

TOSHIBA FIELD EFFECT TRANSISTOR SILICON P CHANNEL MOS TYPE (L^2 - π -MOSV)**2SJ334**

HIGH SPEED, HIGH CURRENT SWITCHING APPLICATIONS
DC-DC CONVERTER, RELAY DRIVE AND MOTOR DRIVE
APPLICATIONS

- 4V Gate Drive
- Low Drain-Source ON Resistance : $R_{DS(ON)} = 29m\Omega$ (Typ.)
- High Forward Transfer Admittance : $|Y_{fs}| = 23S$ (Typ.)
- Low Leakage Current : $I_{DSS} = -100\mu A$ (Max.) ($V_{DS} = -60V$)
- Enhancement-Mode : $V_{th} = -0.8 \sim -2.0V$
($V_{DS} = -10V$, $I_D = -1mA$)

MAXIMUM RATINGS ($T_a = 25^\circ C$)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Drain-Source Voltage		V_{DSS}	-60	V
Drain-Gate Voltage ($R_{GS} = 20k\Omega$)		V_{DGR}	-60	V
Gate-Source Voltage		V_{GSS}	± 20	V
Drain Current	DC	I_D	-30	A
	Pulse	I_{DP}	-120	A
Drain Power Dissipation ($T_c = 25^\circ C$)		P_D	45	W
Single Pulse Avalanche Energy**		E_{AS}	936	mJ
Avalanche Current		I_{AR}	-30	A
Repetitive Avalanche Energy*		E_{AR}	4.5	mJ
Channel Temperature		T_{ch}	150	$^\circ C$
Storage Temperature Range		T_{stg}	-55~150	$^\circ C$

THERMAL CHARACTERISTICS

CHARACTERISTIC	SYMBOL	MAX.	UNIT
Thermal Resistance, Channel to Case	$R_{th(ch-c)}$	2.78	$^\circ C/W$
Thermal Resistance, Channel to Ambient	$R_{th(ch-a)}$	62.5	$^\circ C/W$

Note ;

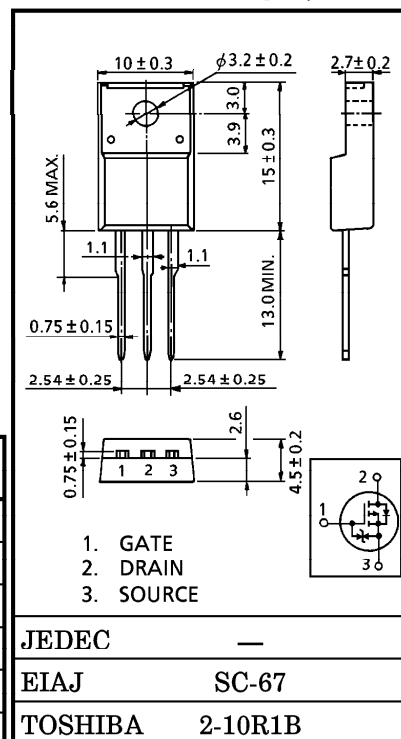
* Repetitive rating ; Pulse Width Limited by Max. junction temperature.

** $V_{DD} = -50V$, $T_{ch} = 25^\circ C$, $L = 747\mu H$, $R_G = 25\Omega$, $I_{AR} = -30A$

This transistor is an electrostatic sensitive device.
Please handle with caution.

