

MOS FIELD EFFECT TRANSISTOR 2SK2485

SWITCHING N-CHANNEL POWER MOS FET INDUSTRIAL USE

DESCRIPTION

The 2SK2485 is N-Channel MOS Field Effect Transistor designed for high voltage switching applications.

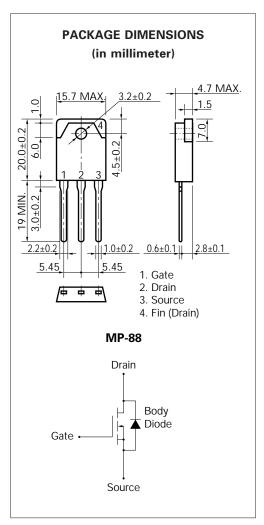
FEATURES

- Low On-Resistance RDS (on) = 2.8 Ω (VGS = 10 V, ID = 3.0 A)
- Low Ciss Ciss = 1 200 pF TYP.
- High Avalanche Capability Ratings

ABSOLUTE MAXIMUM RATINGS (TA = 25 °C)

Drain to Source Voltage	VDSS	900	V
Gate to Source Voltage	Vgss	±30	V
Drain Current (DC)	ID (DC)	± 6.0	Α
Drain Current (pulse)*	ID (pulse)	±12	Α
Total Power Dissipation (Tc = 25 °C)	P _{T1}	100	W
Total Power Dissipation (T _A = 25 °C)	P _{T2}	3.0	W
Channel Temperature	Tch	150	°C
Storage Temperature	T _{stg} -	55 to +150	°C
Single Avalanche Current**	las	6.0	Α
Single Avalanche Energy**	Eas	42.3	mJ

- * PW \leq 10 μ s, Duty Cycle \leq 1 %
- ** Starting T_{ch} = 25 °C, R_G = 25 Ω , V_{GS} = 20 V \rightarrow 0

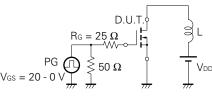


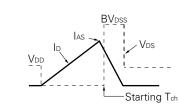


ELECTRICAL CHARACTERISTICS (TA = 25 °C)

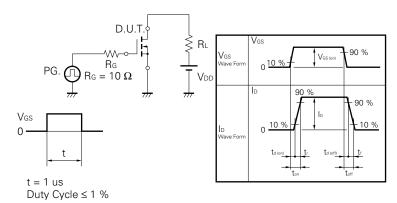
CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Drain to Source On-Resistance	RDS (on)		2.2	2.8	Ω	Vgs = 10 V, ID = 3.0 A
Gate to Source Cutoff Voltage	VGS (off)	2.5		3.5	٧	V _{DS} = 10 V, I _D = 1 mA
Forward Transfer Admittance	l y _{fs} l	2.0			S	V _{DS} = 10 V, I _D = 3.0 A
Drain Leakage Current	IDSS			100	μΑ	V _{DS} = V _{DSS} , V _{GS} = 0
Gate to Source Leakage Current	Igss			±100	nA	$V_{GS} = \pm 30 \text{ V}, V_{DS} = 0$
Input Capacitance	Ciss		1200		pF	V _{DS} = 10 V
Output Capacitance	Coss		170		pF	V _G S = 0
Reverse Transfer Capacitance	Crss		30		pF	f = 1 MHz
Turn-On Delay Time	td (on)		20		ns	ID = 3.0 A
Rise Time	tr		10		ns	V _{GS} = 10 V
Turn-Off Delay Time	td (off)		70		ns	V _{DD} = 150 V
Fall Time	t _f		15		ns	$R_G = 10 \Omega R_L = 50 \Omega$
Total Gate Charge	Q G		40		nC	ID = 6.0 A
Gate to Source Charge	Qgs		7		nC	V _{DD} = 450 V
Gate to Drain Charge	QgD		17		nC	V _G S = 10 V
Body Diode Forward Voltage	V _F (S-D)		1.0		V	IF = 6.0 A, VGS = 0
Reverse Recovery Time	trr		740		ns	IF = 6.0 A, VGS = 0
Reverse Recovery Charge	Qrr		4.0		μC	$di/dt = 50 A/\mu s$

Test Circuit 1 Avalanche Capability

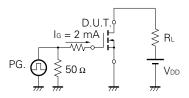




Test Circuit 2 Switching Time



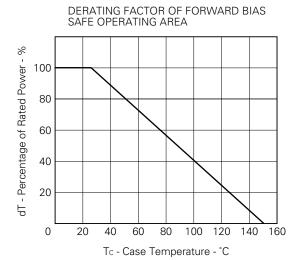
Test Circuit 3 Gate Charge

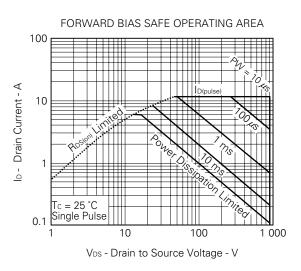


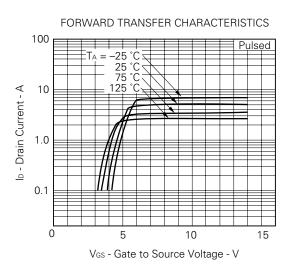
The application circuits and their parameters are for references only and are not intended for use in actual design-in's.

