

# N-CHANNEL MOS FIELD EFFECT POWER TRANSISTOR

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## 2SK785

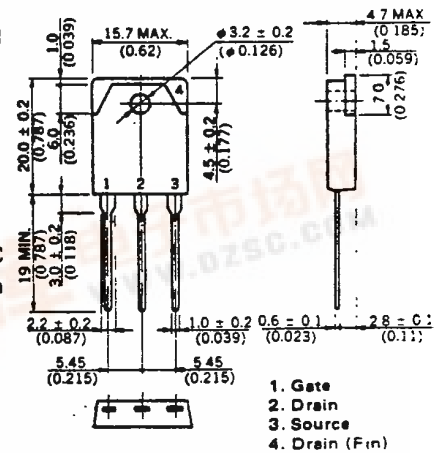
**DESCRIPTION** The 2SK785 is N-channel MOS Field Effect Power Transistor designed for switching power supplies DC-DC converters.

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

**ABSOLUTE MAXIMUM RATINGS**

- Maximum Temperatures
- Storage Temperature . . . . . -55 to +150 °C
  - Channel Temperature . . . . . 150 °C Maximum
- Maximum Power Dissipation ( $T_C = 25\text{ °C}$ )
- Total Power Dissipation . . . . . 150 W
- Maximum Voltages and Currents ( $T_a = 25\text{ °C}$ )
- $V_{DSS}$  Drain to Source Voltage . . . . . 500 V
  - $V_{GSS}$  Gate to Source Voltage . . . . .  $\pm 20$  V
  - $I_{D(DC)}$  Drain Current (DC) . . . . .  $\pm 20$  A
  - $I_{D(pulse)}$  Drain Current (pulse)\* . . . . .  $\pm 80$  A
- \*  $PW \leq 300\ \mu s$ , Duty Cycle  $\leq 2\%$

**PACKAGE DIMENSIONS**  
in millimeters (inches)



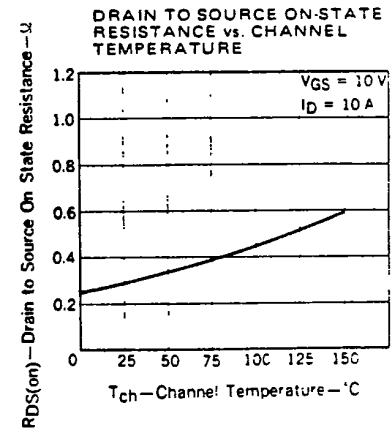
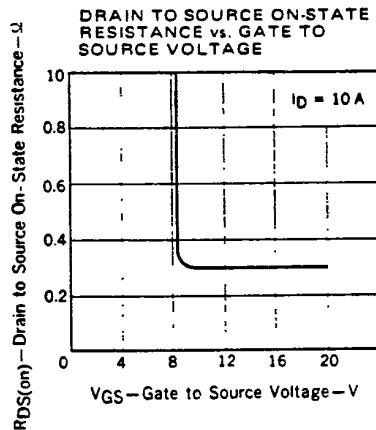
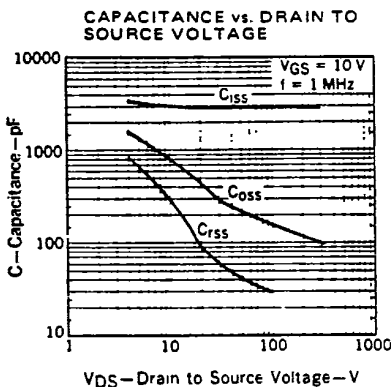
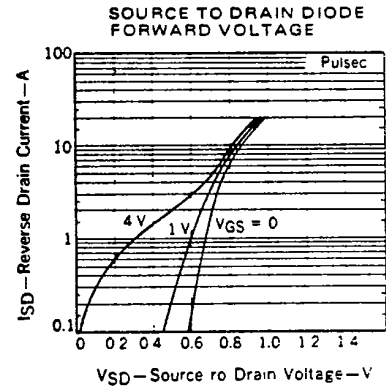
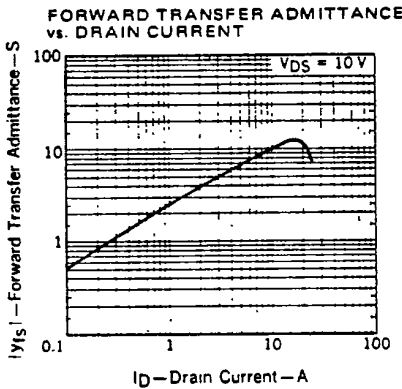
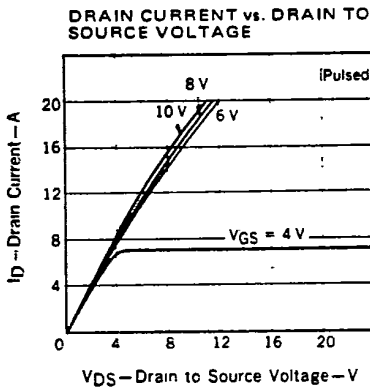
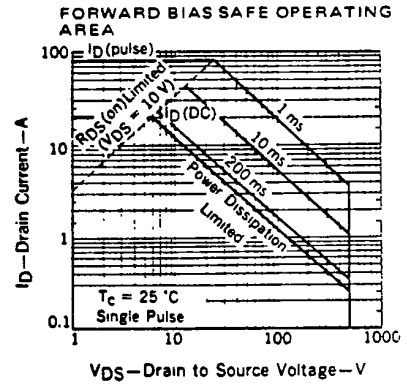
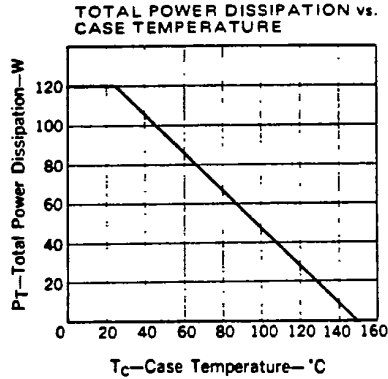
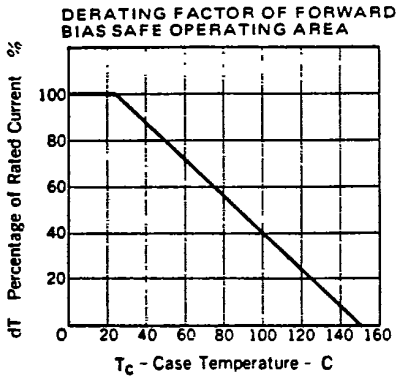
**ELECTRICAL CHARACTERISTICS ( $T_a = 25\text{ °C}$ )**

