

NEC
ELECTRON DEVICE

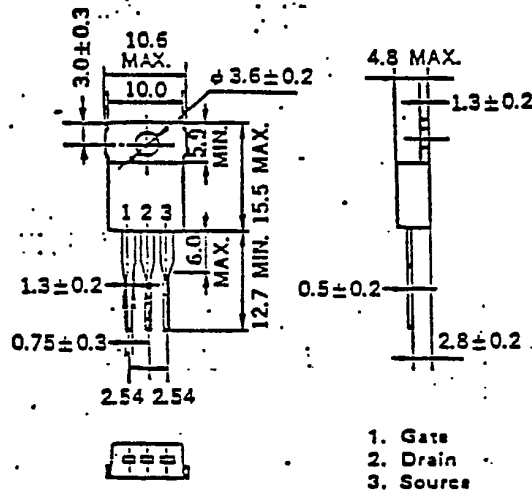
MOS FIELD EFFECT TRANSISTOR

2SJ140

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 : $I_D(DC)=19A$

Low $R_{DS(on)}$

No Secondary Breakdown

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

Drain to Source Voltage V_{DS} - 60V

Gate to Source Voltage V_{GS} $\pm 20V$

Continuous Drain Current $I_D(DC)$ $\pm 19A$

Pulse Drain Current $I_D(pulse)$ $\pm 76A$

Total Power Dissipation P_T 1.5W

Total Power Dissipation P_{T*} 60W

Channel Temperature T_{ch} 150 $^\circ C$

Storage Temperature T_{stg} -55to+150 $^\circ C$

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

** $T_c=25^\circ C$

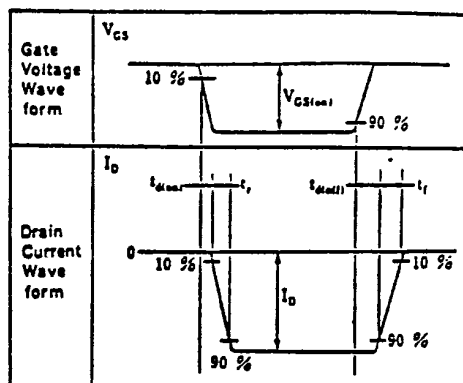
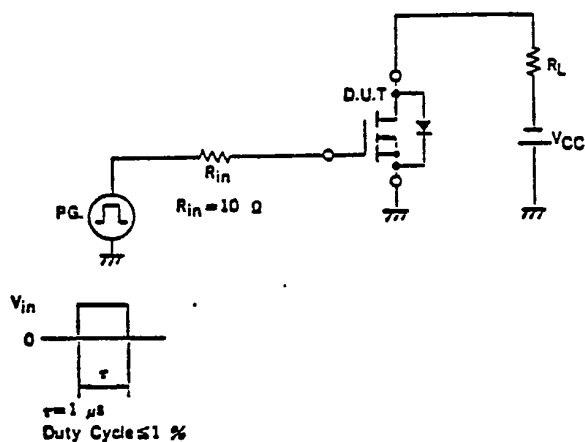
Electrical Characteristics ($T_a=25^\circ C$)

Characteristics	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Drain Leakage Current	I_{DSS}			- 10	μA	$V_{DS}=-60V, V_{GS}=0$
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} $	5.0			S	$V_{DS}=-10V, I_D=-10A$
Drain to Source On-State Resistance	$R_{DS(on)}$			0.2	Ω	$V_{GS}=-10V, I_D=-10A$
Drain to Source On-State Resistance	$R_{DS(on)}$			0.4	Ω	$V_{GS}=-4.0V, I_D=-3.0A$
Input Capacitance	C_{iss}		2600		pF	$V_{DS}=-10V, V_{GS}=0$
Output Capacitance	C_{oss}		630		pF	$V_{GS}=0, V_{DS}=-10V$
Reverse Transfer Capacitance	C_{rss}		130		pF	$f=1.0MHz$
Turn-On Delay Time	$t_{d(on)}$		20		ns	$I_D=-10A, V_{GS}(on)=-10V$
Rise Time	t_r		160		ns	$V_{GS}(on)=-10V$
Turn-Off Delay Time	$t_{d(off)}$		80		ns	$V_{GS}(off)=0V, V_{DS}=-10V$
Fall Time	t_f		90		ns	$R_L=3\Omega$

