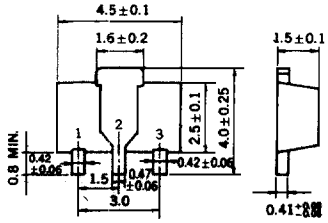
MOS FIELD EFFECT POWER TRANSISTOR
2SK680

FAST SWITCHING
N-CHANNEL SILICON POWER MOS FET

PACKAGE DIMENSIONS
in millimeters



1. Source
2. Drain
3. Gate

FEATURES

- Suitable for switching power supplies, actuater controls, and pulse circuits
- Low $R_{DS(on)}$
- No second breakdown

ABSOLUTE MAXIMUM RATINGS (T_a = 25 °C)

Drain to Source Voltage	V_{DSS}	30	V
Gate to Source Voltage	V_{GSS}	±20	V
Continuous Drain Current	$I_{D(DC)}$	±1.0	A
Total Power Dissipation	P_T*	1.0	W
Channel Temperature	T_{ch}	150	°C
Storage Temperature	T_{stg}	−55 to + 150	°C

*T_C = 25 °C

ELECTRICAL CHARACTERISTICS (T_a = 25 °C)

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Drain Leakage Current	I_{DSS}			10	μA	V_{DS} = 20 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	1.7	2.5	V	V_{DS} = 10 V, I_D = 1 mA
Forward Transfer Admittance	$\|y_{fs}\|$	0.4			S	V_{DS} = 10 V, I_D = 0.5 A
Drain to Source On-State Resistance	$R_{DS(on)}$		0.5	1.0	Ω	V_{GS} = 10 V, I_D = 0.5 A
Drain to Source On-State Resistance	$R_{DS(on)}$		0.95	1.5	Ω	V_{GS} = 4.0 V, I_D = 0.5 A
Input Capacitance	C_{iss}		40		pF	V_{DS} = 10 V V_{GS} = 0 f = 1 MHz
Output Capacitance	C_{oss}		65		pF	
Reverse Transfer Capacitance	C_{rss}		10		pF	
Turn-On Delay Time	$t_{d(on)}$		60		ns	I_D = 0.5 A, V_{CC} = 25 V $V_{GS(on)}$ = 10 V R_L = 50 Ω R_{in} = 10 Ω
Rise Time	t_r		180		ns	
Turn-Off Delay Time	$t_{d(off)}$		550		ns	
Fall Time	t_f		400		ns	

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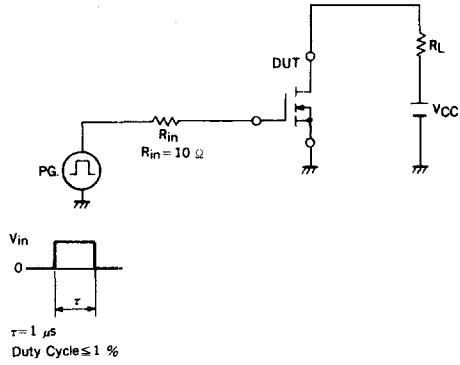
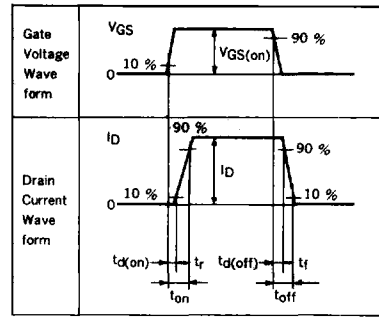
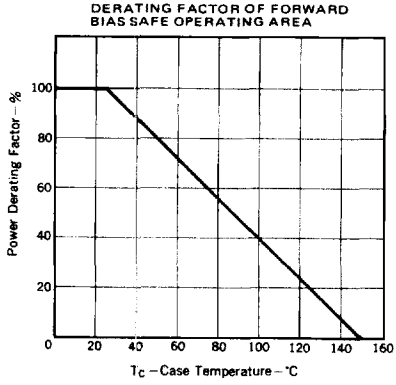
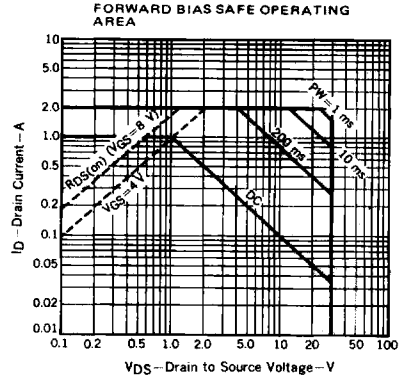
TURN-ON AND TURN-OFF TIME TEST CIRCUIT