SYMBOL	CHARACTERISTIC	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
$I_{DSS}$	Drain Leakage Current			100	$\mu A$	$V_{DS} = 500\text{ V}$ , $V_{GS} = 0$
$I_{GSS}$	Gate to Source Leakage Current			$\pm 100$	nA	$V_{GS} = \pm 20\text{ V}$ , $V_{DS} = 0$
$V_{GS(off)}$	Gate to Source Cutoff Voltage	1.5		3.5	V	$V_{DS} = 10\text{ V}$ , $I_D = 1\text{ mA}$
$Y_{fs}$	Forward Transfer Admittance	9.0			S	$V_{DS} = 10\text{ V}$ , $I_D = 10\text{ A}$
$R_{DS(on)}$	Drain to Source On-State Resistance		0.3	0.4	$\Omega$	$V_{GS} = 10\text{ V}$ , $I_D = 10\text{ A}$
$C_{iss}$	Input Capacitance		3000		pF	$V_{DS} = 10\text{ V}$ , $V_{GS} = 0$ , $f = 1\text{ MHz}$
$C_{oss}$	Output Capacitance		900		pF	
$C_{rss}$	Reverse Transfer Capacitance		350		pF	
$t_{d(on)}$	Turn-On Delay Time		45		ns	$I_D = 10\text{ A}$ , $V_{CC} \approx 150\text{ V}$ $V_{GS(on)} = 10\text{ V}$ $R_L = 15\ \Omega$ $R_{in} = 10\ \Omega$
$t_r$	Rise Time		60		ns	
$t_{d(off)}$	Turn-Off Delay Time		100		ns	
$t_f$	Fall Time		80		ns	

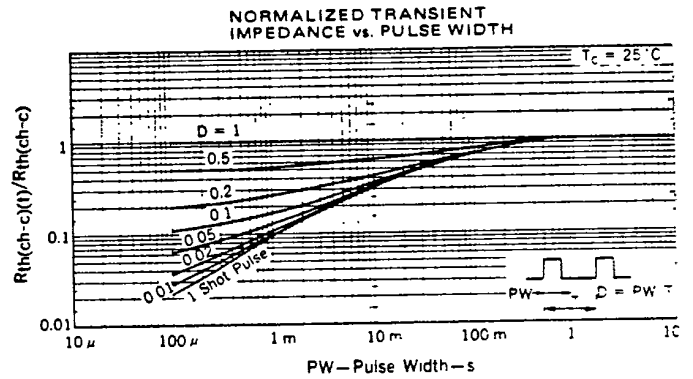
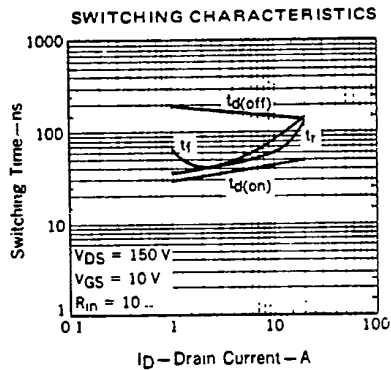
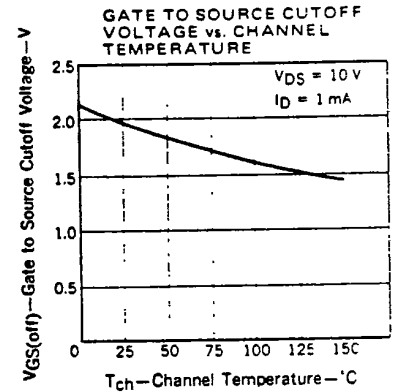
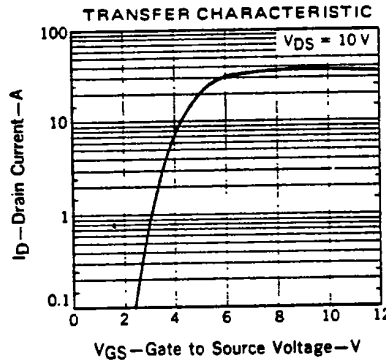
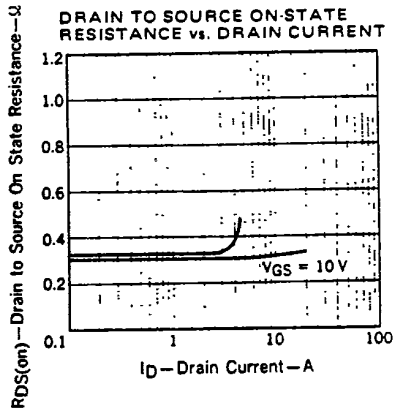


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TYPICAL CHARACTERISTICS (T<sub>a</sub> = 25 °C)



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**SWITCHING TIME TEST CIRCUIT**

