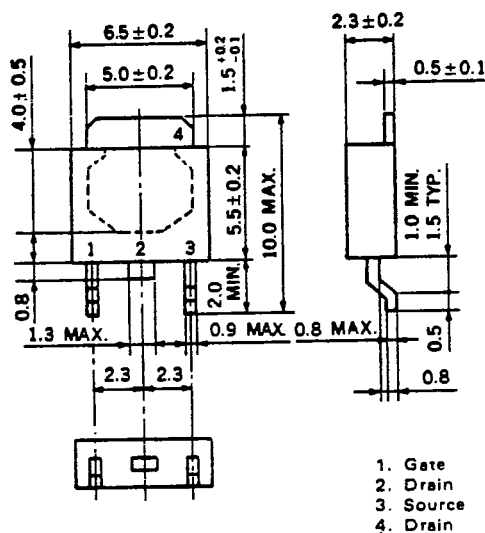


MOS FIELD EFFECT POWER TRANSISTOR

2SK612-Z

FAST SWITCHING N-CHANNEL SILICON POWER MOS FET INDUSTRIAL USE

PACKAGE DIMENSIONS in millimeters



FEATURES

- Suitable for switching power supplies, actuator 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 ($T_a = 25^\circ\text{C}$)

Drain to Source Voltage	V_{DS}	100	V
Gate to Source Voltage	V_{GS}	± 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	$^\circ\text{C}$
Storage Temperature	T_{stg}	-55 to +150	$^\circ\text{C}$

* $PW \leq 10$ ms, Duty Cycle ≤ 50 %

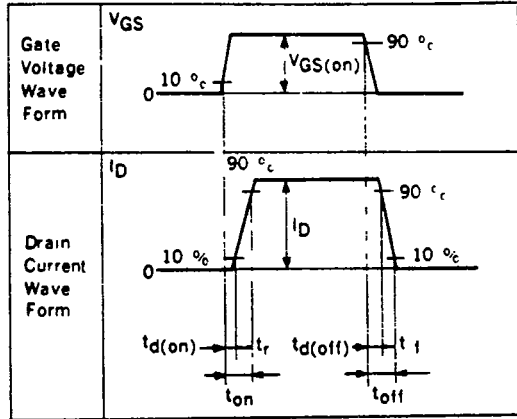
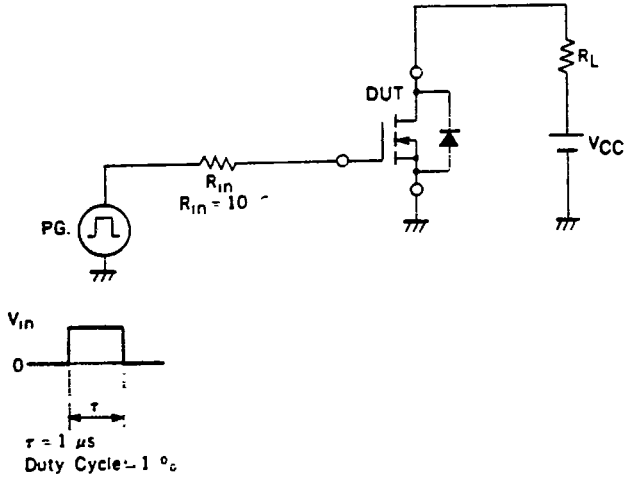
** $T_c = 25^\circ\text{C}$

*** Mounted on ceramic substrate of $2.5\text{ cm}^2 \times 0.7\text{ mm}$

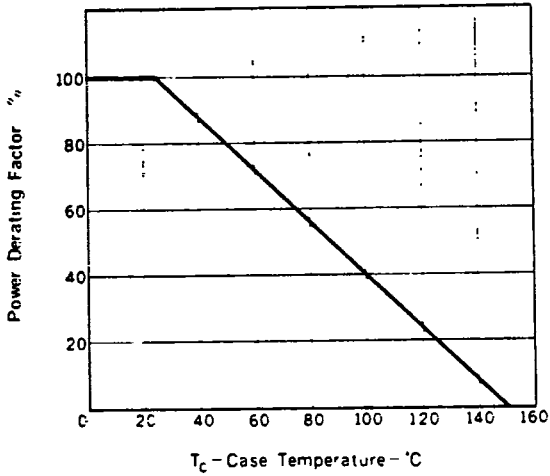
ELECTRICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$)

