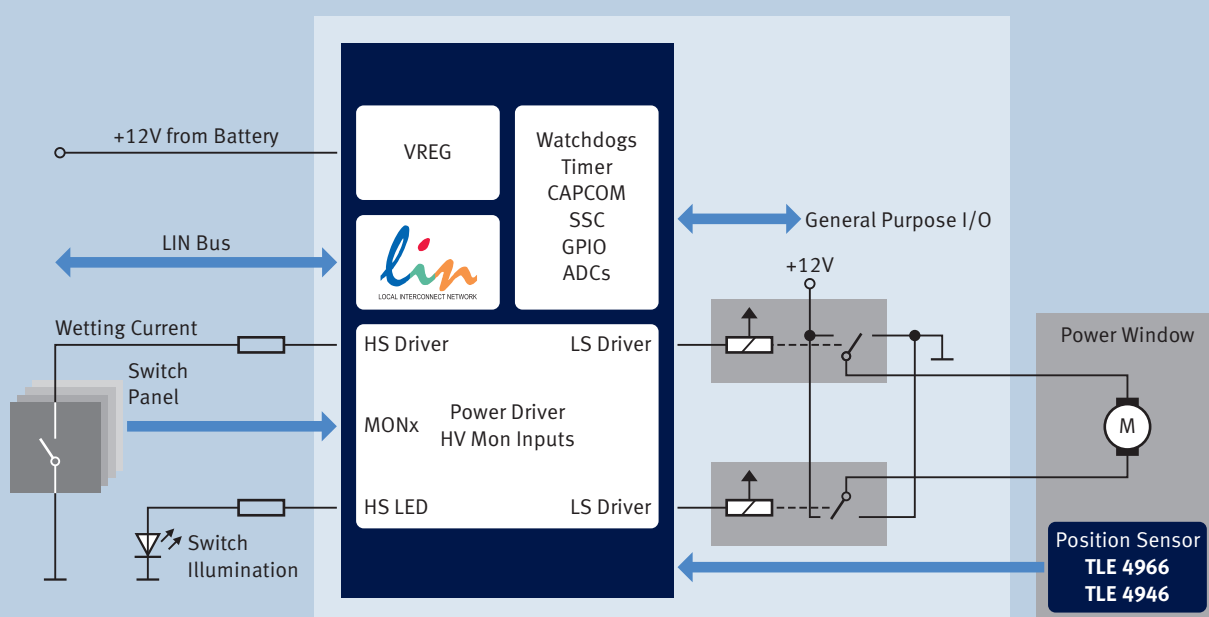
- Window lift
- Seat control
- Sun roof
- Fan control
- Key pad interface
- Switch panel interface

Product Type	Core	XRAM [Byte]	Flash [kB]	16-bit Timer	Package ¹⁾
TLE 7810	XC866	512	16	3	(10)
TLE 7824	XC885	1,536	24	4	(10)
TLE 7826	XC885	1,536	32	4	(10)
TLE 9832 ²⁾	XC800	3,072	24 ... 64	5	(44)

1) See packages on page 92

2) In development

Smart LIN-based Relay Driver IC & Switch Panel Interface with Integrated 8-bit Microcontroller



Glossary

Type List	Product Family	Page
2N7002DW	Small Signal OptiMOST™ N-Channel 60V	23
BCR 320U	Linear LED Driver of BCR400 Series	51
BCR 321U	Linear LED Driver of BCR400 Series	51
BCR 401R	Linear LED Driver of BCR400 Series	51
BCR 401U	Linear LED Driver of BCR400 Series	51
BCR 401W	Linear LED Driver of BCR400 Series	51
BCR 402R	Linear LED Driver of BCR400 Series	51
BCR 402U	Linear LED Driver of BCR400 Series	51
BCR 402W	Linear LED Driver of BCR400 Series	51
BCR 405U	Linear LED Driver of BCR400 Series	51
BCR 420U	Linear LED Driver of BCR400 Series	51
BCR 421U	Linear LED Driver of BCR400 Series	51
BSD 214NW	Small Signal OptiMOST™2 N-Channel 20V	23
BSD 223P	Small Signal OptiMOST™2 P-Channel -20V	24
BSD 235C/n-ch	Small Signal OptiMOST™2 20V Complementary MOSFETS	25
BSD 235C/p-ch	OptiMOST™2 P-20V Complementary MOSFETS	25
BSD 235N	Small Signal OptiMOST™2 N-Channel 20V	23
BSD 3145PE	Small Signal OptiMOST™3 P-Channel -30V + integrated ESD diode	24
BSD 3165N	Small Signal OptiMOST™2 N-Channel 30V	23
BSD 8165N	Small Signal OptiMOST™2 N-Channel 20V	23
BSD 840N	Small Signal OptiMOST™2 N-Channel 20V	23
BSL 2025N	Small Signal OptiMOST™2 N-Channel 20V	23
BSL 205N	Small Signal OptiMOST™2 N-Channel 20V	23
BSL 207N	Small Signal OptiMOST™2 N-Channel 20V	23
BSL 207SP	Small Signal OptiMOST™2 P-Channel -20V	24
BSL 2115P	Small Signal OptiMOST™2 P-Channel -20V	24
BSL 214N	Small Signal OptiMOST™2 N-Channel 20V	23
BSL 215C/n-ch	Small Signal OptiMOST™2 20V Complementary MOSFETS	25
BSL 215C/p-ch	Small Signal OptiMOST™2 P-20V Complementary MOSFETS	25
BSL 215P	Small Signal OptiMOST™2 P-Channel -20V	24
BSL 3025N	Small Signal OptiMOST™2 N-Channel 30V	23
BSL 306N	Small Signal OptiMOST™2 N-Channel 30V	23
BSL 307SP	Small Signal OptiMOST™2 P-Channel -30V	24
BSL 308C/n-ch	Small Signal OptiMOST™2 30V Complementary MOSFETS	25
BSL 308C/p-ch	Small Signal OptiMOST™3 P-30V Complementary MOSFETS	25
BSL 308PE	Small Signal OptiMOST™3 P-Channel -30V + integrated ESD diode	24
BSL 314PE	Small Signal OptiMOST™3 P-Channel -30V + integrated ESD diode	24
BSL 315P	Small Signal OptiMOST™2 P-Channel -30V	24
BSL 316C/n-ch	Small Signal OptiMOST™2 30V Complementary MOSFETS	25
BSL 316C/p-ch	Small Signal OptiMOST™2 P-30V Complementary MOSFETS	25
BSL 6065N	Small Signal OptiMOST™3 N-Channel 60V	23
BSL 8025N	Small Signal OptiMOST™2 N-Channel 20V	23
BSL 806N	Small Signal OptiMOST™2 N-Channel 20V	23
BSP 123	Small Signal SIPMOST™ N-Channel 100V	23
BSP 125	Small Signal SIPMOST™ N-Channel 600V	24
BSP 129	Small Signal SIPMOST™ Depletion MOSFETS 240V	25
BSP 135	Small Signal SIPMOST™ Depletion MOSFETS 600V	25
BSP 149	Small Signal SIPMOST™ Depletion MOSFETS 200V	25
BSP 170P	Small Signal SIPMOST™ P-Channel -60V	25
BSP 171P	Small Signal SIPMOST™ P-Channel -60V	25
BSP 295	Small Signal SIPMOST™ N-Channel 60V	23
BSP 296	Small Signal SIPMOST™ N-Channel 100V	23
BSP 297	Small Signal SIPMOST™ N-Channel 200V	23
BSP 298	Small Signal SIPMOST™ N-Channel 400V	24
BSP 299	Small Signal SIPMOST™ N-Channel 500V	24
BSP 300	Small Signal SIPMOST™ N-Channel 800V	24
BSP 315P	Small Signal SIPMOST™ P-Channel -60V	25
BSP 316P	Small Signal SIPMOST™ P-Channel -100V	25
BSP 317P	Small Signal SIPMOST™ P-Channel -250V	25
BSP 318S	Small Signal SIPMOST™ N-Channel 60V	23

