

NEC
ELECTRON DEVICE

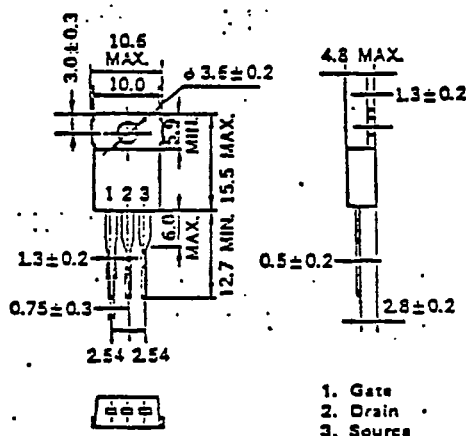
MOS FIELD EFFECT TRANSISTOR

2SK810

FAST SWITCHING N-CHANNEL SILICON POWER MOS FET

PACKAGE DIMENSIONS

(Unit: mm)



Features

Suitable for switching power supplies,
actuator controls and pulse circuits
4V Gate Drive — Logic level —
Large Current Switching : $I_D(DC)=14A$
Low $R_{DS(on)}$
No second breakdown

Absolute Maximum Ratings($T_a=25^\circ C$)

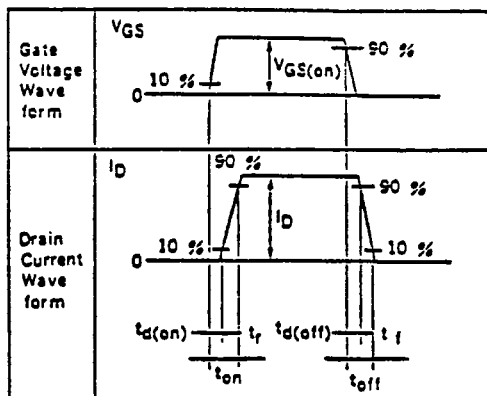
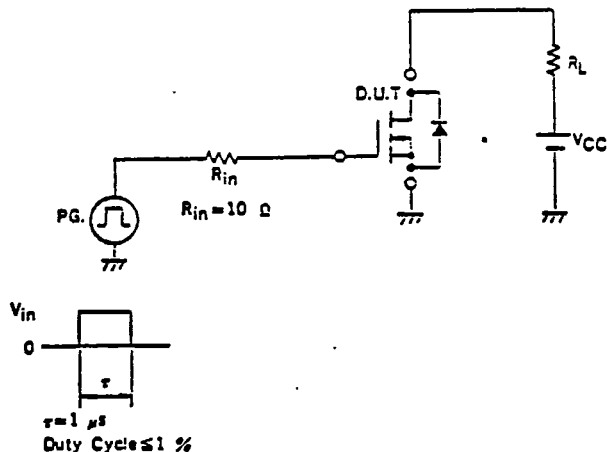
Drain to Source Voltage	V_{DS}	100V
Gate to Source Voltage	V_{GS}	$\pm 20V$
Continuous Drain Current	$I_D(DC)$	$\pm 14A$
Pulse Drain Current	$I_D(pulse)$	$\pm 56A$
Total Power Dissipation	P_T	1.5W
Total Power Dissipation	P_{T*}	60W
Channel Temperature	T_{ch}	150 °C
Storage Temperature	T_{stg}	-55to+150 °C
* $T_{ch} \leq 150^\circ C$		
** $T_c = 25^\circ C$		

Electrical Characteristics ($T_a=25^\circ C$)

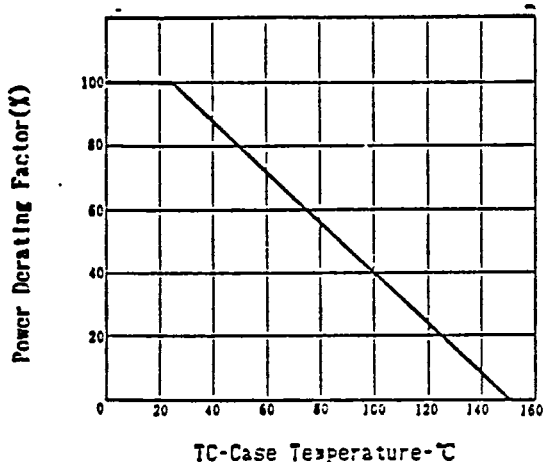
Characteristics	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Drain Leakage Current	I_{DSS}			10	μA	$V_{DS}=100V, V_{GS}=0$
Gate to Source Leakage Current	I_{GSS}			100	nA	$V_{GS}=20V, V_{DS}=0$
Gate to Source Cutoff Voltage	$V_{GS(off)}$	1.0		2.5	V	$V_{DS}=10V, I_D=1.0mA$
Forward Transfer Admittance	$ y_{fs} $	4.0	10		S	$V_{DS}=10V, I_D=3.0A$
Drain to Source On-State Resistance	$R_{DS(on)}$		0.1	0.18	Ω	$V_{GS}=10V, I_D=8.0A$
Drain to Source On-State Resistance	$R_{DS(on)}$		0.15	0.25	Ω	$V_{GS}=4.0V, I_D=8.0A$
Input Capacitance	C_{iss}		1200		pF	$V_{DS}=10V, V_{GS}=0$
Output Capacitance	C_{oss}		400		pF	$V_{GS}=0, f=1.0MHz$
Reverse Transfer Capacitance	C_{rss}		90		pF	$I_D=8.0A, V_{GS(on)}=10V, V_{cc}=40V, RL=5.0\Omega$
Turn-On Delay Time	$t_{d(on)}$		10		ns	
Rise Time	t_r		20		ns	
Turn-Off Delay Time	$t_{d(off)}$		65		ns	
Fall Time	t_f		55		ns	

