To our customers,

Old Company Name in Catalogs and Other Documents

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Renesas Electronics website: http://www.renesas.com

April 1st, 2010
Renesas Electronics Corporation

Issued by: Renesas Electronics Corporation (http://www.renesas.com)

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DATA SHEET

RENESAS

MOS FIELD EFFECT TRANSISTOR

Phase-out/Discontinued

2SK2476

SWITCHING
N-CHANNEL POWER MOS FET
INDUSTRIAL USE

DESCRIPTION

The 2SK2476 is N-Channel MOS Field Effect Transistor designed for high voltage switching applications.

FEATURES

- Low On-Resistance
  $R_{DS(on)}$ = 5.0 Ω (V_{GS} = 10 V, I_D = 2.0 A)
- Low C_{iss} C_{iss} = 590 pF TYP.
- High Avalanche Capability Ratings
- Isolated TO-220 Package

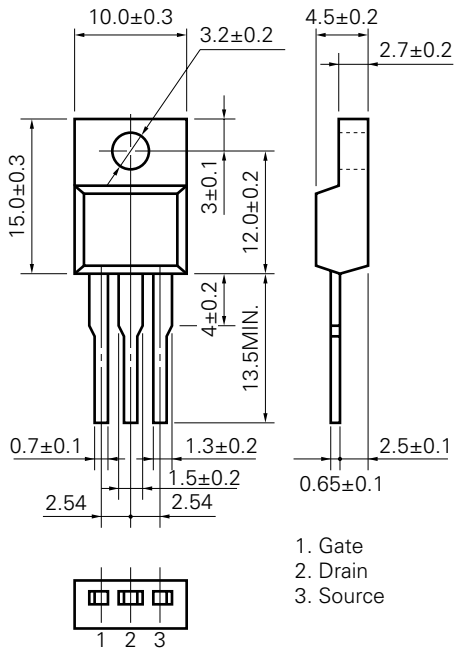
ABSOLUTE MAXIMUM RATINGS (T_A = 25 °C)

Drain to Source Voltage	V_{DSS}	800	V
Gate to Source Voltage	V_{GSS}	±30	V
Drain Current (DC)	$I_{D(DC)}$	±3.0	A
Drain Current (pulse)*	$I_{D(pulse)}$	±9.0	A
Total Power Dissipation (T_C = 25 °C)	P_{T1}	40	W
Total Power Dissipation (T_A = 25 °C)	P_{T2}	2.0	W
Channel Temperature	T_{ch}	150	°C
Storage Temperature	T_{stg}	–55 to +150	°C
Single Avalanche Current**	I_{AS}	3.0	A
Single Avalanche Energy**	E_{AS}	37.8	mJ

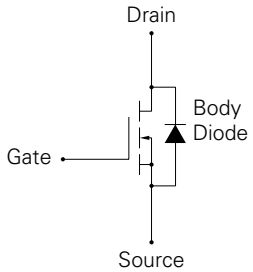
* PW ≤ 10 μs, Duty Cycle ≤ 1 %

** Starting T_{ch} = 25 °C, R_G = 25 Ω, V_{GS} = 20 V → 0

PACKAGE DIMENSIONS
(in millimeter)



MP-45F (ISOLATED TO-220)



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Date Published August 1995 P
Printed in Japan

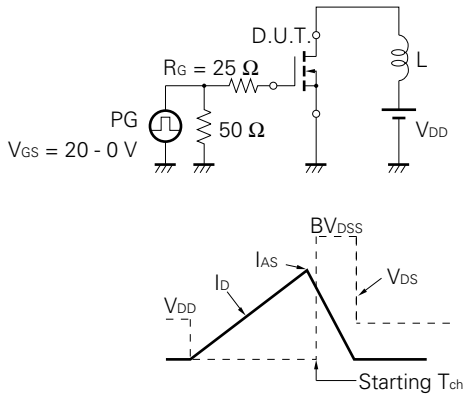
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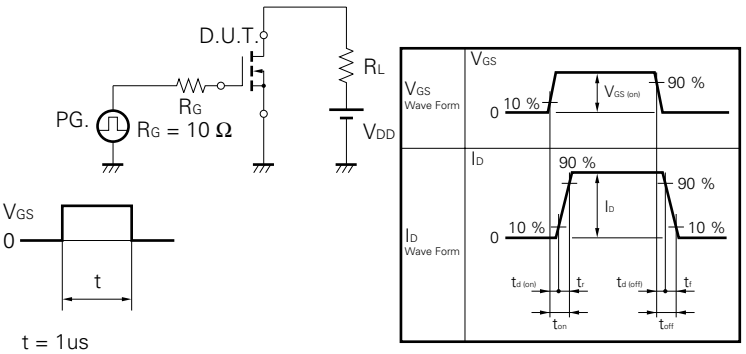
ELECTRICAL CHARACTERISTICS (T_A = 25 °C)

