N-CHANNEL MOS FIELD EFFECT POWER TRANSISTOR

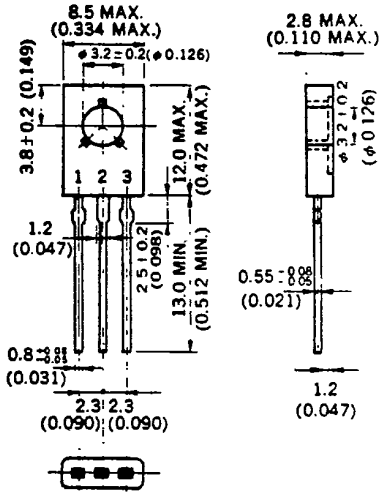
2SK700

DESCRIPTION The 2SK700 is N-Channel MOS Field Effect Power Transistor designed for solenoid, motor and lamp driver.

FEATURES

- 4 V Gate Drive – Logic level –
- Low $R_{DS(on)}$
- No Second Breakdown

PACKAGE DIMENSIONS
in millimeters (inches)



1. Source
2. Drain connected to mounting plane
3. Gate

ABSOLUTE MAXIMUM RATINGS

Maximum Temperatures

- Storage Temperature . . . . . −55 to +150 °C
- Junction Temperature . . . . . 150 °C Maximum

Maximum Power Dissipations

- Total Power Dissipation . . . . . 1.3 W
- Total Power Dissipation (T_C = 25 °C) . . . . . 15 W

Maximum Voltages and Currents (T_a = 25 °C)

V_{DSS}	Drain to Source Voltage	80	V
V_{GSS}	Gate to Source Voltage.	±20	V
$I_{D(DC)}$	Drain Current (DC)	±2	A
$I_{D(pulse)}$	Drain Current (pulse)*	±6	A

* PW ≦ 300 μs, Duty Cycle ≦ 10 %

ELECTRICAL CHARACTERISTICS (T_a = 25 °C)

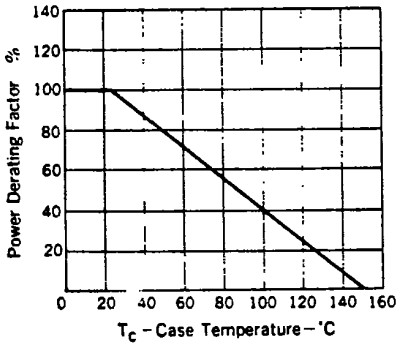
SYMBOL	CHARACTERISTIC	MIN.	TYP	MAX.	UNIT	TEST CONDITIONS
$R_{DS(on)}$	Drain to Source On-State Resistance		0.6	0.8	Ω	V_{GS} = 10 V, I_D = 1 A
$R_{DS(on)}$	Drain to Source On-State Resistance		0.8	1.0	Ω	V_{GS} = 4 V, I_D = 1 A
$V_{GS(off)}$	Gate to Source Cutoff Voltage	1.0		2.5	V	V_{DS} = 10 V, I_D = −1 mA
$\|Y_{fs}\|$	Forward Transfer Admittance	0.5			S	V_{DS} = 10 V, I_D = 1 A
I_{DSS}	Drain Leakage Current			10	μA	V_{DS} = 80 V, V_{GS} = 0
I_{GSS}	Gate to Source Leakage Current			±100	nA	V_{GS} = ±20 V, V_{DS} = 0
C_{iss}	Input Capacitance		200		pF	V_{DS} = 10 V V_{GS} = 0 f = 1 MHz
C_{oss}	Output Capacitance		70		pF	
C_{rss}	Reverse Transfer Capacitance		15		pF	
$t_{d(on)}$	Turn-On Delay Time		45		ns	I_D = 1 A, V_{CC} = 50 V R_L = 50 Ω R_{in} = 10 Ω
t_r	Rise Time		40		ns	
$t_{d(off)}$	Turn-Off Delay Time		450		ns	
t_f	Fall Time		110		ns	

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

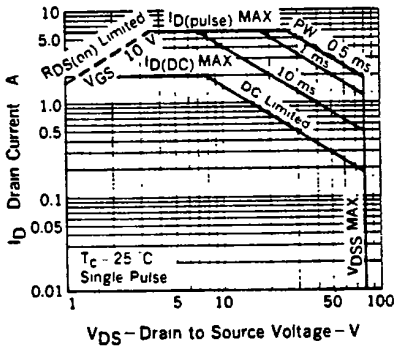
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TYPICAL CHARACTERISTICS (T_a = 25 °C)

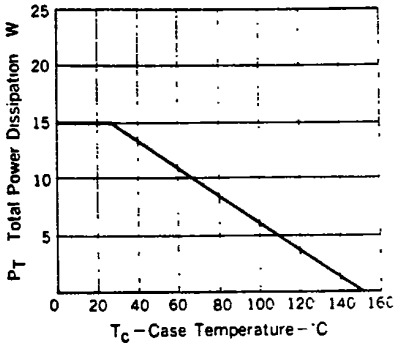
DERATING FACTOR OF FOR WARD BIAS SAFE OPERATING AREA



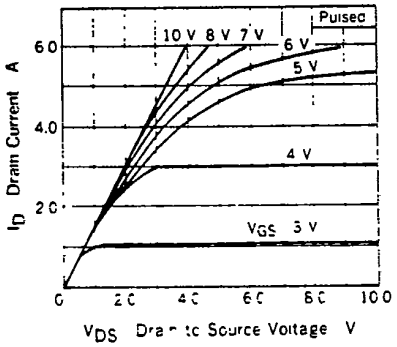
FORWARD BIAS SAFE OPERATING AREA



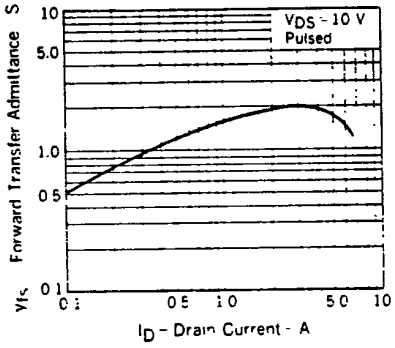
TOTAL POWER DISSIPATION vs. CASE TEMPERATURE



