



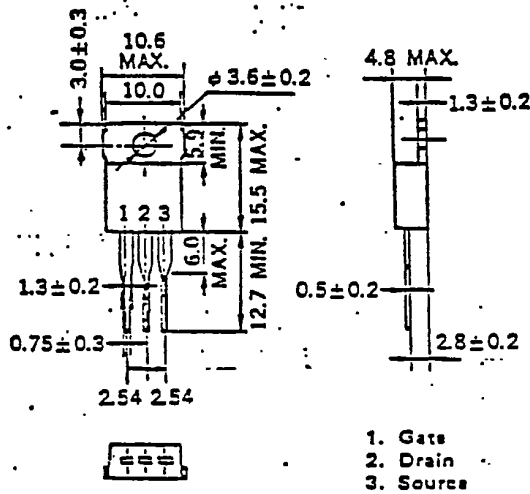
MOS FIELD EFFECT TRANSISTOR

2SJ138

**FAST SWITCHING
P-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 : $I_D(DC)=12A$
- Low $R_{DS(on)}$
- No Secondary 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	$I_D(DC)$	$\pm 12A$
Pulse Drain Current	$I_D(pulse)$	* $\pm 48A$
Total Power Dissipation	P_T	1.5W
Total Power Dissipation	$P_{T\#}$	60%
Channel Temperature	T_{ch}	150 °C
Storage Temperature	T_{stg}	-55to+150 °C

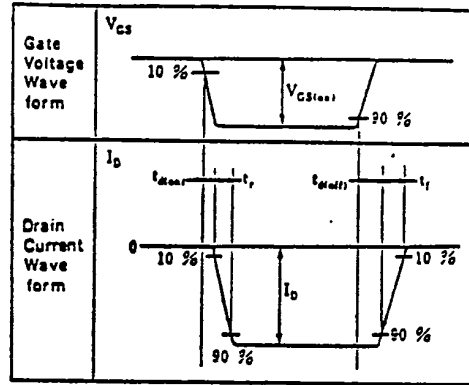
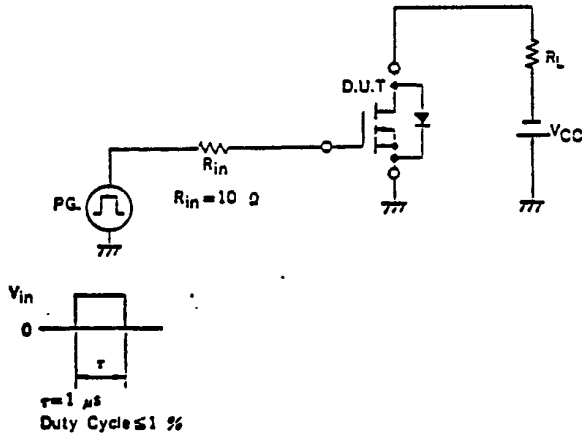
* $T_{ch} \leq 150^\circ C$
 ** $T_c=25^\circ C$