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Drain to Source On-Resistance	$R_{DS\ (on)}$		3.4	5.0	Ω	V_{GS} = 10 V, I_D = 2.0 A
Gate to Source Cutoff Voltage	$V_{GS\ (off)}$	2.5		3.5	V	V_{DS} = 10 V, I_D = 1 mA
Forward Transfer Admittance	$\|y_{fs}\|$	1.0			S	V_{DS} = 20 V, I_D = 2.0 A
Drain Leakage Current	I_{DSS}			100	μA	V_{DS} = V_{DSS}, V_{GS} = 0
Gate to Source Leakage Current	I_{GSS}			±100	nA	V_{GS} = ±30 V, V_{DS} = 0
Input Capacitance	C_{iss}		590		pF	V_{DS} = 10 V
Output Capacitance	C_{oss}		100		pF	V_{GS} = 0
Reverse Transfer Capacitance	C_{rss}		20		pF	f = 1 MHz
Turn-On Delay Time	$t_{d\ (on)}$		15		ns	I_D = 2.0 A
Rise Time	t_r		5		ns	V_{GS} = 10 V
Turn-Off Delay Time	$t_{d\ (off)}$		45		ns	V_{DD} = 150 V
Fall Time	t_f		7		ns	R_G = 10 Ω
Total Gate Charge	Q_G		20		nC	I_D = 3.0 A
Gate to Source Charge	Q_{GS}		5		nC	V_{DD} = 450 V
Gate to Drain Charge	Q_{GD}		10		nC	V_{GS} = 10 V
Body Diode Forward Voltage	$V_{F\ (S\text{-}D)}$		1.0		V	I_F = 3.0 A, V_{GS} = 0
Reverse Recovery Time	t_{rr}		510		ns	I_F = 3.0 A, V_{GS} = 0
Reverse Recovery Charge	Q_{rr}		2.2		μC	di/dt = 50 A/μs

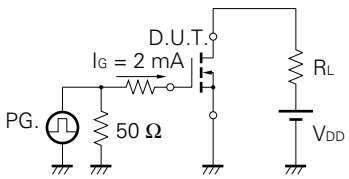
Test Circuit 1 Avalanche Capability



Test Circuit 2 Switching Time



Test Circuit 3 Gate Charge

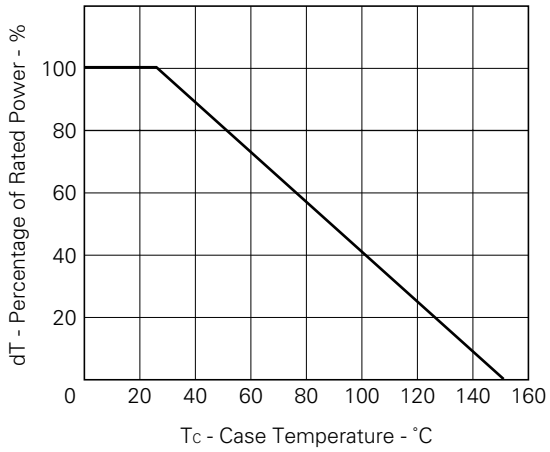


The application circuits and their parameters are for references only and are not intended for use in actual design-in's.