Type List	Product Family	Page
BSP 320S	Small Signal SIPMOST™ N-Channel 60V	23
BSP 321P	Small Signal SIPMOST™ P-Channel -100V	25
BSP 322P	Small Signal SIPMOST™ P-Channel -100V	25
BSP 324	Small Signal SIPMOST™ N-Channel 400V	24
BSP 372	Small Signal SIPMOST™ N-Channel 100V	23
BSP 373	Small Signal SIPMOST™ N-Channel 100V	23
BSP 452	PROFET™: Smart High-Side Switch	40
BSP 60352L	OptiMOST™ 55V (Planar)	15
BSP 613P	Small Signal SIPMOST™ P-Channel -60V	25
BSP 742R	PROFET™: Smart High-Side Switch	40
BSP 742RI	PROFET™: Smart High-Side Switch	40
BSP 742T	PROFET™: Smart High-Side Switch	40
BSP 752R	PROFET™: Smart High-Side Switch	40
BSP 752T	PROFET™: Smart High-Side Switch	40
BSP 75N	HITFET™: Low-Side Protected Switch	29
BSP 76	HITFET™: Low-Side Protected Switch	29
BSP 762T	PROFET™: Smart High-Side Switch	40
BSP 77	HITFET™: Low-Side Protected Switch	29
BSP 772T	PROFET™: Smart High-Side Switch	40
BSP 78	HITFET™: Low-Side Protected Switch	29
BSP 88	Small Signal SIPMOST™ N-Channel 240V	24
BSP 89	Small Signal SIPMOST™ N-Channel 240V	24
BSP 92P	Small Signal SIPMOST™ P-Channel -250V	25
BSR 202N	Small Signal OptiMOST™2 N-Channel 20V	23
BSR 302N	Small Signal OptiMOST™2 N-Channel 30V	23
BSR 315P	Small Signal SIPMOST™ P-Channel -60V	25
BSR 316P	Small Signal SIPMOST™ P-Channel -100V	25
BSR 606N	Small Signal OptiMOST™3 N-Channel 60V	23
BSR 802N	Small Signal OptiMOST™2 N-Channel 20V	23
BSR 92P	Small Signal SIPMOST™ P-Channel -250V	25
BSS 119	Small Signal SIPMOST™ N-Channel 100V	23
BSS 123	Small Signal SIPMOST™ N-Channel 100V	23
BSS 126	Small Signal SIPMOST™ Depletion MOSFETS 600V	25
BSS 127	Small Signal SIPMOST™ N-Channel 600V	24
BSS 131	Small Signal SIPMOST™ N-Channel 240V	24
BSS 138N	Small Signal SIPMOST™ N-Channel 60V	23
BSS 138W	Small Signal SIPMOST™ N-Channel 60V	23
BSS 139	Small Signal SIPMOST™ Depletion MOSFETS 250V	25
BSS 159N	Small Signal SIPMOST™ Depletion MOSFETS 60V	25
BSS 169	Small Signal SIPMOST™ Depletion MOSFETS 100V	25
BSS 192P	Small Signal SIPMOST™ P-Channel -250V	25
BSS 205N	Small Signal OptiMOST™2 N-Channel 20V	23
BSS 209PW	Small Signal OptiMOST™2 P-Channel -20V	24
BSS 214N	Small Signal OptiMOST™2 N-Channel 20V	23
BSS 214NW	Small Signal OptiMOST™2 N-Channel 20V	23
BSS 215P	Small Signal OptiMOST™2 P-Channel -20V	24
BSS 223PW	Small Signal OptiMOST™2 P-Channel -20V	24
BSS 225	Small Signal SIPMOST™ N-Channel 600V	24
BSS 306	Small Signal OptiMOST™2 N-Channel 30V	23
BSS 308PE	Small Signal OptiMOST™3 P-Channel -30V + integrated ESD diode	24
BSS 314PE	Small Signal OptiMOST™3 P-Channel -30V + integrated ESD diode	24
BSS 315P	Small Signal OptiMOST™2 P-Channel -30V	24
BSS 316N	Small Signal OptiMOST™2 N-Channel 30V	23
BSS 606N	Small Signal OptiMOST™3 N-Channel 60V	23
BSS 67052L	Small Signal OptiMOST™ N-Channel 55V	23
BSS 7728N	Small Signal SIPMOST™ N-Channel 60V	23
BSS 806N	Small Signal OptiMOST™2 N-Channel 20V	23
BSS 816NW	Small Signal OptiMOST™3 N-Channel 20V	23
BSS 83P	Small Signal SIPMOST™ P-Channel -60V	25
BSS 84P	Small Signal SIPMOST™ P-Channel -60V	25

Type List	Product Family	Page
BSS 84PW	Small Signal SiPMOST™ P-Channel -60V	25
BSS 87	Small Signal SiPMOST™ N-Channel 240V	24
BSV 236SP	Small Signal OptiMOST™P-Channel -20V	24
BTF 50060-1TEA	PROFET™: Smart High-Side Switch	44
BTM 7700G	Trilith IC (Integrated High-Current Motor Drivers)	60
BTM 7710G	Trilith IC (Integrated High-Current Motor Drivers)	60
BTM 7710GP	Trilith IC (Integrated High-Current Motor Drivers)	60
BTM 7740G	Trilith IC (Integrated High-Current Motor Drivers)	60
BTM 7741G	Trilith IC (Integrated High-Current Motor Drivers)	60
BTM 7750G	Trilith IC (Integrated High-Current Motor Drivers)	60
BTM 7750GP	Trilith IC (Integrated High-Current Motor Drivers)	60
BTM 7751G	Trilith IC (Integrated High-Current Motor Drivers)	60
BTM 7752G	Trilith IC (Integrated High-Current Motor Drivers)	60
BTM 7755G	Trilith IC (Integrated High-Current Motor Drivers)	60
BTM 7810K	Trilith IC (Integrated High-Current Motor Drivers)	60
BTM 7811K	Trilith IC (Integrated High-Current Motor Drivers)	60
BTN 7930B	NovalithiC™ (Integrated High-Current Motor Drivers)	61
BTN 7930P	NovalithiC™ (Integrated High-Current Motor Drivers)	61
BTN 7930S	NovalithiC™ (Integrated High-Current Motor Drivers)	61
BTN 7933B	NovalithiC™ (Integrated High-Current Motor Drivers)	61
BTN 7960B	NovalithiC™ (Integrated High-Current Motor Drivers)	61
BTN 7960P	NovalithiC™ (Integrated High-Current Motor Drivers)	61
BTN 7960S	NovalithiC™ (Integrated High-Current Motor Drivers)	61
BTN 7963B	NovalithiC™ (Integrated High-Current Motor Drivers)	61
BTN 7970B	NovalithiC™ (Integrated High-Current Motor Drivers)	61
BTN 7970P	NovalithiC™ (Integrated High-Current Motor Drivers)	61
BTN 7970S	NovalithiC™ (Integrated High-Current Motor Drivers)	61
BTN 7971B	NovalithiC™ (Integrated High-Current Motor Drivers)	61
BTN 7973B	NovalithiC™ (Integrated High-Current Motor Drivers)	61
BTN 8946TA	NovalithiC™ (Integrated High-Current Motor Drivers)	61
BTN 8960TA	NovalithiC™ (Integrated High-Current Motor Drivers)	61
BTN 8980TA	NovalithiC™ (Integrated High-Current Motor Drivers)	61
BTS 117TC	HITFET™: Low-Side Protected Switch	29
BTS 118D	HITFET™: Low-Side Protected Switch	29
BTS 133TC	HITFET™: Low-Side Protected Switch	29
BTS 134D	HITFET™: Low-Side Protected Switch	29
BTS 141TC	HITFET™: Low-Side Protected Switch	29
BTS 142D	HITFET™: Low-Side Protected Switch	29
BTS 149	HITFET™: Low-Side Protected Switch	29
BTS 244Z	TEMPFET™: Temperature Protected Switch	27
BTS 247Z	TEMPFET™: Temperature Protected Switch	27
BTS 282Z	TEMPFET™: Temperature Protected Switch	27
BTS 3028SDL	HITFET™: Low-Side Protected Switch	29
BTS 3028SDR	HITFET™: Low-Side Protected Switch	29
BTS 3046SDL	HITFET™: Low-Side Protected Switch	29
BTS 3046SDR	HITFET™: Low-Side Protected Switch	29
BTS 3104SDL	HITFET™: Low-Side Protected Switch	29
BTS 3104SDR	HITFET™: Low-Side Protected Switch	29
BTS 3110N	HITFET™: Low-Side Protected Switch	29
BTS 3118D	HITFET™: Low-Side Protected Switch	29
BTS 3118N	HITFET™: Low-Side Protected Switch	29
BTS 3134D	HITFET™: Low-Side Protected Switch	29
BTS 3134N	HITFET™: Low-Side Protected Switch	29
BTS 3142D	HITFET™: Low-Side Protected Switch	29
BTS 3160D	HITFET™: Low-Side Protected Switch	29
BTS 3205G	HITFET™: Low-Side Protected Switch	29
BTS 3205N	HITFET™: Low-Side Protected Switch	29
BTS 3207N	HITFET™: Low-Side Protected Switch	29
BTS 3256D	HITFET™: Low-Side Protected Switch	29
BTS 3405G	HITFET™: Low-Side Protected Switch	29

