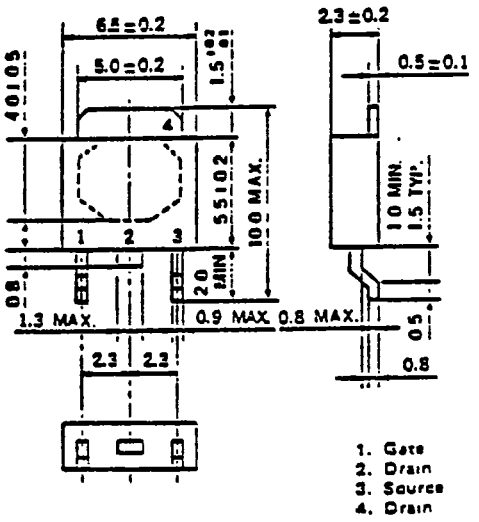
NEC ELECTRON DEVICE

MOS FIELD EFFECT POWER TRANSISTOR
2SJ128-Z

FAST SWITCHING
P-CHANNEL SILICON POWER MOS FET
INDUSTRIAL USE

PACKAGE DIMENSIONS
in millimeters



1. Gate
2. Drain
3. Source
4. Drain

FEATURES

- Suitable for switching power supplies, actuater controls, and pulse circuits.
- Low $R_{DS(on)}$
- No second breakdown
- 4 V Gate Drive – Logic level –
- Designed for Hybrid Integrated Circuits

ABSOLUTE MAXIMUM RATINGS (T_a = 25 °C)

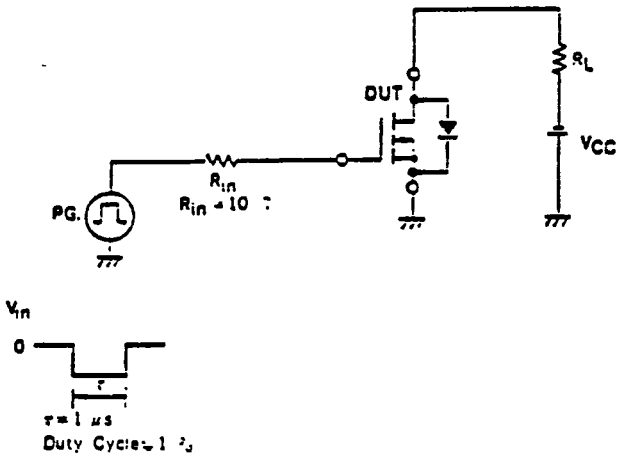
Drain to Source Voltage	V_{DSS}	−100	V
Gate to Source Voltage	V_{GSS}	∓20	V
Continuous Drain Current	$I_{D(DC)}$	∓2	A
Peak Drain Current	$I_{D(pulse)}$ *	∓8	A
Total Power Dissipation	P_T **	20	W
Total Power Dissipation at 25 °C Ambient Temperature	P_T ***	2.0	W
Channel Temperature	T_{ch}	150	°C
Storage Temperature	T_{stg}	−55 to +150	°C

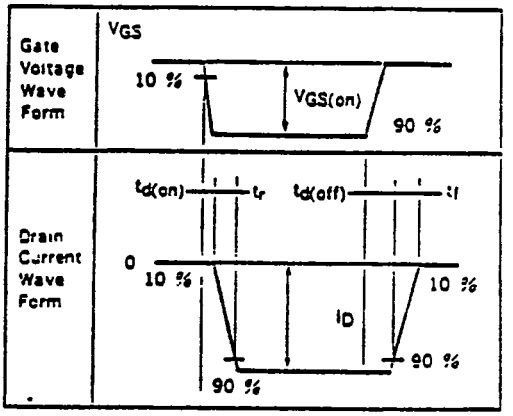
* PW ≤ 300 μs, Duty Cycle ≤ 10 %
** T_c = 25 °C
*** Mounted on ceramic substrate of 2.5 cm² x 0.7 mm

ELECTRICAL CHARACTERISTICS (T_a = 25 °C)

