

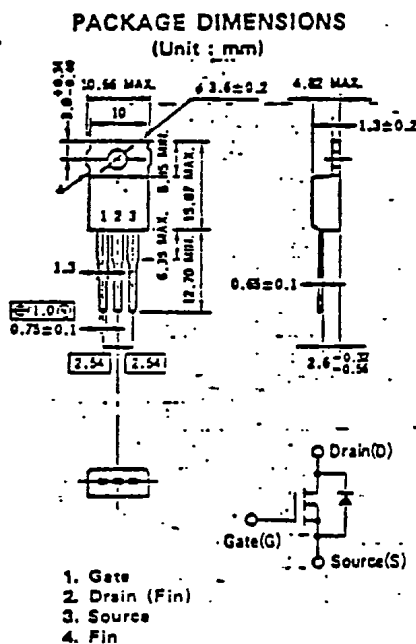
**NEC**  
ELECTRON DEVICE

PRELIMINARY SPECIFICATION

MOS FIELD EFFECT TRANSISTOR

# 2SK786

FAST SWITCHING  
N-CHANNEL SILICON POWER MOS FET



### Features

Suitable for switching power supplies,  
DC-DC converters and pulse circuits  
Ultra High Voltage:  $V_{DS} = 900V$   
Low  $R_{DS(on)}$   
No second breakdown

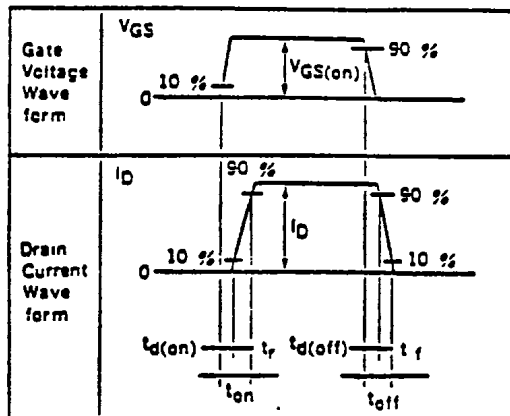
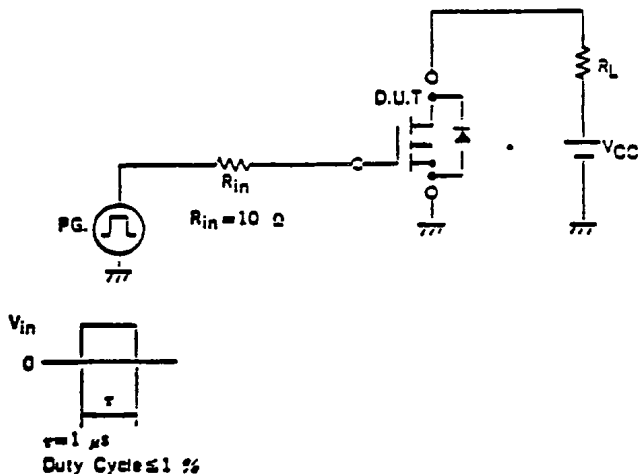
### Absolute Maximum Ratings ( $T_a = 25^\circ C$ )

Drain to Source Voltage	$V_{DS}$	900V
Gate to Source Voltage	$V_{GS}$	$\pm 20V$
Continuous Drain Current	$I_D(DC)$	$\pm 3.0A$
Pulse Drain Current	$I_D(pulse)$	$\pm 6.0A$
Total Power Dissipation	$P_T$	1.5W
Total Power Dissipation	$P_T^{**}$	50%
Channel Temperature	$T_{ch}$	150 °C
Storage Temperature	$T_{stg}$	-55 to +150 °C

