

MOS FIELD EFFECT POWER TRANSISTORS

2SK739, 2SK739-Z

FAST SWITCHING N-CHANNEL SILICON POWER MOS FET INDUSTRIAL USE

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_{DSS}	60	V
Gate to Source Voltage	V_{GSS}	± 20	V
Continuous Drain Current	$I_{D(DC)}$	± 2.0	A
Peak Drain Current	$I_{D(pulse)}$ *	± 8.0	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 300 μs , Duty Cycle \leq 10 %

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

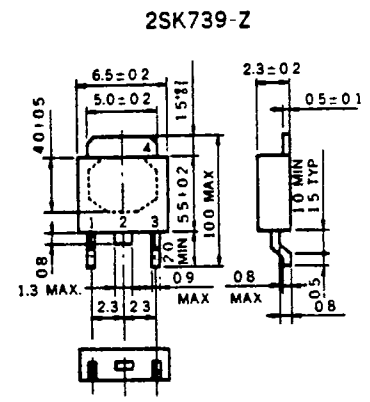
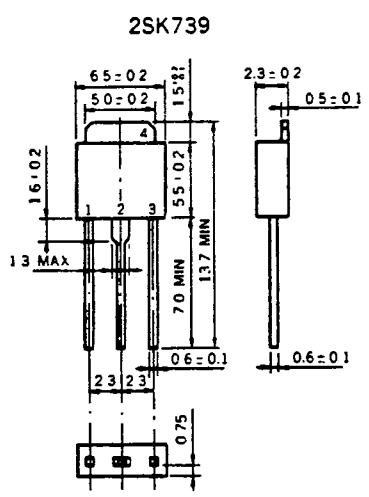
*** Mounted on ceramic substrate of 2.5 cm² x 0.7 mm

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

CHARACTERISTIC	SYMBOL	MIN.	TYP	MAX.	UNIT	TEST CONDITIONS
Drain Leakage Current	I_{DSS}			10	μA	$V_{DS} = 60\text{ V}, V_{GS} = 0$
Gate to Source Leakage Current	I_{GSS}			± 100	nA	$V_{GS} = \pm 20\text{ V}, V_{DS} = 0$
Gate to Source Cutoff Voltage	$V_{GS(off)}$	1.0		2.5	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	$R_{DS(on)}$		0.17	0.25	Ω	$V_{GS} = 10\text{ V}, I_D = 1\text{ A}$
Drain to Source On-State Resistance	$R_{DS(on)}$		0.22	0.35	Ω	$V_{GS} = 4\text{ V}, I_D = 0.8\text{ A}$
Input Capacitance	C_{iss}		550		pF	
Output Capacitance	C_{oss}		200		pF	$V_{DS} = 10\text{ V}, V_{GS} = 0$ $f = 1\text{ MHz}$
Reverse Transfer Capacitance	C_{rss}		60		pF	
Turn-On Delay Time	$t_d(on)$		10		ns	$I_D = 1\text{ A}, V_{CC} = 30\text{ V}$
Rise Time	t_r		20		ns	$V_{GS(on)} = 10\text{ V}$
Turn-Off Delay Time	$t_d(off)$		80		ns	$R_L = 30\ \Omega$
Fall Time	t_f		20		ns	$R_{in} = 10\ \Omega$

