SWITCHING
N-CHANNEL POWER MOS FET
INDUSTRIAL USE

DESCRIPTION

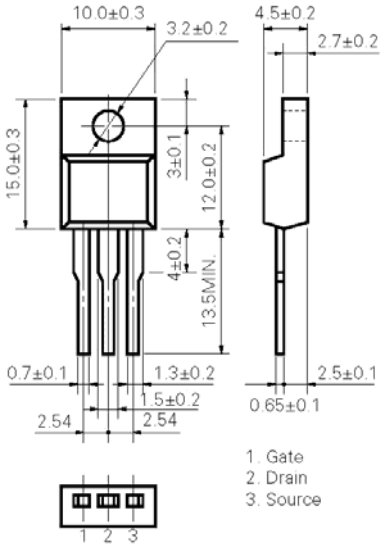
2SK2498 is N-Channel MOS Field Effect Transistor designed for high current switching applications.

FEATURES

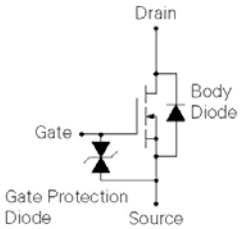
- Super Low On-State Resistance
  $R_{DS(on)}$ 1 ≤ 9mΩ (V_{GS}=10V, I_D=25A)
  $R_{DS(on)}$ 2 ≤ 14mΩ (V_{GS}=4V, I_D=25A)
- Low C_{iss} C_{iss} = 3400pF TYP.
- High Avalanche Capability Ratings
- Isolate TO-220 Package
- Buit-in G-S Protection Diode

ABSOLUTE MAXIMUM RATINGS (TA=25℃)			
Drain to Source Voltage	V_{DSS}	60	V
Gate to Source Voltage	V_{GSS}	±20	V
Drain Current (DC)	$I_{D(DC)}$	±50	A
Drain Current (pulse)*	$I_{D(pulse)}$	±200	A
Total Power Dissipation (Tc=25°C)	P_{T1}	35	W
Total Power Dissipation (T_A=25°C)	P_{T2}	2.0	W
Channel Temperature	Tch	150	°C
Storage Temperature	Tstg	-55 to +150	°C
Single Avalanche Current **	I_{AS}	50	A
Single Avalanche Energy **	E_{AS}	250	mJ
* PW ≤10μs, Duty Cycle ≤ 1%			
** Starting T_{ch}=25°C, R_G=25Ω, V_{GS}=20V → 0			

PACKAGE DIMENSIONS (in millimeter)



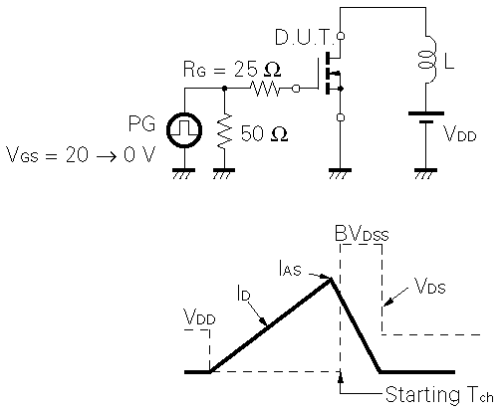
MP-45F (ISOLATED TO-220)



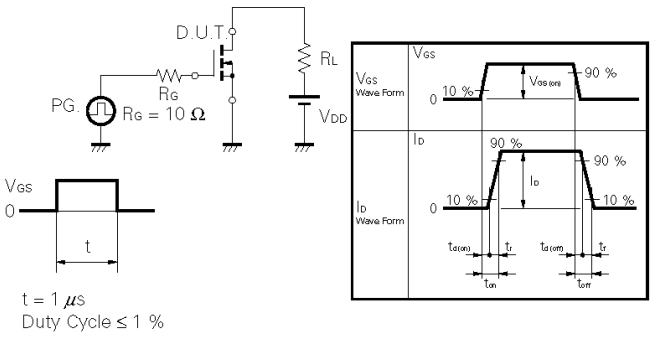
ELECTRICAL CHARACTERISTICS (TA=25℃)

