RENESAS

FX20ASJ-03F

High-Speed Switching Use
Pch Power MOS FET

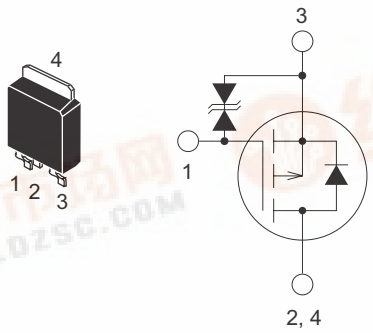
REJ03G0248-0100
Rev.1.00
Aug.20.2004

Features

- Drive voltage : 4 V
- V_{DSS} : – 30 V
- $r_{DS(ON)\ (max)}$: 0.12 Ω
- I_D : – 20 A

Outline

MP-3A



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

Applications

Motor control, lamp control, solenoid control, DC-DC converters, etc.

Maximum Ratings

(Tc = 25°C)

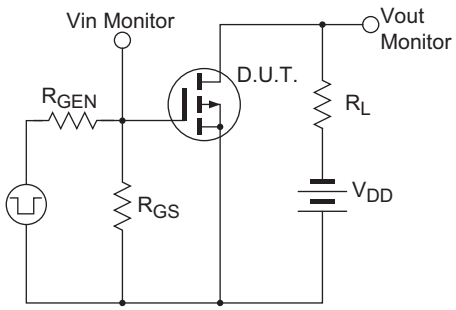
Parameter	Symbol	Ratings	Unit	Conditions
Drain-source voltage	V_{DSS}	–30	V	V_{GS} = 0 V
Gate-source voltage	V_{GSS}	±20	V	V_{DS} = 0 V
Drain current	I_D	–20	A	
Drain current (Pulsed)	I_{DM}	– 40	A	
Avalanche current (Pulsed)	I_{DA}	–5	A	L = 10 µH
Source current	I_S	–20	A	
Source current (Pulsed)	I_{SM}	– 40	A	
Maximum power dissipation	P_D	25	W	
Channel temperature	Tch	– 55 to +150	°C	
Storage temperature	Tstg	– 55 to +150	°C	
Mass	—	0.32	g	Typical value

Electrical Characteristics

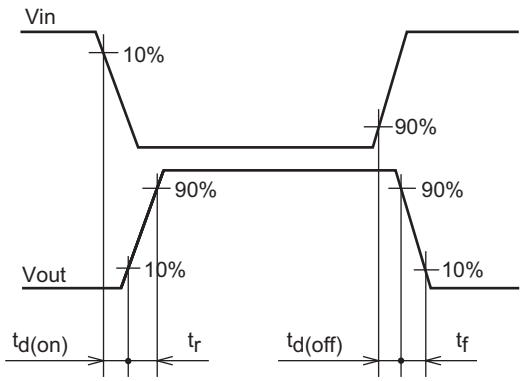
(Tch = 25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test conditions
Drain-source breakdown voltage	$V_{(BR)DSS}$	–30	—	—	V	I_D = 1 mA, V_{GS} = 0 V
Gate-source breakdown voltage	$V_{(BR)GSS}$	±20	—	—	V	I_G = ±100 µA, V_{DS} = 0 V
Drain-source leakage current	I_{DSS}	—	—	100	µA	V_{DS} = –30 V, V_{GS} = 0 V
Gate-source leakage current	I_{GSS}	—	—	±10	µA	V_{GS} = ±20 V, V_{DS} = 0 V
Gate-source threshold voltage	$V_{GS(th)}$	–1.5	–2.0	–2.5	V	I_D = –1 mA, V_{DS} = –10 V
Drain-source on-state resistance	$r_{DS(ON)}$	—	0.085	0.12	Ω	I_D = –10 A, V_{GS} = –10 V
Drain-source on-state resistance	$r_{DS(ON)}$	—	0.145	0.20	Ω	I_D = –2 A, V_{GS} = – 4 V
Drain-source on-state voltage	$V_{DS(ON)}$	—	–0.85	–1.2	V	I_D = –10 A, V_{GS} = –10 V
Forward transfer admittance	$\lvert y_{fs} \rvert$	—	8	—	S	I_D = –10 A, V_{DS} = – 5 V
Input capacitance	Ciss	—	500	—	pF	V_{DS} = –10 V, V_{GS} = 0 V, f = 1MHz
Output capacitance	Coss	—	100	—	pF	
Reverse transfer capacitance	Crss	—	80	—	pF	
Turn-on delay time	$t_{d(on)}$	—	6	—	ns	V_{DD} = –15 V, I_D = –10 A, V_{GS} = –10 V, R_{GEN} = R_{GS} = 50 Ω
Rise time	t_r	—	8	—	ns	
Turn-off delay time	$t_{d(off)}$	—	40	—	ns	
Fall time	t_f	—	15	—	ns	
Source-drain voltage	V_{SD}	—	–1.0	–1.5	V	I_S = –10 A, V_{GS} = 0 V
Thermal resistance	Rth(ch-c)	—	—	5.0	°C/W	Channel to case
Reverse recovery time	t_{rr}	—	30	—	ns	I_S = –10 A, dis/dt = – 50 A/µs