INDUSTRIAL APPLICATIONS

Unit in mm

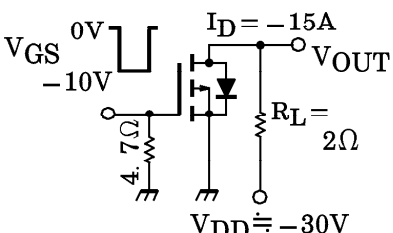


Weight : 1.9g

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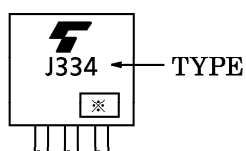
ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current		I_{GSS}	$V_{GS} = \pm 16V, V_{DS} = 0V$	—	—	± 10	μA
Drain Cut-off Current		I_{DSS}	$V_{DS} = -60V, V_{GS} = 0V$	—	—	-100	μA
Drain-Source Breakdown Voltage		$V_{(BR) DSS}$	$I_D = -10mA, V_{GS} = 0V$	-60	—	—	V
Gate Threshold Voltage		V_{th}	$V_{DS} = -10V, I_D = -1mA$	-0.8	—	-2.0	V
Drain-Source ON Resistance		$R_{DS(ON)}$	$V_{GS} = -4V, I_D = -15A$	—	46	60	$m\Omega$
			$V_{GS} = -10V, I_D = -15A$	—	29	38	
Forward Transfer Admittance		$ Y_{fs} $	$V_{DS} = -10V, I_D = -15A$	14	23	—	S
Input Capacitance		C_{iss}	$V_{DS} = -10V, V_{GS} = 0V$ $f = 1MHz$	—	3300	—	pF
Reverse Transfer Capacitance		C_{rss}		—	460	—	
Output Capacitance		C_{oss}		—	1450	—	
Switching Time	Rise Time	t_r		—	20	—	ns
	Turn-on Time	t_{on}		—	25	—	
	Fall Time	t_f		—	35	—	
	Turn-off Time	t_{off}		—	130	—	
Total Gate Charge (Gate-Source Plus Gate-Drain)		Q_g	$V_{DD} = -48V, V_{GS} = -10V$ $I_D = -30A$	—	110	—	nC
Gate-Source Charge		Q_{gs}		—	75	—	
Gate-Drain ("Miller") Charge		Q_{gd}		—	35	—	

SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Continuous Drain Reverse Current	I_{DR}	—	—	—	30	A
Pulse Drain Reverse Current	I_{DRP}	—	—	—	120	A
Diode Forward Voltage	V_{DSF}	$I_{DR} = -30A, V_{GS} = 0V$	—	—	1.7	V
Reverse Recovery Time	t_{rr}	$I_{DR} = -30A, V_{GS} = 0V$	—	100	—	ns
Reverse Recovery Charge	Q_{rr}	$dI_{DR} / dt = 50A / \mu s$	—	0.16	—	μC