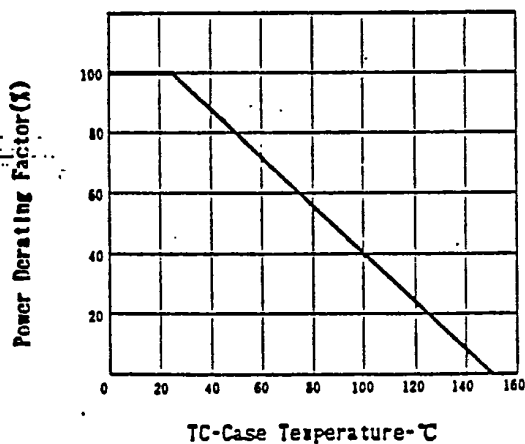
NEC cannot assume any responsibility for any circuits shown or represent that they are free from patent infringement.

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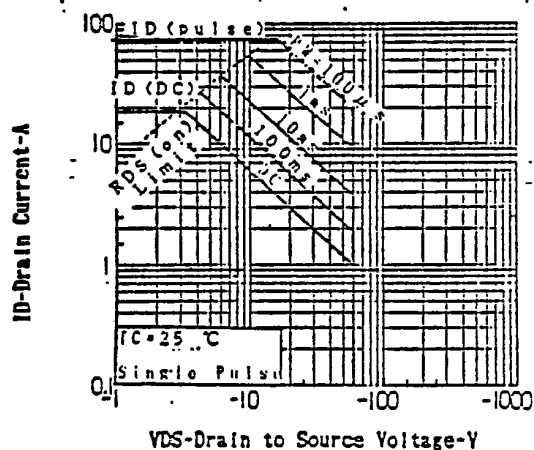
TURN-ON AND TURN-OFF TIME TEST CIRCUIT