Type List	Product Family	Page
BTS 3408G	HITFET™: Low-Side Protected Switch	29
BTS 3410G	HITFET™: Low-Side Protected Switch	29
BTS 3800SL	HITFET™: Low-Side Protected Switch	29
BTS 4130QGA	PROFET™: Smart High-Side Switch	42
BTS 4140N	PROFET™: Smart High-Side Switch	40
BTS 4141N	PROFET™: Smart High-Side Switch	40
BTS 4142N	PROFET™: Smart High-Side Switch	40
BTS 4160DGA	PROFET™: Smart High-Side Switch	42
BTS 4175SGA	PROFET™: Smart High-Side Switch	40
BTS 428L2	PROFET™: Smart High-Side Switch	42
BTS 4300SGA	PROFET™: Smart High-Side Switch	40
BTS 432E2	PROFET™: Smart High-Side Switch	42
BTS 441R	PROFET™: Smart High-Side Switch	42
BTS 441T	PROFET™: Smart High-Side Switch	40
BTS 442E2	PROFET™: Smart High-Side Switch	42
BTS 443P	PROFET™: Smart High-Side Switch	42
BTS 452R	PROFET™: Smart High-Side Switch	40
BTS 452T	PROFET™: Smart High-Side Switch	40
BTS 462T	PROFET™: Smart High-Side Switch	40
BTS 4880-R	PROFET™: Smart High-Side Switch	40
BTS 50050-1EGA	PROFET™: Smart High-Side Switch	44
BTS 50055-1TMA	PROFET™: Smart High-Side Switch	44
BTS 50055-1TMB	PROFET™: Smart High-Side Switch	44
BTS 50055-1TMC	PROFET™: Smart High-Side Switch	44
BTS 50060-1EGA	PROFET™: Smart High-Side Switch	44
BTS 50060-1TEA	PROFET™: Smart High-Side Switch	44
BTS 50070-1EGA	PROFET™: Smart High-Side Switch	44
BTS 50070-1TMA	PROFET™: Smart High-Side Switch	44
BTS 50070-1TMB	PROFET™: Smart High-Side Switch	44
BTS 50080-1EGA	PROFET™: Smart High-Side Switch	44
BTS 50080-1TEA	PROFET™: Smart High-Side Switch	44
BTS 50080-1TEB	PROFET™: Smart High-Side Switch	44
BTS 50080-1TMA	PROFET™: Smart High-Side Switch	44
BTS 50080-1TMB	PROFET™: Smart High-Side Switch	44
BTS 50085-1TMA	PROFET™: Smart High-Side Switch	44
BTS 50085-1TMB	PROFET™: Smart High-Side Switch	44
BTS 5012SDA	PROFET™: Smart High-Side Switch	42
BTS 5014SDA	PROFET™: Smart High-Side Switch	42
BTS 5016SDA	PROFET™: Smart High-Side Switch	42
BTS 5020-2EKA	PROFET™: Smart High-Side Switch	44
BTS 5030-2EKA	PROFET™: Smart High-Side Switch	44
BTS 5045-2EKA	PROFET™: Smart High-Side Switch	44
BTS 5090-2EKA	PROFET™: Smart High-Side Switch	44
BTS 5120-2EKA	PROFET™: Smart High-Side Switch	44
BTS 5180-2EKA	PROFET™: Smart High-Side Switch	44
BTS 5210 G	PROFET™: Smart High-Side Switch	42
BTS 5210 L	PROFET™: Smart High-Side Switch	42
BTS 5215L	PROFET™: Smart High-Side Switch	42
BTS 5264SF	SPI Power Controller (SPOC) for Advanced Light Control	48
BTS 5266SF	SPI Power Controller (SPOC) for Advanced Light Control	48
BTS 5268SF	SPI Power Controller (SPOC) for Advanced Light Control	48
BTS 5274SF	SPI Power Controller (SPOC) for Advanced Light Control	48
BTS 5276SF	SPI Power Controller (SPOC) for Advanced Light Control	48
BTS 5278SF	SPI Power Controller (SPOC) for Advanced Light Control	48
BTS 5460SF	SPI Power Controller (SPOC) for Advanced Light Control	48
BTS 5480SF	SPI Power Controller (SPOC) for Advanced Light Control	48
BTS 550P	PROFET™: Smart High-Side Switch	44
BTS 555	PROFET™: Smart High-Side Switch	44
BTS 5562E	SPI Power Controller (SPOC) for Advanced Light Control	48
BTS 5566G	SPI Power Controller (SPOC) for Advanced Light Control	48

