

To our customers,

Old Company Name in Catalogs and Other Documents

On April 1st, 2010, NEC Electronics Corporation merged with Renesas Technology Corporation, and Renesas Electronics Corporation took over all the business of both companies. Therefore, although the old company name remains in this document, it is a valid Renesas Electronics document. We appreciate your understanding.

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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Phase-out/Discontinued

**N-CHANNEL POWER MOS FET ARRAY
SWITCHING
INDUSTRIAL USE**

DESCRIPTION

The μPA1572B is N-channel Power MOS FET Array that built in 4 circuits designed for solenoid, motor and lamp driver.

FEATURES

- Full Mold Package with 4 Circuits
- 4 V driving is possible
- Low On-state Resistance
 $R_{DS(on)} = 0.6 \Omega$ MAX. ($V_{GS} = 10 V, I_D = 1 A$)
 $R_{DS(on)} = 0.8 \Omega$ MAX. ($V_{GS} = 4 V, I_D = 1 A$)
- Low Input Capacitance $C_{iss} = 110 pF$ TYP.

ORDERING INFORMATION

Type Number	Package
μPA1572BH	10Pin SIP

ABSOLUTE MAXIMUM RATINGS (TA = 25 °C)

Drain to Source Voltage ($V_{GS} = 0$)	V_{DSS}	60	V
Gate to Source Voltage ($V_{DS} = 0$)	$V_{GSS(AC)}$	±20	V
Drain Current (DC)	$I_D(DS)$	±2.0	A/unit
Drain Current (pulse)	$I_D(pulse) *1$	±6.0	A/unit
Total Power Dissipation	$P_{T1} *2$	20	W
Total Power Dissipation	$P_{T2} *3$	3.0	W
Channel Temperature	T_{CH}	150	°C
Storage Temperature	T_{stg}	-55 to +150	°C
Single Avalanche Current	$I_{AS} *4$	5.0	A
Single Avalanche Energy	$E_{AS} *4$	0.1	mJ

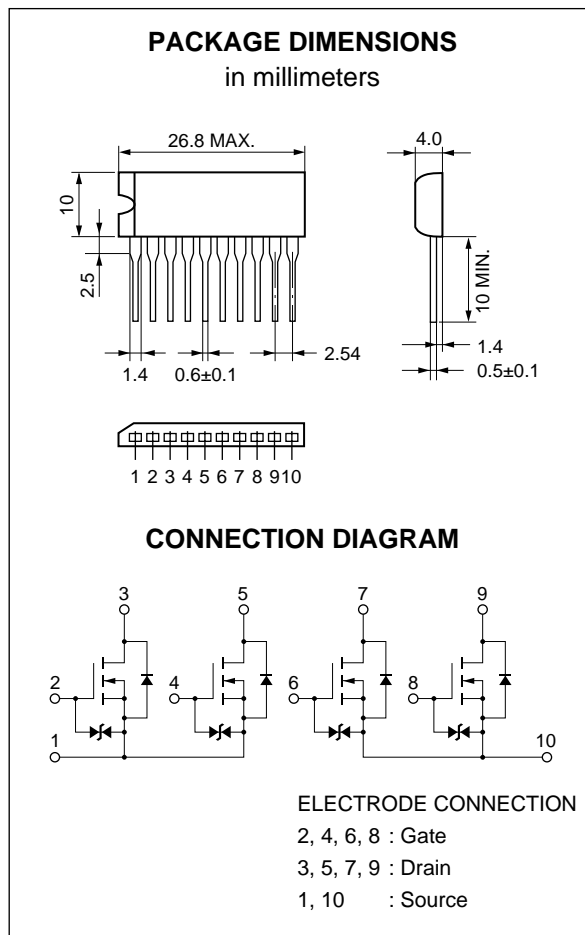
*1 $PW \leq 10 \mu s, Duty Cycle \leq 1 \%$ *2 4 Circuits $T_c = 25 \text{ °C}$

*3 4 Circuits $T_A = 25 \text{ °C}$

*4 Starting $T_{CH} = 25 \text{ °C}, V_{DD} = 30 V, V_{GS} = 20 V \rightarrow 0, R_G = 25 \Omega, L = 100 \mu H$

Build-in Gate Diodes are for protection from static electricity in handing.
 In case high voltage over V_{GSS} is applied, please append gate protection circuits.