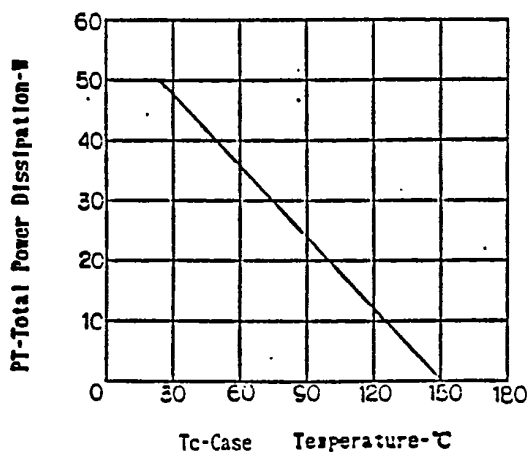
DERATING FACTOR OF FORWARD BIAS
SAFE OPERATING AREA



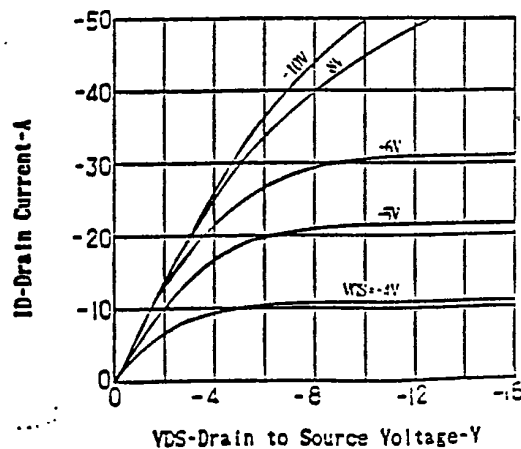
FORWARD BIAS SAFE OPERATING AREA

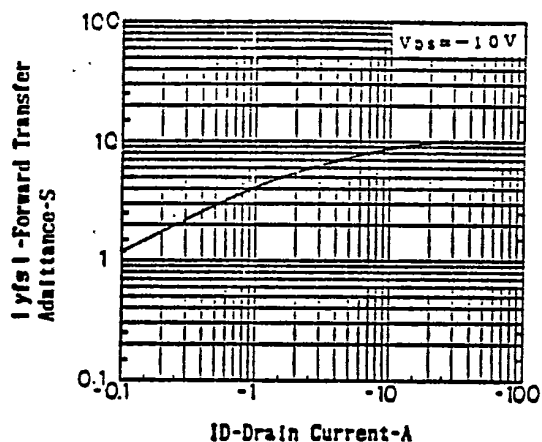
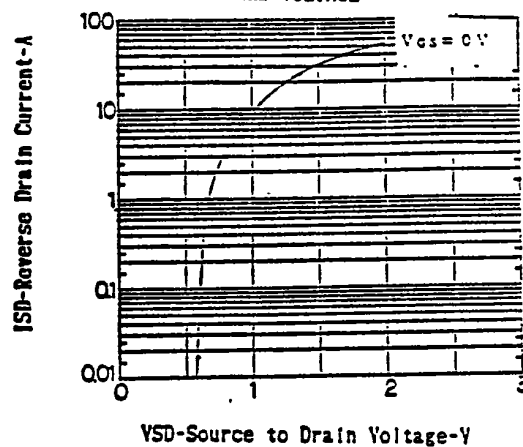
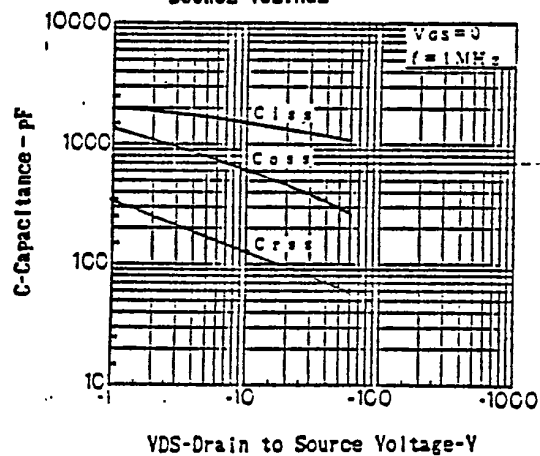
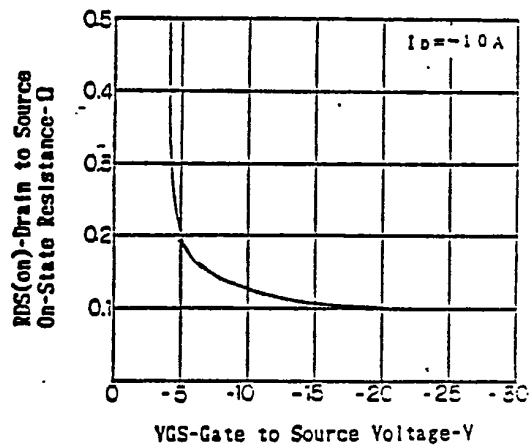
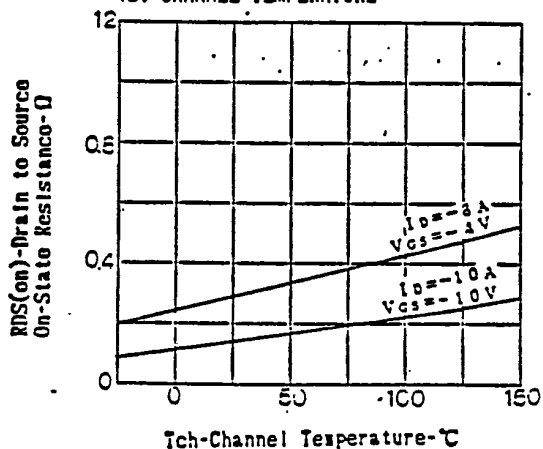
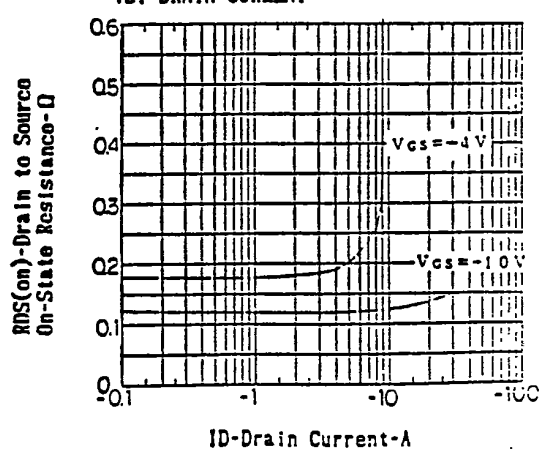


