

# N-CHANNEL MOS FIELD EFFECT POWER TRANSISTOR

## 2SK736

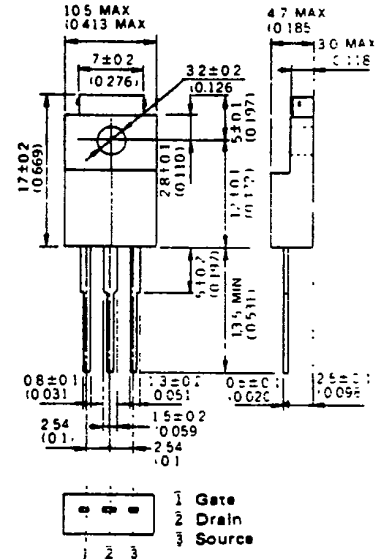
**DESCRIPTION** The 2SK736 is N-Channel MOS Field Effect Power Transistor designed for solenoid, motor and lamp driver.

- FEATURES**
- Gate Drive – Logic level –
  - Low  $R_{DS(on)}$
  - No Secondary Breakdown

**ABSOLUTE MAXIMUM RATINGS**

- Maximum Temperatures**
- Storage Temperature . . . . .  $-55$  to  $+150$  °C
  - Channel Temperature . . . . .  $150$  °C Maximum
- Maximum Power Dissipations**
- Total Power Dissipation ( $T_a = 25$  °C) . . . . . 2.0 W
  - Total Power Dissipation ( $T_c = 25$  °C) . . . . . 35 W
- Maximum Voltages and Currents ( $T_a = 25$  °C)**
- $V_{DSS}$  Drain to Source Voltage . . . . . 100 V
  - $V_{GSS}$  Gate to Source Voltage . . . . .  $\pm 20$  V
  - $I_{D(DC)}$  Drain Current (DC) . . . . .  $\pm 15$  A
  - $I_{D(pulse)}$  Drain Current (pulse)\* . . . . .  $\pm 60$  A
- \*PW  $\leq 300$   $\mu$ s, Duty Cycle  $\leq 10$  %

**PACKAGE DIMENSIONS**  
in millimeters (inches)

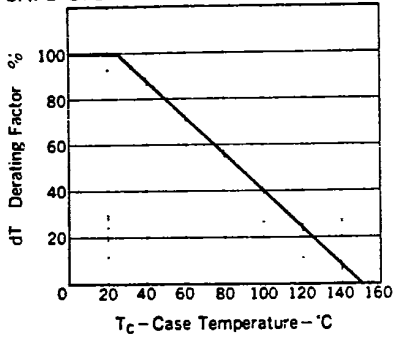


**ELECTRICAL CHARACTERISTICS ( $T_a = 25$  °C)**

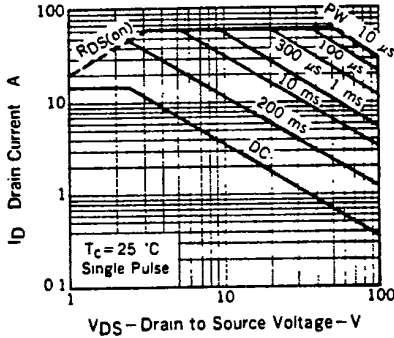
SYMBOL	CHARACTERISTIC	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
$R_{DS(on)}$	Drain to Source On-State Resistance			0.08	$\Omega$	$V_{GS} = 10$ V, $I_D = 6$ A
$R_{DS(on)}$	Drain to Source On-State Resistance			0.10	$\Omega$	$V_{GS} = 4$ V, $I_D = 6$ A
$V_{GS(off)}$	Gate to Source Cutoff Voltage	1.0		2.5	V	$V_{DS} = 10$ V, $I_D = 1$ mA
$ y_{fs} $	Forward Transfer Admittance	5.0			S	$V_{DS} = 10$ V, $I_D = 6$ A
$I_{DSS}$	Drain Leakage Current			10	$\mu$ A	$V_{DS} = 100$ V, $V_{GS} = 0$
$I_{GSS}$	Gate to Source Leakage Current			$\pm 100$	nA	$V_{GS} = \pm 20$ V, $V_{DS} = 0$
$C_{iss}$	Input Capacitance		2400		pF	$V_{DS} = 10$ V
$C_{oss}$	Output Capacitance		600		pF	$V_{GS} = 0$
$C_{rss}$	Reverse Transfer Capacitance		100		pF	$f = 1$ MHz
$t_d(on)$	Turn On Delay Time		15		ns	
$t_r$	Rise Time		70		ns	$I_D = 6$ A, $V_{CC} \approx 50$ V
$t_d(off)$	Turn Off Delay Time		250		ns	$R_L = 5$ $\Omega$
$t_f$	Fall Time		160		ns	$R_{in} = 10$ $\Omega$

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

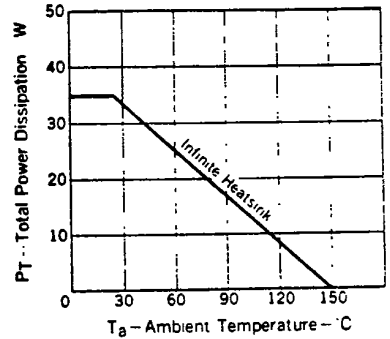
DERATING FACTOR OF FORWARD BIAS SAFE OPERATING AREA



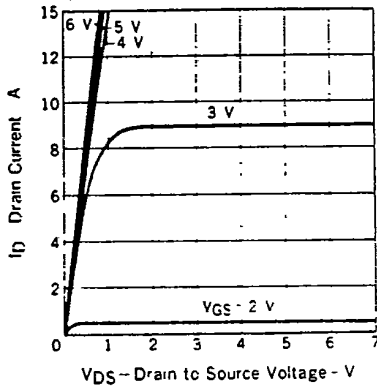
FORWARD BIAS SAFE OPERATING AREA



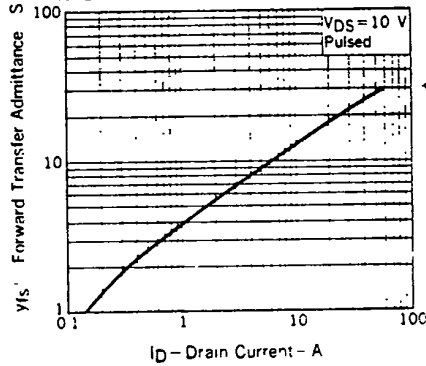
TOTAL POWER DISSIPATION vs. AMBIENT TEMPERATURE