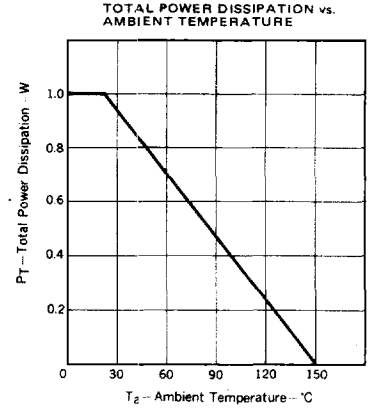


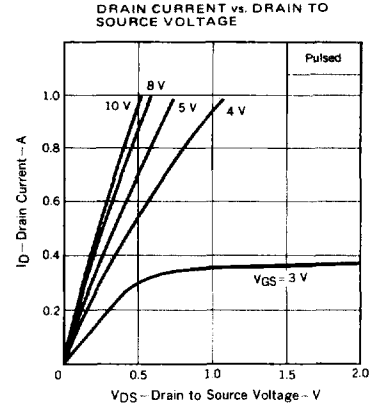


TYPICAL CHARACTERISTICS (T_a = 25 °C)

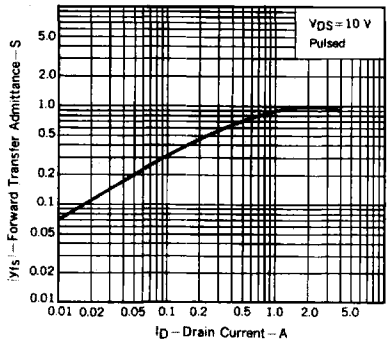




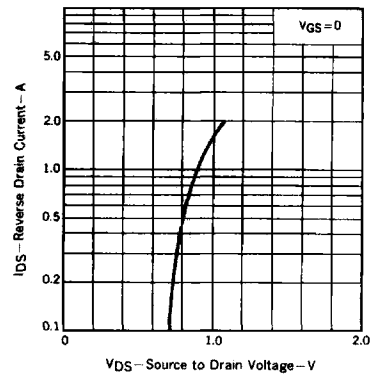




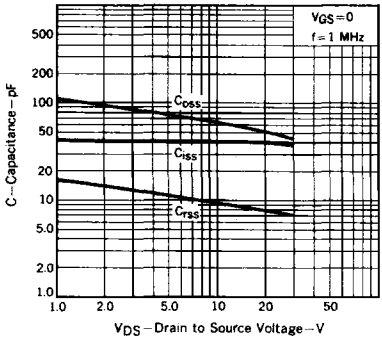
FORWARD TRANSFER ADMITTANCE vs. DRAIN CURRENT



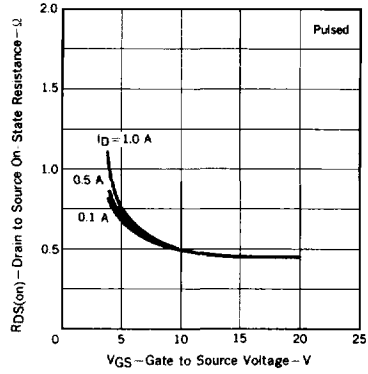
SOURCE TO DRAIN DIODE FORWARD VOLTAGE



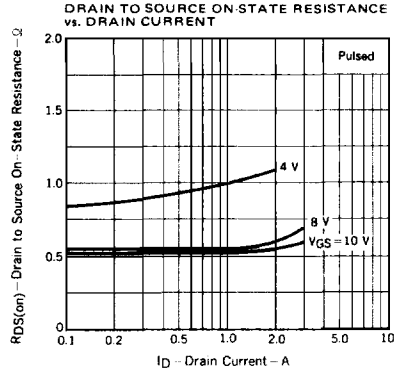
CAPACITANCE vs. DRAIN TO SOURCE VOLTAGE



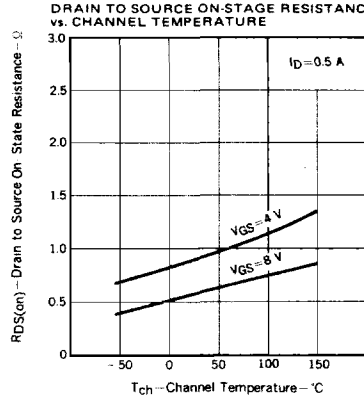
DRAIN TO SOURCE ON-STATE RESISTANCE vs. GATE TO SOURCE VOLTAGE



DRAIN TO SOURCE ON-STATE RESISTANCE vs. DRAIN CURRENT



DRAIN TO SOURCE ON-STAGE RESISTANCE vs. CHANNEL TEMPERATURE



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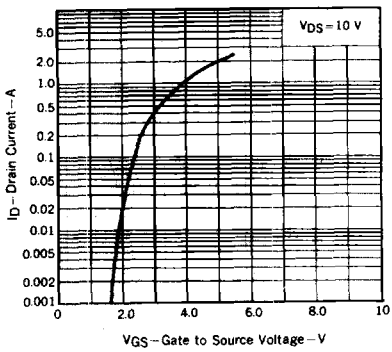
TRANSFER CHARACTERISTICS



GATE TO SOURCE CUTOFF VOLTAGE vs. CHANNEL TEMPERATURE