Glossary

Type List	Product Family	Page
BTS 5572E	SPI Power Controller (SPOC) for Advanced Light Control	48
BTS 5576G	SPI Power Controller (SPOC) for Advanced Light Control	48
BTS 5590G	SPI Power Controller (SPOC) for Advanced Light Control	48
BTS 5662E	SPI Power Controller (SPOC) for Advanced Light Control	48
BTS 5672E	SPI Power Controller (SPOC) for Advanced Light Control	48
BTS 5682E	SPI Power Controller (SPOC) for Advanced Light Control	48
BTS 6133D	PROFET™: Smart High-Side Switch	42
BTS 6142D	PROFET™: Smart High-Side Switch	42
BTS 6143D	PROFET™: Smart High-Side Switch	42
BTS 6163D	PROFET™: Smart High-Side Switch	42
BTS 640S2G	PROFET™: Smart High-Side Switch	44
BTS 6460SF	SPI Power Controller (SPOC) for Advanced Light Control	48
BTS 6480SF	SPI Power Controller (SPOC) for Advanced Light Control	48
BTS 7111L	PROFET™: Smart High-Side Switch	40
BTS 712N1	PROFET™: Smart High-Side Switch	40
BTS 716G	PROFET™: Smart High-Side Switch	42
BTS 716GB	PROFET™: Smart High-Side Switch	42
BTS 721L1	PROFET™: Smart High-Side Switch	42
BTS 723GW	PROFET™: Smart High-Side Switch	42
BTS 724G	PROFET™: Smart High-Side Switch	42
BTS 730	PROFET™: Smart High-Side Switch	40
BTS 740S2	PROFET™: Smart High-Side Switch	44
IPB 100N04S2-04	OptiMOST™ 40V (Planar)	14
IPB 100N04S2L-03	OptiMOST™ 40V (Planar)	14
IPB 100N04S4-H2	OptiMOST™-T2 40V (Trench)	17
IPB 100N06S2-05	OptiMOST™ 55V (Planar)	15
IPB 100N06S2L-05	OptiMOST™ 55V (Planar)	15
IPB 100N08S2-07	OptiMOST™ 75V (Planar)	16
IPB 100N08S2L-07	OptiMOST™ 75V (Planar)	16
IPB 100N10S3-05	OptiMOST™-T 100V (Trench)	16
IPB 120N04S4-01	OptiMOST™-T2 40V (Trench)	17
IPB 120N04S4-02	OptiMOST™-T2 40V (Trench)	17
IPB 120N06S4-02	OptiMOST™-T2 60V (Trench)	18
IPB 120N06S4-03	OptiMOST™-T2 60V (Trench)	18
IPB 120N06S4-H1	OptiMOST™-T2 60V (Trench)	18
IPB 120P04P4-04	OptiMOST™-P2 40V (Trench)	20
IPB 120P04P4L-03	OptiMOST™-P2 40V (Trench)	20
IPB 160N04S2-03	OptiMOST™ 40V (Planar)	14
IPB 160N04S2L-03	OptiMOST™ 40V (Planar)	14
IPB 160N04S4-H1	OptiMOST™-T2 40V (Trench)	17
IPB 180N03S4L-01	OptiMOST™-T2 30V (Trench)	17
IPB 180N03S4L-H0	OptiMOST™-T2 30V (Trench)	17
IPB 180N04S4-00	OptiMOST™-T2 40V (Trench)	17
IPB 180N04S4-01	OptiMOST™-T2 40V (Trench)	17
IPB 180N04S4-H0	OptiMOST™-T2 40V (Trench)	17
IPB 180N06S4-H1	OptiMOST™-T2 60V (Trench)	18
IPB 180P04P4-03	OptiMOST™-P2 40V (Trench)	20
IPB 180P04P4L-02	OptiMOST™-P2 40V (Trench)	20
IPB 22N03S4L-15	OptiMOST™-T2 30V (Trench)	17
IPB 45N04S4L-08	OptiMOST™-T2 40V (Trench)	18
IPB 45N06S4-09	OptiMOST™-T2 60V (Trench)	19
IPB 45N06S4L-08	OptiMOST™-T2 60V (Trench)	19
IPB 45P03P4L-11	OptiMOST™-T2 30V P-Channel (Trench)	19
IPB 50N10S3L-16	OptiMOST™-T 100V (Trench)	16
IPB 70N04S4-06	OptiMOST™-T2 40V (Trench)	18
IPB 70N10S3-12	OptiMOST™-T 100V (Trench)	16
IPB 70N10S3L-12	OptiMOST™-T 100V (Trench)	16
IPB 70P04P4-09	OptiMOST™-P2 40V (Trench)	20
IPB 70P04P4L-08	OptiMOST™-P2 40V (Trench)	20
IPB 77N06S2-12	OptiMOST™ 55V (Planar)	15

Type List	Product Family	Page
IPB 80N03S4L-02	OptiMOST™-T2 30V (Trench)	17
IPB 80N03S4L-03	OptiMOST™-T2 30V (Trench)	17
IPB 80N04S2-04	OptiMOST™ 40V (Planar)	14
IPB 80N04S2-H4	OptiMOST™ 40V (Planar)	14
IPB 80N04S2L-03	OptiMOST™ 40V (Planar)	14
IPB 80N04S4-03	OptiMOST™-T2 40V (Trench)	17
IPB 80N04S4-04	OptiMOST™-T2 40V (Trench)	18
IPB 80N04S4L-04	OptiMOST™-T2 40V (Trench)	18
IPB 80N06S2-05	OptiMOST™ 55V (Planar)	15
IPB 80N06S2-07	OptiMOST™ 55V (Planar)	15
IPB 80N06S2-08	OptiMOST™ 55V (Planar)	15
IPB 80N06S2-09	OptiMOST™ 55V (Planar)	15
IPB 80N06S2-H5	OptiMOST™ 55V (Planar)	15
IPB 80N06S2L-05	OptiMOST™ 55V (Planar)	15
IPB 80N06S2L-06	OptiMOST™ 55V (Planar)	15
IPB 80N06S2L-07	OptiMOST™ 55V (Planar)	15
IPB 80N06S2L-09	OptiMOST™ 55V (Planar)	15
IPB 80N06S2L-11	OptiMOST™ 55V (Planar)	15
IPB 80N06S2L-H5	OptiMOST™ 55V (Planar)	15
IPB 80N06S4-05	OptiMOST™-T2 60V (Trench)	19
IPB 80N06S4-07	OptiMOST™-T2 60V (Trench)	19
IPB 80N06S4L-05	OptiMOST™-T2 60V (Trench)	18
IPB 80N06S4L-07	OptiMOST™-T2 60V (Trench)	19
IPB 80N08S2-07	OptiMOST™ 75V (Planar)	16
IPB 80N08S2L-07	OptiMOST™ 75V (Planar)	16
IPB 80P03P4-05	OptiMOST™-T2 30V P-Channel (Trench)	19
IPB 80P03P4L-04	OptiMOST™-T2 30V P-Channel (Trench)	19
IPB 80P03P4L-07	OptiMOST™-T2 30V P-Channel (Trench)	19
IPB 80P04P4-05	OptiMOST™-P2 40V (Trench)	20
IPB 80P04P4-07	OptiMOST™-P2 40V (Trench)	20
IPB 80P04P4L-04	OptiMOST™-P2 40V (Trench)	20
IPB 80P04P4L-06	OptiMOST™-P2 40V (Trench)	20
IPB 90N04S4-02	OptiMOST™-T2 40V (Trench)	17
IPB 90N06S4-04	OptiMOST™-T2 60V (Trench)	18
IPB 90N06S4L-04	OptiMOST™-T2 60V (Trench)	18
IPD 100N04S4-02	OptiMOST™-T2 40V (Trench)	17
IPD 100N06S4-03	OptiMOST™-T2 60V (Trench)	18
IPD 14N06S2-80	OptiMOST™ 55V (Planar)	15
IPD 15N06S2L-64	OptiMOST™ 55V (Planar)	15
IPD 22N08S2L-50	OptiMOST™ 75V (Planar)	16
IPD 25N06S2-40	OptiMOST™ 55V (Planar)	15
IPD 25N06S4L-30	OptiMOST™-T2 60V (Trench)	18
IPD 26N06S2L-35	OptiMOST™ 55V (Planar)	15
IPD 30N03S2L-07	OptiMOST™ 30V (Planar)	14
IPD 30N03S2L-10	OptiMOST™ 30V (Planar)	14
IPD 30N03S2L-20	OptiMOST™ 30V (Planar)	14
IPD 30N03S4L-09	OptiMOST™-T2 30V (Trench)	17
IPD 30N03S4L-14	OptiMOST™-T2 30V (Trench)	17
IPD 30N06S2-15	OptiMOST™ 55V (Planar)	15
IPD 30N06S2-23	OptiMOST™ 55V (Planar)	15
IPD 30N06S2L-13	OptiMOST™ 55V (Planar)	15
IPD 30N06S2L-23	OptiMOST™ 55V (Planar)	15
IPD 30N06S4L-23	OptiMOST™-T2 60V (Trench)	18
IPD 30N08S2-22	OptiMOST™ 75V (Planar)	16
IPD 30N08S2L-21	OptiMOST™ 75V (Planar)	16
IPD 30N10S3L-34	OptiMOST™-T 100V (Trench)	16
IPD 35N10S3L-26	OptiMOST™-T 100V (Trench)	16
IPD 40N03S4L-08	OptiMOST™-T2 30V (Trench)	17
IPD 50N03S2-07	OptiMOST™ 30V (Planar)	14
IPD 50N03S2L-06	OptiMOST™ 30V (Planar)	14