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Drain to Source On-Resistance	$R_{DS(on)1}$		7.3	9.0	mΩ	V_{GS}=10V, I_D=25A
	$R_{DS(on)2}$		11	14	mΩ	V_{GS}=4V, I_D=25A
Gate to Source Cutoff Voltage	$V_{GS(off)}$	1.0	1.5	2.0	V	V_{DS}=10V, I_D=1mA
Forward Transfer Admittance	|yfo|	20	58		S	V_{DS}=10V, I_D=25A
Drain Leakage Current	I_{DSS}			10	μA	V_{DS}=60V, V_{GS}=0
Gate to Source Leakage Current	I_{GSS}			±10	nA	V_{GS}=±20V, V_{DS}=0
Input Capacitance	Ciss		3400		pF	V_{DS}=10V
Output Capacitance	Coss		1600		pF	V_{GS}=0
Reverse Transfer Capacitance	Crss		770		pF	f=1MHz
Turn-On Delay Time	$t_{d(on)}$		55		ns	I_D=25A
Rise Time	t_r		360		ns	$V_{GS(on)}$=10V
Turn-Off Delay Time	$t_{d(off)}$		480		ns	V_{DD}=30V
Fall Time	t_f		360		ns	R_G=10Ω
Total Gate Charge	Q_G		152		nC	I_D=50A
Gate to Source Charge	Q_{GS}		11		nC	V_{DD}=48V
Gate to Drain Charge	Q_{GD}		60		nC	V_{GS}=10V
Body Diode Forward Voltage	$V_{F(S-D)}$		0.92		V	I_F=50A,V_{GS}=0
Reverse Recovery Time	trr		105		ns	I_F=50A,V_{GS}=0
Reverse Recovery Charge	Qrr		265		μC	di/dt=100A/μs

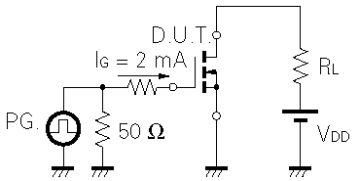
Test Circuit 1 Avalanche Capability



Test Circuit 2 Switching Time



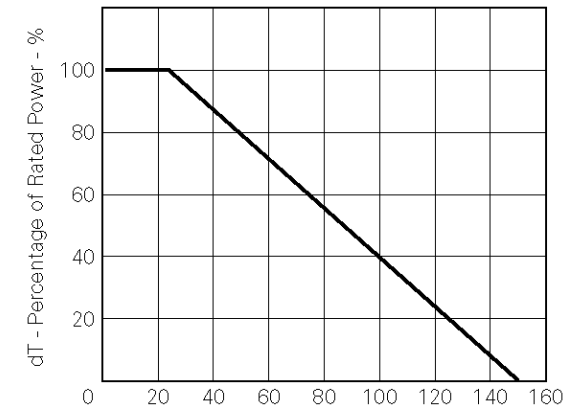
Test Circuit 3 Gate Charge



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

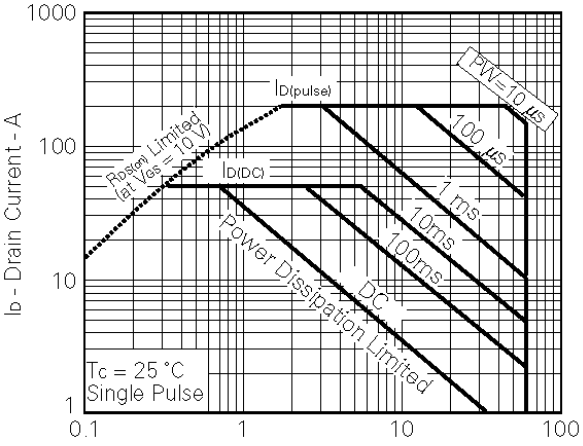
TYICAL CHARACTERISTICS (T_A=25°C)