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

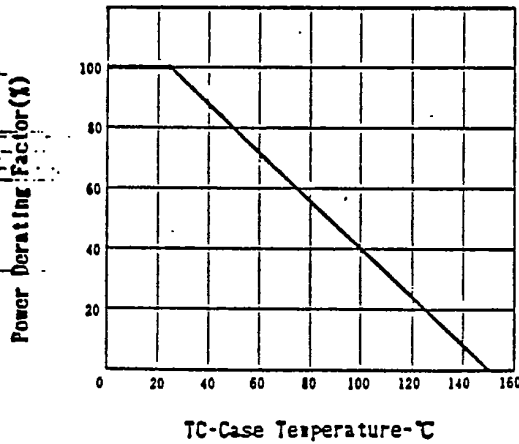
Characteristics	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Drain Leakage Current	I_{DSS}			- 10	μA	$V_{DS}=-100V, V_{GS}=0$
Gate to Source Leakage Current	I_{GSS}			100	nA	$V_{GS}=20V, V_{DS}=0$
Gate to Source Cutoff Voltage	$V_{GS(off)}$	-1.0		-3.0	V	$V_{DS}=-10V, I_D=-1.0mA$
Forward Transfer Admittance	$ y_{fs} $	2.0			S	$V_{DS}=-10V, I_D=-6.5A$
Drain to Source On-State Resistance	$R_{DS(on)}$			0.3	Ω	$V_{GS}=-10V, I_D=-6.5A$
Drain to Source On-State Resistance	$R_{DS(on)}$			0.45	Ω	$V_{GS}=-1.0V, I_D=-6.5A$
Input Capacitance	C_{iss}		2700		pF	$V_{DS}=-10V, V_{GS}=0$
Output Capacitance	C_{oss}		600		pF	$V_{GS}=0, V_{DS}=-10V$
Reverse Transfer Capacitance	C_{rss}		110		pF	$f=1.0MHz$
Turn-On Delay Time	$t_d(on)$		15		ns	$I_D=-6.5A, V_{GS}(on)=-10V$
Rise Time	t_r		70		ns	$V_{GS}(on)=-10V$
Turn-Off Delay Time	$t_d(off)$		85		ns	$V_{CC}=-50V$
Fall Time	t_f		70		ns	$R_L=8\Omega$

NEC cannot assume any responsibility for any circuits shown or represent that they are free from patent infringement.