Type List	Product Family	Page
IPD 50N03S4L-06	OptiMOS™-T2 30V (Trench)	17
IPD 50N04S4-08	OptiMOS™-T2 40V (Trench)	17
IPD 50N04S4-10	OptiMOS™-T2 40V (Trench)	17
IPD 50N04S4L-08	OptiMOS™-T2 40V (Trench)	17
IPD 50N06S2-14	OptiMOS™ 55V (Planar)	15
IPD 50N06S2L-13	OptiMOS™ 55V (Planar)	15
IPD 50N06S4-09	OptiMOS™-T2 60V (Trench)	18
IPD 50N06S4L-08	OptiMOS™-T2 60V (Trench)	18
IPD 50N06S4L-12	OptiMOS™-T2 60V (Trench)	18
IPD 50N10S3L-16	OptiMOS™-T2 100V (Trench)	16
IPD 50P03P4L-11	OptiMOS™-T2 30V P-Channel (Trench)	19
IPD 50P04P4-13	OptiMOS™-P2 40V (Trench)	20
IPD 50P04P4L-11	OptiMOS™-T2 40V P-Channel (Trench)	20
IPD 70N03S4L-04	OptiMOS™-T2 30V (Trench)	17
IPD 70N10S3-12	OptiMOS™-T 100V (Trench)	16
IPD 70N10S3L-12	OptiMOS™-T 100V (Trench)	16
IPD 70P04P4-09	OptiMOS™-T2 40V P-Channel (Trench)	20
IPD 70P04P4L-08	OptiMOS™-P2 40V (Trench)	20
IPD 75N04S4-06	OptiMOS™-T2 40V (Trench)	17
IPD 80P03P4L-07	OptiMOS™-T2 30V P-Channel (Trench)	19
IPD 85P04P4-07	OptiMOS™-P2 40V (Trench)	20
IPD 85P04P4L-06	OptiMOS™-T2 40V (Trench)	20
IPD 90N03S4L-02	OptiMOS™-T2 30V (Trench)	17
IPD 90N03S4L-03	OptiMOS™-T2 30V (Trench)	17
IPD 90N04S4-02	OptiMOS™-T2 40V (Trench)	17
IPD 90N04S4-03	OptiMOS™-T2 40V (Trench)	17
IPD 90N04S4-04	OptiMOS™-T2 40V (Trench)	17
IPD 90N04S4-05	OptiMOS™-T2 40V (Trench)	17
IPD 90N04S4L-04	OptiMOS™-T2 40V (Trench)	17
IPD 90N06S4-04	OptiMOS™-T2 60V (Trench)	18
IPD 90N06S4-05	OptiMOS™-T2 60V (Trench)	18
IPD 90N06S4-07	OptiMOS™-T2 60V (Trench)	18
IPD 90N06S4L-03	OptiMOS™-T2 60V (Trench)	18
IPD 90N06S4L-05	OptiMOS™-T2 60V (Trench)	18
IPD 90N06S4L-06	OptiMOS™-T2 60V (Trench)	18
IPD 90P03P4-04	OptiMOS™-T2 30V P-Channel (Trench)	19
IPD 90P03P4L-04	OptiMOS™-T2 30V P-Channel (Trench)	19
IPD 90P04P4-05	OptiMOS™-T2 40V P-Channel (Trench)	20
IPD 90P04P4L-04	OptiMOS™-P2 40V (Trench)	20
IPG 20N04S4-08	OptiMOS™ T2- Dual N-Channel	21
IPG 20N04S4-09	OptiMOS™ T2- Dual N-Channel	21
IPG 20N04S4-12	OptiMOS™ T2- Dual N-Channel	21
IPG 20N04S4L-07	OptiMOS™ T2- Dual N-Channel	21
IPG 20N04S4L-08	OptiMOS™ T2- Dual N-Channel	21
IPG 20N04S4L-11	OptiMOS™ T2- Dual N-Channel	21
IPG 20N06S2L-35	OptiMOS™ T2- Dual N-Channel	21
IPG 20N06S2L-50	OptiMOS™ T2- Dual N-Channel	21
IPG 20N06S2L-65	OptiMOS™ T2- Dual N-Channel	21
IPG 20N06S4-15	OptiMOS™ T2- Dual N-Channel	21
IPG 20N06S4L-11	OptiMOS™ T2- Dual N-Channel	21
IPG 20N06S4L-14	OptiMOS™ T2- Dual N-Channel	21
IPG 20N06S4L-26	OptiMOS™ T2- Dual N-Channel	21
IPI 100N04S4-H2	OptiMOS™-T2 40V (Trench)	18
IPI 100N08S2-07	OptiMOS™ 75V (Planar)	16
IPI 100N10S3-05	OptiMOS™-T 100V (Trench)	16
IPI 120N04S4-01	OptiMOS™-T2 40V (Trench)	18
IPI 120N04S4-02	OptiMOS™-T2 40V (Trench)	18
IPI 120N06S4-02	OptiMOS™-T2 60V (Trench)	19
IPI 120N06S4-03	OptiMOS™-T2 60V (Trench)	19
IPI 120N06S4-H1	OptiMOS™-T2 60V (Trench)	19

Type List	Product Family	Page
IPI 120P04P4-04	OptiMOS™-P2 40V (Trench)	21
IPI 120P04P4L-03	OptiMOS™-P2 40V (Trench)	21
IPI 22N03S4L-15	OptiMOS™-T2 30V (Trench)	17
IPI 45N06S4-09	OptiMOS™-T2 60V (Trench)	19
IPI 45N06S4L-08	OptiMOS™-T2 60V (Trench)	19
IPI 45P03P4L-11	OptiMOS™-T2 30V P-Channel (Trench)	19
IPI 50N10S3L-16	OptiMOS™-T 100V (Trench)	16
IPI 70N04S4-06	OptiMOS™-T2 40V (Trench)	18
IPI 70N10S3-12	OptiMOS™-T 100V (Trench)	16
IPI 70N10S3L-12	OptiMOS™-T 100V (Trench)	16
IPI 70P04P4-09	OptiMOS™-P2 40V (Trench)	21
IPI 70P04P4L-08	OptiMOS™-P2 40V (Trench)	21
IPI 80N03S4L-03	OptiMOS™-T2 30V (Trench)	17
IPI 80N03S4L-04	OptiMOS™-T2 30V (Trench)	17
IPI 80N04S2-04	OptiMOS™ 40V (Planar)	14
IPI 80N04S2-H4	OptiMOS™ 40V (Planar)	14
IPI 80N04S4-03	OptiMOS™-T2 40V (Trench)	18
IPI 80N04S4-04	OptiMOS™-T2 40V (Trench)	18
IPI 80N04S4L-04	OptiMOS™-T2 40V (Trench)	18
IPI 80N06S2-07	OptiMOS™ 55V (Planar)	15
IPI 80N06S2-08	OptiMOS™ 55V (Planar)	15
IPI 80N06S2L-05	OptiMOS™ 55V (Planar)	15
IPI 80N06S2L-11	OptiMOS™ 55V (Planar)	15
IPI 80N06S4-05	OptiMOS™-T2 60V (Trench)	19
IPI 80N06S4-07	OptiMOS™-T2 60V (Trench)	19
IPI 80N06S4L-05	OptiMOS™-T2 60V (Trench)	19
IPI 80N06S4L-07	OptiMOS™-T2 60V (Trench)	19
IPI 80N08S2-07	OptiMOS™ 75V (Planar)	16
IPI 80P03P4L-04	OptiMOS™-T2 30V P-Channel (Trench)	19
IPI 80P03P4L-07	OptiMOS™-T2 30V P-Channel (Trench)	19
IPI 80P04P4-05	OptiMOS™-P2 40V (Trench)	21
IPI 80P04P4-07	OptiMOS™-P2 40V (Trench)	21
IPI 80P04P4L-04	OptiMOS™-P2 40V (Trench)	21
IPI 80P04P4L-06	OptiMOS™-P2 40V (Trench)	21
IPI 90N04S4-02	OptiMOS™-T2 40V (Trench)	18
IPI 90N06S4-04	OptiMOS™-T2 60V (Trench)	19
IPI 90N06S4L-04	OptiMOS™-T2 60V (Trench)	19
IPP 100N04S2-04	OptiMOS™ 40V (Planar)	14
IPP 100N04S2L-03	OptiMOS™ 40V (Planar)	14
IPP 100N04S4-H2	OptiMOS™-T2 40V (Trench)	18
IPP 100N06S2-05	OptiMOS™ 55V (Planar)	15
IPP 100N06S2L-05	OptiMOS™ 55V (Planar)	15
IPP 100N08S2-07	OptiMOS™ 75V (Planar)	16
IPP 100N08S2L-07	OptiMOS™ 75V (Planar)	16
IPP 100N10S3-05	OptiMOS™-T 100V (Trench)	16
IPP 120N04S4-01	OptiMOS™-T2 40V (Trench)	18
IPP 120N04S4-02	OptiMOS™-T2 40V (Trench)	18
IPP 120N06S4-02	OptiMOS™-T2 60V (Trench)	19
IPP 120N06S4-03	OptiMOS™-T2 60V (Trench)	19
IPP 120N06S4-H1	OptiMOS™-T2 60V (Trench)	19
IPP 120P04P4-04	OptiMOS™-P2 40V (Trench)	20
IPP 120P04P4L-03	OptiMOS™-P2 40V (Trench)	20
IPP 22N03S4L-15	OptiMOS™-T2 30V (Trench)	17
IPP 45N06S4-09	OptiMOS™-T2 60V (Trench)	19
IPP 45N06S4L-08	OptiMOS™-T2 60V (Trench)	19
IPP 45P03P4L-11	OptiMOS™-T2 30V P-Channel (Trench)	20
IPP 50N10S3L-16	OptiMOS™-T 100V (Trench)	16
IPP 70N04S4-06	OptiMOS™-T2 40V (Trench)	18
IPP 70N10S3-12	OptiMOS™-T 100V (Trench)	16
IPP 70N10S3L-12	OptiMOS™-T 100V (Trench)	16

