

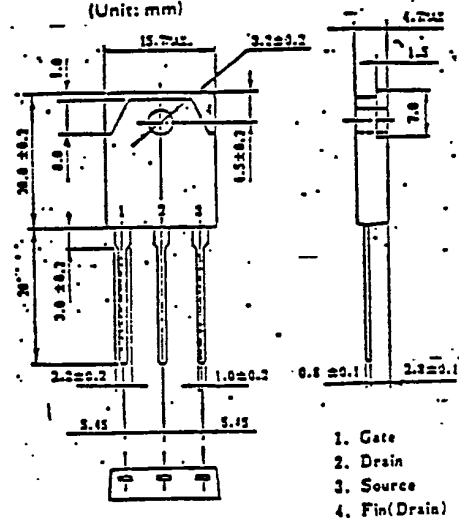
NEC
ELECTRON DEVICE

MOS FIELD EFFECT TRANSISTOR

2SK821

**FAST SWITCHING
N-CHANNEL SILICON POWER MOS FET**

PACKAGE DIMENSIONS
(Unit: mm)



Features

Suitable for switching power supplies,
actuator controls and pulse circuits
Low $R_{DS(on)}$

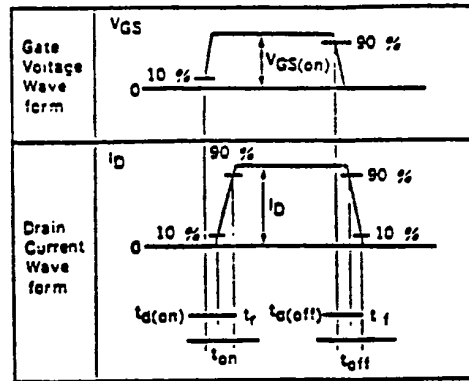
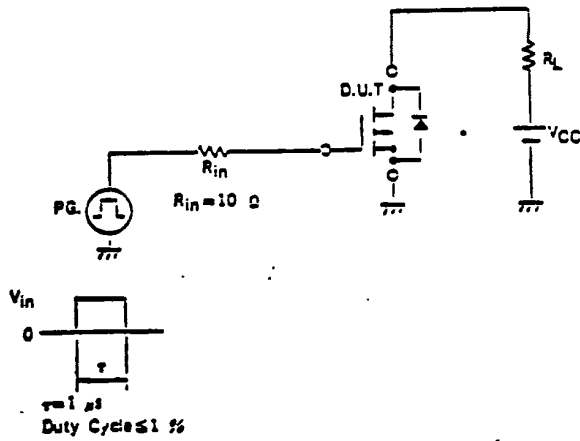
Absolute Maximum Ratings ($T_a=25^\circ\text{C}$)

Drain to Source Voltage	V_{DS}	250V
Gate to Source Voltage	V_{GS}	$\pm 20\text{V}$
Continuous Drain Current	$I_D(\text{DC})$	$\pm 20\text{A}$
Pulse Drain Current	$I_D(\text{pulse})$	$* \pm 80\text{A}$
Total Power Dissipation	P_T	3.0W
Total Power Dissipation	P_{T**}	120W
Channel Temperature	T_{ch}	150 $^\circ\text{C}$
Storage Temperature	T_{stg}	-55 to +150 $^\circ\text{C}$
* $PW \leq 100 \mu\text{s}$, Duty Cycle $\leq 2\%$		
** $T_c=25^\circ\text{C}$		

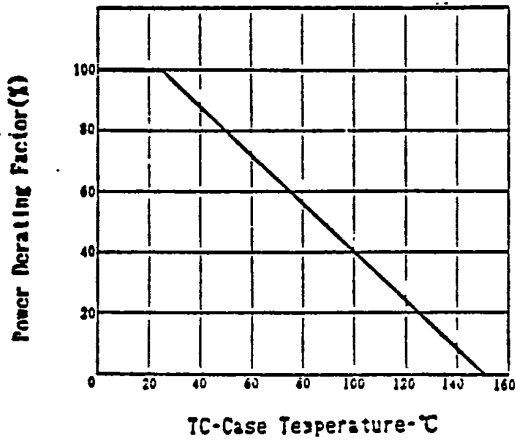
Electrical Characteristics ($T_a=25^\circ\text{C}$)