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TURN-ON AND TURN-OFF TIME TEST CIRCUIT

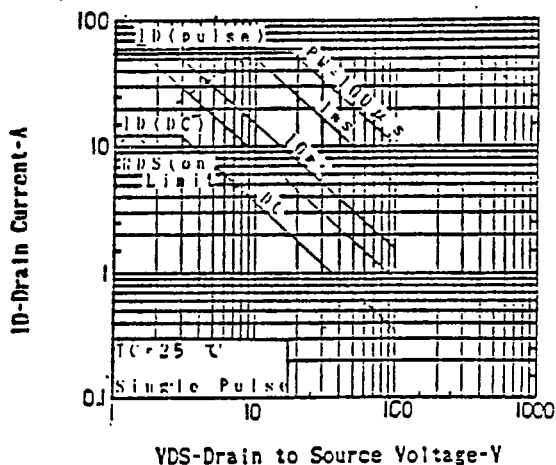
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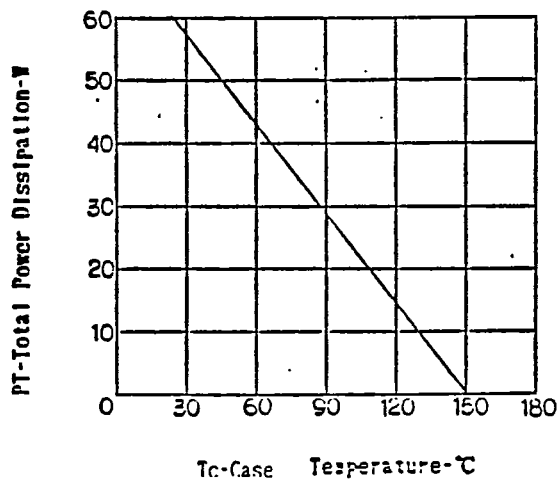
DERATING FACTOR OF FORWARD BIAS
SAFE OPERATING AREA



