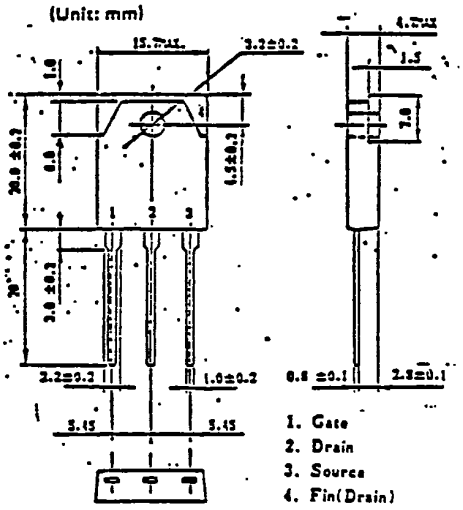
NEC
ELECTRON DEVICE

MOS FIELD EFFECT TRANSISTOR

2SK831

FAST SWITCHING
N-CHANNEL SILICON POWER MOS FET

PACKAGE DIMENSIONS
(Unit: mm)



Features
- Suitable for switching power supplies, actuator controls and pulse circuits
- Low RDS(on)

Absolute Maximum Ratings(Ta=25°c)

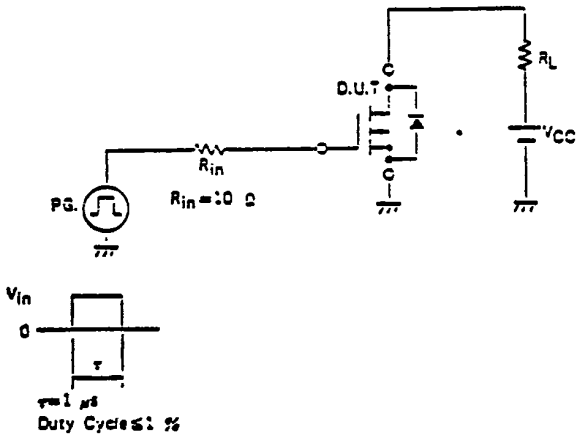
Drain to Source Voltage	VDSS	500V
Gate to Source Voltage	VGSS	± 20V
Continuous Drain Curre	ID(DC)	± 18A
Pulse Drain Current	ID(pulse)	* ± 60A
Total Power Dissipation	PT	3.0W
Total Power Dissipation	PT**	120W
Channel Temperature	Tch	150 °C
Storage Temperature	Tstg	-55to+150 °C

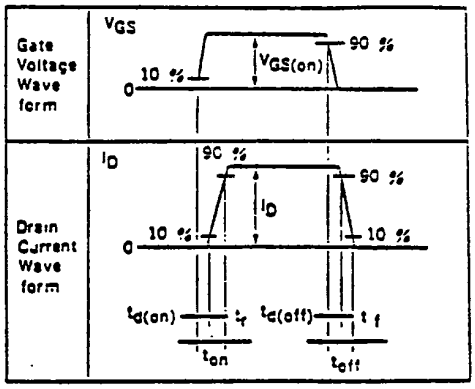
* PW ≦300 us, Duty Cycle≦2%
** Tc=25 °C

Electrical Characteristics (Ta=25 °C)

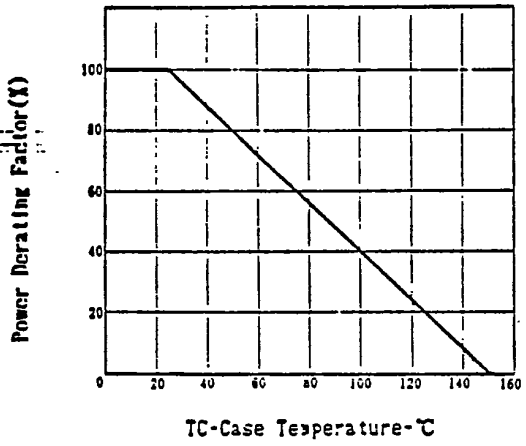
Characteristics	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Drain Leakage Current	IDSS			100	μA	VDS=500V,VGS=0
Gate to Source Leakage Current	IGSS			±100	nA	VGS=±20V,VDS=0
Gate to Source Cutoff Voltage	VGS(off)	1.5		3.5	V	VDS=10V,ID=1.0mA
Forward Transfer Admittance	yfs	8.0			S	VDS=10V,ID=9.0A
Drain to Source On-State Resistance	RDS(on)		0.35	0.45	Ω	VGS=10V,ID=9.0A
Input Capacitance	Ciss		2600		pF	VDS= 10V,
Output Capacitance	Coss		620		pF	VGS=0,
Reverse Transfer Capacitance	Crss		170		pF	f=1.0MHz
Turn-On Delay Time	td(on)		35		ns	ID=9.0A
Rise Time	tr		55		ns	VGS(on)= 10V,
Turn-Off Delay Time	td(off)		150		ns	Vcc=150V,
Fall Time	tf		55		ns	RL= 16 Ω