Characteristics	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Drain Leakage Current	I_{DSS}			100	μA	$V_{DS}=250\text{V}, V_{GS}=0$
Gate to Source Leakage Current	I_{GSS}			± 100	nA	$V_{GS}=\pm 20\text{V}, V_{DS}=0$
Gate to Source Cutoff Voltage	$V_{GS(off)}$	1.5		3.5	V	$V_{DS}=10\text{V}, I_D=1.0\text{mA}$
Forward Transfer Admittance	y_{fs}	5.0			S	$V_{DS}=10\text{V}, I_D=10\text{A}$
Drain to Source On-State Resistance	$R_{DS(on)}$		0.18	0.23	Ω	$V_{GS}=10\text{V}, I_D=10\text{A}$
Input Capacitance	C_{iss}		1900		pF	$V_{DS}=10\text{V}, V_{GS}=0$
Output Capacitance	C_{oss}		680		pF	$f=1.0\text{MHz}$
Reverse Transfer Capacitance	C_{rss}		320		pF	$I_D=10\text{A}$
Turn-On Delay Time	$t_d(on)$		30		ns	$V_{GS(on)}=10\text{V}$
Rise Time	t_r		45		ns	$V_{CC}=150\text{V}, RL=15\Omega$
Turn-Off Delay Time	$t_d(off)$		120		ns	
Fall Time	t_f		40		ns	