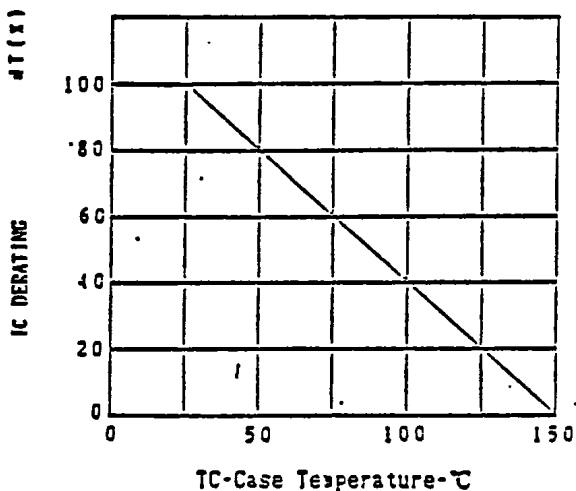
\*  $PW \leq 100 \mu s$ , Duty Cycles  $\leq 2\%$   
\*\*  $T_c = 25^\circ C$

### Electrical Characteristics ( $T_a = 25^\circ C$ )

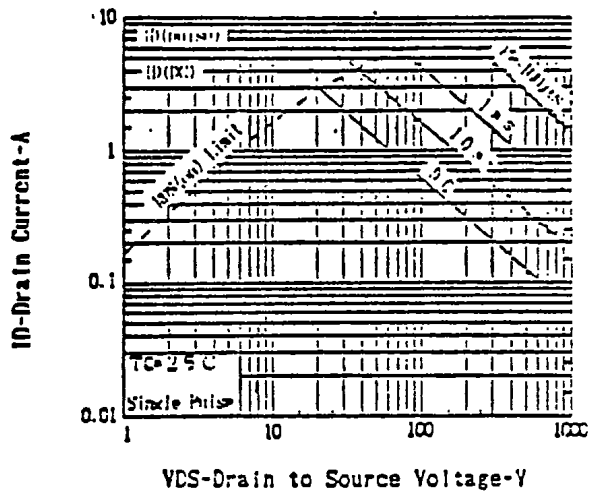
Characteristics	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Drain Leakage Current	$I_{DSS}$			100	$\mu A$	$V_{DS} = 900V, V_{GS} = 0$
Gate to Source Leakage Current	$I_{GSS}$			$\pm 100$	nA	$V_{GS} = \pm 20V, V_{DS} = 0$
Gate to Source Cutoff Voltage	$V_{GS(off)}$	1.5		3.5	V	$V_{DS} = 10V, I_D = 1.0mA$
Forward Transfer Admittance	$ y_{fs} $	0.8			S	$V_{DS} = 20V, I_D = 2.0A$
Drain To Source On-State Resistance	$R_{DS(on)}$			7.0	$\Omega$	$V_{GS} = 15V, I_D = 20A$
Input Capacitance	$C_{iss}$		470		pF	$V_{DS} = 10V$
Output Capacitance	$C_{oss}$		100		pF	$V_{GS} = 0$
Reverse Transfer Capacitance	$C_{rss}$		40		pF	$f = 1.0MHz$
Turn-On Delay Time	$t_d(on)$		10		ns	$I_D = 1.5A,$
Rise Time	$t_r$		40		ns	$V_{GS(on)} = 10V$
Turn-Off Delay Time	$t_d(off)$		45		ns	$V_{CC} = 150V$
Fall Time	$t_f$		15		ns	$RL = 100\Omega$