Switching Time Measurement Circuit



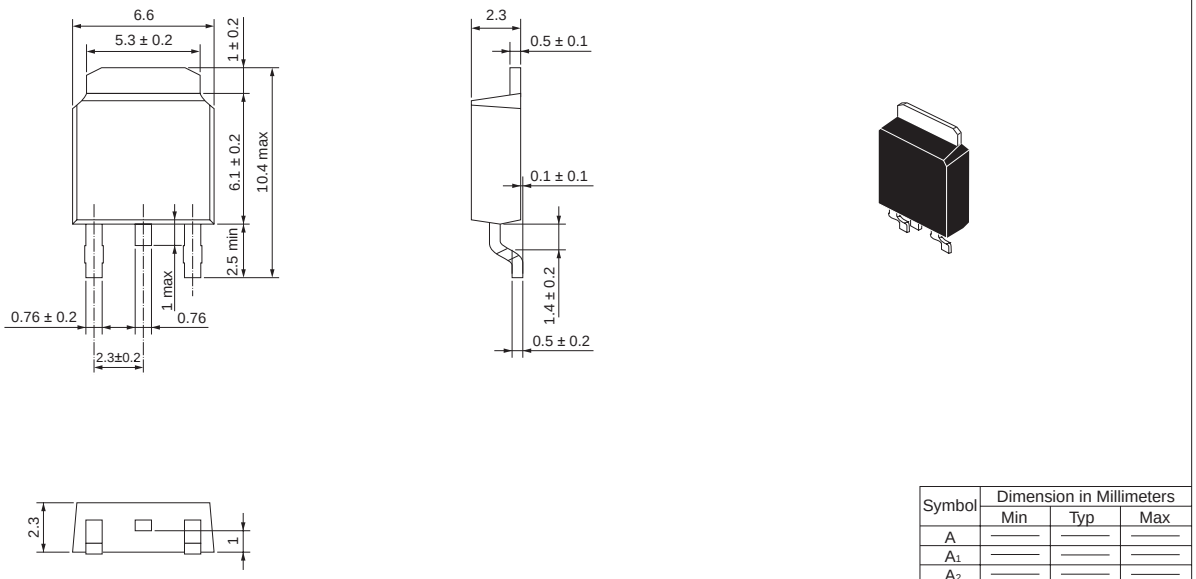
Switching Waveform



Package Dimensions

MP-3A

EIAJ Package Code	JEDEC Code	Mass (g) (reference value)	Lead Material
—	—	0.32	Cu alloy



Symbol	Dimension in Millimeters		
	Min	Typ	Max
A	—	—	—
A_1	—	—	—
A_2	—	—	—
b	—	—	—
D	—	—	—
E	—	—	—
e	—	—	—
x	—	—	—
y	—	—	—
y_1	—	—	—
ZD	—	—	—
ZE	—	—	—

Note 1) The dimensional figures indicate representative values unless otherwise the tolerance is specified.

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-03F-T13
Surface-mounted type	Plastic Magazine (Tube)	75	Type name	FX20ASJ-03F

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

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Colophon .1.0