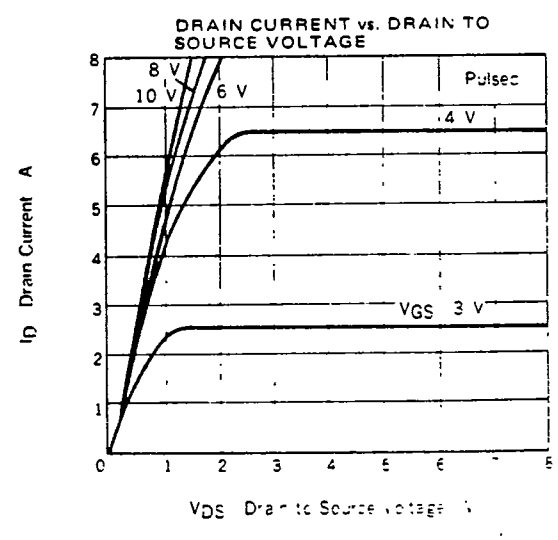
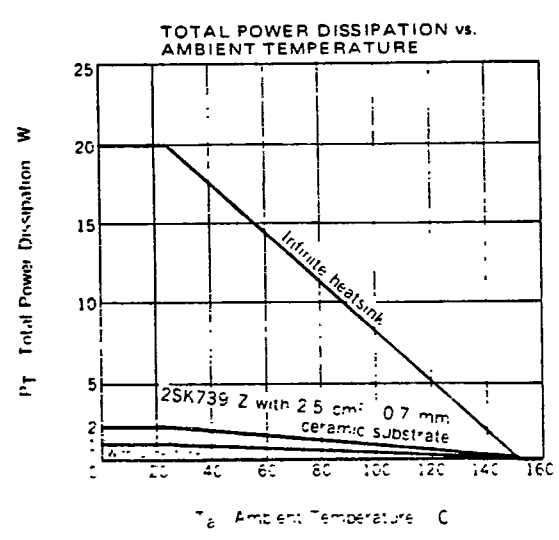
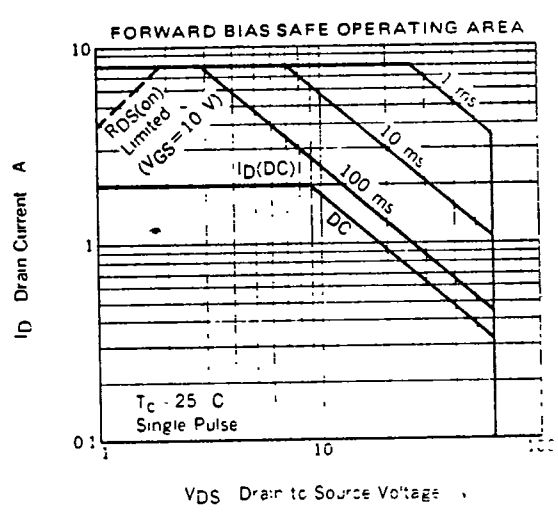
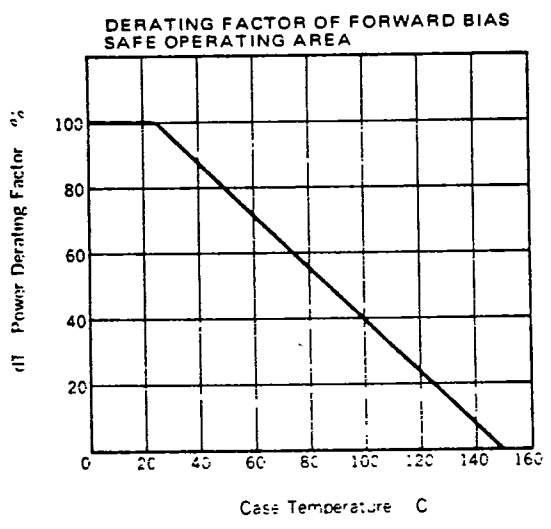
NEC cannot assume any responsibility for any circuits shown or represent that they are free from patent infringement.