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Drain Leakage Current	I_{DSS}			−10	μA	V_{DS} = −100 V, V_{GS} = 0
Gate to Source Leakage Current	I_{GSS}			∓100	nA	V_{GS} = −20 V, V_{DS} = 0
Gate to Source Cutoff Voltage	$V_{GS(off)}$	−1.0		−3.0	V	V_{DS} = −10 V, I_D = −1 mA
Forward Transfer Admittance	$\|y_{fs}\|$	1.0			S	V_{DS} = −10 V, I_D = −1 A
Drain to Source On-State Resistance	$R_{DS(on)}$		0.8	1.0	Ω	V_{GS} = −10 V, I_D = −1 A
Drain to Source On-State Resistance	$R_{DS(on)}$		1.1	1.5	Ω	V_{GS} = −4 V, I_D = −0.8 A
Input Capacitance	C_{iss}		1000		pF	V_{DS} = −10 V, V_{GS} = 0 f = 1 MHz
Output Capacitance	C_{oss}		200		pF	
Reverse Transfer Capacitance	C_{rss}		25		pF	
Turn-On Delay Time	$t_{d(on)}$		30		ns	I_D = −1 A, V_{CC} ≒ −50 V $V_{GS(on)}$ = −10 V R_L = 10 Ω R_{in} = 10 Ω
Rise Time	t_r		30		ns	
Turn-Off Delay Time	$t_{d(off)}$		110		ns	
Fall Time	t_f		40		ns	

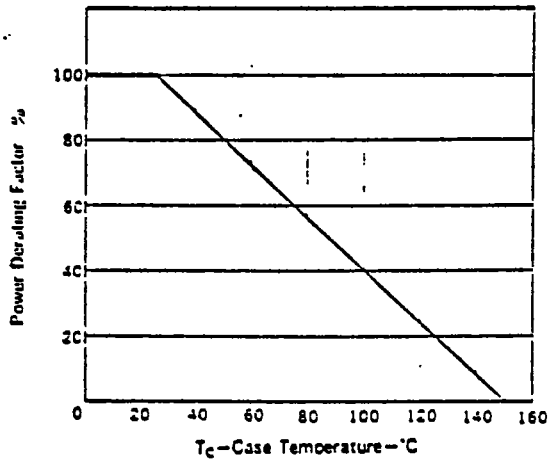
TURN-ON AND TURN-OFF TIME TEST CIRCUIT



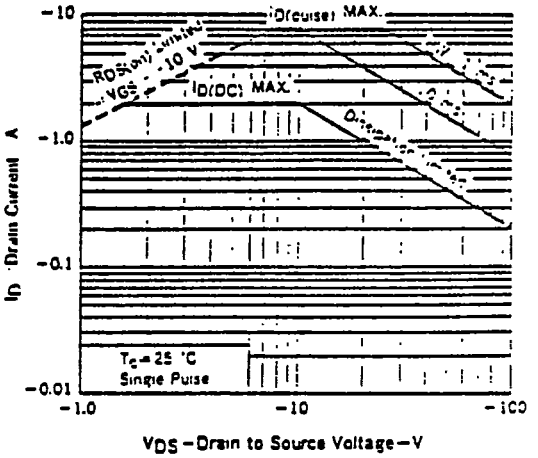


TYPICAL CHARACTERISTICS (T_a = 25 °C)

