

1.8V Drive Nch+Nch MOSFET

EM6K6

●Structure

Silicon N-channel
MOSFET

●Applications

Switching

●Features

- 1) The MOSFET elements are independent, eliminating mutual interference.
- 2) Mounting cost and area can be cut in half.
- 3) Low on-resistance.
- 4) Low voltage drive (1.8V) makes this device ideal for portable equipment.

●Packaging specifications

Type	Package	Taping
	Code	T2R
	Basic ordering unit (pieces)	8000
EM6K6		○

●Absolute maximum ratings (Ta=25°C)

<It is the same ratings for the Tr1 and Tr2>

Parameter	Symbol	Limits	Unit
Drain-source voltage	V_{DS}	20	V
Gate-source voltage	V_{GS}	±8	V
Drain current	Continuous	I_D	±300 mA
	Pulsed	I_{DP}^{*1}	±600 mA
Total power dissipation	P_D^{*2}	150	mW / TOTAL
		120	mW / ELEMENT
Channel temperature	T_{ch}	150	°C
Storage temperature	T_{stg}	-55 to +150	°C

*1 $P_w \leq 10 \mu s$, Duty cycle $\leq 1\%$

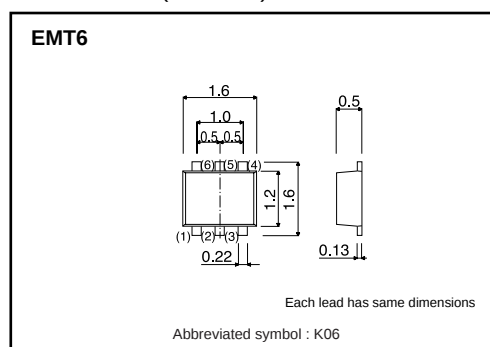
*2 Each terminal mounted on a recommended land.

●Thermal resistance

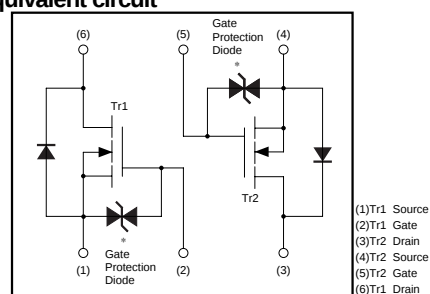
Parameter	Symbol	Limits	Unit
Channel to ambient	$R_{th(ch-a)}^{*}$	833	°C/W / TOTAL
		1042	°C/W / ELEMENT

* Each terminal mounted on a recommended land

●Dimensions (Unit : mm)



●Equivalent circuit



* A protection diode has been built in between the gate and the source to protect against static electricity when the product is in use. Use the protection circuit when rated voltages are exceeded.

Transistor

●Electrical characteristics (Ta=25°C)

<It is the same characteristics for the Tr1 and Tr2>

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Gate-source leakage	I_{GSS}	—	—	± 10	μA	$V_{GS}=\pm 8V$, $V_{DS}=0V$
Drain-source breakdown voltage	$V_{(BR)DSS}$	20	—	—	V	$I_D=1mA$, $V_{GS}=0V$
Zero gate voltage drain current	I_{DSS}	—	—	1.0	μA	$V_{DS}=20V$, $V_{GS}=0V$
Gate threshold voltage	$V_{GS(th)}$	0.3	—	1.0	V	$V_{DS}=10V$, $I_D=1mA$
Static drain-source on-state resistance	$R_{DS(on)}^*$	—	0.7	1.0	Ω	$I_D=300mA$, $V_{GS}=4.0V$
		—	0.8	1.2	Ω	$I_D=300mA$, $V_{GS}=2.5V$
		—	1.0	1.4	Ω	$I_D=300mA$, $V_{GS}=1.8V$
Forward transfer admittance	$ Y_{fs} ^*$	400	—	—	ms	$I_D=300mA$, $V_{DS}=10V$
Input capacitance	C_{iss}	—	25	—	pF	$V_{DS}=10V$
Output capacitance	C_{oss}	—	10	—	pF	$V_{GS}=0V$
Reverse transfer capacitance	C_{rss}	—	10	—	pF	$f=1MHz$
Turn-on delay time	$t_{d(on)}^*$	—	5	—	ns	$I_D=150mA$, $V_{DD} \doteq 10V$
Rise time	t_r^*	—	10	—	ns	$V_{GS}=4.0V$
Turn-off delay time	$t_{d(off)}^*$	—	15	—	ns	$R_L=67\Omega$
Fall time	t_f^*	—	10	—	ns	$R_G=10\Omega$

* Pulsed

●Body diode characteristics (Source-drain) (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Forward voltage	V_{SD}^*	—	—	1.2	V	$I_S=100mA$, $V_{GS}=0V$