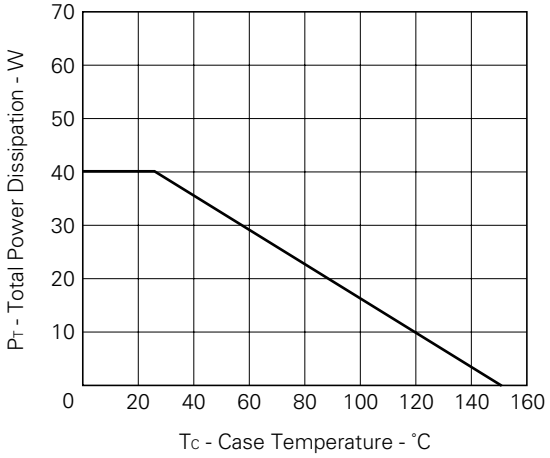
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TYPICAL CHARACTERISTICS (T_A = 25 °C)

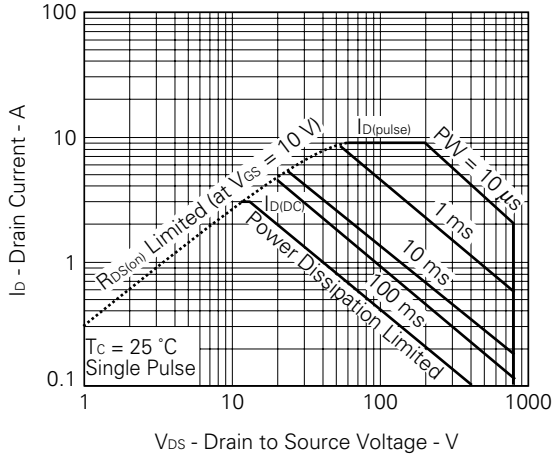
DERATING FACTOR OF FORWARD BIAS SAFE OPERATING AREA



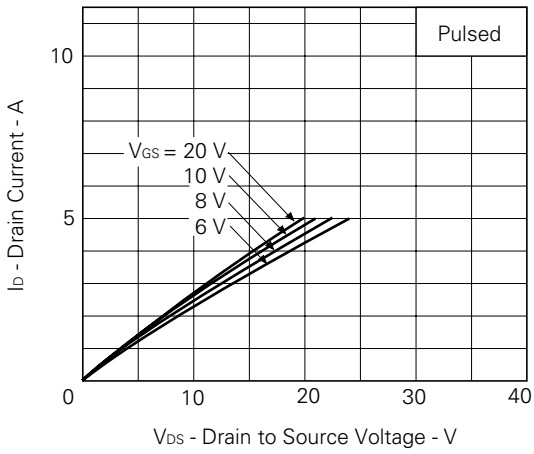
TOTAL POWER DISSIPATION vs. CASE TEMPERATURE



