

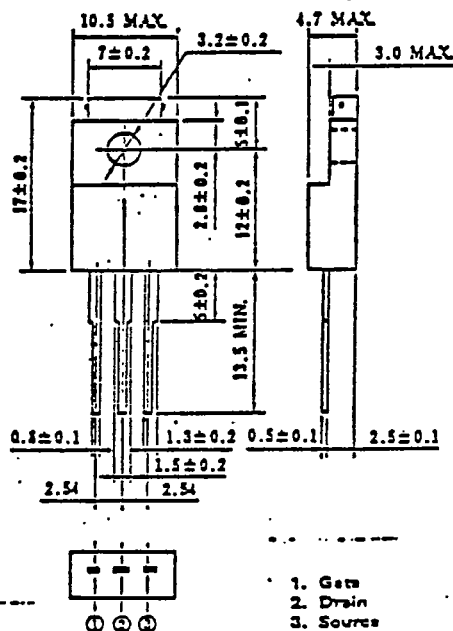
NEC
ELECTRON DEVICE

MOS FIELD EFFECT TRANSISTOR

2SK813

FAST SWITCHING N-CHANNEL SILICON POWER MOS FET

PACKAGE DIMENSIONS (Unit:mm)



Electrical Characteristics (Ta=25 °C)

Features

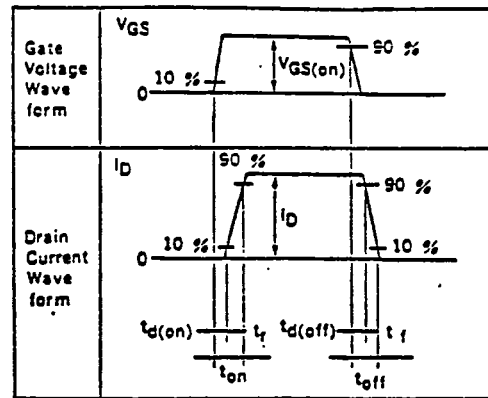
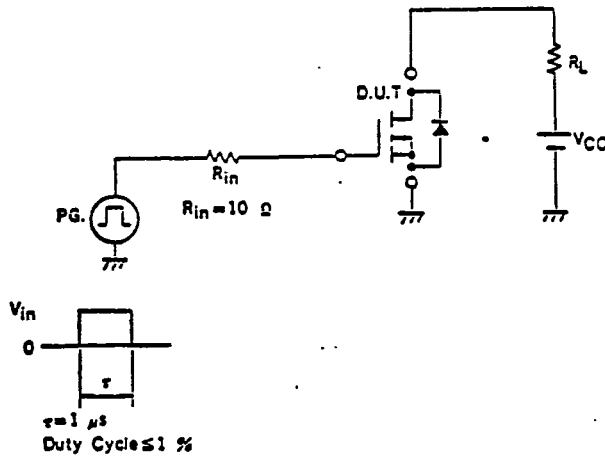
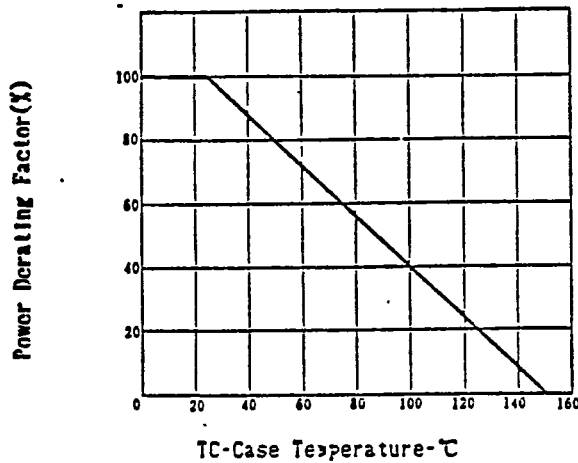
Suitable for switching power supplies,
actuator controls and pulse circuits
4V Gate Drive — Logic level —
Large Current Switching : $I_D(DC)=21A$
Low $R_{DS(on)}$
No second breakdown

Absolute Maximum Ratings(Ta=25°C)