TURN-ON AND TURN-OFF TIME TEST CIRCUIT

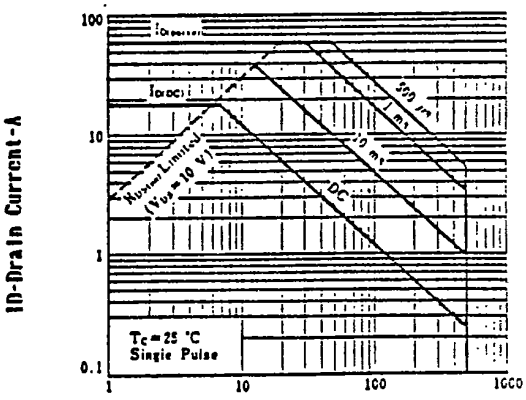




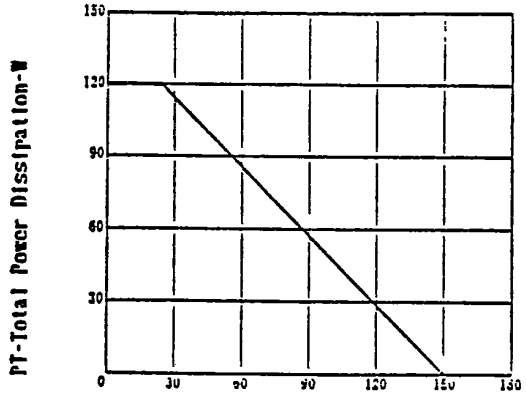
DERATING FACTOR OF FORWARD BIAS SAFE OPERATING AREA



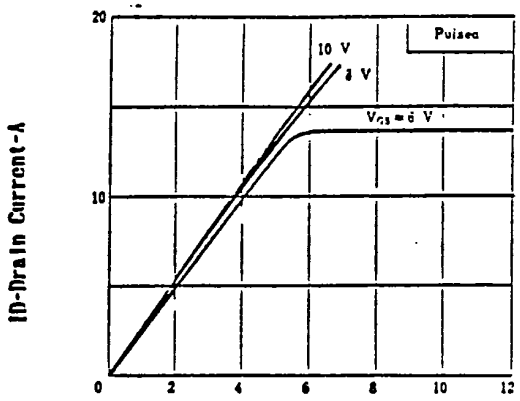
FORWARD BIAS SAFE OPERATING AREA



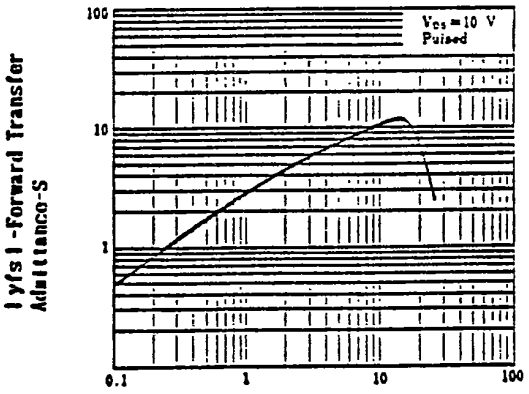
TOTAL POWER DISSIPATION vs. CASE TEMPERATURE



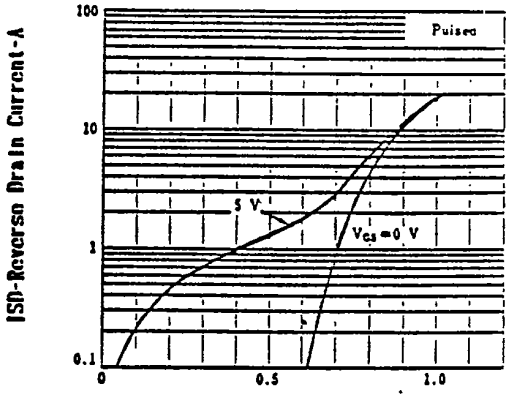
DRAIN CURRENT vs. DRAIN TO SOURCE VOLTAGE