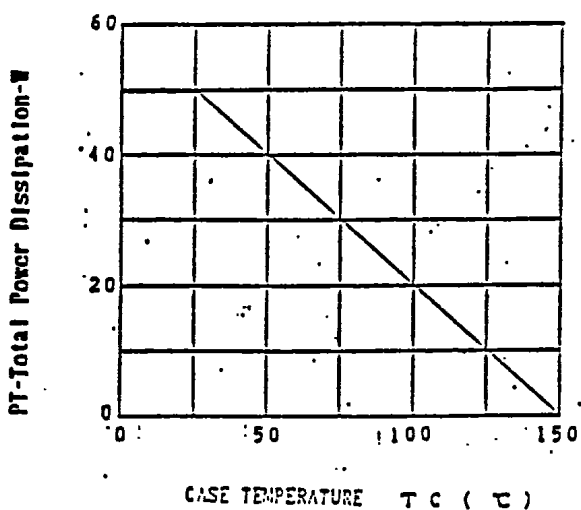
DERATING FACTOR OF FORWARD BIAS SAFE OPERATING AREA



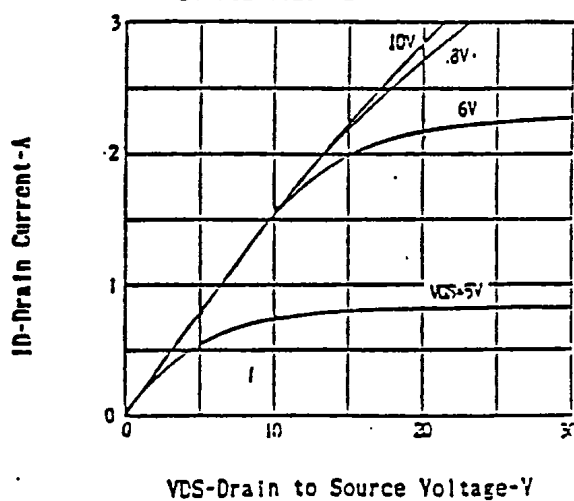
FORWARD BIAS SAFE OPERATING AREA



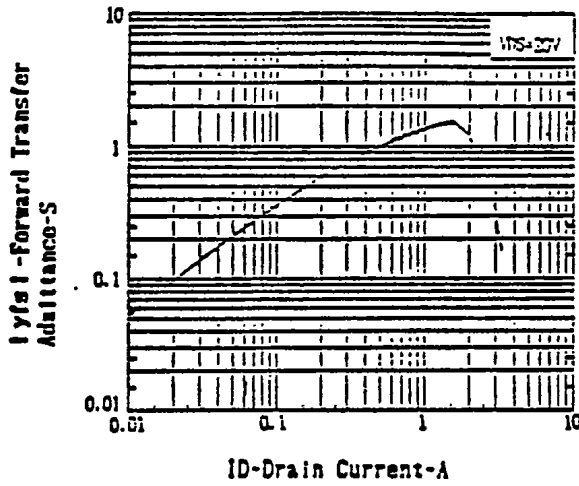
TOTAL POWER DISSIPATION vs. CASE TEMPERATURE



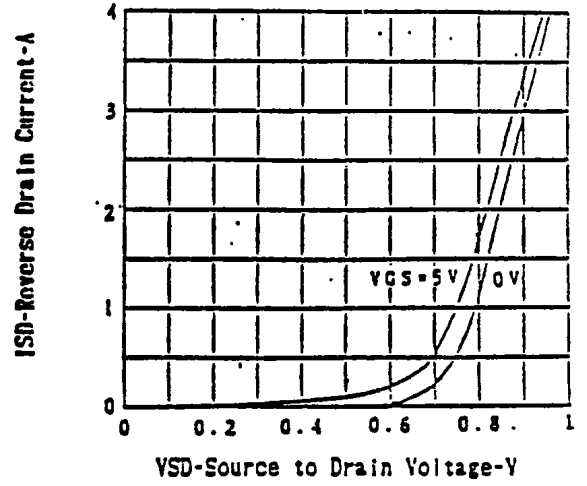
DRAIN CURRENT vs. DRAIN TO SOURCE VOLTAGE



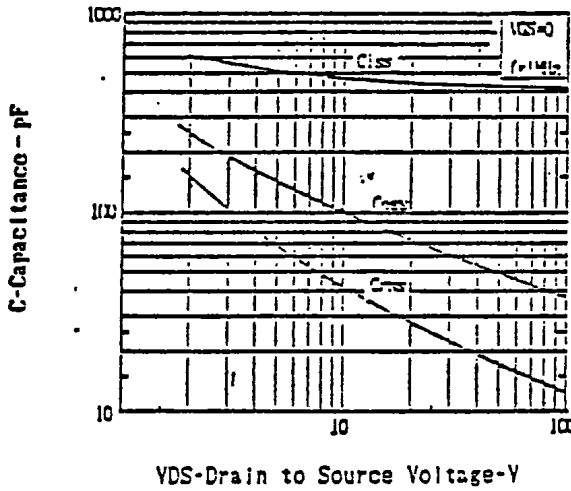
FORWARD TRANSFER ADMITTANCE  
vs. DRAIN CURRENT