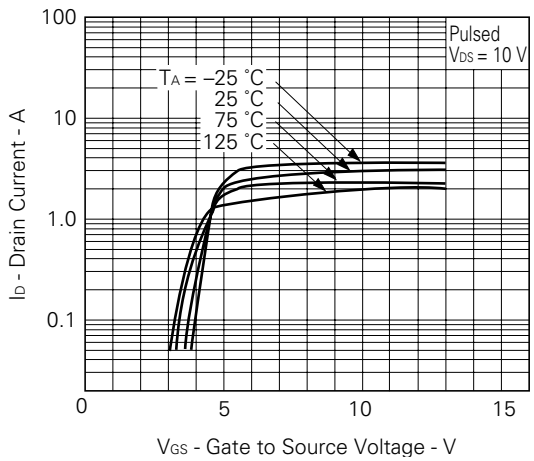
FORWARD BIAS SAFE OPERATING AREA



DRAIN CURRENT vs. DRAIN TO SOURCE VOLTAGE

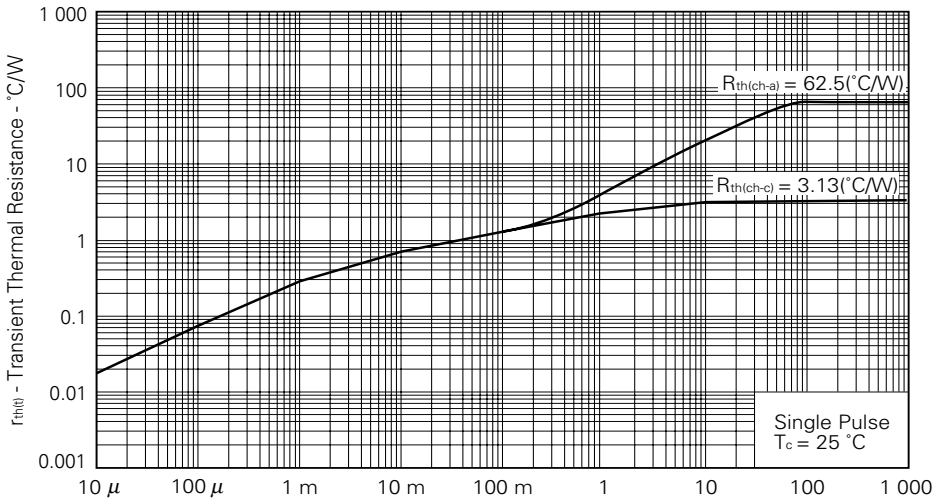


FORWARD TRANSFER CHARACTERISTICS

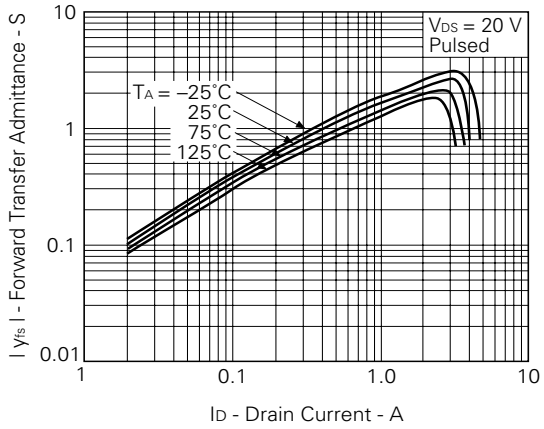


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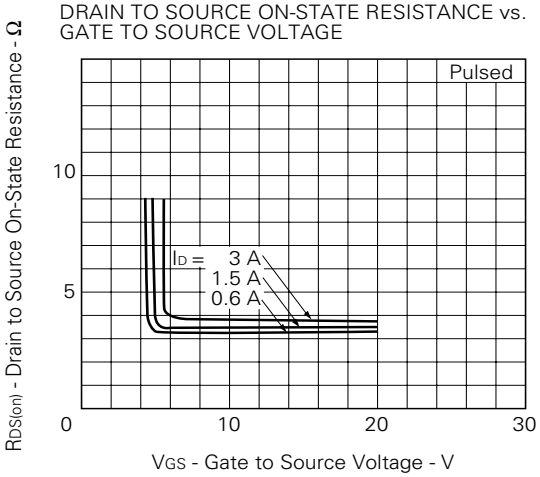
TRANSIENT THERMAL RESISTANCE vs. PULSE WIDTH



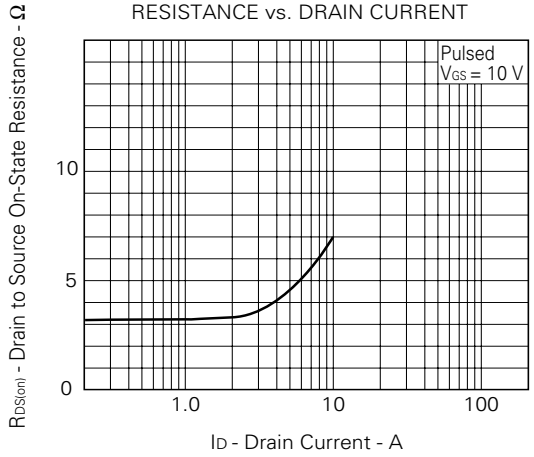
FORWARD TRANSFER ADMITTANCE vs. DRAIN CURRENT



