

To our customers,

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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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Not recommended
for new design

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FX20ASJ-2

High-Speed Switching Use Pch Power MOS FET

REJ03G1441-0300

Rev.3.00

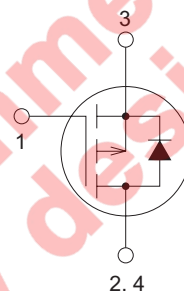
Dec 19, 2008

Features

- Drive voltage : 4 V
- V_{DSS} : - 100 V
- $r_{DS(ON) (max)}$: 0.26 Ω
- I_D : - 20 A
- Integrated Fast Recovery Diode (TYP.) : 100 ns

Outline

RENESAS Package code: PRSS0004ZG-A
(Package name: MP-3A)



1. Gate
2. Drain
3. Source
4. Drain

Applications

Motor control, Lamp control, Solenoid control, DC-DC converters, etc.

Maximum Ratings

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

Parameter	Symbol	Ratings	Unit	Conditions
Drain-source voltage	V_{DSS}	-100	V	$V_{GS} = 0\text{ V}$
Gate-source voltage	V_{GSS}	± 20	V	$V_{DS} = 0\text{ V}$
Drain current	I_D	-20	A	
Drain current (Pulsed)	I_{DM}	-80	A	
Avalanche drain current (Pulsed)	I_{DA}	-20	A	$L = 50\ \mu\text{H}$
Source current	I_S	-20	A	
Source current (Pulsed)	I_{SM}	-80	A	
Maximum power dissipation	P_D	35	W	
Channel temperature	T_{ch}	- 55 to +150	$^\circ\text{C}$	
Storage temperature	T_{stg}	- 55 to +150	$^\circ\text{C}$	
Mass	—	0.32	g	Typical value