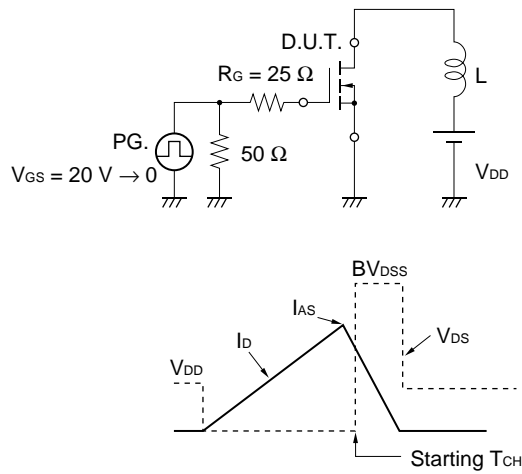
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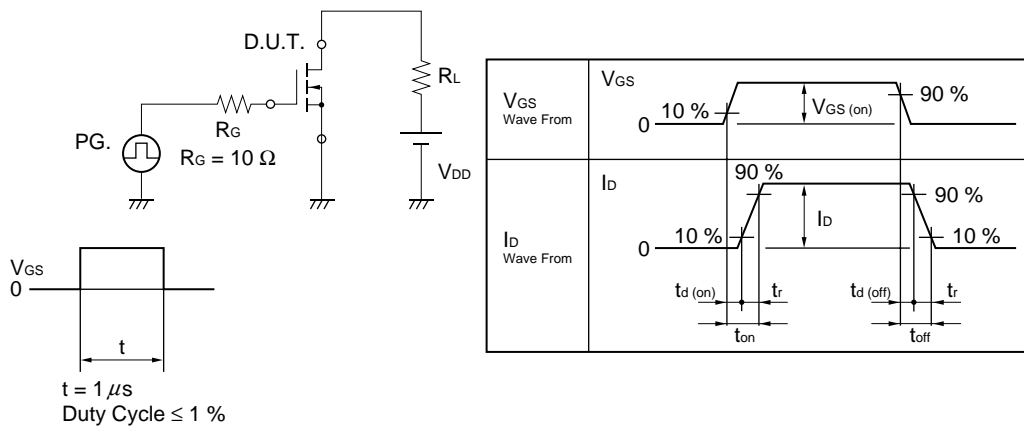
ELECTRICAL CHARACTERISTICS (T_A = 25 °C)

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Drain Leakage Current	I _{DSS}			10	μA	V _{DS} = 60 V, V _{GS} = 0
Gate Leakage Current	I _{GSS}			±10	μA	V _{GS} = ±20 V, V _{DS} = 0
Gate Cutoff Voltage	V _{GS (off)}	1.0		2.0	V	V _{DS} = 10 V, I _D = 1.0 mA
Forward Transfer Admittance	Y _{fs}	0.5			S	V _{DS} = 10 V, I _D = 1.0 A
Drain to Source ON-Resistance	R _{DS (on)1}		0.3	0.6	Ω	V _{GS} = 10 V, I _D = 1.0 A
Drain to Source ON-Resistance	R _{DS (on)2}		0.4	0.8	Ω	V _{GS} = 4.0 V, I _D = 1.0 A
Input Capacitance	C _{iss}		110		pF	V _{DS} = 10 V, V _{GS} = 0, f = 1.0 MHz
Output Capacitance	C _{oss}		70		pF	
Reverse Transfer Capacitance	C _{rss}		25		pF	
Turn-on Delay Time	t _{d (on)}		30		ns	I _D = 1.0 A, V _{GS (on)} = 10 V, V _{DD} = 30 V, R _L = 30 Ω
Rise Time	t _r		200		ns	
Turn-off Delay Time	t _{d (off)}		100		ns	
Fall Time	t _f		160		ns	
Total Gate Charge	Q _G		5.4		nC	V _{GS} = 10 V, I _D = 2.0 A, V _{DD} = 48 V
Gate to Source Charge	Q _{GS}		0.7		nC	
Gate to Drain Charge	Q _{GD}		2.0		nC	
Body Diode Forward Voltage	V _{F (S-D)}		1.0		V	I _F = 2.0 A, V _{GS} = 0
Reverse Recovery Time	t _{rr}		130		ns	I _F = 2.0 A, V _{GS} = 0, di/dt = 50 A/μs
Reverse Recovery Charge	Q _{rr}		110		nC	