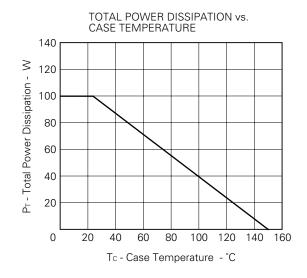
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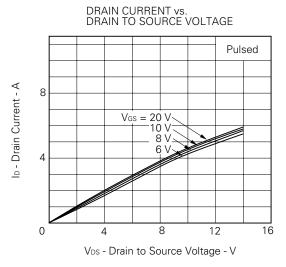
TYPICAL CHARACTERISTICS (TA = 25 °C)





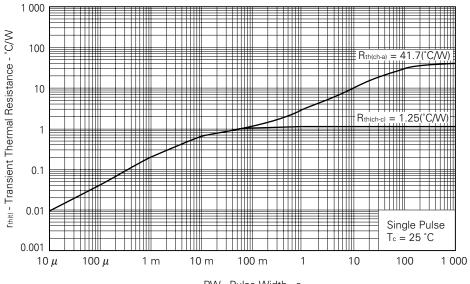




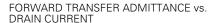


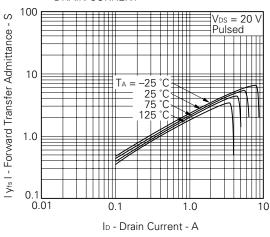


TRANSIENT THERMAL RESISTANCE vs. PULSE WIDTH

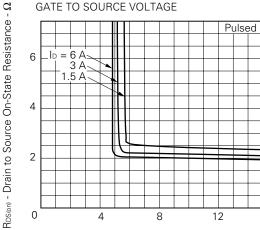


PW - Pulse Width - s



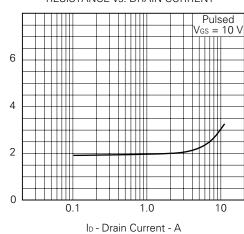


DRAIN TO SOURCE ON-STATE RESISTANCE vs. GATE TO SOURCE VOLTAGE

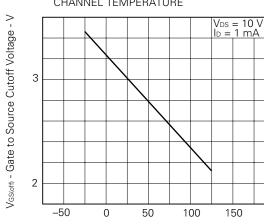


V_{GS} - Gate to Source Voltage - V

DRAIN TO SOURCE ON-STATE RESISTANCE vs. DRAIN CURRENT

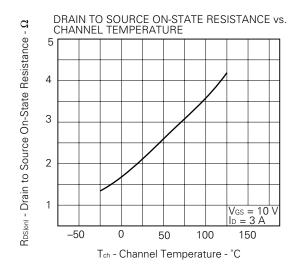


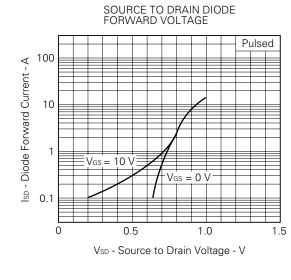
GATE TO SOURCE CUTOFF VOLTAGE vs. CHANNEL TEMPERATURE

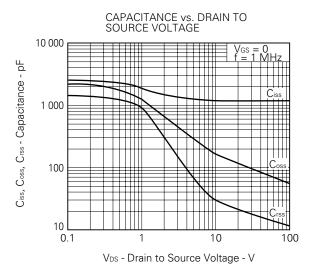


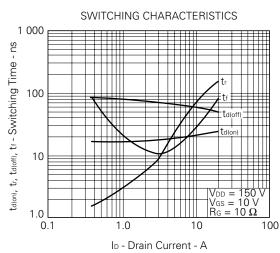
 T_{ch} - Channel Temperature - $^{\circ}\text{C}$

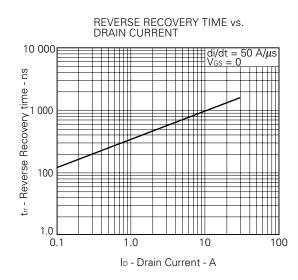
 $\mathsf{R}^{_{\mathsf{DS(on)}}}\text{-}\mathsf{Drain}$ to Source On-State Resistance - Ω

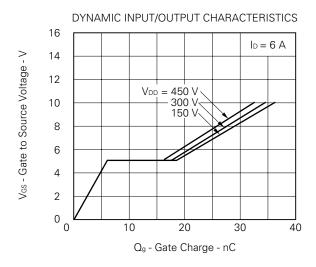




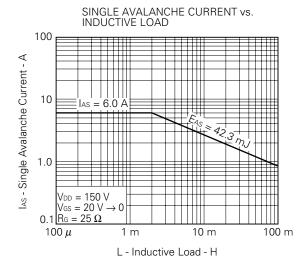


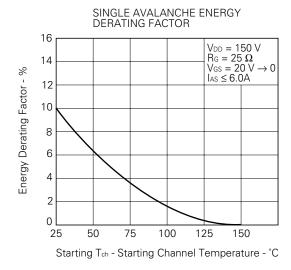














REFERENCE

Document Name	Document No.
NEC semiconductor device reliability/quality control system.	TEI-1202
Quality grade on NEC semiconductor devices.	IEI-1209
Semiconductor device mounting technology manual.	IEI-1207
Semiconductor device package manual.	IEI-1213
Guide to quality assurance for semiconductor devices.	MEI-1202
Semiconductor selection guide.	MF-1134
Power MOS FET features and application switching power supply.	TEA-1034
Application circuits using Power MOS FET.	TEA-1035
Safe operating area of Power MOS FET.	TEA-1037

7

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