Glossary

Type List	Product Family	Page
IPP 70P04P4-09	OptiMOST™-P2 40V (Trench)	21
IPP 70P04P4L-08	OptiMOST™-P2 40V (Trench)	21
IPP 77N06S2-12	OptiMOST™ 55V (Planar)	15
IPP 80N03S4L-03	OptiMOST™-T2 30V (Trench)	17
IPP 80N03S4L-04	OptiMOST™-T2 30V (Trench)	17
IPP 80N04S2-04	OptiMOST™ 40V (Planar)	14
IPP 80N04S2-H4	OptiMOST™ 40V (Planar)	14
IPP 80N04S2L-03	OptiMOST™ 40V (Planar)	14
IPP 80N04S4-03	OptiMOST™-T2 40V (Trench)	18
IPP 80N04S4-04	OptiMOST™-T2 40V (Trench)	18
IPP 80N04S4L-04	OptiMOST™-T2 40V (Trench)	18
IPP 80N06S2-05	OptiMOST™ 55V (Planar)	15
IPP 80N06S2-07	OptiMOST™ 55V (Planar)	15
IPP 80N06S2-08	OptiMOST™ 55V (Planar)	15
IPP 80N06S2-09	OptiMOST™ 55V (Planar)	15
IPP 80N06S2-H5	OptiMOST™ 55V (Planar)	15
IPP 80N06S2L-05	OptiMOST™ 55V (Planar)	15
IPP 80N06S2L-06	OptiMOST™ 55V (Planar)	15
IPP 80N06S2L-07	OptiMOST™ 55V (Planar)	15
IPP 80N06S2L-09	OptiMOST™ 55V (Planar)	15
IPP 80N06S2L-11	OptiMOST™ 55V (Planar)	15
IPP 80N06S2L-H5	OptiMOST™ 55V (Planar)	15
IPP 80N06S4-05	OptiMOST™-T2 60V (Trench)	19
IPP 80N06S4-07	OptiMOST™-T2 60V (Trench)	19
IPP 80N06S4L-05	OptiMOST™-T2 60V (Trench)	19
IPP 80N06S4L-07	OptiMOST™-T2 60V (Trench)	19
IPP 80N08S2-07	OptiMOST™ 75V (Planar)	16
IPP 80N08S2L-07	OptiMOST™ 75V (Planar)	16
IPP 80P03P4L-04	OptiMOST™-T2 30V P-Channel (Trench)	20
IPP 80P03P4L-07	OptiMOST™-T2 30V P-Channel (Trench)	20
IPP 80P04P4-05	OptiMOST™-P2 40V (Trench)	20
IPP 80P04P4-07	OptiMOST™-P2 40V (Trench)	21
IPP 80P04P4L-04	OptiMOST™-P2 40V (Trench)	20
IPP 80P04P4L-06	OptiMOST™-P2 40V (Trench)	21
IPP 90N04S4-02	OptiMOST™-T2 40V (Trench)	18
IPP 90N06S4-04	OptiMOST™-T2 60V (Trench)	19
IPP 90N06S4L-04	OptiMOST™-T2 60V (Trench)	19
SN7002N	Small Signal SiPMOST™ N-Channel 60V	23
SN7002W	Small Signal SiPMOST™ N-Channel 60V	23
TCA 3727G	Stepper Motor Driver (Integrated Smart Power Motor Drivers)	55
TLD 1211SJ	Infineon® Basic LED Driver	52
TLD 5045EJ	Infineon® Power LED Driver	53
TLD 5085EJ	Infineon® Power LED Driver	53
TLD 5095EL	Infineon® Power LED Driver	53
TLD 5098EL	Infineon® Power LED Driver	53
TLD 7305EK	Infineon® LIN LED Driver	53
TLD 7306EK	Infineon® LIN LED Driver	53
TLD 7395EK	Infineon® LIN LED Driver	53
TLD 7396EK	Infineon® LIN LED Driver	53
TLE 4205G	Servo Driver (Integrated Smart Power Motor Drivers)	56
TLE 4206-2G	Servo Driver (Integrated Smart Power Motor Drivers)	56
TLE 4206-4G	Servo Driver (Integrated Smart Power Motor Drivers)	56
TLE 4206G	Servo Driver (Integrated Smart Power Motor Drivers)	56
TLE 4207G	Motor Control IC (Integrated Smart Power Motor Drivers)	57
TLE 4208G	Motor Control IC (Integrated Smart Power Motor Drivers)	57
TLE 4208G	Stepper Motor Driver (Integrated Smart Power Motor Drivers)	55
TLE 4209A	Servo Driver (Integrated Smart Power Motor Drivers)	56
TLE 4209G	Servo Driver (Integrated Smart Power Motor Drivers)	56
TLE 4234A	Power Supply Single Regulator	66
TLE 4236A	Power Supply Single Regulator	66

Type List	Product Family	Page
TLE 4240-2M	Infineon® Basic LED Driver	52
TLE 4240-3M	Infineon® Basic LED Driver	52
TLE 4241GM	Infineon® Basic LED Driver	52
TLE 4242G	Infineon® Basic LED Driver	52
TLE 4250-2	Trackers	68
TLE 4251	Trackers	68
TLE 4252	Trackers	68
TLE 4253	Trackers	68
TLE 4254	Trackers	68
TLE 4262	Power Supply Single Regulator	66
TLE 4263/-2	Power Supply Single Regulator	66
TLE 4264	Power Supply Single Regulator	66
TLE 4264-2	Power Supply Single Regulator	66
TLE 4264A	Power Supply Single Regulator	66
TLE 4266	Power Supply Single Regulator	66
TLE 4266-2	Power Supply Single Regulator	66
TLE 4266A	Power Supply Single Regulator	66
TLE 4267	Power Supply Single Regulator	66
TLE 4268	Power Supply Single Regulator	66
TLE 4269A	Power Supply Single Regulator	66
TLE 4270-2	Power Supply Single Regulator	66
TLE 4271-2	Power Supply Single Regulator	66
TLE 4274A	Power Supply Single Regulator	66
TLE 4275A	Power Supply Single Regulator	66
TLE 4276A	Power Supply Single Regulator	66
TLE 4278	Power Supply Single Regulator	66
TLE 4279A	Power Supply Single Regulator	66
TLE 4284	Power Supply Single Regulator	66
TLE 4285	Power Supply Single Regulator	66
TLE 4286	Power Supply Single Regulator	66
TLE 4287	Power Supply Single Regulator	66
TLE 4290	Power Supply Single Regulator	66
TLE 4294	Power Supply Single Regulator	66
TLE 4295	Power Supply Single Regulator	66
TLE 4296	Power Supply Single Regulator	66
TLE 4296-2	Power Supply Single Regulator	66
TLE 4299AG	Power Supply Single Regulator	66
TLE 4299AGM/E	Power Supply Single Regulator	66
TLE 4470	Power Supply Multiple output regulator	68
TLE 4471	Power Supply Multiple output regulator	68
TLE 4473	Power Supply Multiple output regulator	68
TLE 4476	Power Supply Multiple output regulator	68
TLE 4675	Power Supply Single Regulator	66
TLE 4678	Power Supply Single Regulator	66
TLE 4726G	Stepper Motor Driver (Integrated Smart Power Motor Drivers)	55
TLE 4729G	Stepper Motor Driver (Integrated Smart Power Motor Drivers)	55
TLE 5205-2	Powertrain H-Bridges for Electronic Throttle Control	80
TLE 5205-2G	Powertrain H-Bridges for Electronic Throttle Control	80
TLE 5205-2GP	Powertrain H-Bridges for Electronic Throttle Control	80
TLE 5205-2S	Powertrain H-Bridges for Electronic Throttle Control	80
TLE 5206-2	Powertrain H-Bridges for Electronic Throttle Control	80
TLE 5206-2G	Powertrain H-Bridges for Electronic Throttle Control	80
TLE 5206-2GP	Powertrain H-Bridges for Electronic Throttle Control	80
TLE 5206-2S	Powertrain H-Bridges for Electronic Throttle Control	80
TLE 6208-3G	Motor Control IC (Integrated Smart Power Motor Drivers)	57
TLE 6208-6G	Motor Control IC (Integrated Smart Power Motor Drivers)	57
TLE 6209R	Powertrain H-Bridges for Electronic Throttle Control	80
TLE 6217G	Flex - Smart Multichannel Switch for Powertrain/Safety Applications	36
TLE 6220GP	Flex - Smart Multichannel Switch for Powertrain/Safety Applications	36
TLE 6230GP	Flex - Smart Multichannel Switch for Powertrain/Safety Applications	36