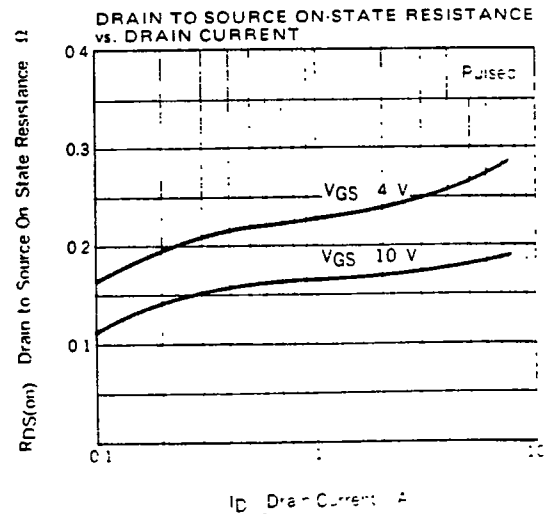
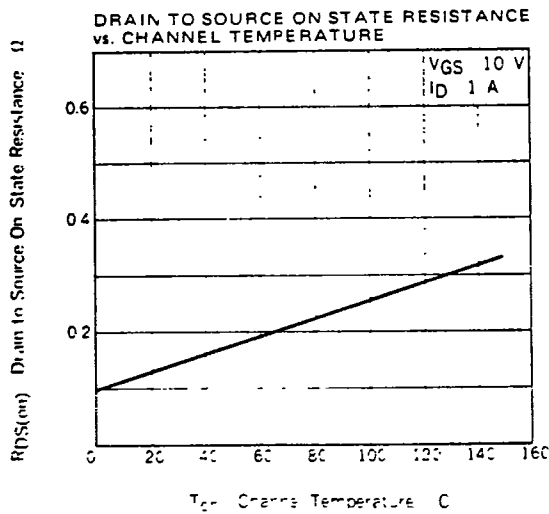
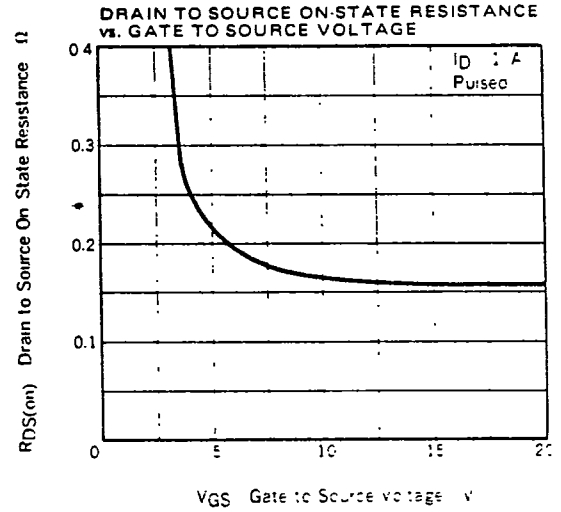
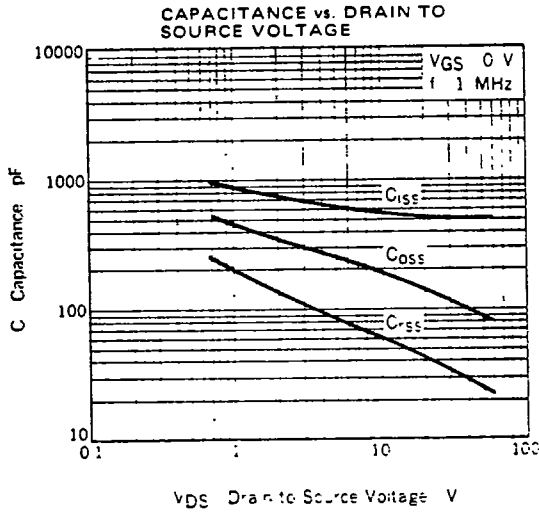
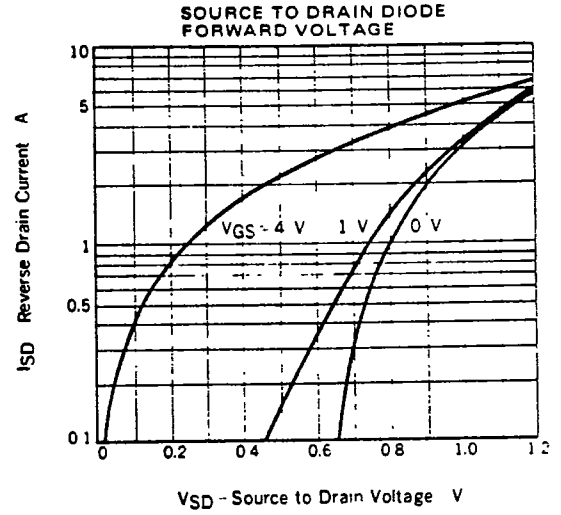
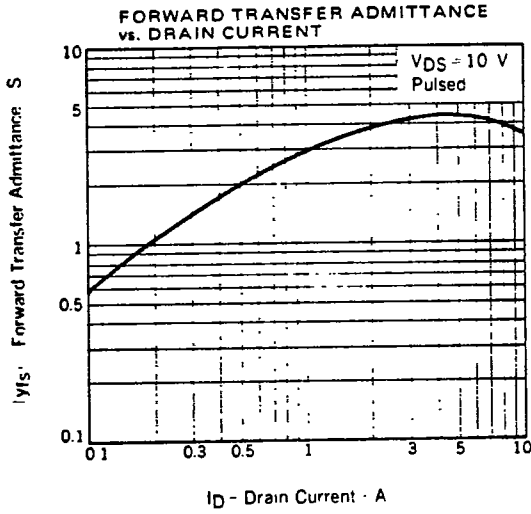
PACKAGE DIMENSIONS (Unit: mm)