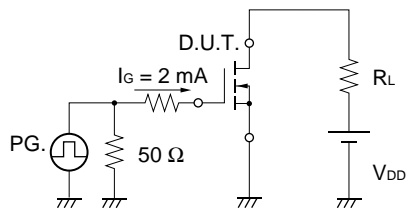
Test Circuit 1 Avalanche Capability



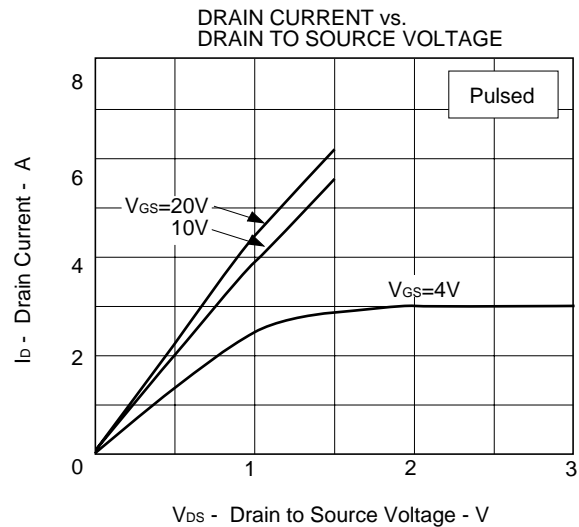
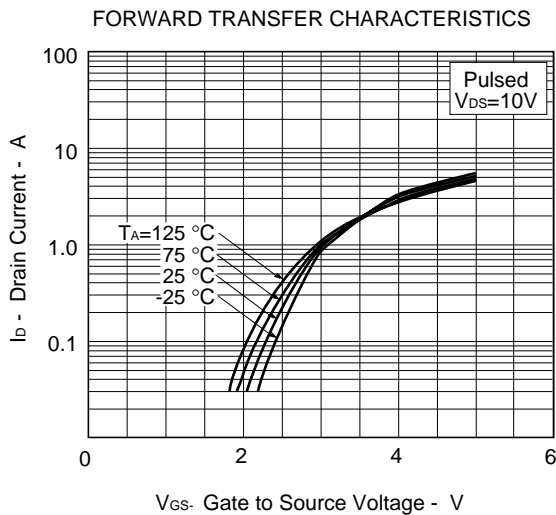