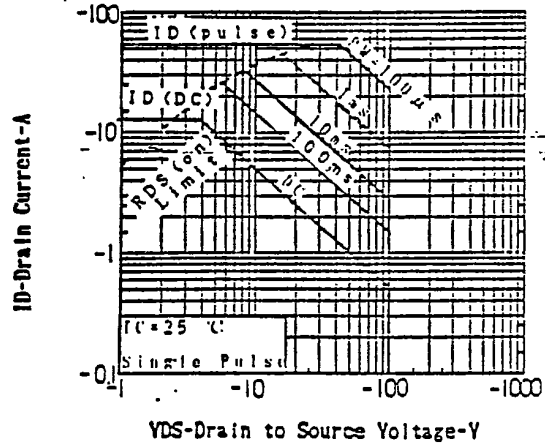
TURN-ON AND TURN-OFF TIME TEST CIRCUIT



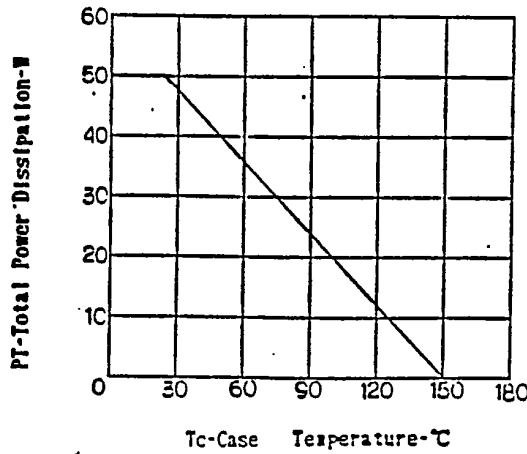
DERATING FACTOR OF FORWARD BIAS SAFE OPERATING AREA



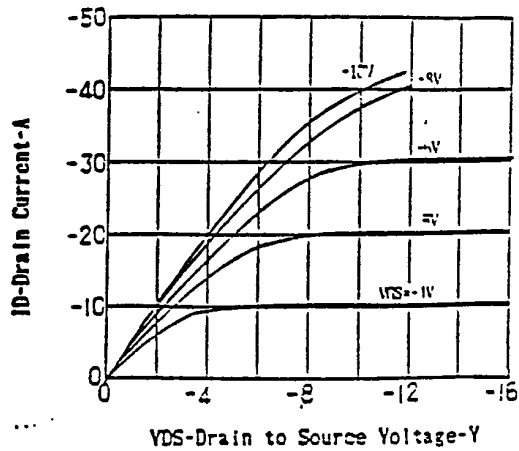
FORWARD BIAS SAFE OPERATING AREA

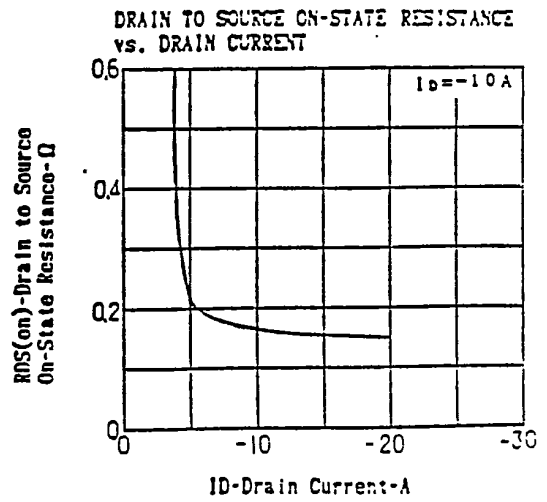
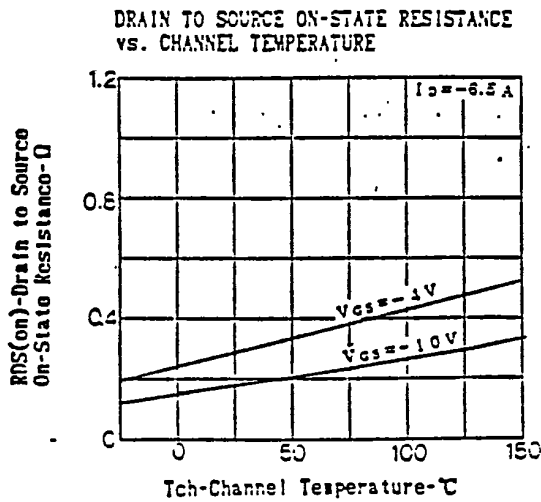
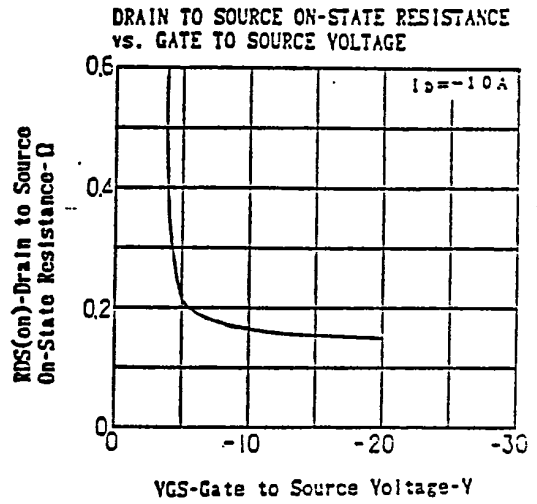
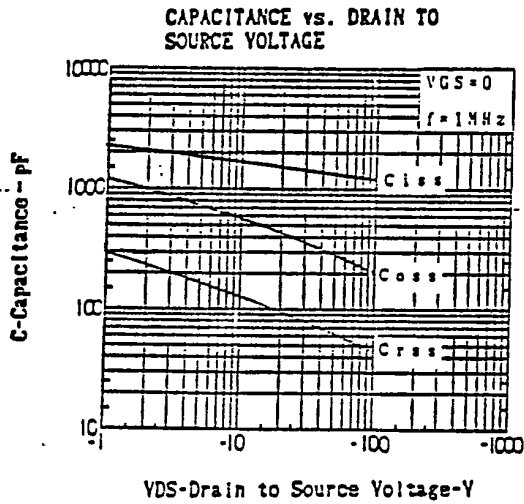
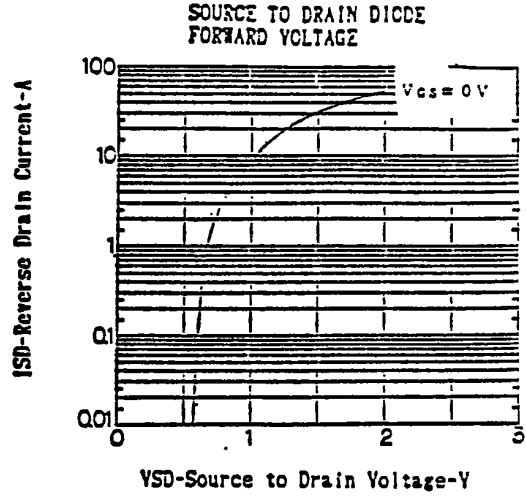
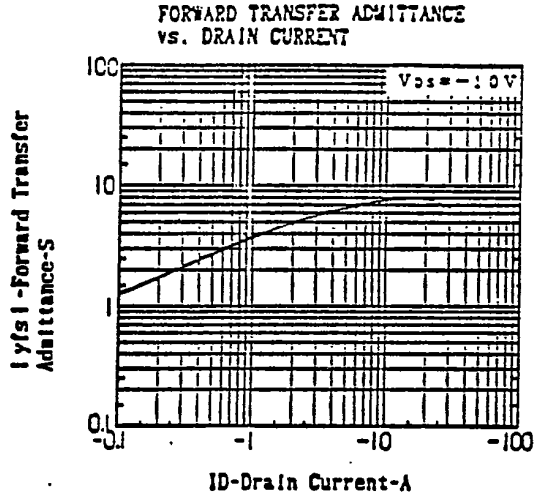