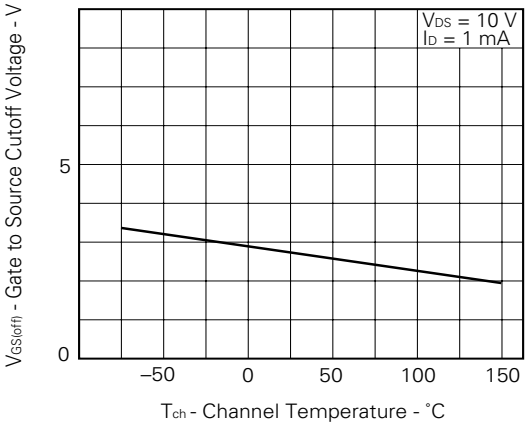
DRAIN TO SOURCE ON-STATE RESISTANCE vs. GATE TO SOURCE VOLTAGE



DRAIN TO SOURCE ON-STATE RESISTANCE vs. DRAIN CURRENT

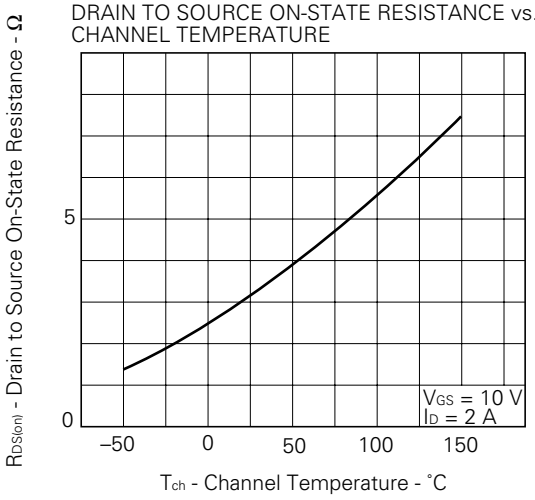


GATE TO SOURCE CUTOFF VOLTAGE vs. CHANNEL TEMPERATURE

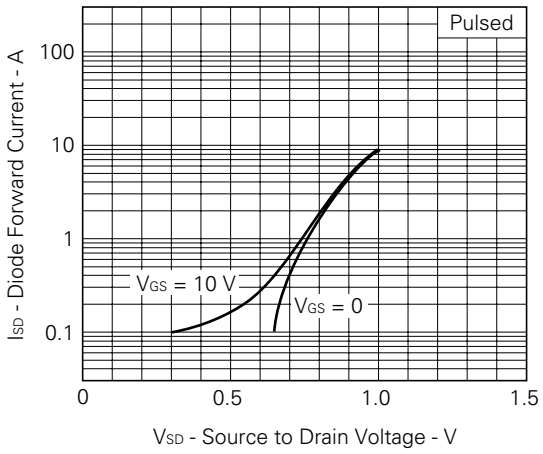


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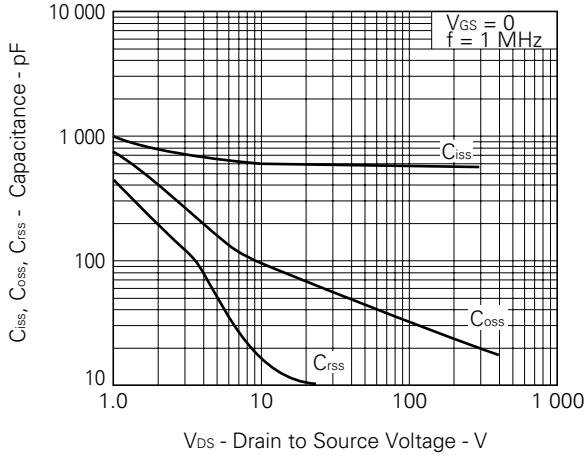
DRAIN TO SOURCE ON-STATE RESISTANCE vs. CHANNEL TEMPERATURE