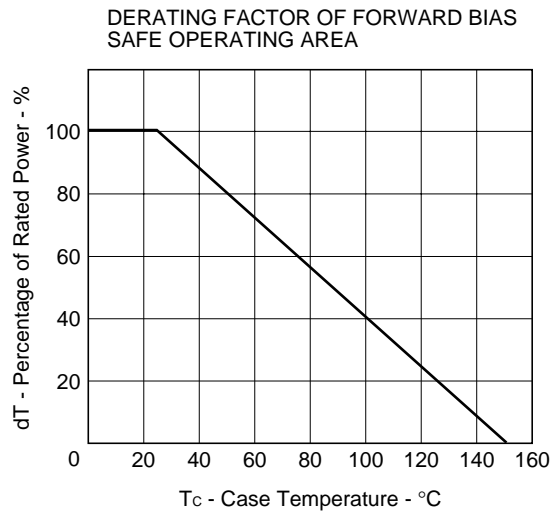
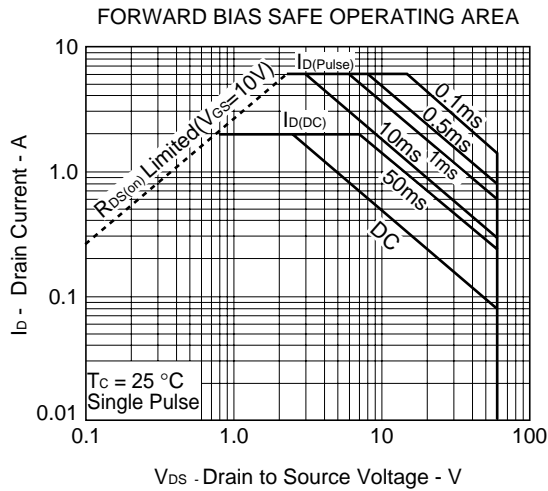
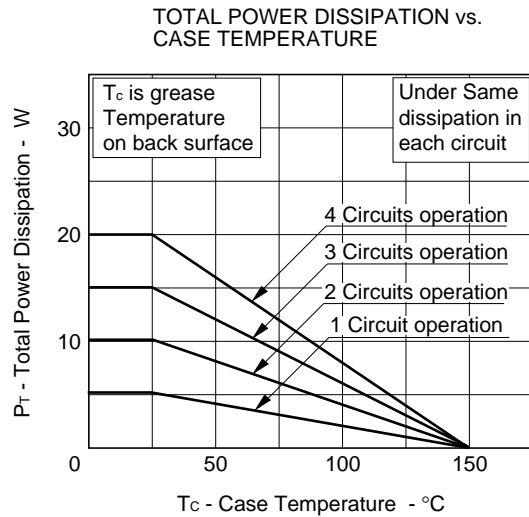
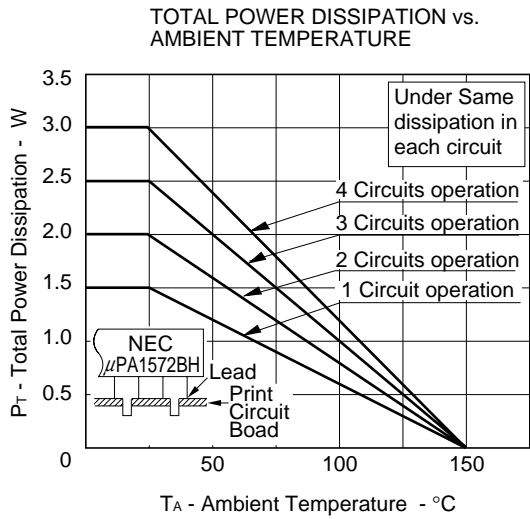
Test Circuit 2 Switching Time