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Drain Leakage Current	I_{DSS}			10	μA	$V_{DS} = 80\text{ V}, V_{GS} = 0$
Gate to Source Leakage Current	I_{GSS}			± 100	nA	$V_{GS} = \pm 15\text{ V}, V_{DS} = 0$
Gate to Source Cutoff Voltage	$V_{GS(off)}$	0.8		3.0	V	$V_{DS} = 10\text{ V}, I_D = 1\text{ mA}$
Forward Transfer Admittance	$ y_{fs} $	1.0			S	$V_{DS} = 10\text{ V}, I_D = 1\text{ A}$
Drain to Source On-State Resistance	$R_{DS(on)}$		0.3	0.45	Ω	$V_{GS} = 10\text{ V}, I_D = 1\text{ A}$
Drain to Source On-State Resistance	$R_{DS(on)}$		0.35	0.6	Ω	$V_{GS} = 4\text{ V}, I_D = 0.8\text{ A}$
Input Capacitance	C_{iss}		500		pF	$V_{DS} = 10\text{ V}, V_{GS} = 0$ $f = 1\text{ MHz}$
Output Capacitance	C_{oss}		120		pF	
Reverse Transfer Capacitance	C_{rss}		30		pF	
Turn-On Delay Time	$t_{d(on)}$		10		ns	$I_D = 1\text{ A}, V_{CC} = 50\text{ V}$ $V_{GS(on)} = 10\text{ V}$ $R_L = 50\ \Omega$ $R_{in} = 10\ \Omega$
Rise Time	t_r		20		ns	
Turn-Off Delay Time	$t_{d(off)}$		80		ns	
Fall Time	t_f		20		ns	