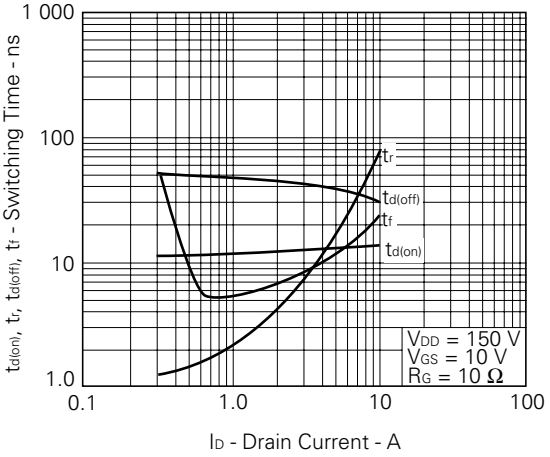
SOURCE TO DRAIN DIODE FORWARD VOLTAGE



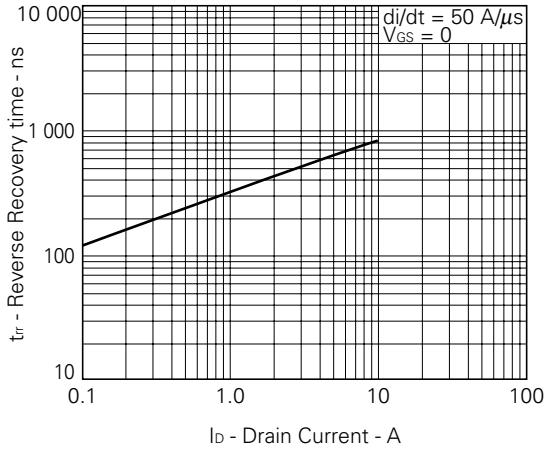
CAPACITANCE vs. DRAIN TO SOURCE VOLTAGE



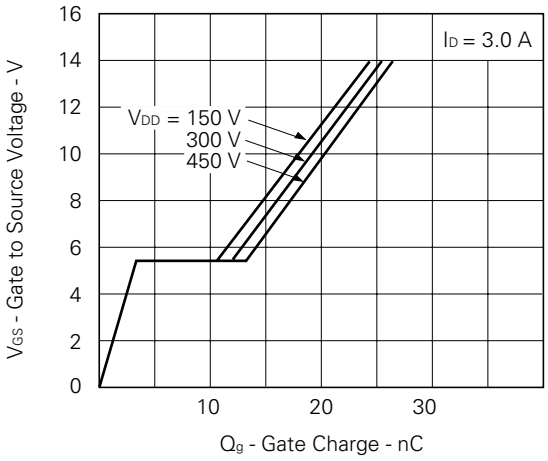
SWITCHING CHARACTERISTICS



REVERSE RECOVERY TIME vs. DRAIN CURRENT

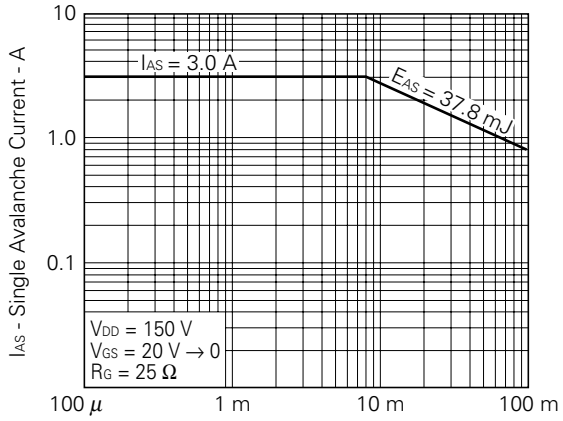


DYNAMIC INPUT/OUTPUT CHARACTERISTICS

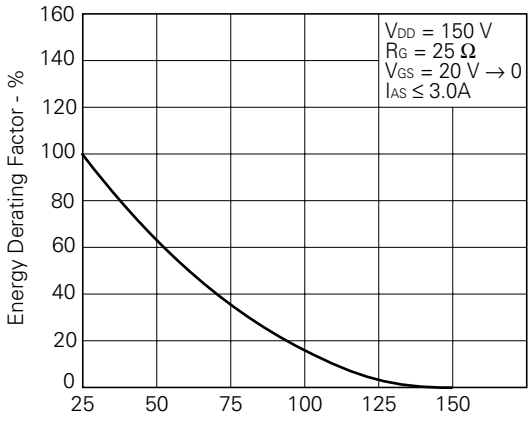


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SINGLE AVALANCHE CURRENT vs.
INDUCTIVE LOAD



SINGLE AVALANCHE ENERGY
DERATING FACTOR



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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

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