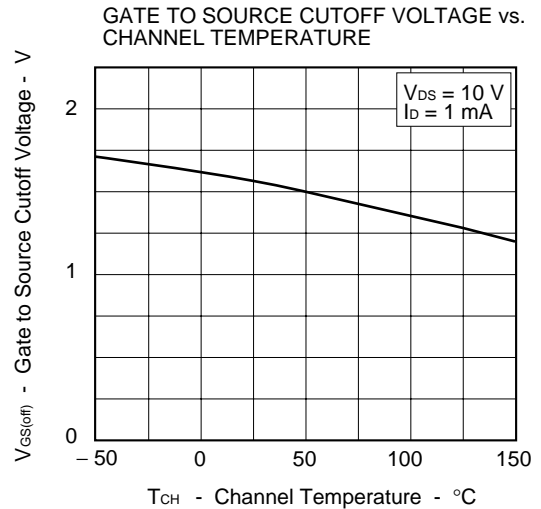
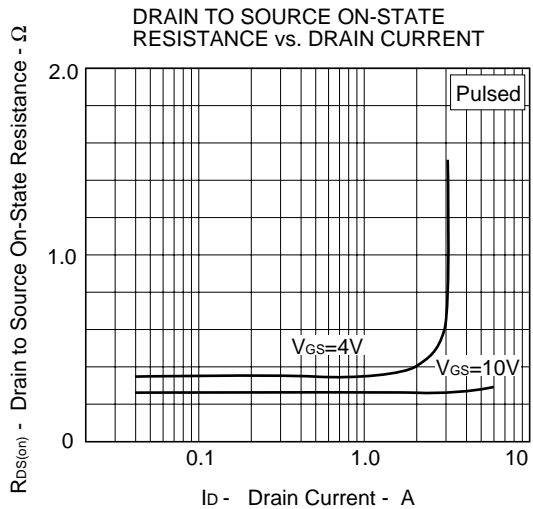
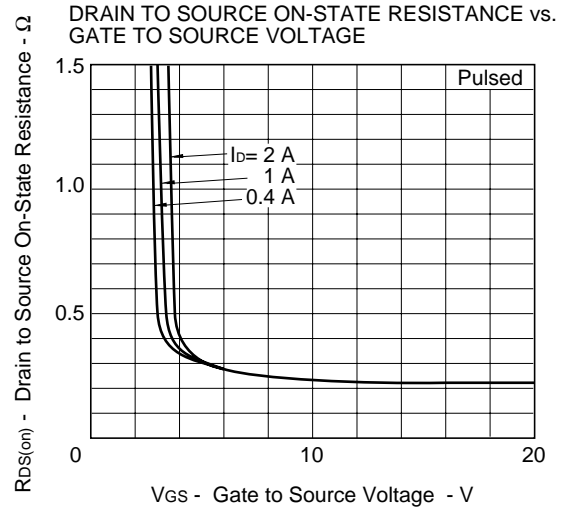
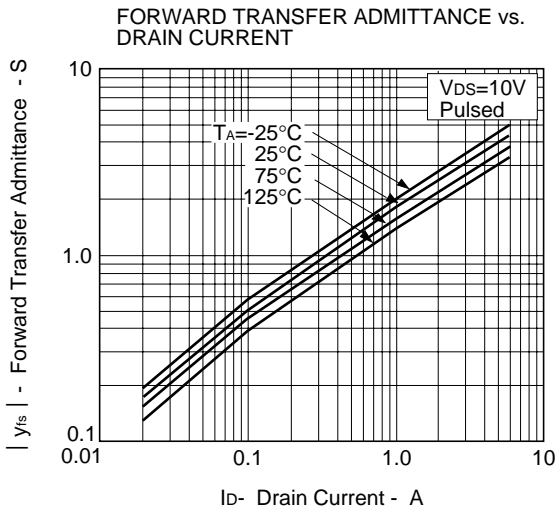
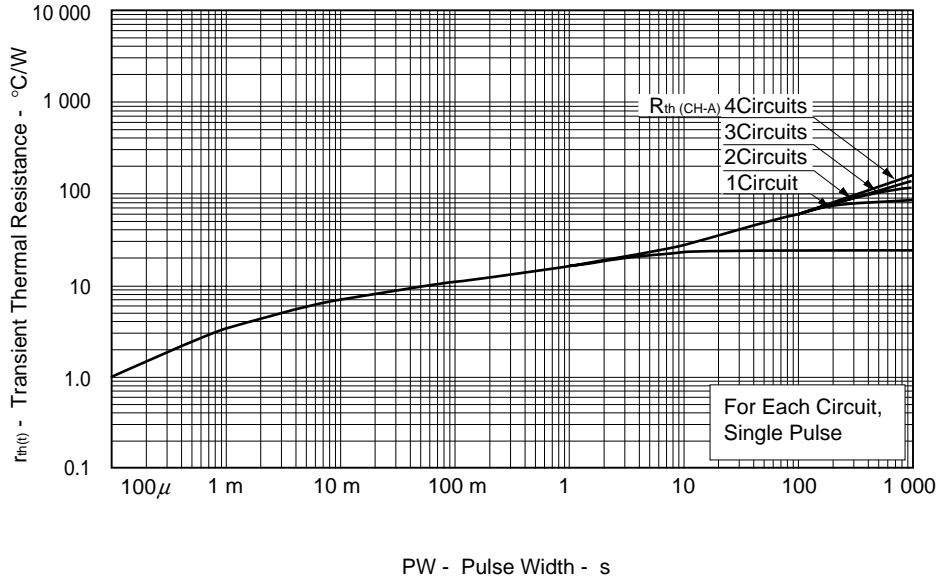
Test Circuit 3 Gate Charge