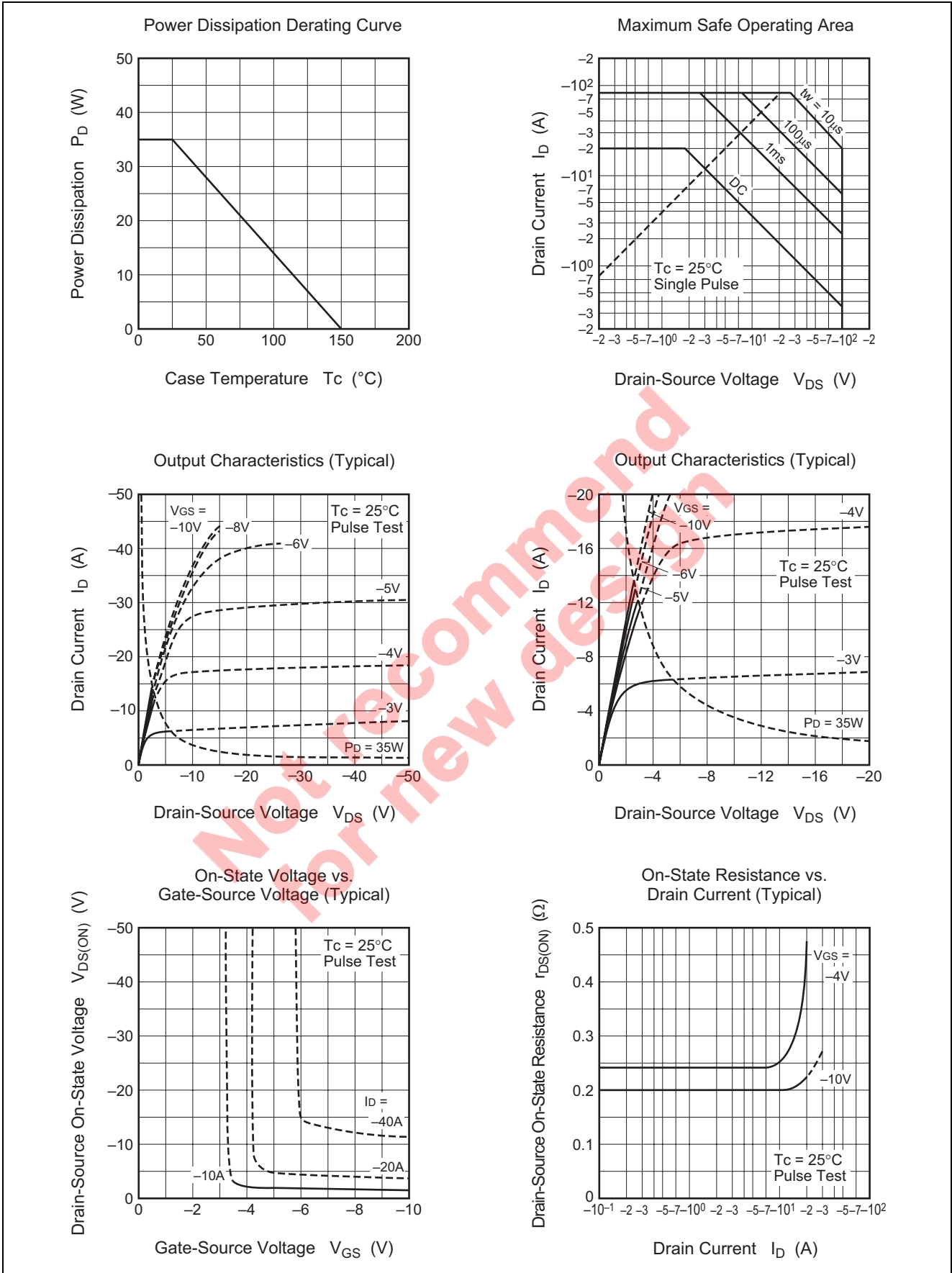
Electrical Characteristics

(T_{ch} = 25°C)

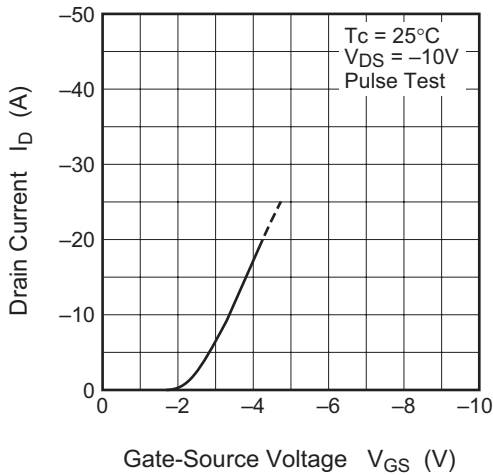
Parameter	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain-source breakdown voltage	V _{(BR)DSS}	-100	—	—	V	I _D = -1 mA, V _{GS} = 0 V
Gate-source leakage current	I _{GSS}	—	—	±0.1	μA	V _{GS} = ±20 V, V _{DS} = 0 V
Drain-source leakage current	I _{DSS}	—	—	-0.1	mA	V _{DS} = -100 V, V _{GS} = 0 V
Gate-source threshold voltage	V _{GS(th)}	-1.3	-1.8	-2.3	V	I _D = -1 mA, V _{DS} = -10 V
Drain-source on-state resistance	r _{DS(ON)}	—	0.20	0.26	Ω	I _D = -10 A, V _{GS} = -10 V
Drain-source on-state resistance	r _{DS(ON)}	—	0.25	0.32	Ω	I _D = -10 A, V _{GS} = -4 V
Drain-source on-state voltage	V _{DS(ON)}	—	-2.0	-2.6	V	I _D = -10 A, V _{GS} = -10 V
Forward transfer admittance	y _{fs}	—	10.3	—	S	I _D = -10 A, V _{DS} = -10 V
Input capacitance	C _{iss}	—	2360	—	pF	V _{DS} = -10 V, V _{GS} = 0 V, f = 1MHz
Output capacitance	C _{oss}	—	198	—	pF	
Reverse transfer capacitance	C _{rss}	—	99	—	pF	
Turn-on delay time	t _{d(on)}	—	13	—	ns	V _{DD} = -50 V, I _D = -10 A, V _{GS} = -10 V, R _{GEN} = R _{GS} = 50 Ω
Rise time	t _r	—	30	—	ns	
Turn-off delay time	t _{d(off)}	—	139	—	ns	
Fall time	t _f	—	74	—	ns	
Source-drain voltage	V _{SD}	—	-1.0	-1.5	V	I _S = -10 A, V _{GS} = 0 V
Thermal resistance	R _{th(ch-c)}	—	—	3.57	°C/W	Channel to case
Reverse recovery time	t _{rr}	—	100	—	ns	I _S = -20 A, d _{is} /d _t = 100 A/μs