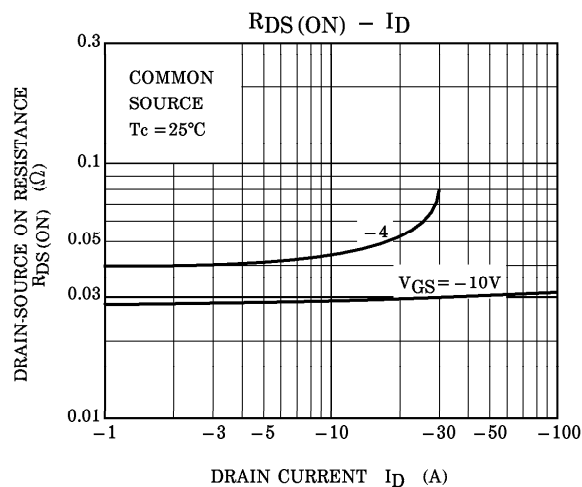
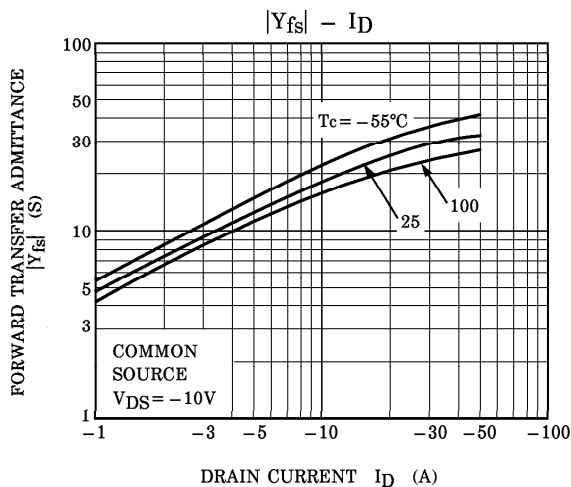
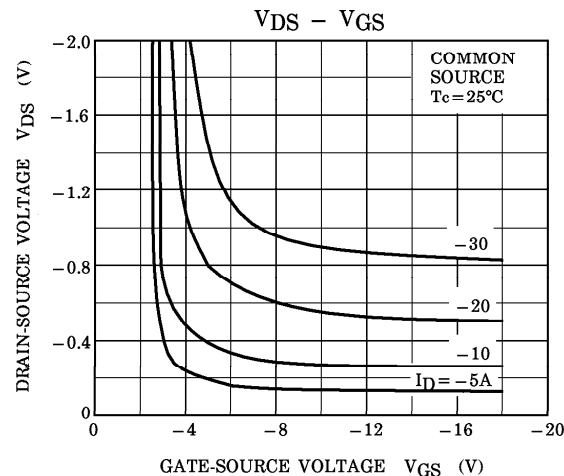
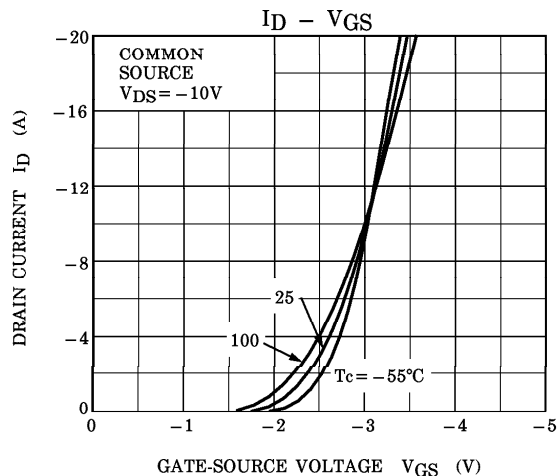
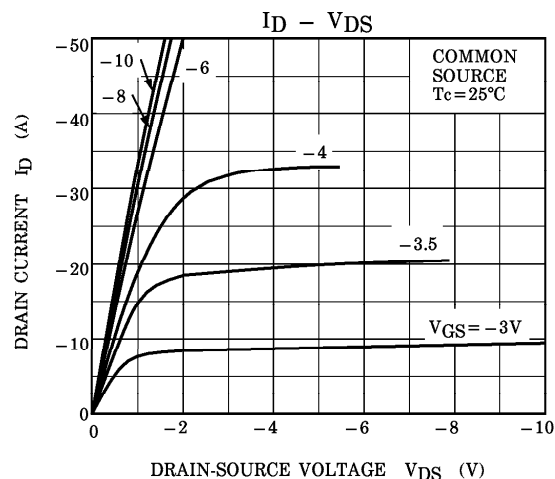
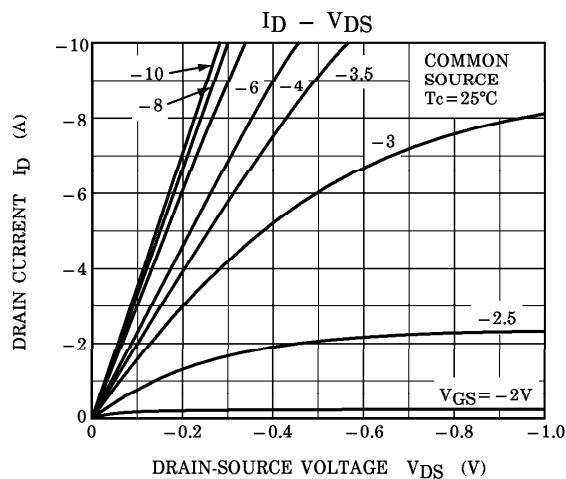
MARKING