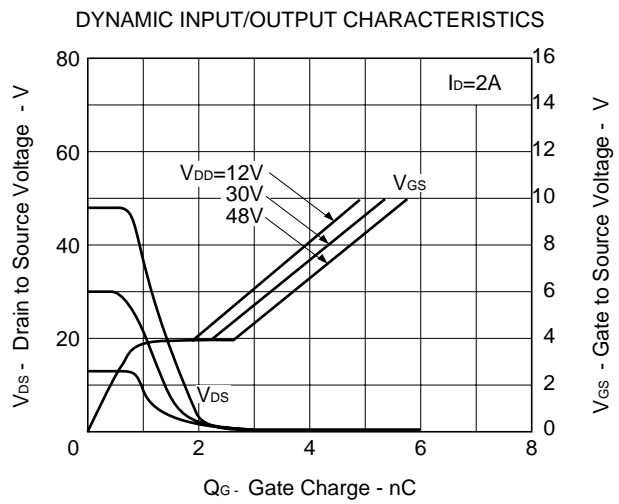
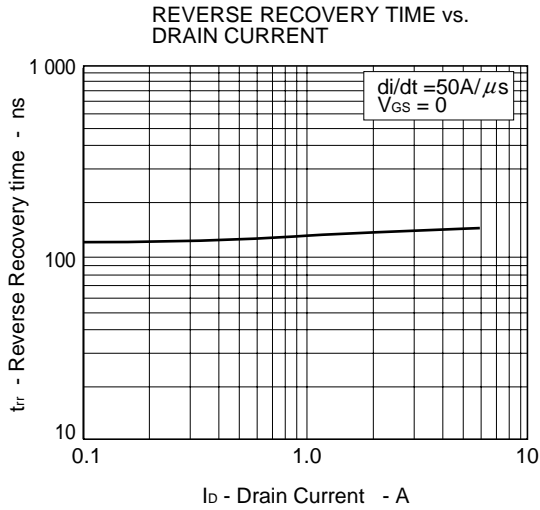
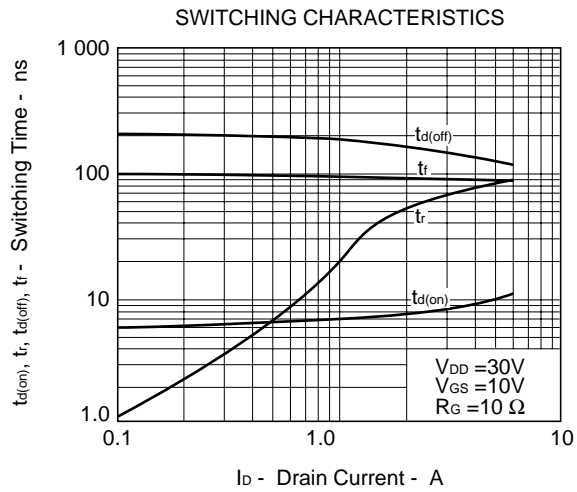
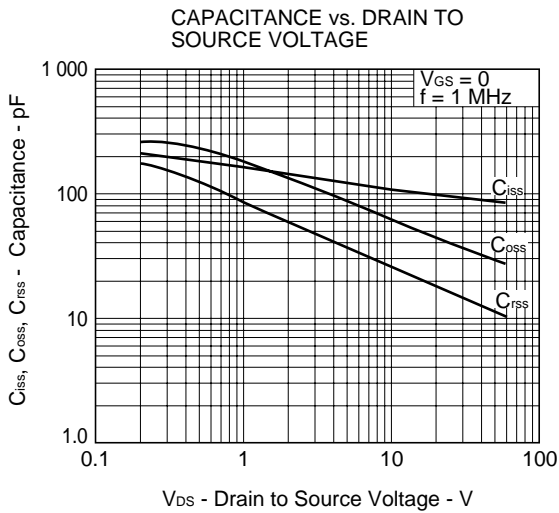
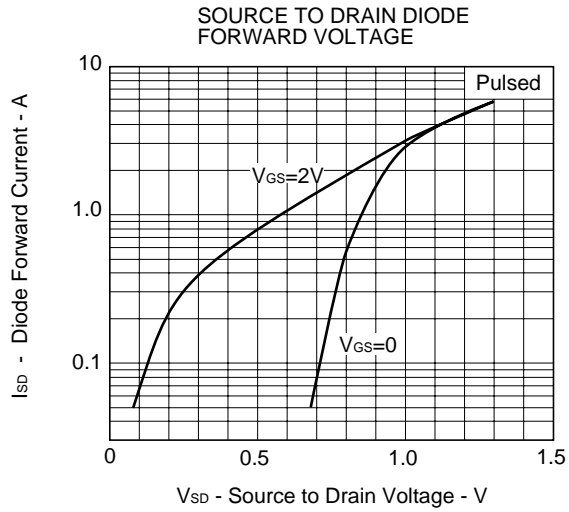
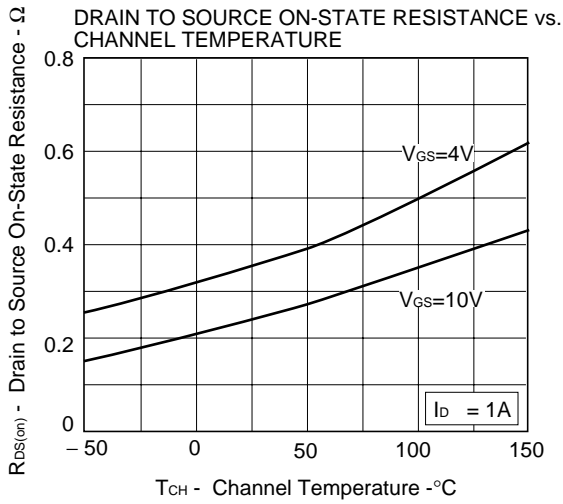