DERATING FACTOR OF FORWARD BIAS SAFE OPERATING AREA



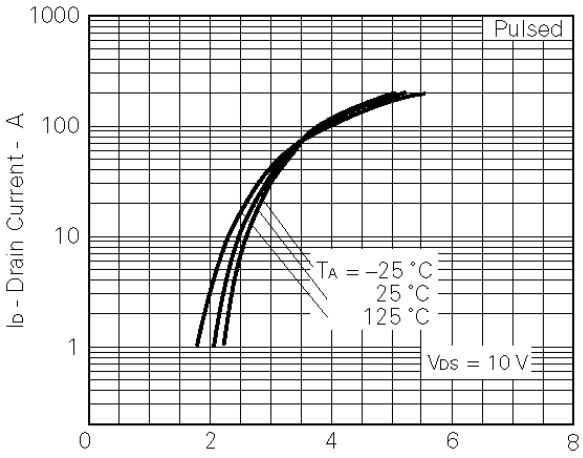
Tc-Case Temperature -℃

FORWARD BIAS SAFE OPERATING AREA



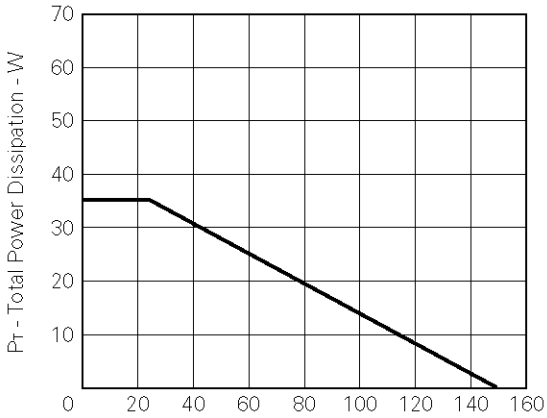
VDS-Drain to Source Voltage-V

FORWARD TRANSFER CHARACTERISTICS



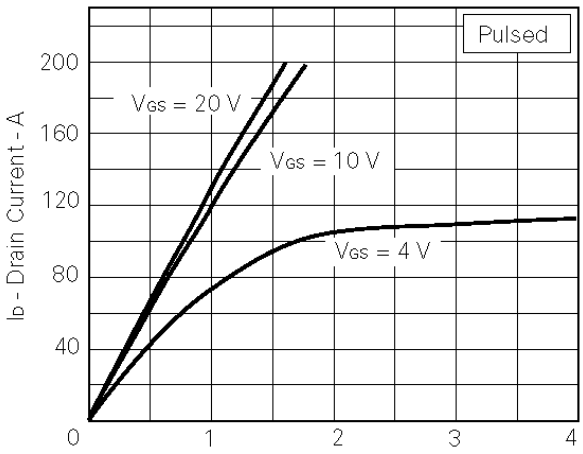
V_{GS}-Gate to Source Voltage -V

TOTAL POWER DISSIPATION vs. CASE TEMPERATURE



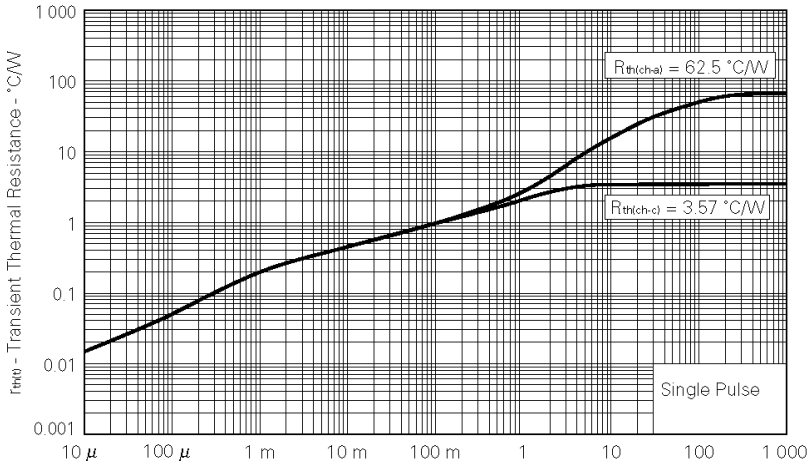
Tc-Case Temperature - ℃

DRAIN CURRENT vs. DRAIN TO SOURCE VOLTAGE



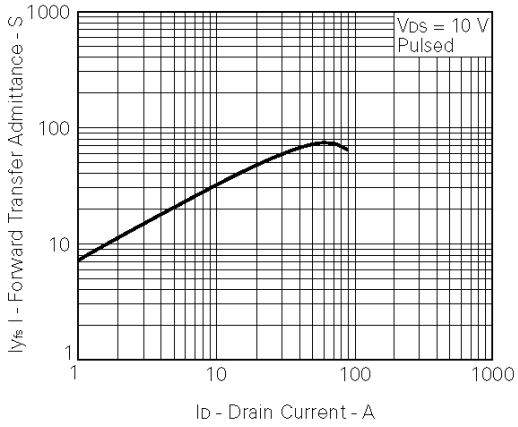