Not recommended
for new designs

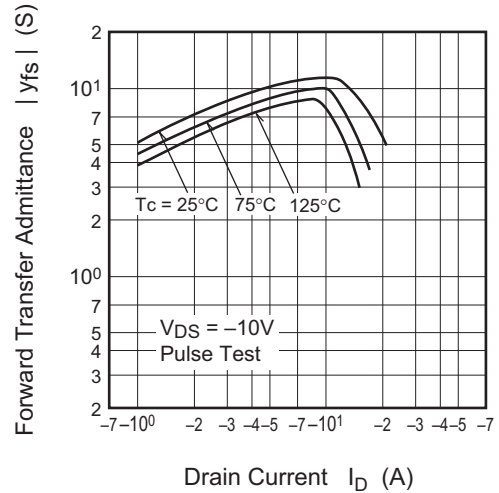
Performance Curves



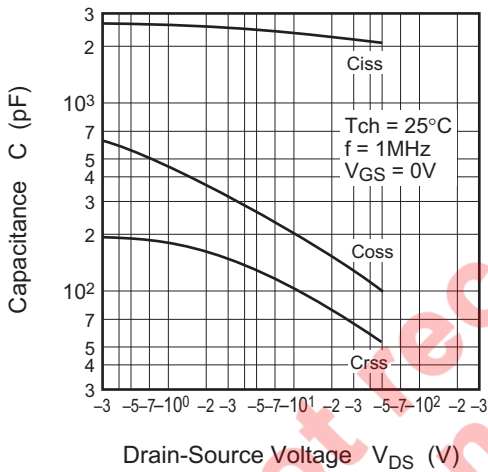
Transfer Characteristics (Typical)



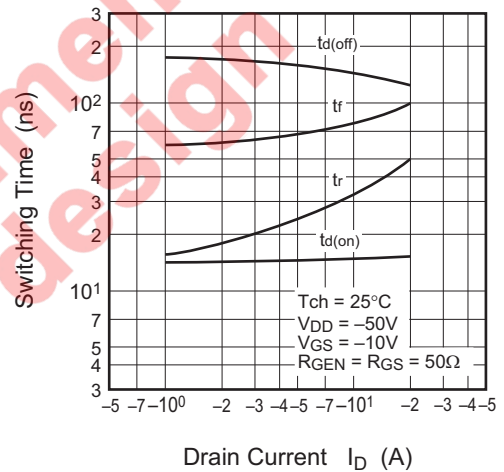
Forward Transfer Admittance vs. Drain Current (Typical)



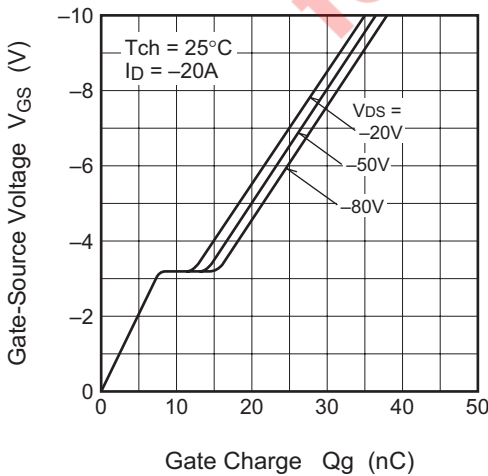
Capacitance vs. Drain-Source Voltage (Typical)



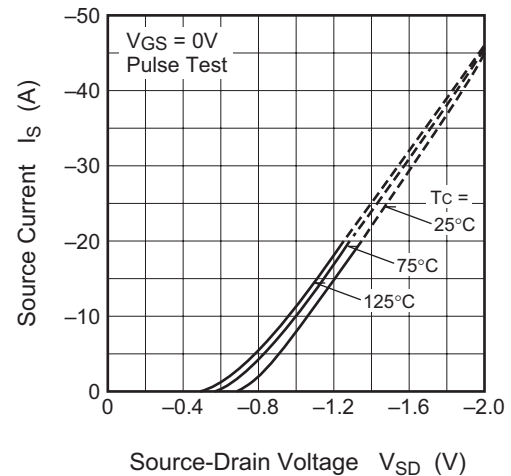
Switching Characteristics (Typical)