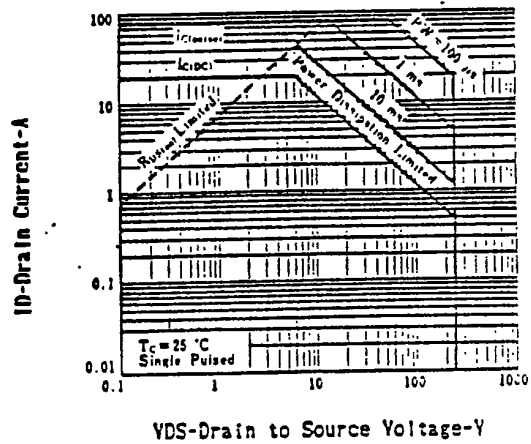
TURN-ON AND TURN-OFF TIME TEST CIRCUIT



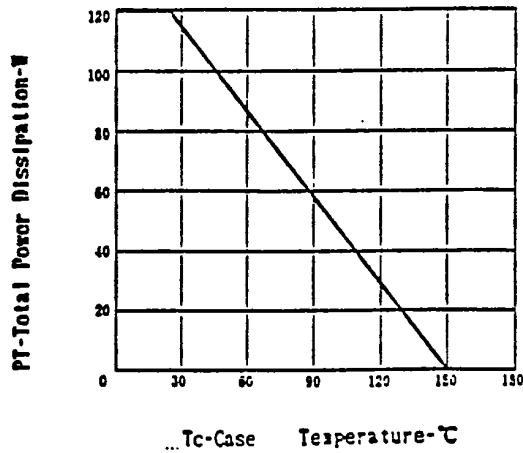
DERATING FACTOR OF FORWARD BIAS SAFE OPERATING AREA



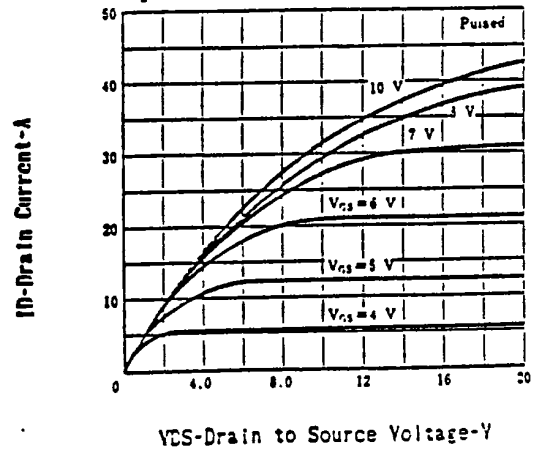
FORWARD BIAS SAFE OPERATING AREA

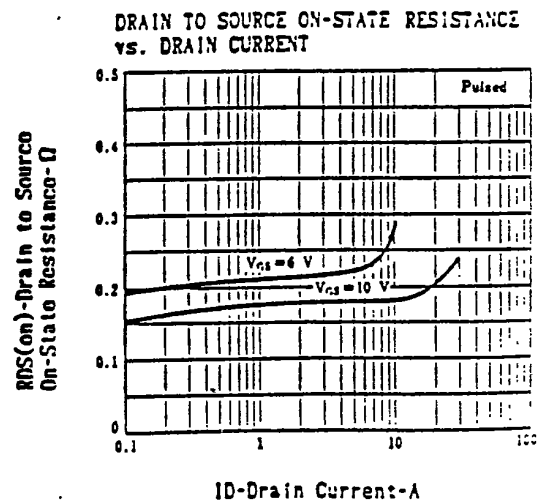
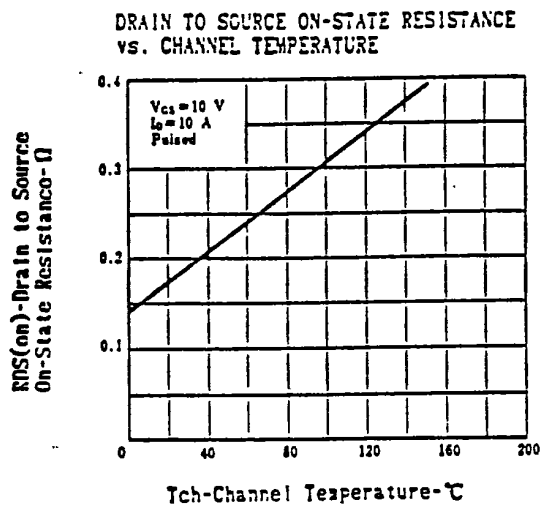
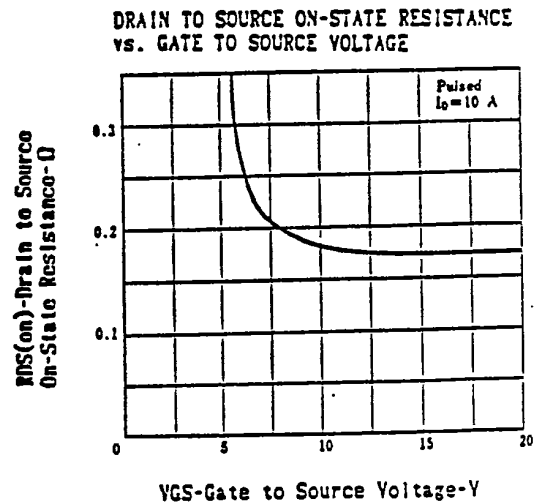
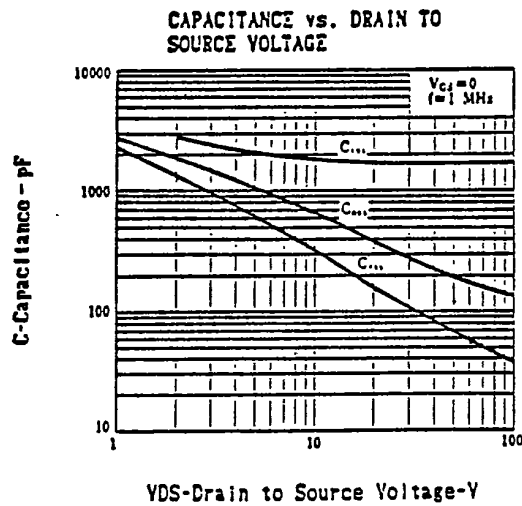
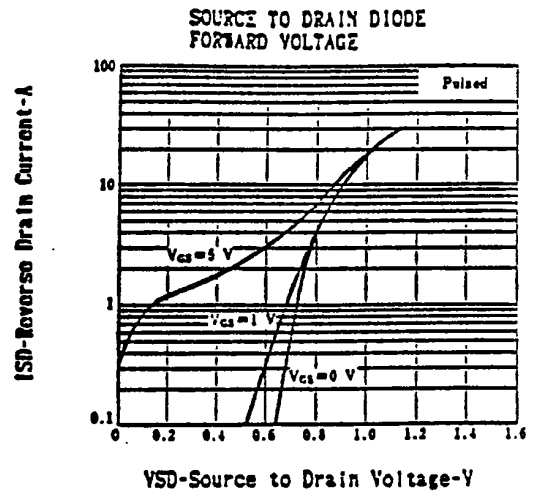
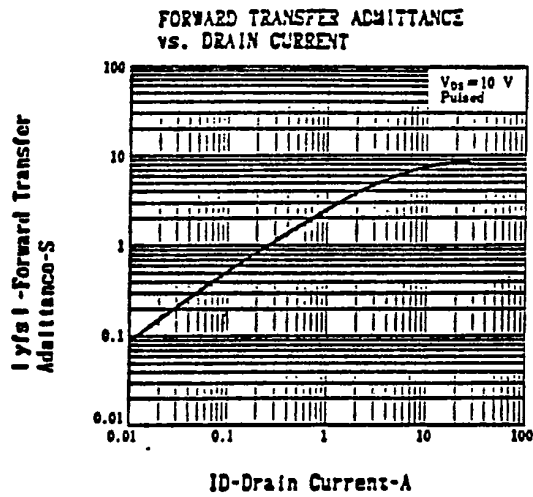