Type List	Product Family	Page
TLE 6232GP	Flex - Smart Multichannel Switch for Powertrain/Safety Applications	36
TLE 6240GP	Flex - Smart Multichannel Switch for Powertrain/Safety Applications	36
TLE 6244x	Flex - Smart Multichannel Switch for Powertrain/Safety Applications	36
TLE 6250G	CAN Transceiver	75
TLE 6250GV33	CAN Transceiver	75
TLE 6251-2G	CAN Transceiver	75
TLE 6251-3G	CAN Transceiver	75
TLE 6251DS	CAN Transceiver	75
TLE 6254-3G	CAN Transceiver	75
TLE 6258-2G	LIN Transceiver	75
TLE 6263-3G	System Basis Chip (SBC)	76
TLE 6266G	System Basis Chip (SBC)	76
TLE 6270R	Constant Current Control IC	78
TLE 6280GP	3-Phase Bridge Driver IC (Gate Driver ICs for External MOSFETs)	63
TLE 6281G	H-Bridge (Gate Driver ICs for External MOSFETs)	63
TLE 6282G	H-Bridge (Gate Driver ICs for External MOSFETs)	63
TLE 6284G	H-Bridge (Gate Driver ICs for External MOSFETs)	63
TLE 6285G	System Basis Chip (SBC)	76
TLE 6286G	System Basis Chip (SBC)	76
TLE 6288R	Constant Current Control IC	79
TLE 6365	DC/DC Converters	70
TLE 6368	DC/DC Converters	70
TLE 6389-2GV	DC/DC Converters	70
TLE 6389-2GV50	DC/DC Converters	70
TLE 6389-3GV50	DC/DC Converters	70
TLE 6710	Airbag Firing IC	81
TLE 6711	DC/DC Converters	70
TLE 6712	Airbag Firing IC	81
TLE 6714	Airbag Firing IC	81
TLE 7181EM	H-Bridge (Gate Driver ICs for External MOSFETs)	63
TLE 7182EM	H-Bridge (Gate Driver ICs for External MOSFETs)	63
TLE 7183F	3-Phase Bridge Driver IC (Gate Driver ICs for External MOSFETs)	63
TLE 7183QJ	3-Phase Bridge Driver IC (Gate Driver ICs for External MOSFETs)	63
TLE 7184F	3-Phase Bridge Driver IC (Gate Driver ICs for External MOSFETs)	63
TLE 7184F-3V	3-Phase Bridge Driver IC (Gate Driver ICs for External MOSFETs)	63
TLE 7185E	3-Phase Bridge Driver IC (Gate Driver ICs for External MOSFETs)	63
TLE 7188F	3-Phase Bridge Driver IC (Gate Driver ICs for External MOSFETs)	63
TLE 7189F	3-Phase Bridge Driver IC (Gate Driver ICs for External MOSFETs)	63
TLE 7189QK	3-Phase Bridge Driver IC (Gate Driver ICs for External MOSFETs)	63
TLE 7209-2R	Powertrain H-Bridges for Electronic Throttle Control	80
TLE 7230R	SPIDER LS Smart Multichannel Switch for Body applications	32
TLE 7231G	SPIDER LS Smart Multichannel Switch for Body applications	32
TLE 7233G	SPIDER LS Smart Multichannel Switch for Body Applications	32
TLE 7234EM	SPIDER HS/LS Smart Multichannel Switch for Body Applications	32
TLE 7234SE	SPIDER HS/LS Smart Multichannel Switch for Body Applications	32
TLE 7235EM	SPIDER HS/LS Smart Multichannel Switch for Body Applications	32
TLE 7235SE	SPIDER HS/LS Smart Multichannel Switch for Body Applications	32
TLE 7236EM	SPIDER HS/LS Smart Multichannel Switch for Body Applications	32
TLE 7236SE	SPIDER HS/LS Smart Multichannel Switch for Body Applications	32
TLE 7237SL	SPIDER HS/LS Smart Multichannel Switch for Body Applications	32
TLE 7238SL	SPIDER HS/LS Smart Multichannel Switch for Body Applications	32
TLE 7239SL	SPIDER HS/LS Smart Multichannel Switch for Body Applications	32
TLE 7240SL	SPIDER LS Smart Multichannel Switch for Body Applications	32
TLE 7241E	Constant Current Control IC	79
TLE 7242-2G	Constant Current Control IC	79
TLE 7243SL	SPIDER LS Smart Multichannel Switch for Body Applications	32
TLE 7244SL	SPIDER LS Smart Multichannel Switch for Body Applications	32
TLE 7250G	CAN Transceiver	75
TLE 7250GVIO	CAN Transceiver	75
TLE 7259-2GE	LIN Transceiver	75

Type List	Product Family	Page
TLE 7259-2GU	LIN Transceiver	75
TLE 7263E	System Basis Chip (SBC)	76
TLE 7269G	LIN Transceiver	75
TLE 7270-2	Power Supply Single Regulator	66
TLE 7272-2	Power Supply Single Regulator	66
TLE 7273-2	Power Supply Single Regulator	66
TLE 7274-2	Power Supply Single Regulator	66
TLE 7276-2	Power Supply Single Regulator	66
TLE 7278-2	Power Supply Single Regulator	66
TLE 7279-2	Power Supply Single Regulator	66
TLE 7368	DC/DC Converters	70
TLE 7368-2	DC/DC Converters	70
TLE 7368-3	DC/DC Converters	70
TLE 7469	Power Supply Multiple output regulator	68
TLE 7714	Airbag Firing IC	81
TLE 7718	Airbag Firing IC	81
TLE 7729	Satellite Receiver IC	81
TLE 7734	Airbag Firing IC	81
TLE 7738	Airbag Firing IC	81
TLE 7810	Embedded Power	82
TLE 7824	Embedded Power	82
TLE 7826	Embedded Power	82
TLE 81025G	Flex - Smart Multichannel Switch for Powertrain/Safety Applications	36
TLE 8104E	Flex - Smart Multichannel Switch for Powertrain/Safety Applications	36
TLE 8110EE	Flex - Smart Multichannel Switch for Powertrain/Safety Applications	36
TLE 8201R	Door Module Ics (Integrated Smart Power Motor Drivers)	58
TLE 8203R	Door Module Ics (Integrated Smart Power Motor Drivers)	58
TLE 8209-2SA	Powertrain H-Bridges for Electronic Throttle Control	80
TLE 8242L	Constant Current Control IC	79
TLE 8250G	CAN Transceiver	75
TLE 8250GVIO	CAN Transceiver	75
TLE 82543	Constant Current Control IC	79
TLE 826x	System Basis Chip (SBC)	76
TLE 8366	DC/DC Converters	70
TLE 8386	DC/DC Converters	70
TLE 8386-2	DC/DC Converters	70
TLE 84106EL	Motor Control IC (Integrated Smart Power Motor Drivers)	57
TLE 84110EL	Motor Control IC (Integrated Smart Power Motor Drivers)	57
TLE 8444SL	Motor Control IC (Integrated Smart Power Motor Drivers)	57
TLE 8444SL	Stepper Motor Driver (Integrated Smart Power Motor Drivers)	55
TLE 8458	System Basis Chip (SBC)	76
TLE 8718SA	Flex - Smart Multichannel Switch for Powertrain/Safety Applications	36
TLE 9832	Embedded Power	82
TLF 4277	Power Supply Single Regulator	66