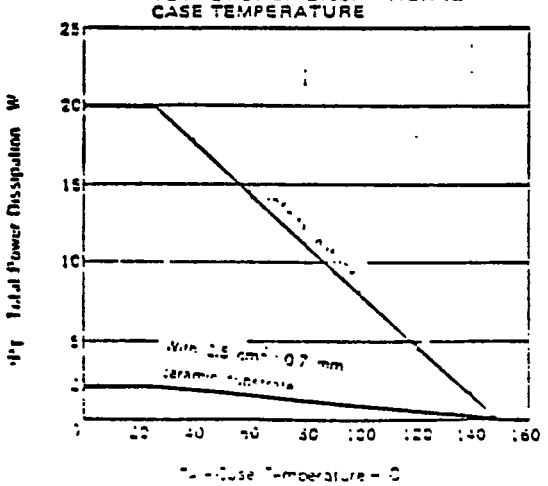
DERATING FACTOR OF FORWARD BIAS SAFE OPERATING AREA



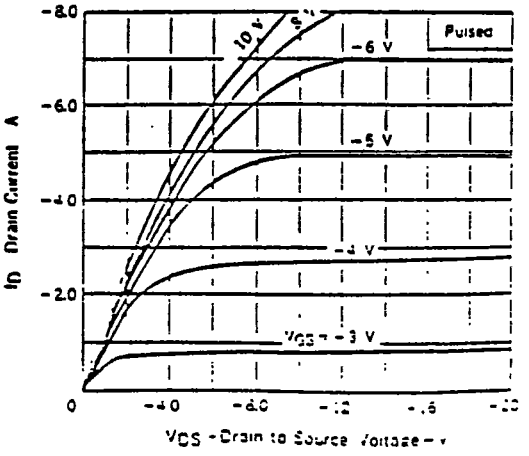
FORWARD BIAS SAFE OPERATING AREA



TOTAL POWER DISSIPATION vs. CASE TEMPERATURE



DRAIN CURRENT vs. DRAIN TO SOURCE VOLTAGE



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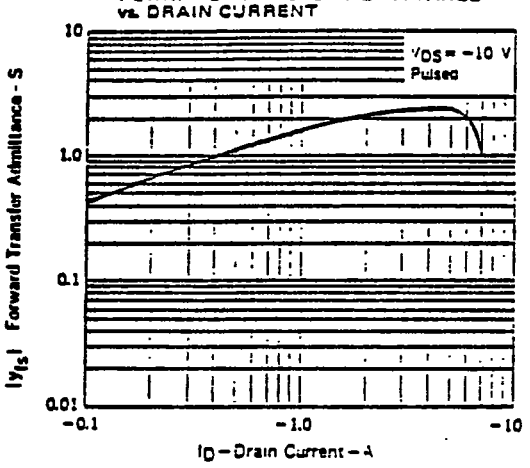
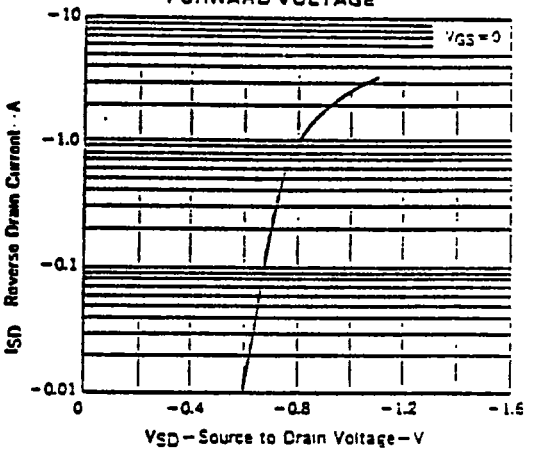
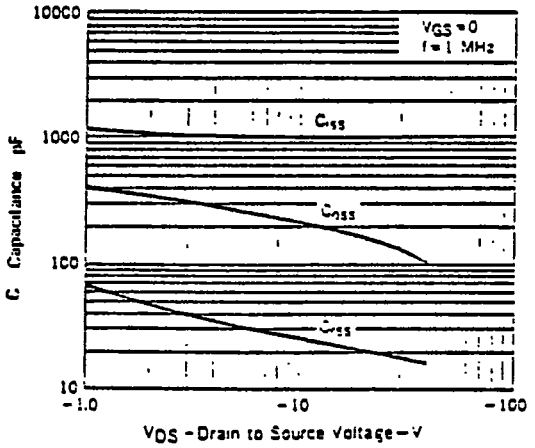
FORWARD TRANSFER ADMITTANCE vs. DRAIN CURRENT