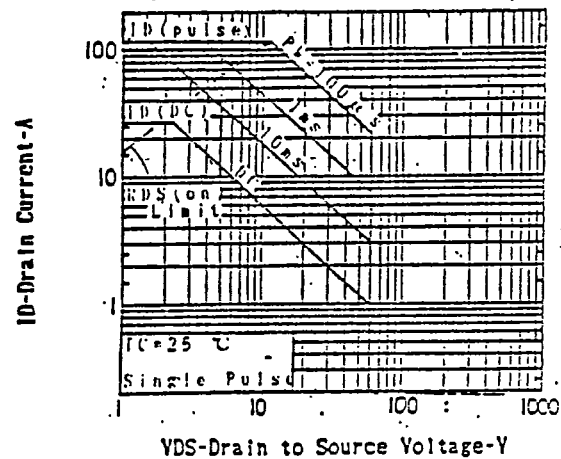
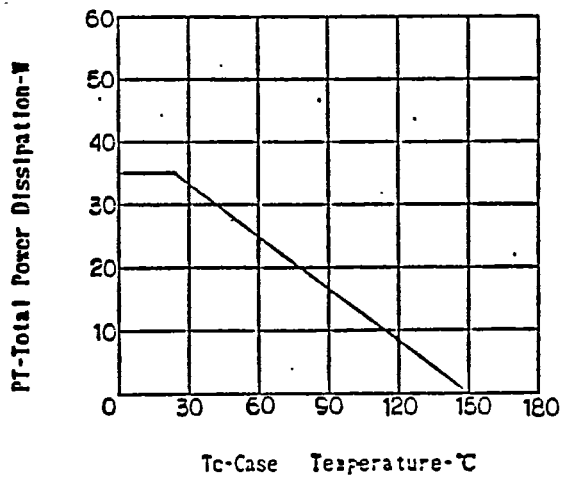
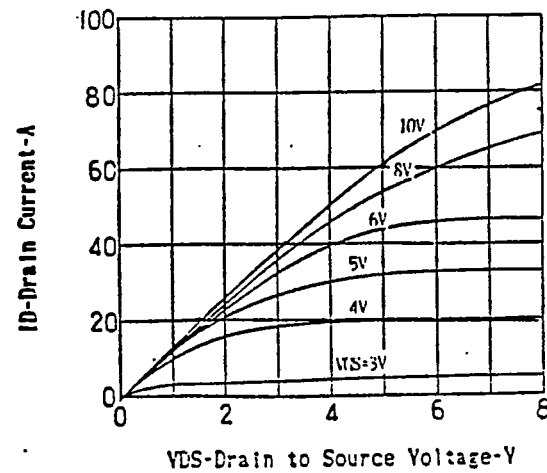
Drain to Source Voltage	V_{DSS}	60V
Gate to Source Voltage	V_{GSS}	± 20V
Continuous Drain Current	$I_D(DC)$	± 21A
Pulse Drain Current	$I_D(pulse)$	* ± 84A
Total Power Dissipation	PT	2.0W
Total Power Dissipation	PT**	35W
Channel Temperature	Tch	150 °C
Storage Temperature	Tstg	-55to+150 °C
* Tch ≤ 150 °C		
** Tc = 25 °C		