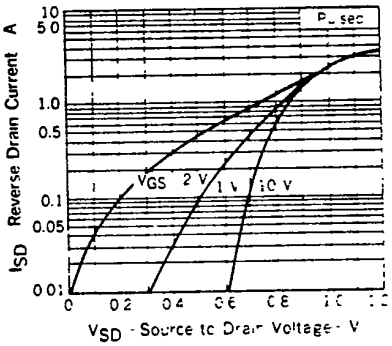
DRAIN CURRENT vs. DRAIN TO SOURCE VOLTAGE



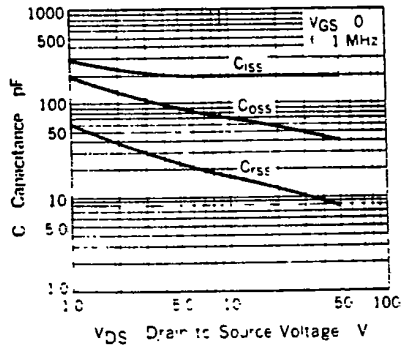
FORWARD TRANSFER ADMITTANCE vs DRAIN CURRENT



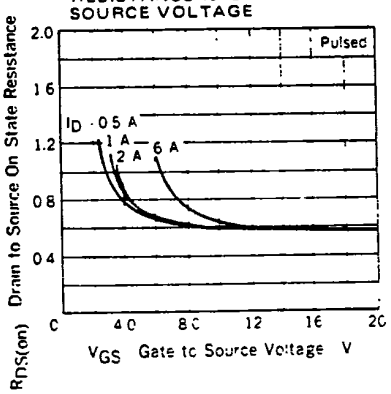
SOURCE TO DRAIN DIODE FORWARD VOLTAGE



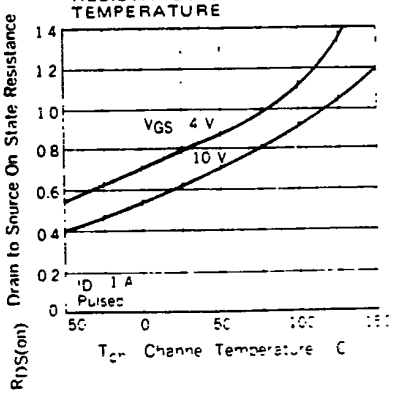
CAPACITANCE vs. DRAIN TO SOURCE VOLTAGE

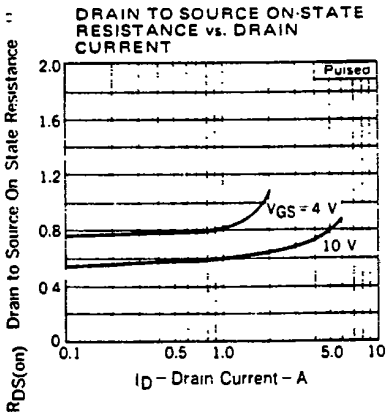


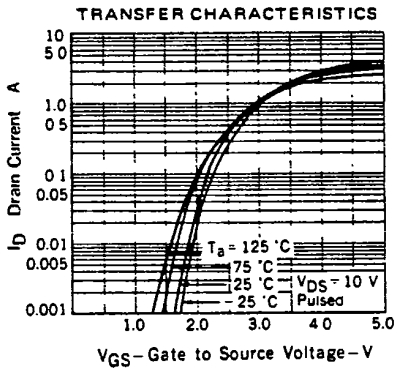
DRAIN TO SOURCE ON-STATE RESISTANCE vs GATE TO SOURCE VOLTAGE

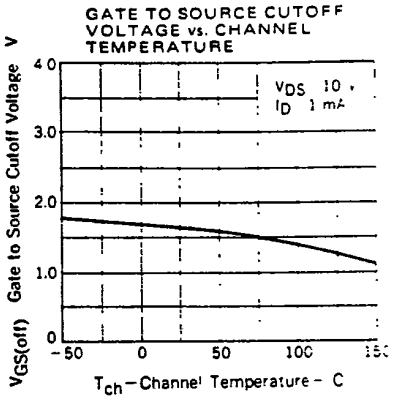


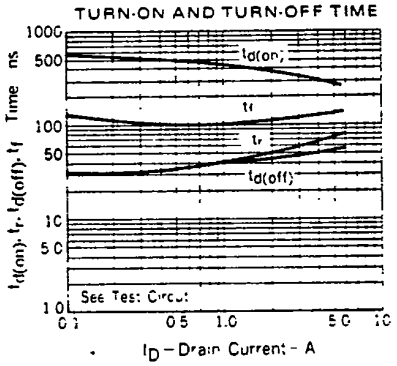
DRAIN TO SOURCE ON STATE RESISTANCE vs CHANNEL TEMPERATURE











TURN-ON AND TURN-OFF TIME TEST CIRCUIT