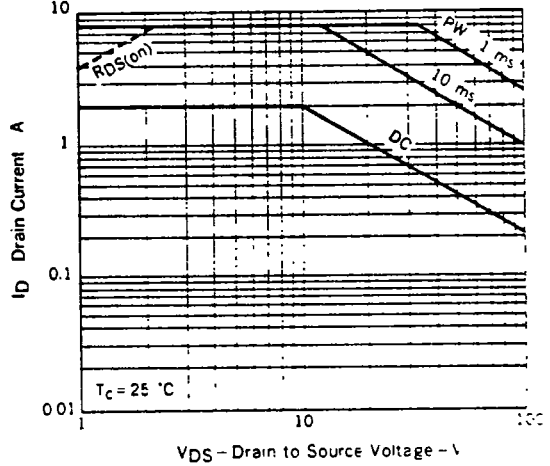
TURN-ON AND TURN-OFF TIME TEST CIRCUIT



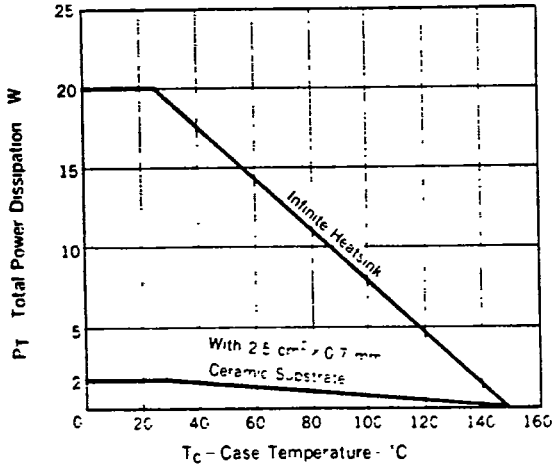
DERATING FACTOR OF FORWARD BIAS SAFE OPERATING AREA



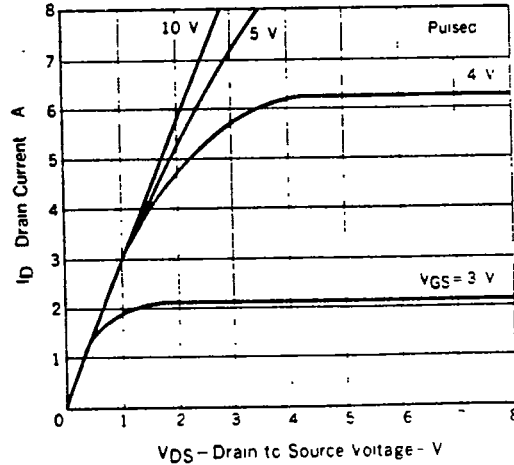
FORWARD BIAS SAFE OPERATING AREA

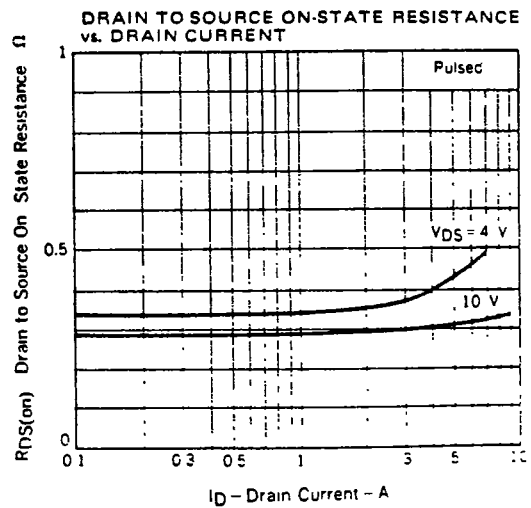
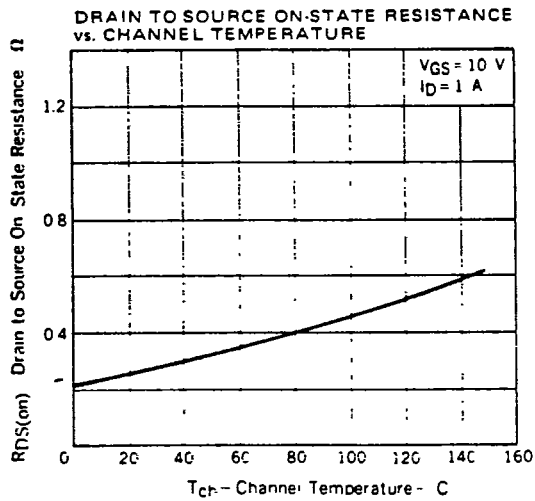
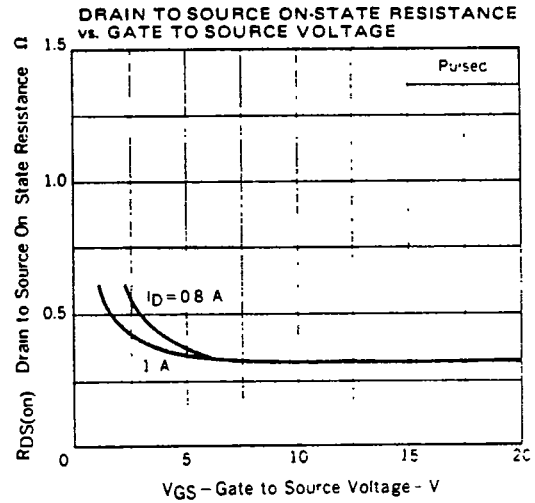
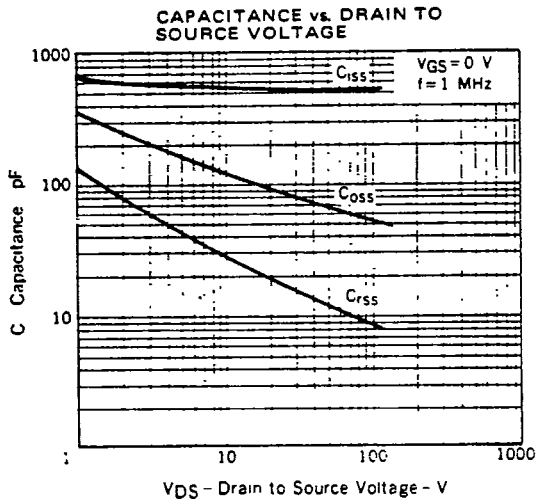
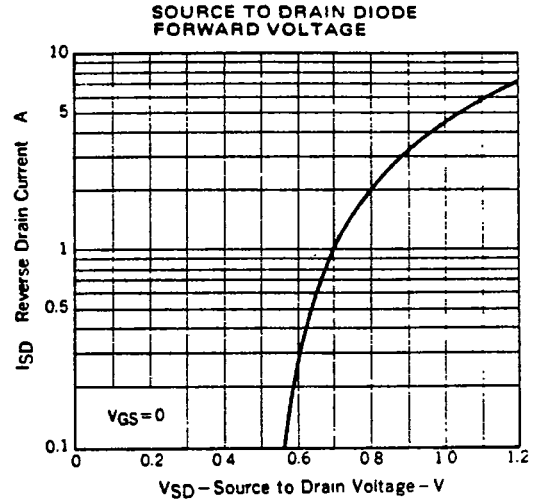
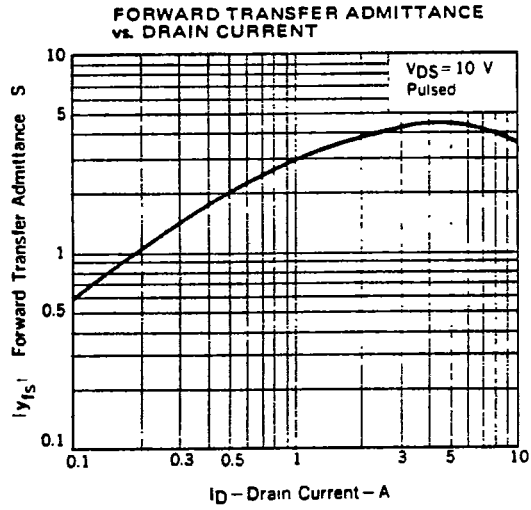