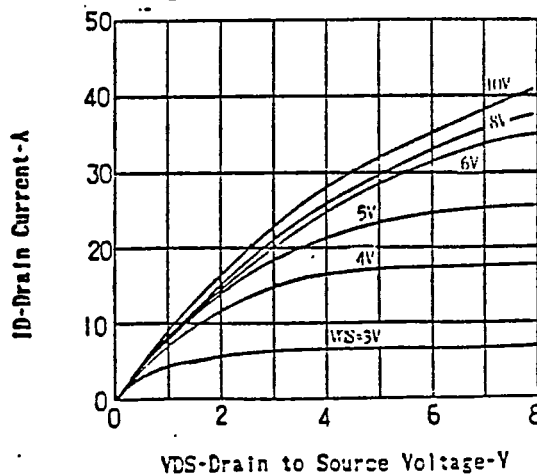
FORWARD BIAS SAFE OPERATING AREA



TOTAL POWER DISSIPATION vs.
CASE TEMPERATURE

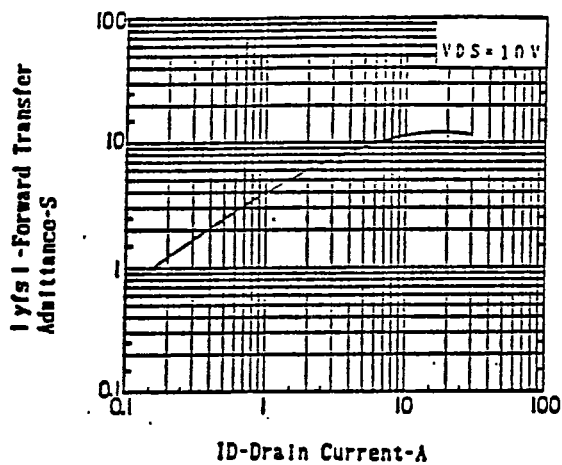
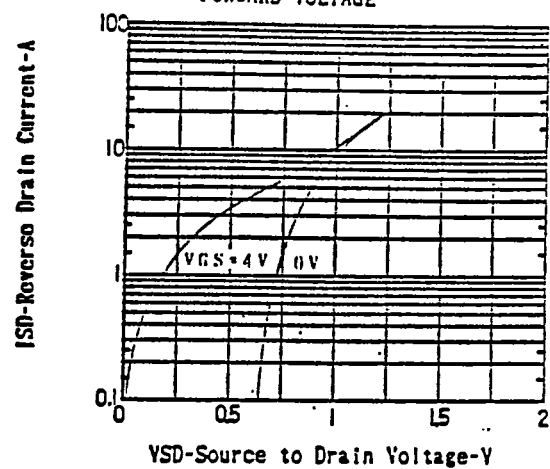
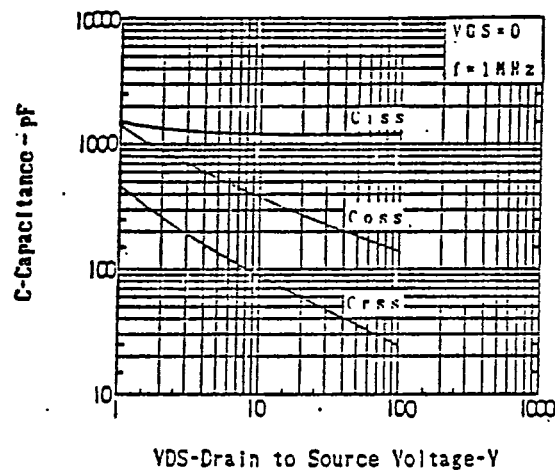
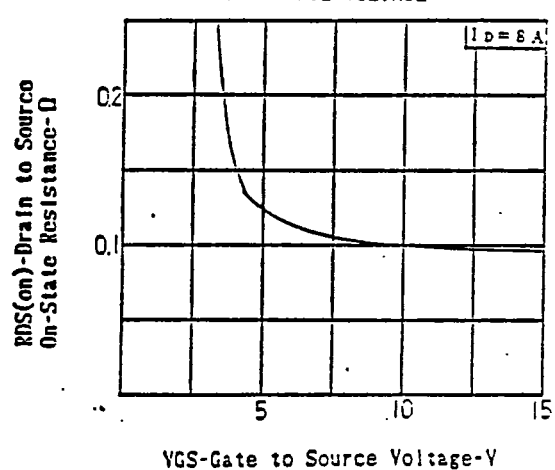
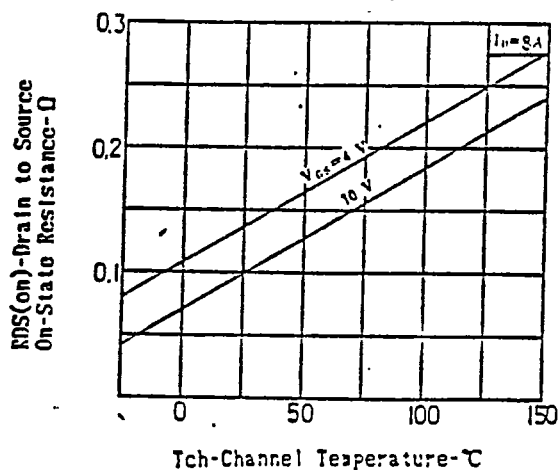
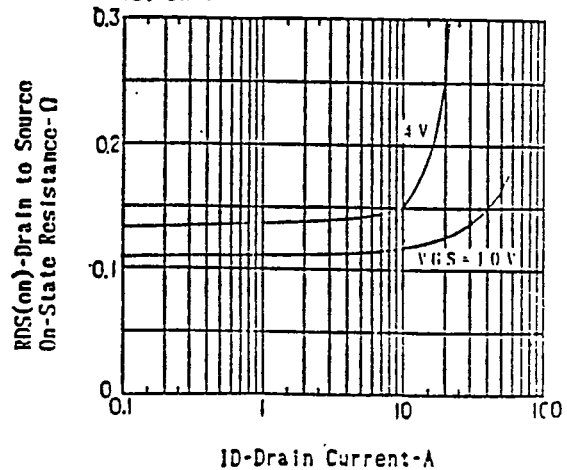