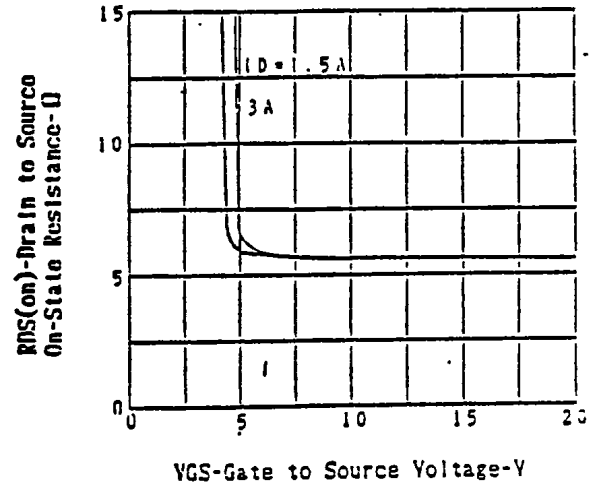
SOURCE TO DRAIN DIODE  
FORWARD VOLTAGE



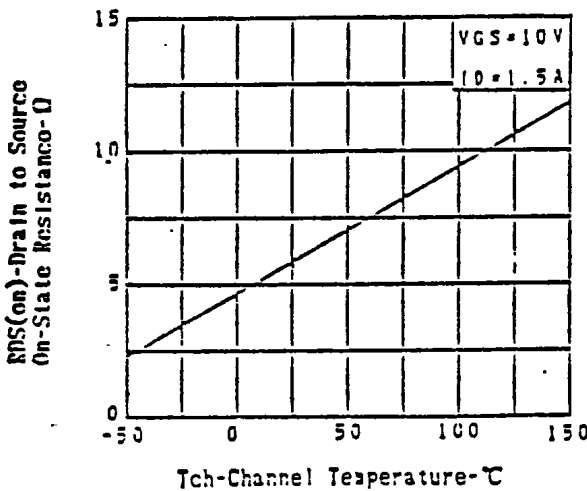
CAPACITANCE vs. DRAIN TO  
SOURCE VOLTAGE