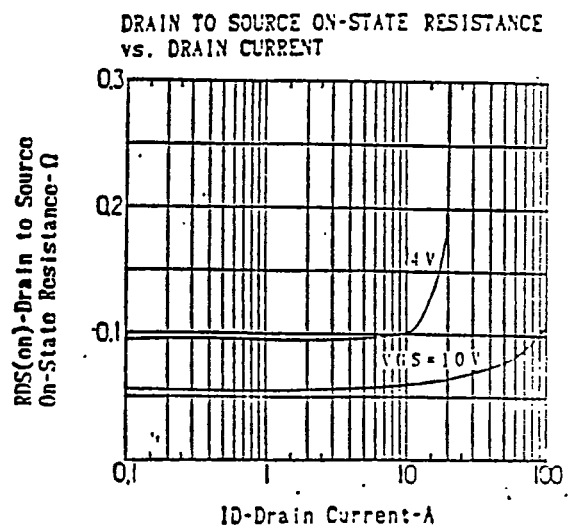
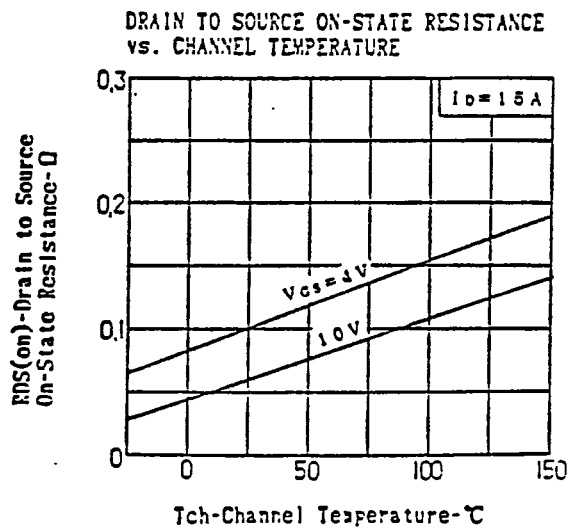
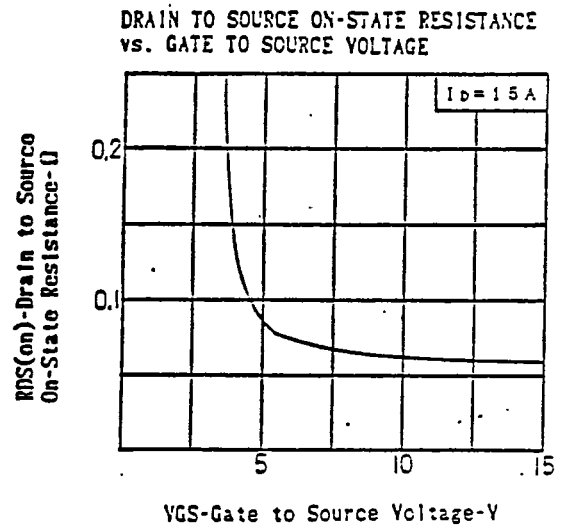
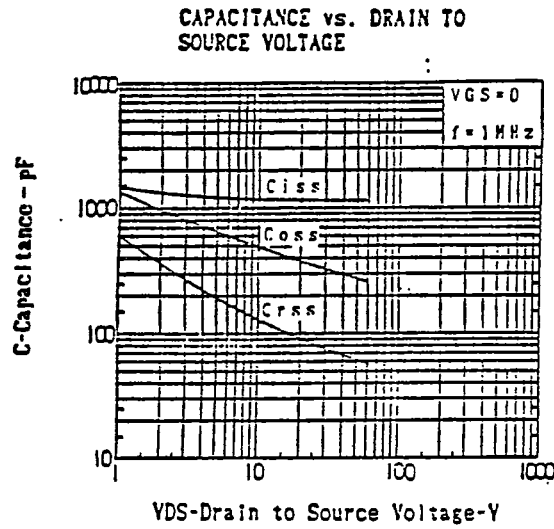
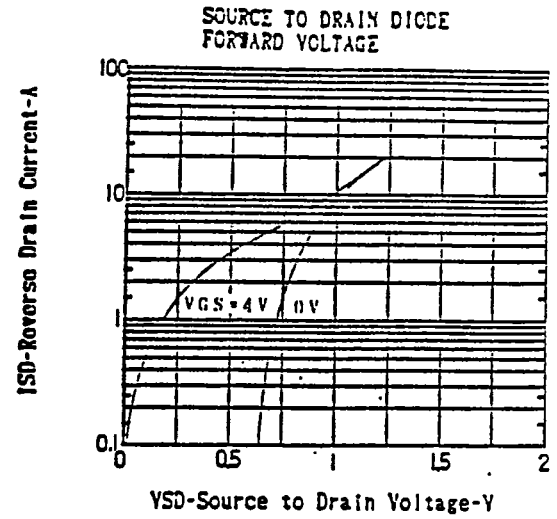
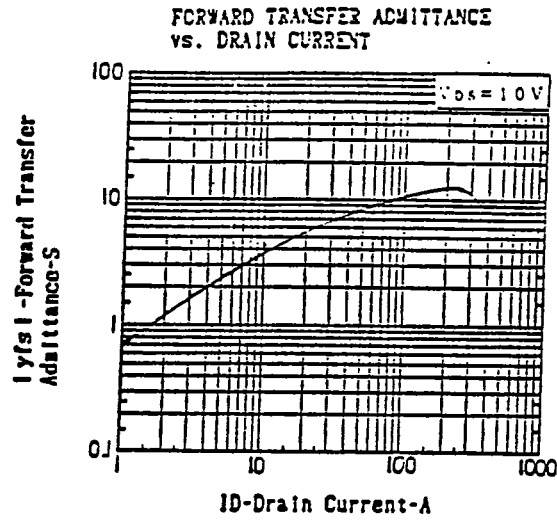
Characteristics	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Drain Leakage Current	I_{DSS}			10	μA	$V_{DS} = 60V, V_{GS} = 0$
Gate to Source Leakage Current	I_{GSS}			100	nA	$V_{GS} = 20V, V_{DS} = 0$
Gate to Source Cutoff Voltage	$V_{GS(off)}$	1.0		2.5	V	$V_{DS} = 10V, I_D = 1.0mA$
Forward Transfer Admittance	$ y_{fs} $	6.0	12		S	$V_{DS} = 10V, I_D = 15A$
Drain to Source On-State Resistance	$R_{DS(on)}$		0.07	0.085	Ω	$V_{GS} = 10V, I_D = 15A$
Drain to Source On-State Resistance	$R_{DS(on)}$		0.1	0.15	Ω	$V_{GS} = 4.0V, I_D = 15A$
Input Capacitance	C_{iss}		1200		pF	$V_{DS} = 10V,$
Output Capacitance	C_{oss}		520		pF	$V_{GS} = 0,$
Reverse Transfer Capacitance	C_{rss}		130		pF	$f = 1.0MHz$
Turn-On Delay Time	$t_d(on)$		10		ns	$I_D = 15A,$
Rise Time	t_r		10		ns	$V_{GS(on)} = 10V,$
Turn-Off Delay Time	$t_d(off)$		70		ns	$V_{cc} = 30V,$
Fall Time	t_f		100		ns	$R_L = 2.0 \Omega$

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 TEMPERATUREDRAIN CURRENT vs. DRAIN TO
SOURCE VOLTAGE



6427525 N E C ELECTRONICS INC

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