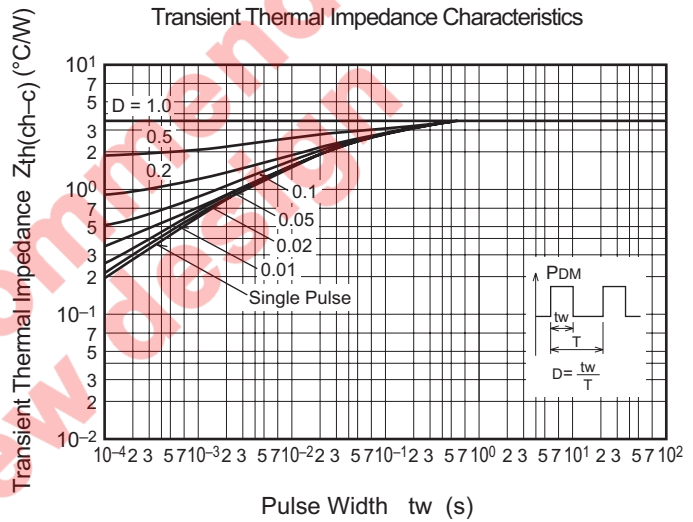
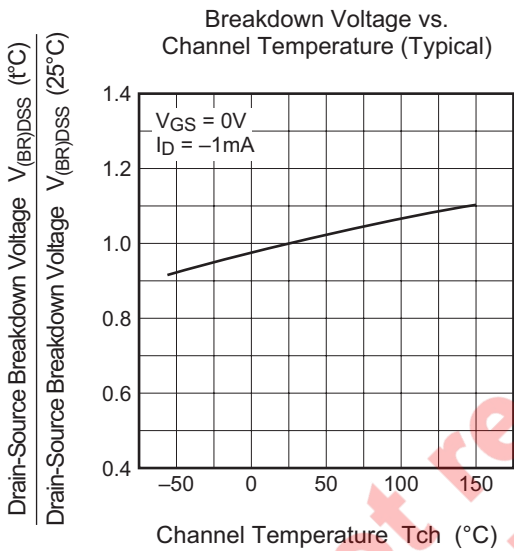
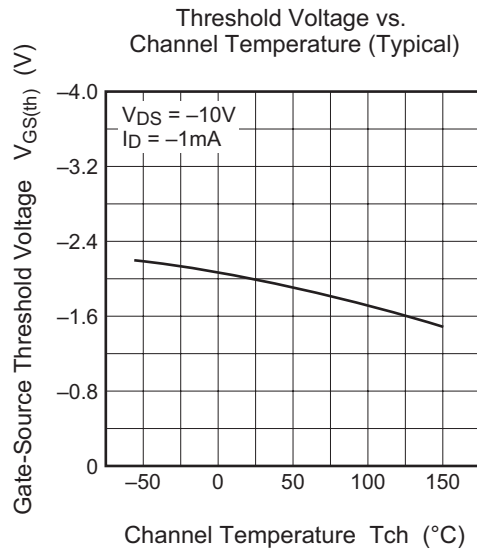
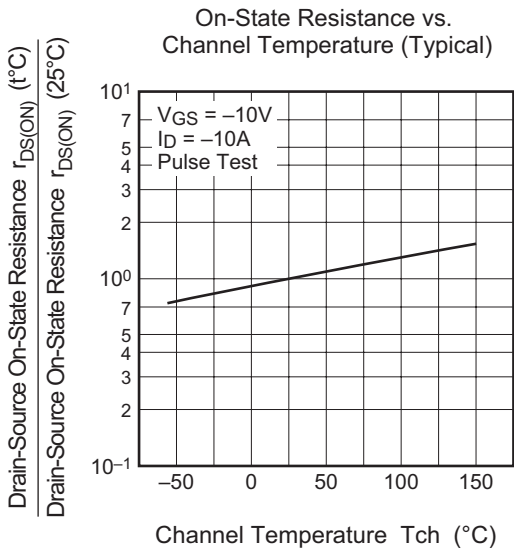


Gate-Source Voltage vs. Gate Charge (Typical)

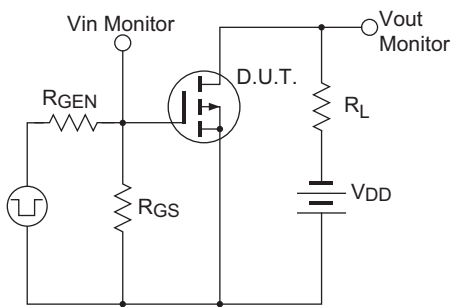


Source-Drain Diode Forward Characteristics (Typical)