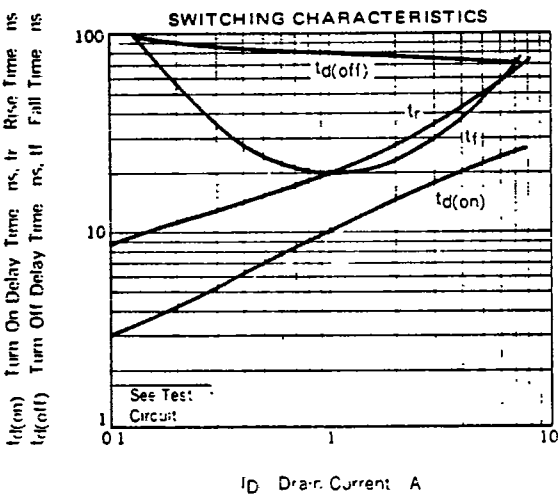
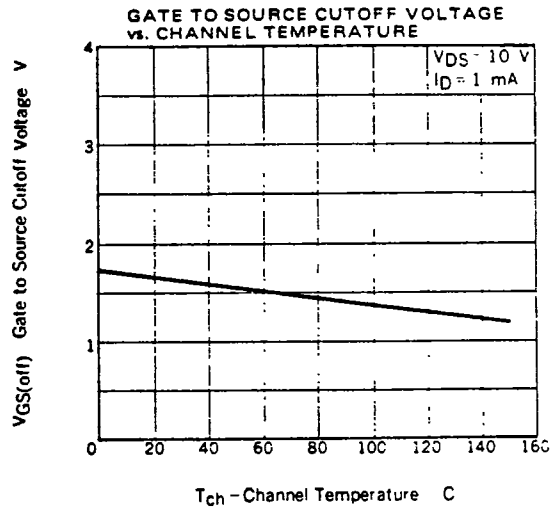
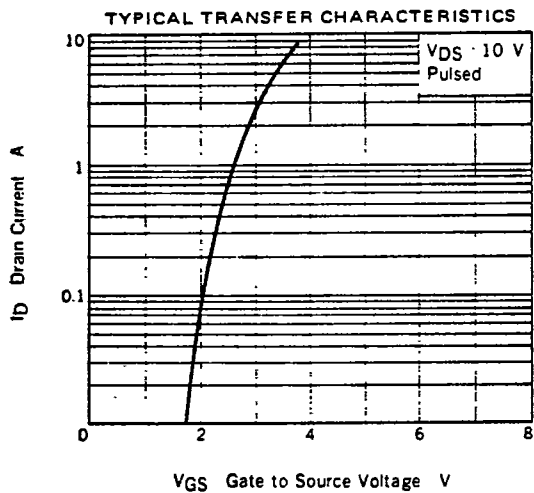


- 1. Gate
- 2. Drain
- 3. Source
- 4. Drain (Fin)

TYPICAL CHARACTERISTICS (T_a = 25 °C)







SWITCHING TIME TEST CIRCUIT