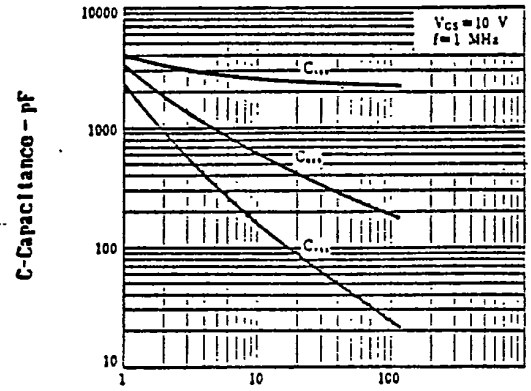
FORWARD TRANSFER ADMITTANCE vs. DRAIN CURRENT



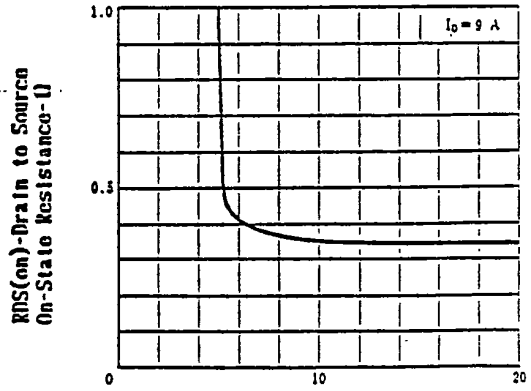
SOURCE TO DRAIN DIODE FORWARD VOLTAGE



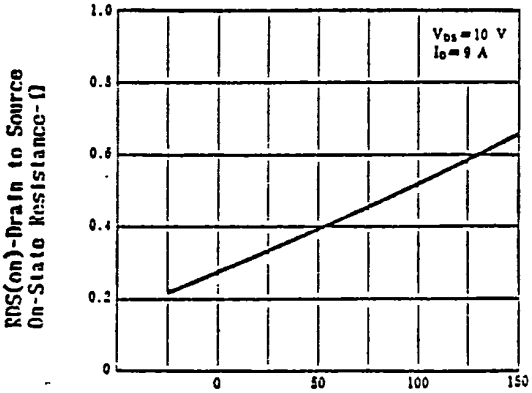
CAPACITANCE vs. DRAIN TO SOURCE VOLTAGE



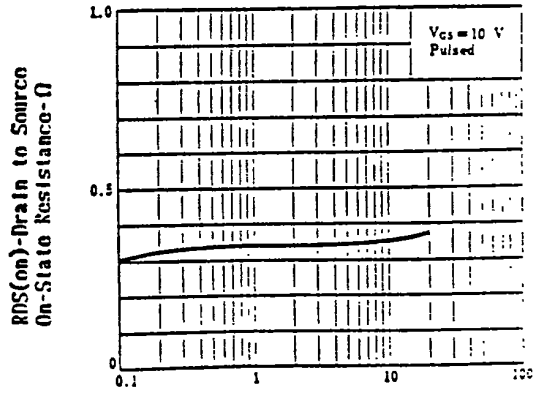
DRAIN TO SOURCE ON-STATE RESISTANCE vs. GATE TO SOURCE VOLTAGE



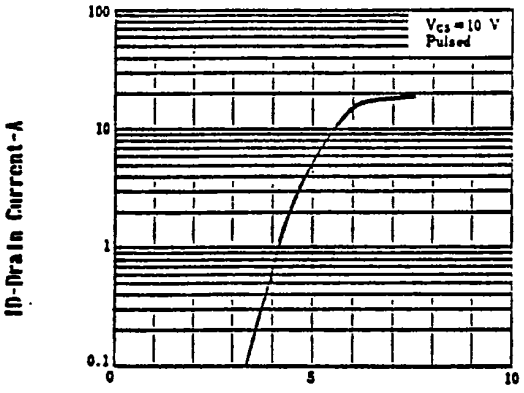
DRAIN TO SOURCE ON-STATE RESISTANCE vs. CHANNEL TEMPERATURE



DRAIN TO SOURCE ON-STATE RESISTANCE vs. DRAIN CURRENT

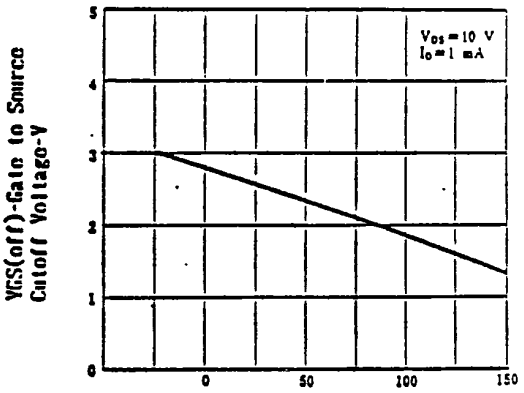


TRANSFER CHARACTERISTICS



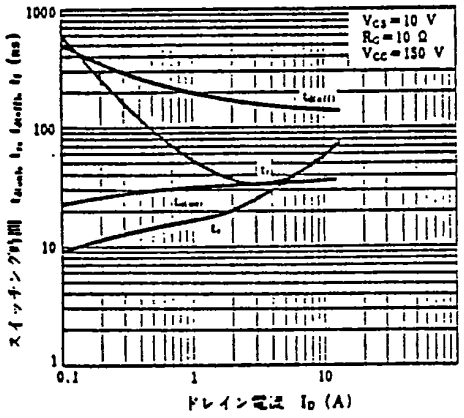
VGS-Gate to Source Voltage-V

GATE TO SOURCE CUTOFF VOLTAGE vs. CHANNEL TEMPERATURE



Tch-Channel Temperature-℃

SWITCHING CHARACTERISTICS



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