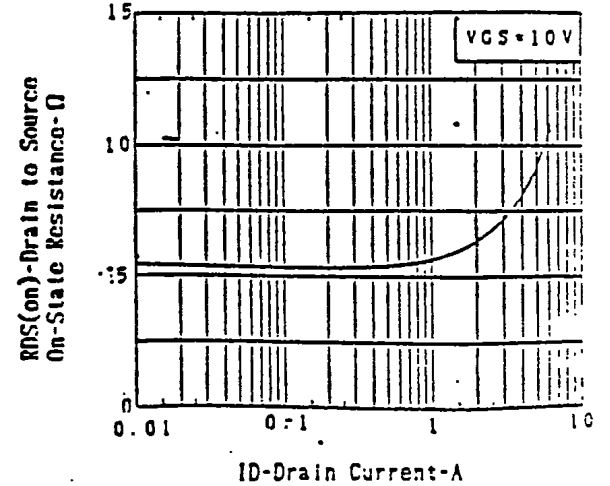
DRAIN TO SOURCE ON-STATE RESISTANCE  
vs. GATE TO SOURCE VOLTAGE



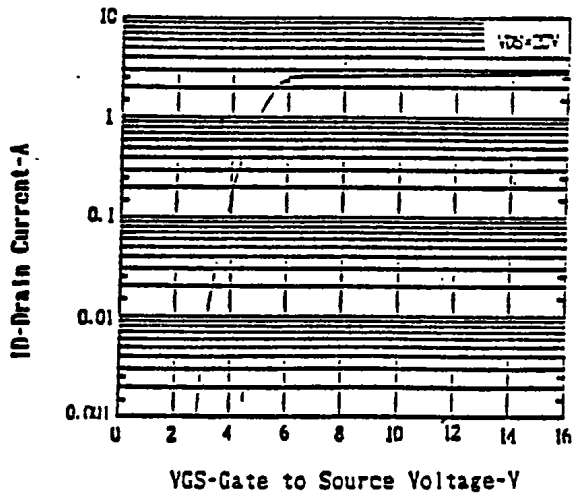
DRAIN TO SOURCE ON-STATE RESISTANCE  
vs. CHANNEL TEMPERATURE



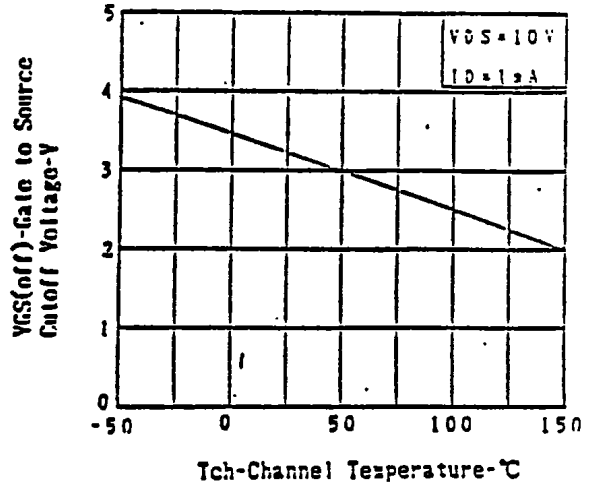
DRAIN TO SOURCE ON-STATE RESISTANCE  
vs. DRAIN CURRENT



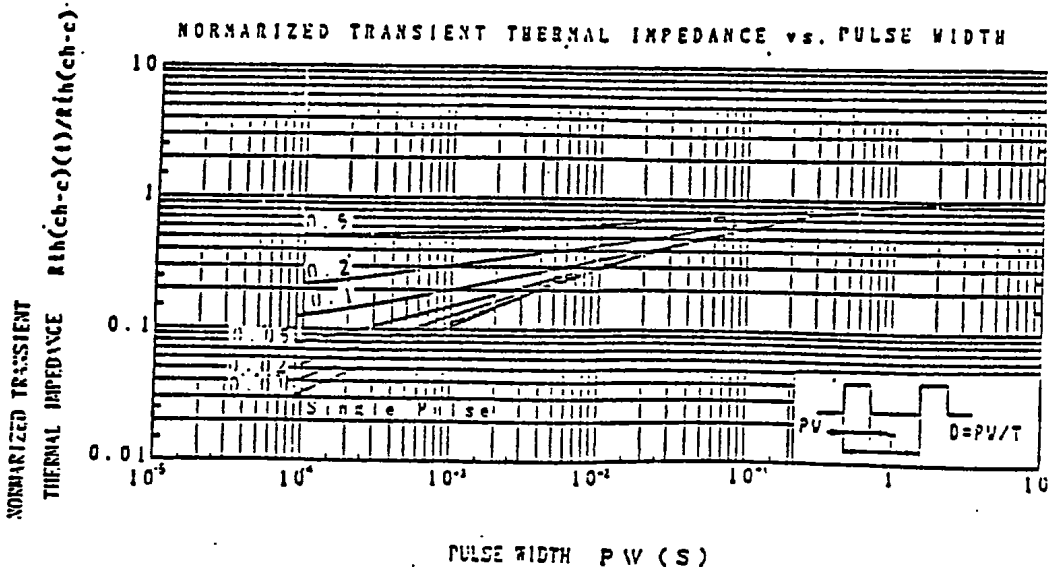
TRANSFER CHARACTERISTICS



GATE TO SOURCE CUTOFF VOLTAGE vs. CHANNEL TEMPERATURE



NORMALIZED TRANSIENT THERMAL IMPEDANCE vs. PULSE WIDTH



SWITCHING CHARACTERISTICS