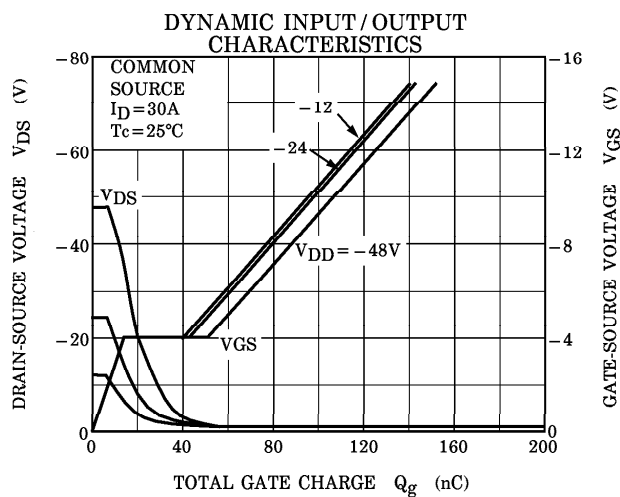
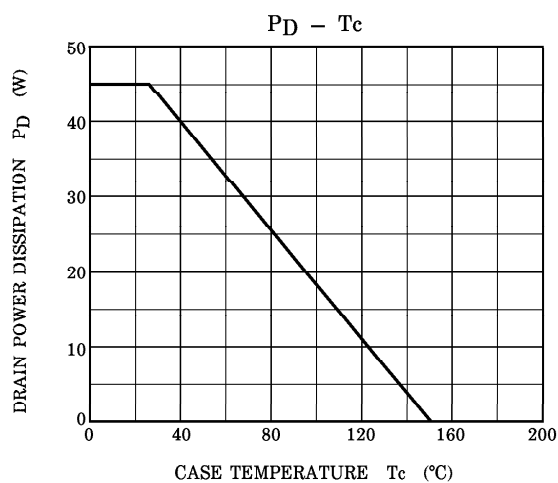
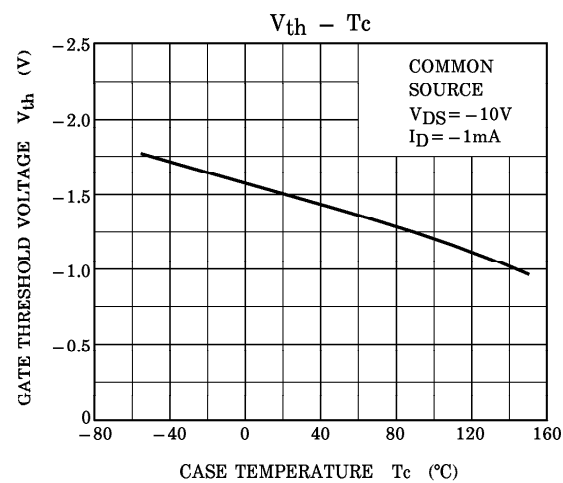
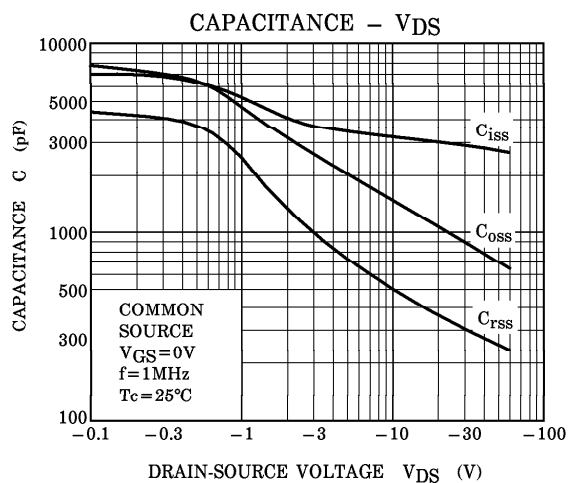
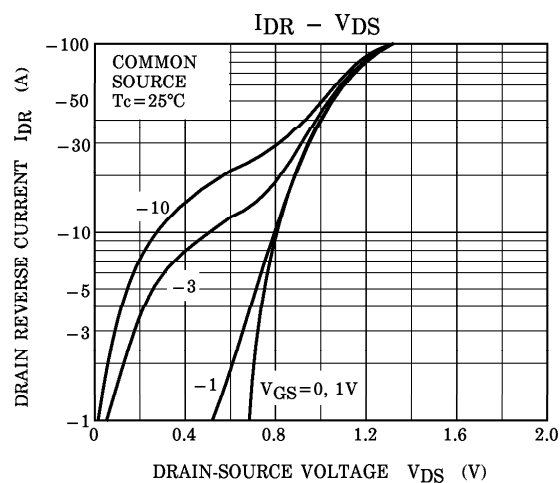
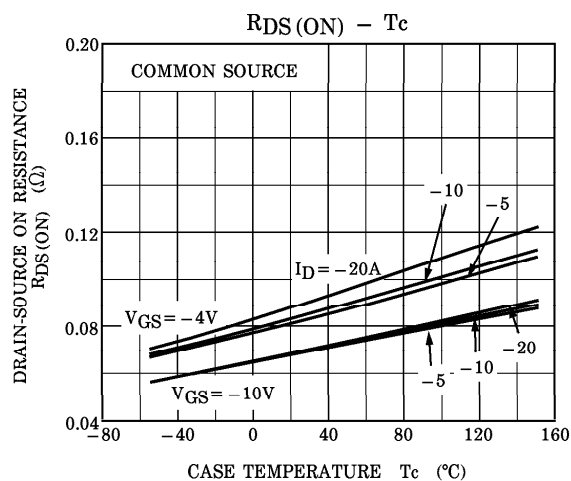