TOTAL POWER DISSIPATION vs. CASE TEMPERATURE



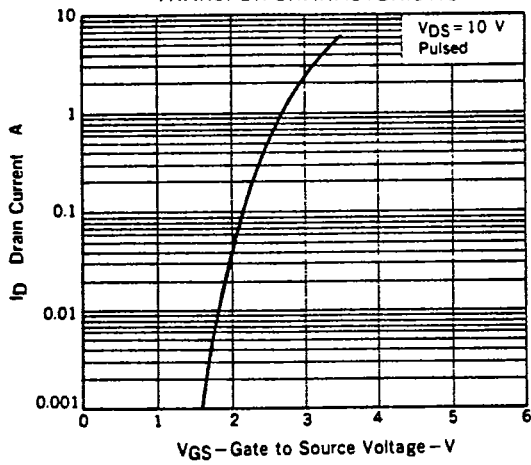
DRAIN CURRENT vs. DRAIN TO SOURCE VOLTAGE



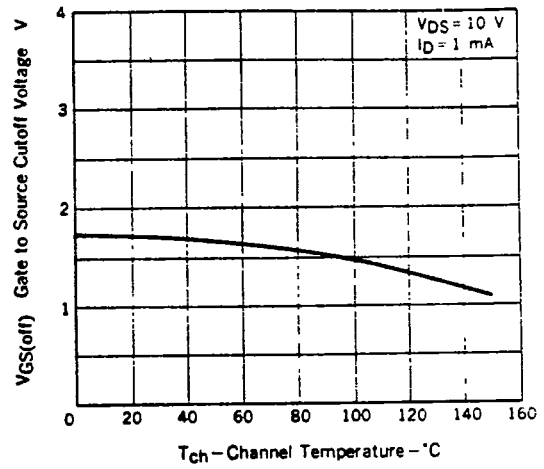


2SK612-Z

TRANSFER CHARACTERISTIC



GATE TO SOURCE CUTOFF VOLTAGE vs. CHANNEL TEMPERATURE



4