TOTAL POWER DISSIPATION vs. CASE TEMPERATURE

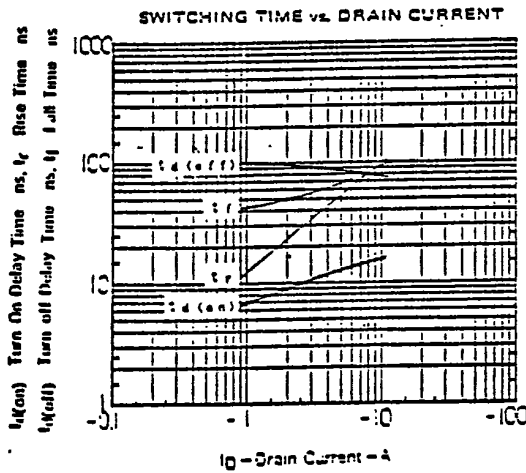
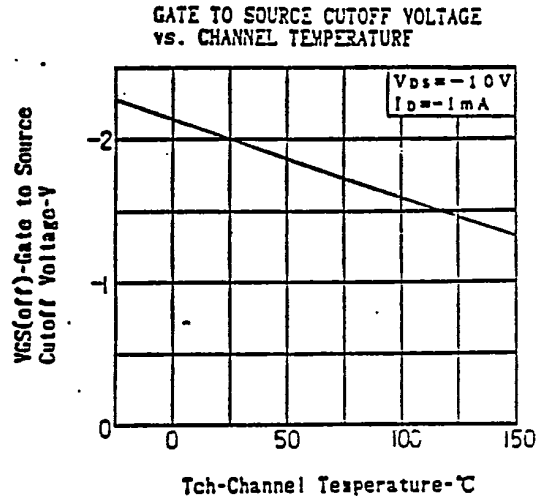
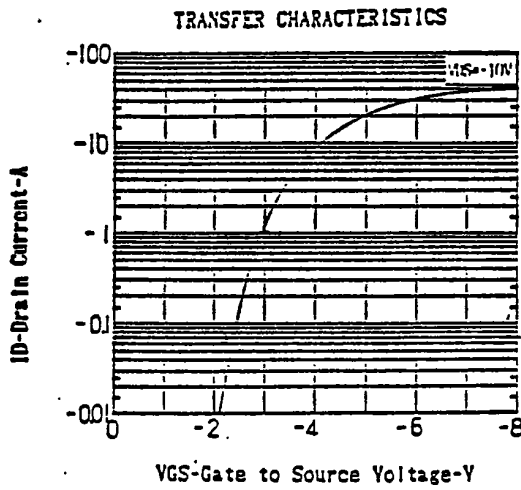


DRAIN CURRENT vs. DRAIN TO SOURCE VOLTAGE





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