* Pulsed

●Electrical characteristic curves

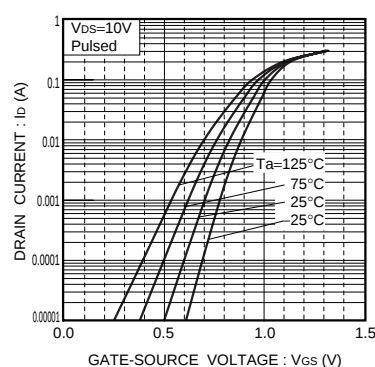


Fig.1 Typical transfer characteristics

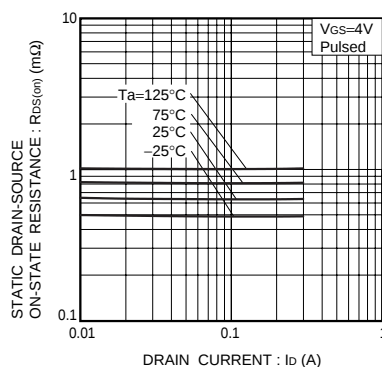


Fig.2 Static drain-source on-state resistance vs. drain current (I)

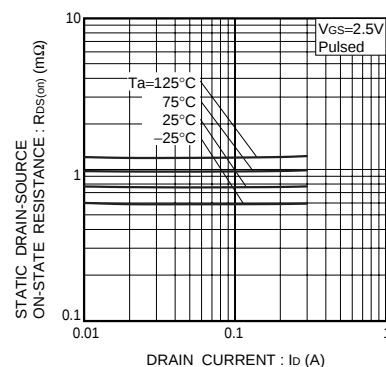


Fig.3 Static drain-source on-state resistance vs. drain current (II)

Transistor

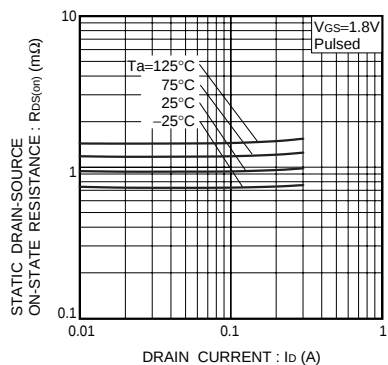


Fig.4 Static drain-source on-state resistance vs. drain current (III)

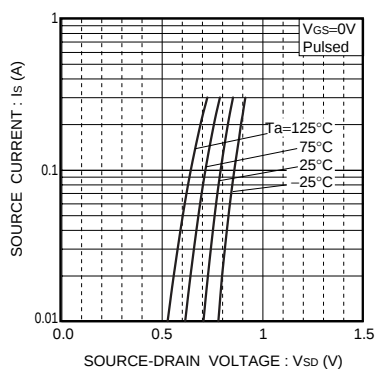


Fig.5 Source current vs. source-drain voltage

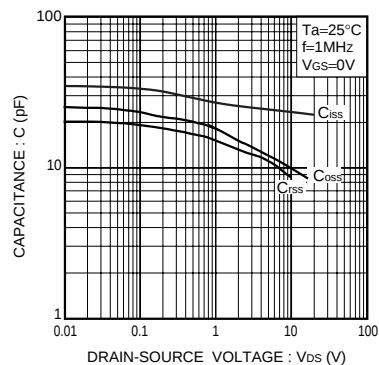


Fig.6 Typical capacitance vs. drain-source voltage

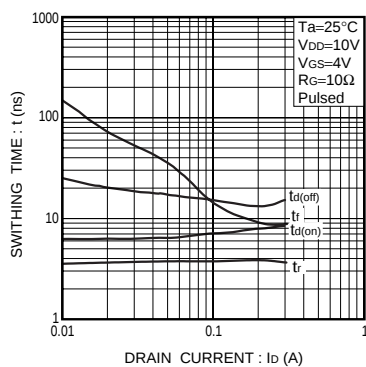


Fig.7 Switching characteristics

● Switching characteristics measurement circuit

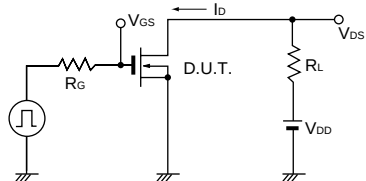


Fig.8 Switching time measurement circuit

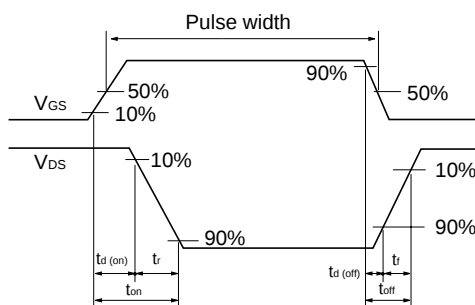


Fig.9 Switching time waveforms

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