TOTAL POWER DISSIPATION vs.
CASE TEMPERATURE



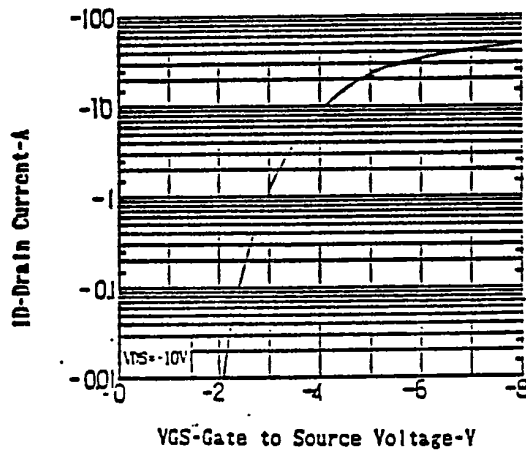
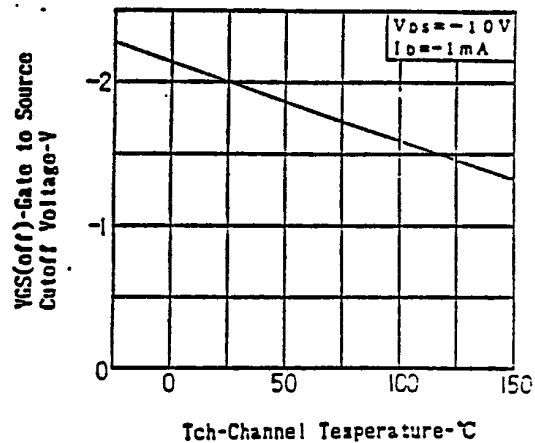
DRAIN CURRENT vs. DRAIN TO
SOURCE VOLTAGE



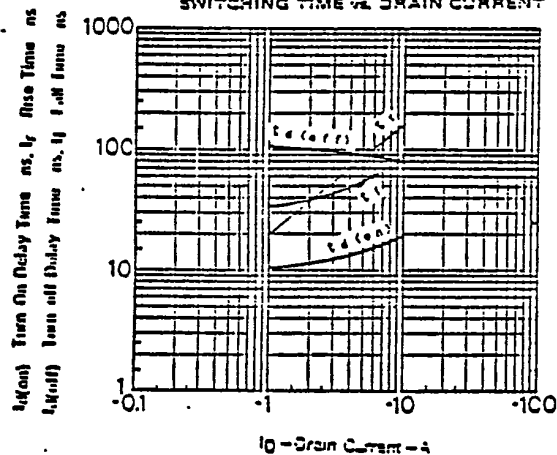
FORWARD TRANSFER ADMITTANCE
vs. DRAIN CURRENTSOURCE TO DRAIN DIODE
FORWARD VOLTAGECAPACITANCE vs. DRAIN TO
SOURCE VOLTAGEDRAIN TO SOURCE ON-STATE RESISTANCE
vs. GATE TO SOURCE VOLTAGEDRAIN TO SOURCE ON-STATE RESISTANCE
vs. CHANNEL TEMPERATUREDRAIN TO SOURCE ON-STATE RESISTANCE
vs. DRAIN CURRENT

NEC ELECTRON DEVICE

TRANSFER CHARACTERISTICS

GATE TO SOURCE CUTOFF VOLTAGE
vs. CHANNEL TEMPERATURE

SWITCHING TIME vs. DRAIN CURRENT



NEC Corporation

INTERNATIONAL ELECTRON DEVICES DIV.
 NEC Building, 33-1, Shiba Gochome
 Minato-ku, Tokyo 108, Japan
 Tel: Tokyo 454-1111
 Telex Address: NECTOK J22686
 Cable Address: MICROPHONE TOKYO