V_{DS}-Drain to Source Voltage -V

TRANSIENT THERMAL RESISTANCE vs. PULSE WIDTH

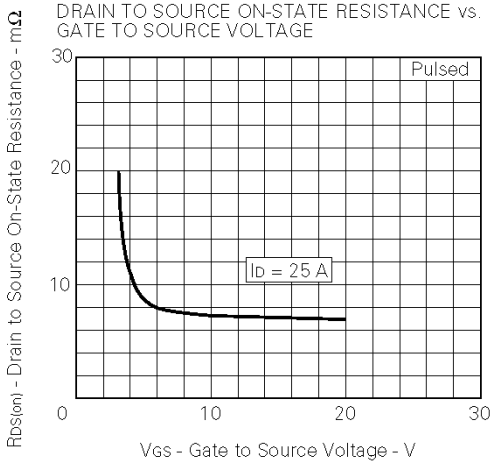


PW-Pulse Width -s

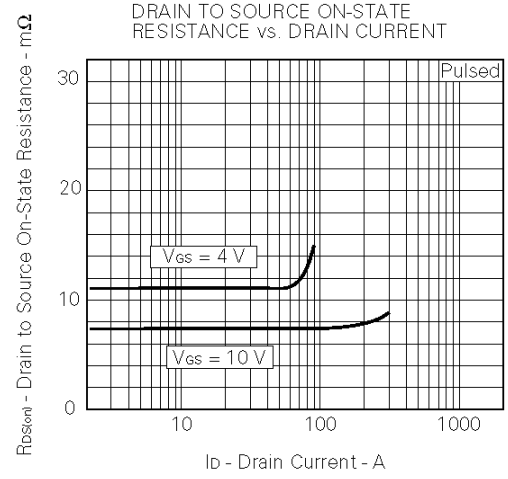
FORWARD TRANSFER ADMITTANCE vs. DRAIN CURRENT



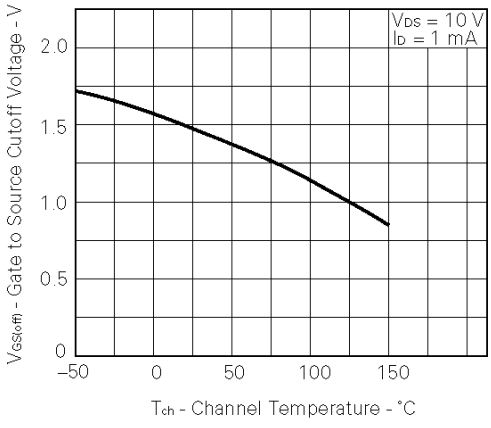
DRAIN TO SOURCE ON-STATE RESISTANCE vs. GATE TO SOURCE VOLTAGE



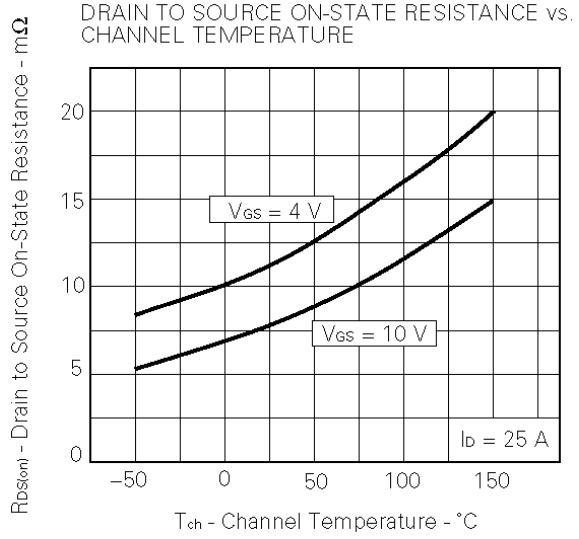
DRAIN TO SOURCE ON-STATE RESISTANCE vs. DRAIN CURRENT



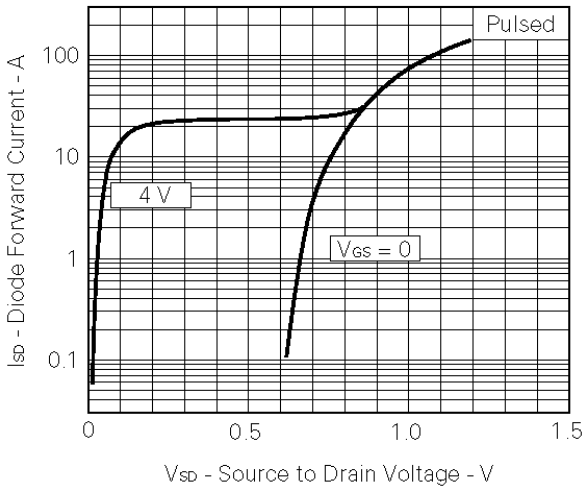
GATE TO SOURCE CUTOFF VOLTAGE vs. CHANNEL TEMPERATURE