TOTAL POWER DISSIPATION vs. CASE TEMPERATURE

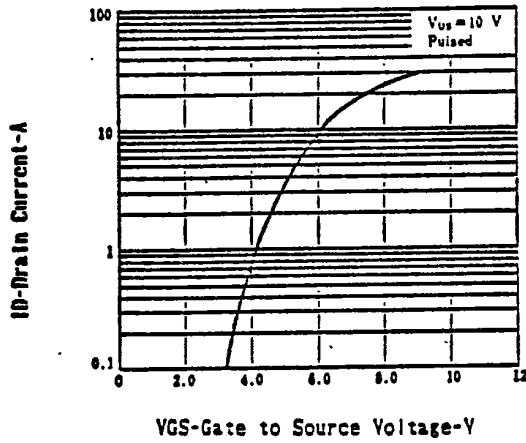


DRAIN CURRENT vs. DRAIN TO SOURCE VOLTAGE

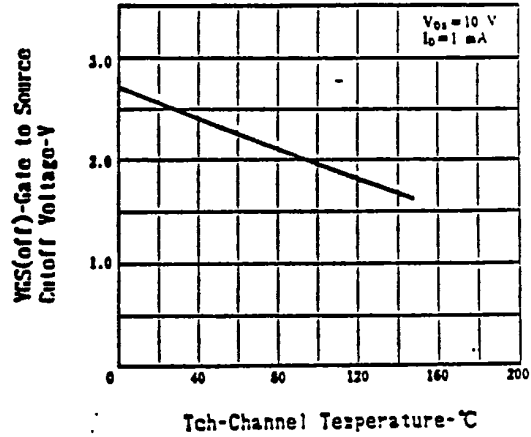




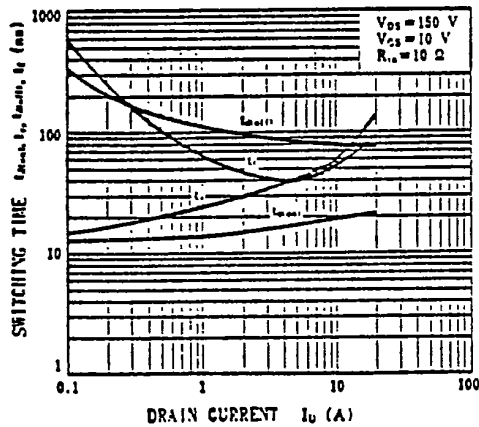
TRANSFER CHARACTERISTICS



GATE TO SOURCE CUTOFF VOLTAGE vs. CHANNEL TEMPERATURE



SWITCHING CHARACTERISTICS



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