Living Automotive Excellence – On the Way to Zero-Defect Products and Services

The most valuable aspect of cars is the people they carry. Therefore, safety should never be compromised. This is the most important consideration for everybody involved in making automobiles – from the smallest suppliers to the manufacturers themselves.

As car components become more and more complex, and as the number of control units in vehicles increases, the likelihood of a product failure becomes greater. Quality performance is a key differentiator for automotive market success. Our target of Zero-Defect means:

- No quality events
- Defect-free product launches
- Automotive product quality of zero failed parts per million
- Low non-conformance costs
- Highest quality image in the market
- More business due to satisfied customers

No compromise when it comes to quality

Infineon established the most comprehensive quality program in the semiconductor industry in 2003. The Automotive Excellence Program is founded on four pillars: people, products, processes and production. Due to our “no compromise” policy in all four pillars our program really works. Our employees truly live the credos of Zero Defect, considering the highest quality requirements and understanding the importance of prevention. They are trained to deeply understand the tools and methods used to avoid deviations and to solve problems proactively.



On the way to zero-defect products

On the way to zero-defect products, some examples:

- Excellent requirement management that the product fits your application
- Products with proof of design quality and robustness for harsh automotive environment
- With Advanced Process Control (APC) in wafer production, we realize deviations before they affect the product
- Highest outgoing product quality by intelligent outlier screening (PAT, SBA, wafer pattern recognition)

Automotive excellence is your competitive advantage

In five years the ppm rate for our automotive products decreased by more than 80% down to less than 0.2ppm. This means that there are only two fails within ten million delivered devices. Our quality is clearly seen as the industry benchmark by most of our automotive customers.

Many of our partners have expressed their satisfaction with the quality of our products and the way we execute Automotive Excellence.

- “Best Quality Award Toyota Hirose 2009” for zero defect quality for three years
- “Supplier Performance Award” for the year 2008 from Continental
- “Excellent Supplier Award 2008” from Hitachi Cable Japan
- “German TOPIT Award 2008” for the Automotive Excellence Program

Packages¹⁾

① PG-DSO-8	② PG-DSO-8 (Exposed Pad)	③ PG-DSO-12	④ PG-DSO-14	⑤ PG-DSO-14 (Exposed Pad)	⑥ PG-DSO-16
⑦ PG-DSO-20	⑧ PG-DSO-20 (Power-SO)	⑨ PG-DSO-24	⑩ PG-DSO-28	⑪ PG-DSO-32	⑫ PG-DSO-36
⑬ PG-DSO-36 (Exposed Pad)	⑭ PG-DSO-36 (Power-SO)	⑮ PG-DSO-52	⑯ PG-LQFP-64	⑰ PG-MQFP-64 (Power)	⑱ SC-59
⑲ SC-74	⑳ SCT-595	㉑ SOT-23	㉒ SOT-89	㉓ SOT-143R	㉔ SOT-223
㉕ SOT-323	㉖ SOT-343	㉗ SOT-363	㉘ PG-SSOP-14EP	㉙ PG-SSOP-24	㉚ PG-SSOP-24 (Exposed Pad)
㉛ PG-TDSON-8 dual	㉜ PG-T0252-3 (DPAK)	㉝ PG-T0252-5 (DPAK 5-leg)	㉞ PG-T0263-3 (T0220-3 (SMD))	㉟ PG-T0263-3 (T0220-3 (SMD))	㊱ PG-T0263-5 (T0220-5 (SMD))
㊲ PG-T0263-5 (T0220-5 (SMD))	㊳ PG-T0263-7 (T0220-7 (SMD))	㊴ PG-T0263-7 (T0220-7 (SMD))	㊵ PG-T0263-15	㊶ PG-TQFP-48 (Exposed Pad)	㊷ TSOP-6/6 dual
㊸ PG-TSSOP-28	㊹ PG-VQFN-48	㊺ PG-DIP-8	㊻ PG-DIP-18	㊼ PG-DIP-20	㊽ PG-T0218-5
㊾ PG-T0220-3	㊿ PG-T0220-5	① PG-T0220-5	② PG-T0220-5	③ PG-T0220-7	④ PG-T0220-7
⑤ PG-T0220-7	⑥ PG-T0262-3				

1) For further information on Infineon packages, please visit our internet site at [www.infineon.com/packages]



More detailed information on
Automotive Power Products is
available on our Web Site
[www.infineon.com/automotivepower]

- Data sheets
- Application notes
- Technical articles
- Automotive applications
- Product briefs
- Other documents

Ask Infineon – Infineon Hotline-Service at your fingertips. Where you need it. When you need it.

Infineon offers its toll-free 0800 service hotline as one central number, available 24 / 7 in English and German.

Our global connection service goes way beyond standard operating and switchboard services by offering qualified support on the phone. Call us!

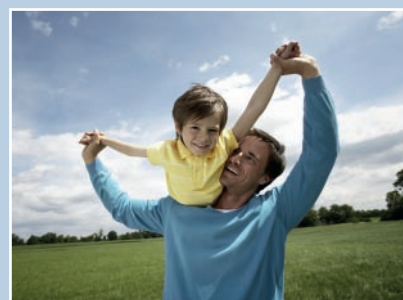
- Germany 0800 951 951 951
- USA 1866 951 9519
- International 00 800 951 951 951
- Direct access +49 89 234-0 (interconnection fee)

Where to Buy Infineon Distribution Partners and Sales Offices

Please use our location finder to get in contact with your nearest Infineon distributor or sales office.

www.infineon.com/WhereToBuy

Infineon Technologies – innovative semiconductor solutions for energy efficiency, mobility and security.



Published by
Infineon Technologies AG
85579 Neubiberg, Germany

© 2011 Infineon Technologies AG.
All Rights Reserved.

Visit us:
www.infineon.com

Order Number: B124-H9343-G2-X-7600
Date: 04 / 2011

ATTENTION PLEASE!

The information given in this document should in no event be regarded as a guarantee of conditions or characteristics ("Beschaffenhheitsgarantie"). With respect to any examples or hints given herein, any typical values stated herein and/or any information regarding the application of the device, Infineon Technologies hereby disclaims any and all warranties and liabilities of any kind, including without limitation warranties of non-infringement of intellectual property rights of any third party.

INFORMATION

For further information on technology, delivery terms and conditions and prices, please contact your nearest Infineon Technologies Office (www.infineon.com).

WARNINGS

Due to technical requirements, components may contain dangerous substances. For information on the types in question, please contact your nearest Infineon Technologies Office. Infineon Technologies Components may only be used in life-support devices or systems with the express written approval of Infineon Technologies, if a failure of such components can reasonably be expected to cause the failure of that life-support device or system, or to affect the safety or effectiveness of that device or system. Life support devices or systems are intended to be implanted in the human body, or to support and/or maintain and sustain and/or protect human life. If they fail, it is reasonable to assume that the health of the user or other persons may be endangered.