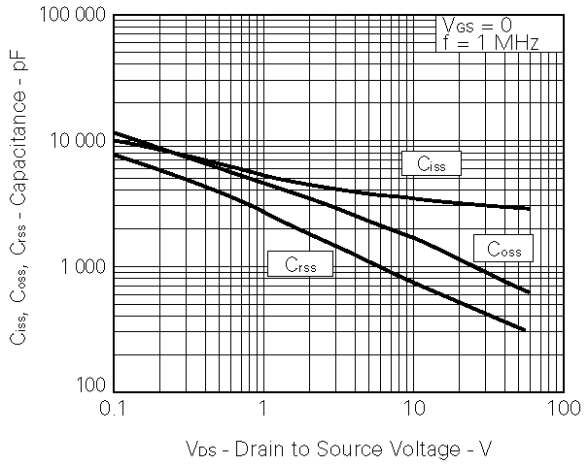
DRAIN TO SOURCE ON-STATE RESISTANCE vs. CHANNEL TEMPERATURE



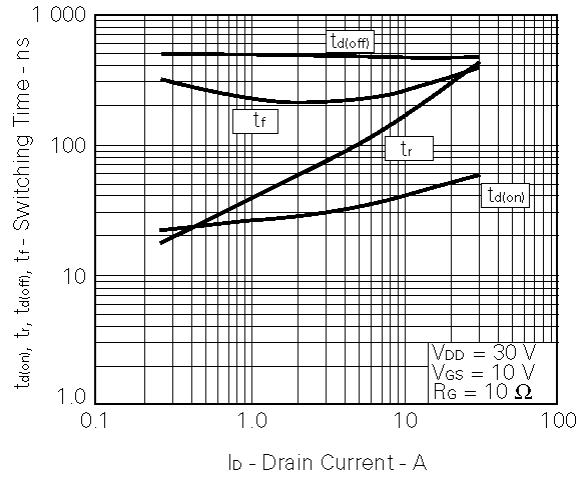
SOURCE TO DRAIN DIODE FORWARD VOLTAGE



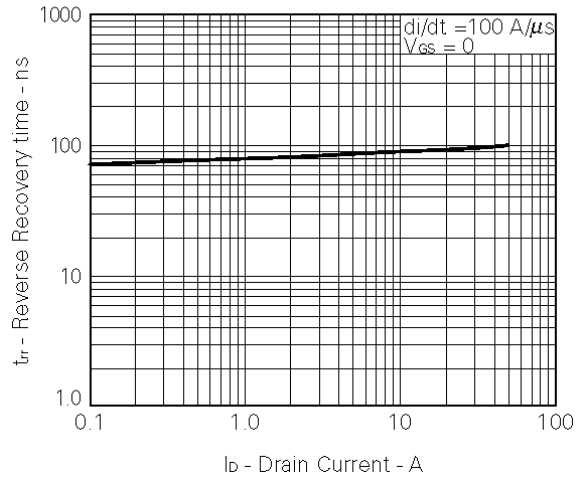
CAPACITANCE vs. DRAIN TO SOURCE VOLTAGE



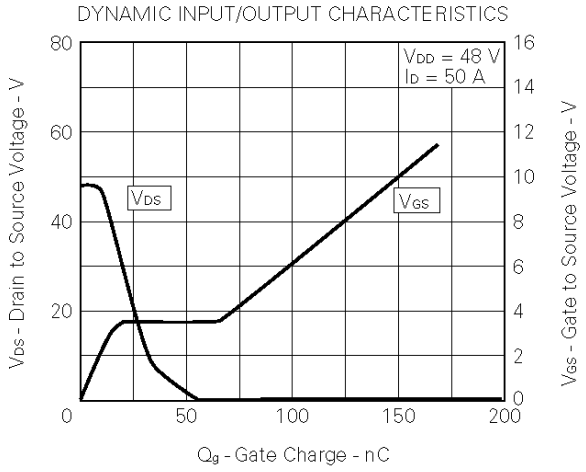
SWITCHING CHARACTERISTICS



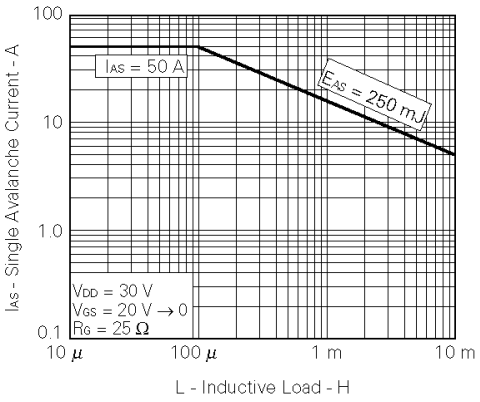
REVERSE RECOVERY TIME vs. DRAIN CURRENT



DYNAMIC INPUT/OUTPUT CHARACTERISTICS



SINGLE AVALANCHE CURRENT vs.
INDUCTIVE LOAD



SINGLE AVALANCHE ENERGY
DERATING FACTOR