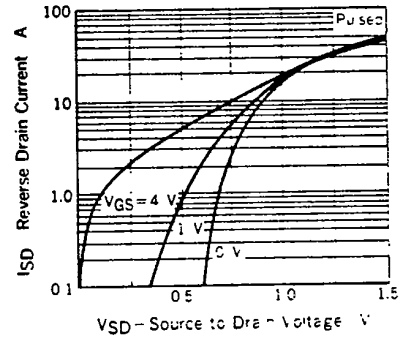
DRAIN CURRENT vs. DRAIN TO SOURCE VOLTAGE



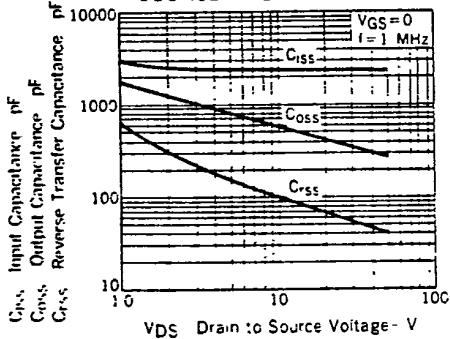
FORWARD TRANSFER ADMITTANCE vs. DRAIN CURRENT



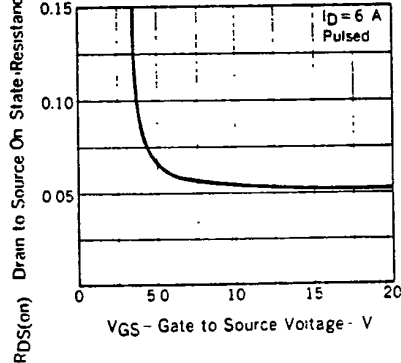
SOURCE TO DRAIN DIODE FORWARD VOLTAGE



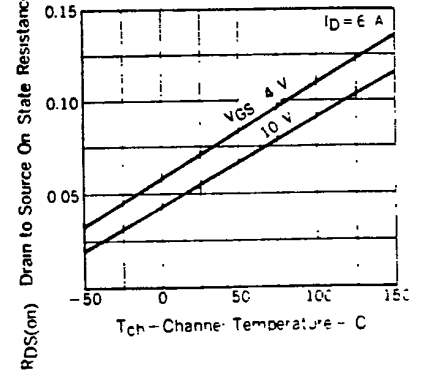
CAPACITANCE vs. DRAIN TO SOURCE VOLTAGE

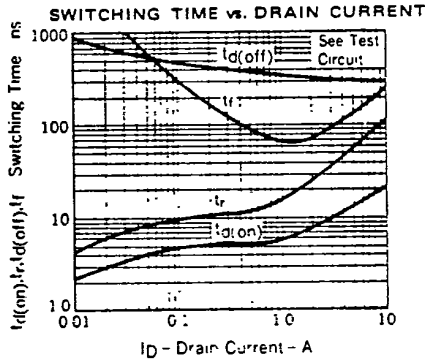
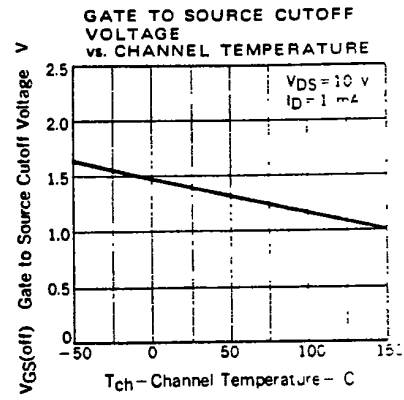
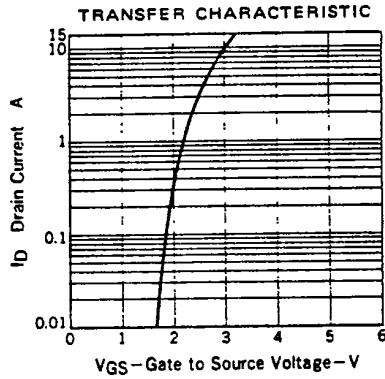
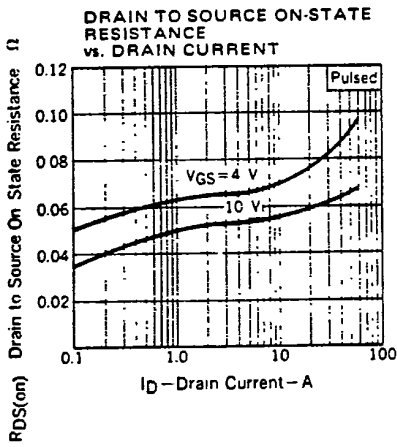


DRAIN TO SOURCE ON-STATE RESISTANCE vs. GATE TO SOURCE VOLTAGE



DRAIN TO SOURCE ON-STATE RESISTANCE vs. CHANNEL TEMPERATURE





### SWITCHING TIME TEST CIRCUIT