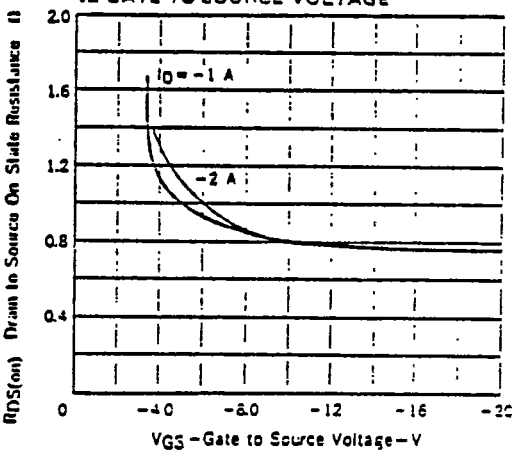
SOURCE TO DRAIN DIODE FORWARD VOLTAGE



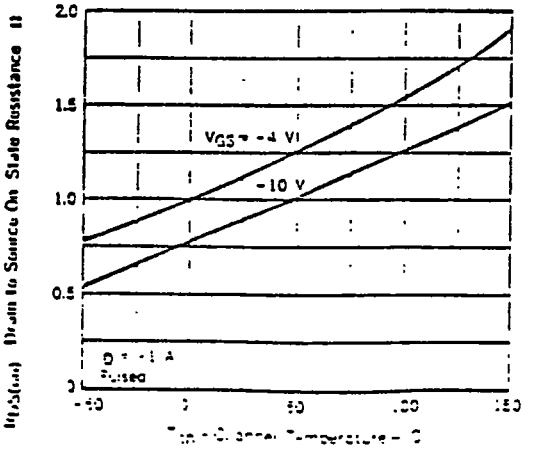
CAPACITANCE vs. DRAIN TO SOURCE VOLTAGE



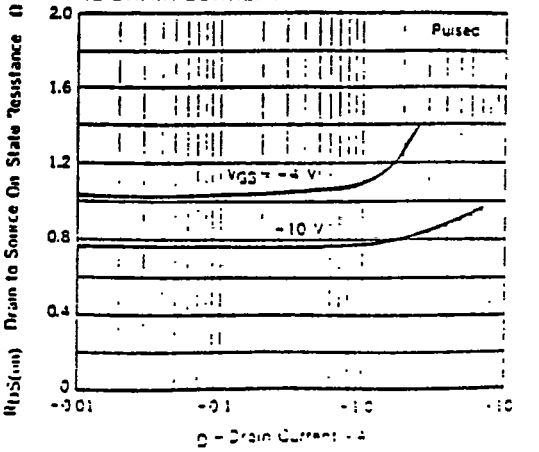
DRAIN TO SOURCE ON-STATE RESISTANCE vs. GATE TO SOURCE VOLTAGE



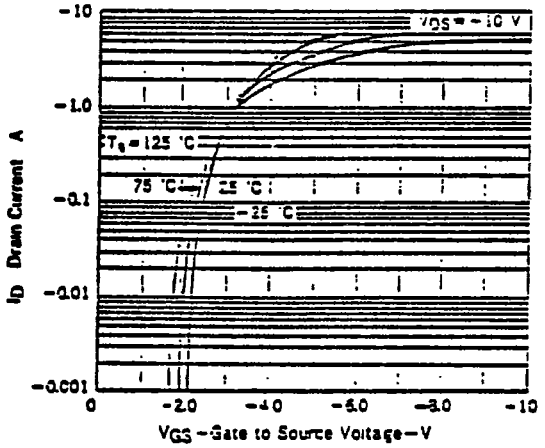
DRAIN TO SOURCE ON-STATE RESISTANCE vs. CHANNEL TEMPERATURE



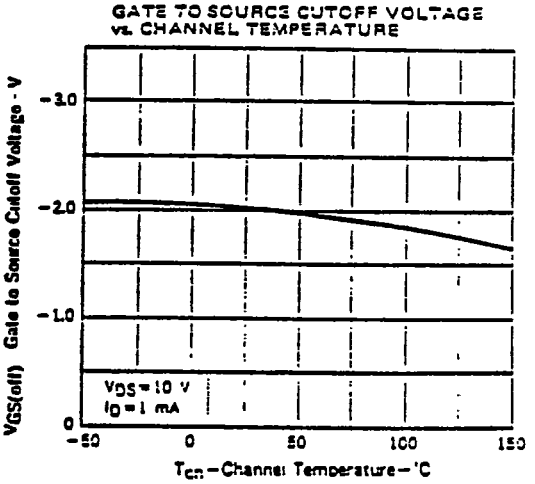
DRAIN TO SOURCE ON-STATE RESISTANCE vs. DRAIN CURRENT



TRANSFER CHARACTERISTICS



GATE TO SOURCE CUTOFF VOLTAGE vs. CHANNEL TEMPERATURE



SWITCHING TIME vs. DRAIN CURRENT