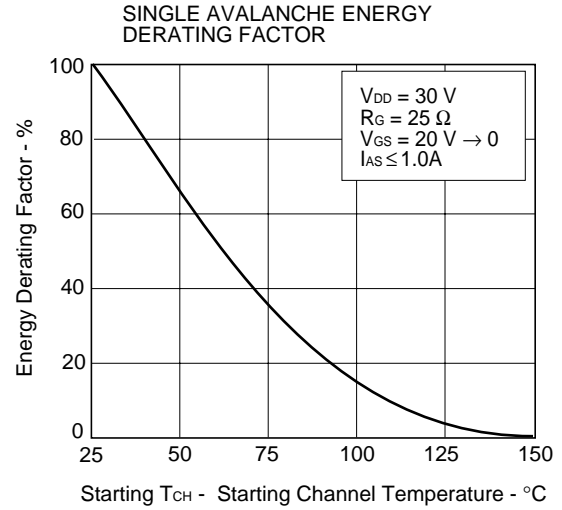
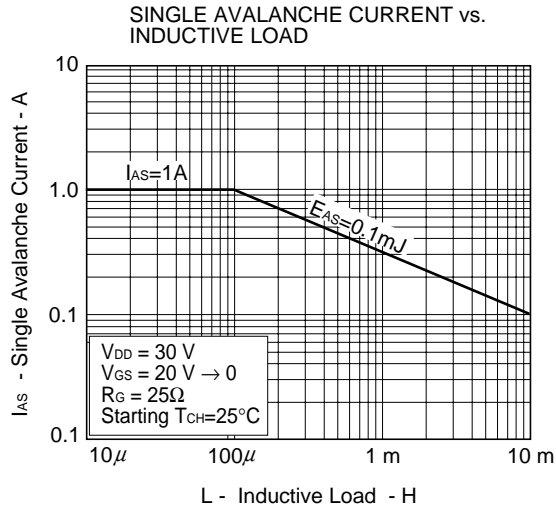
CHARACTERISTICS ($T_A = 25^\circ\text{C}$)



TRANSIENT THERMAL RESISTANCE vs. PULSE WIDTH







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	C10535E
Semiconductor device package manual	C10943X
Guide to quality assurance for semiconductor devices	MEI-1202
Semiconductor selection guide	X10679E
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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Special: Transportation equipment (automobiles, trains, ships, etc.), traffic control systems, anti-disaster systems, anti-crime systems, safety equipment and medical equipment (not specifically designed for life support)

Specific : Aircrafts, aerospace equipment, submersible repeaters, nuclear reactor control systems, life support systems or medical equipment for life support, etc.

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Anti-radioactive design is not implemented in this product.