DRAIN CURRENT vs. DRAIN TO
SOURCE VOLTAGE

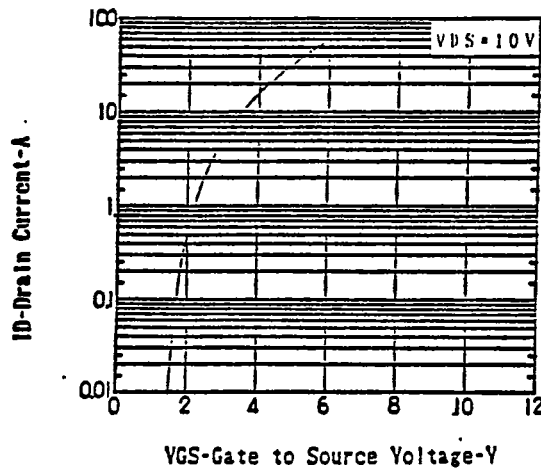
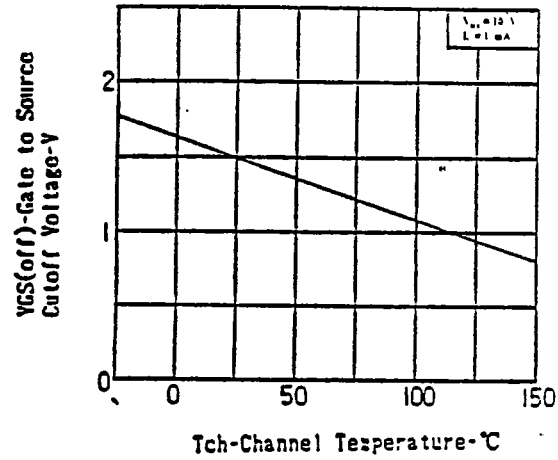


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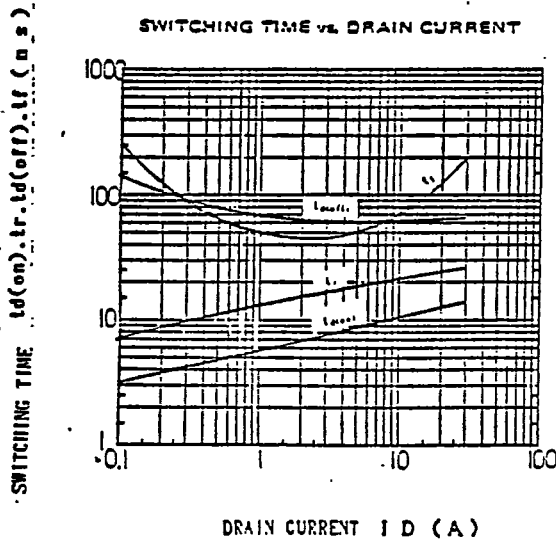
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FORWARD TRANSFER ADMITTANCE
vs. DRAIN CURRENTSOURCE TO DRAIN DIODE
FORWARD VOLTAGECAPACITANCE vs. DRAIN TO
SOURCE VOLTAGEDRAIN TO SOURCE ON-STATE RESISTANCE
vs. GATE TO SOURCE VOLTAGEDRAIN TO SOURCE ON-STATE RESISTANCE
vs. CHANNEL TEMPERATUREDRAIN TO SOURCE ON-STATE RESISTANCE
vs. DRAIN CURRENT

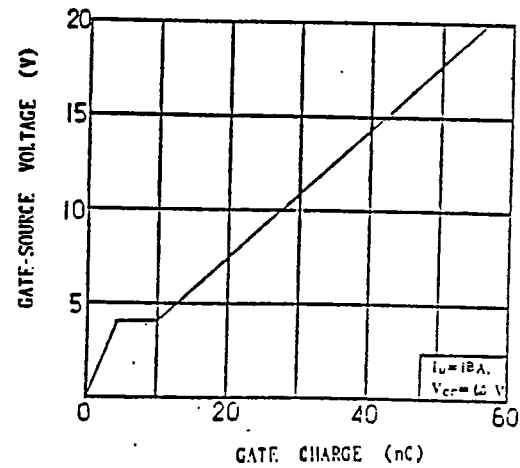
TRANSFER CHARACTERISTICS

GATE TO SOURCE CUTOFF VOLTAGE
vs. CHANNEL TEMPERATURE

SWITCHING TIME vs. DRAIN CURRENT



GATE CHARGE VS GATE-SOURCE VOLTAGE



NORMARIZED TRANSIENT THERMAL IMPEDANCE vs. PULSE WIDTH