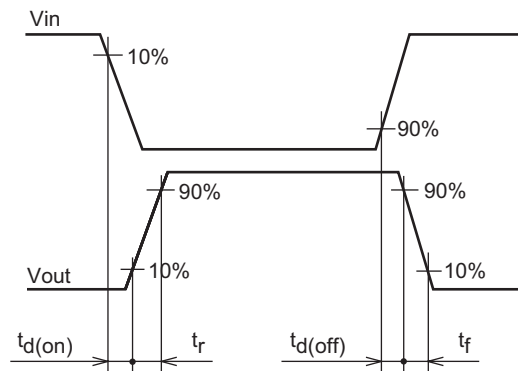




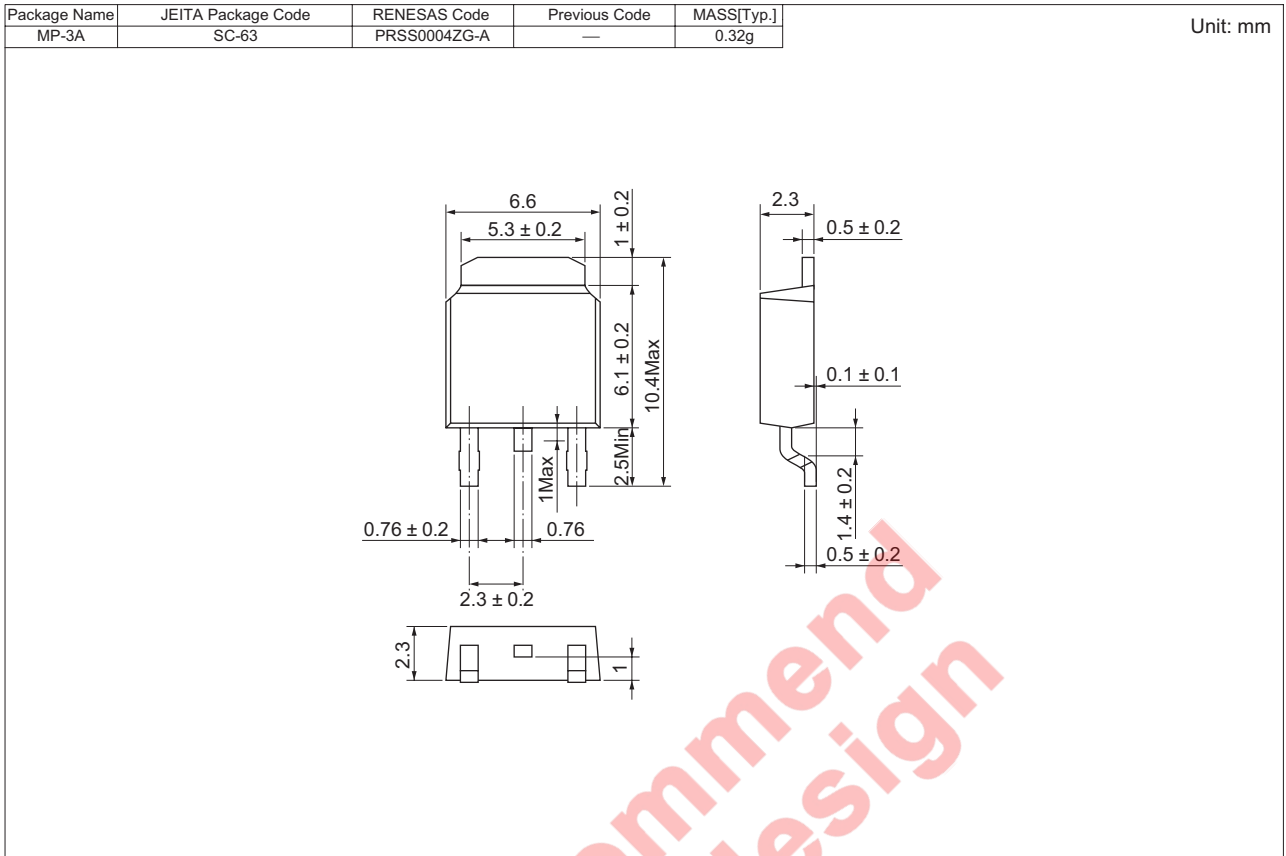
Switching Time Measurement Circuit



Switching Waveform



Package Dimensions



Order Code

Lead form	Standard packing	Quantity	Standard order code	Standard order code example
Surface-mounted type	Taping	3000	Type name – T +Direction (1 or 2) +3	FX20ASJ-2-T13
Surface-mounted type	Plastic Magazine (Tube)	75	Type name	FX20ASJ-2

Note: Please confirm the specification about the shipping in detail.

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