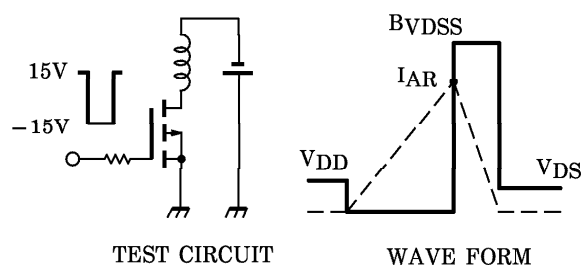
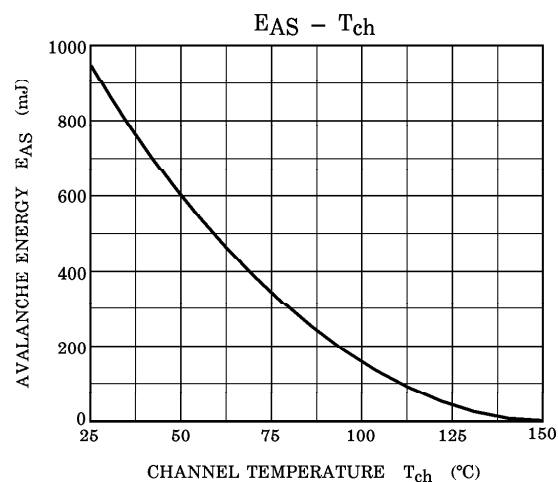
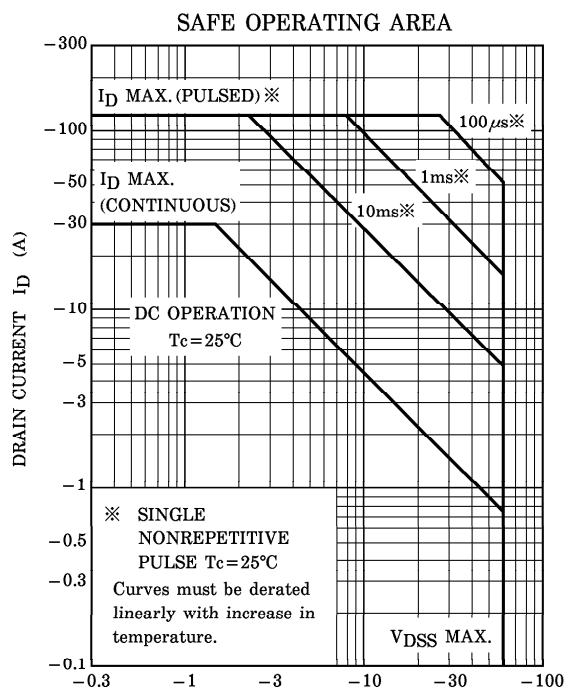
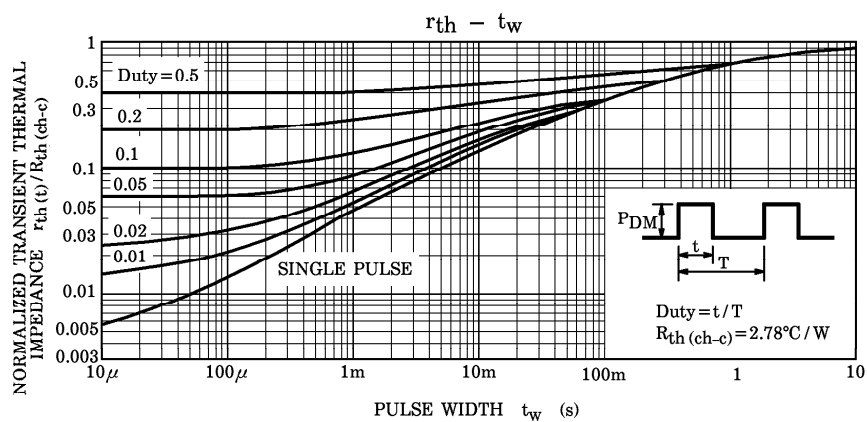
※ Lot Number

□ □ — Month (Starting from Alphabet A)

— Year (Last Number of the Christian Era)







Peak $I_{AR} = -30A$, $R_G = 25\Omega$, $V_{DD} = -50V$, $L = 747\mu H$

$$E_{AS} = \frac{1}{2} \cdot L \cdot I^2 \cdot \left(\frac{BVDSS}{BVDSS - V_{DD}} \right)$$