

FX20ASJ-03F

High-Speed Switching Use
Pch Power MOS FET

REJ03G0248-0100

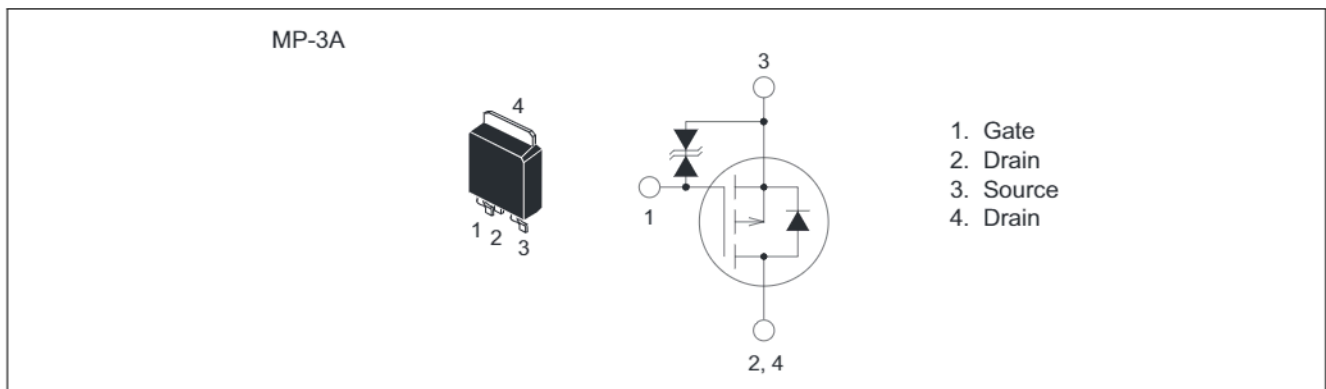
Rev.1.00

Aug.20.2004

Features

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

Outline



Applications

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

Maximum Ratings

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

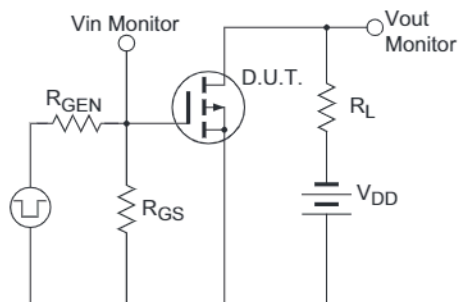
Parameter	Symbol	Ratings	Unit	Conditions
Drain-source voltage	V_{DSS}	-30	V	$V_{GS} = 0\text{ V}$
Gate-source voltage	V_{GSS}	± 20	V	$V_{DS} = 0\text{ V}$
Drain current	I_D	-20	A	
Drain current (Pulsed)	I_{DM}	-40	A	
Avalanche current (Pulsed)	I_{DA}	-5	A	$L = 10\ \mu\text{H}$
Source current	I_S	-20	A	
Source current (Pulsed)	I_{SM}	-40	A	
Maximum power dissipation	P_D	25	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

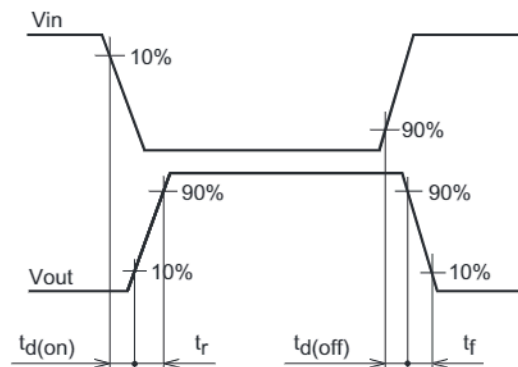
(Tch = 25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test conditions
Drain-source breakdown voltage	$V_{(BR)DSS}$	-30	—	—	V	$I_D = 1 \text{ mA}$, $V_{GS} = 0 \text{ V}$
Gate-source breakdown voltage	$V_{(BR)GSS}$	± 20	—	—	V	$I_G = \pm 100 \text{ } \mu\text{A}$, $V_{DS} = 0 \text{ V}$
Drain-source leakage current	I_{DSS}	—	—	100	μA	$V_{DS} = -30 \text{ V}$, $V_{GS} = 0 \text{ V}$
Gate-source leakage current	I_{GSS}	—	—	± 10	μA	$V_{GS} = \pm 20 \text{ V}$, $V_{DS} = 0 \text{ V}$
Gate-source threshold voltage	$V_{GS(th)}$	-1.5	-2.0	-2.5	V	$I_D = -1 \text{ mA}$, $V_{DS} = -10 \text{ V}$
Drain-source on-state resistance	$r_{DS(ON)}$	—	0.085	0.12	Ω	$I_D = -10 \text{ A}$, $V_{GS} = -10 \text{ V}$
Drain-source on-state resistance	$r_{DS(ON)}$	—	0.145	0.20	Ω	$I_D = -2 \text{ A}$, $V_{GS} = -4 \text{ V}$
Drain-source on-state voltage	$V_{DS(ON)}$	—	-0.85	-1.2	V	$I_D = -10 \text{ A}$, $V_{GS} = -10 \text{ V}$
Forward transfer admittance	$ y_{fs} $	—	8	—	S	$I_D = -10 \text{ A}$, $V_{DS} = -5 \text{ V}$
Input capacitance	C_{iss}	—	500	—	pF	$V_{DS} = -10 \text{ V}$, $V_{GS} = 0 \text{ V}$, $f = 1 \text{ MHz}$
Output capacitance	C_{oss}	—	100	—	pF	
Reverse transfer capacitance	C_{rss}	—	80	—	pF	
Turn-on delay time	$t_{d(on)}$	—	6	—	ns	$V_{DD} = -15 \text{ V}$, $I_D = -10 \text{ A}$, $V_{GS} = -10 \text{ V}$, $R_{GEN} = R_{GS} = 50 \text{ } \Omega$
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	$I_S = -10 \text{ A}$, $V_{GS} = 0 \text{ V}$
Thermal resistance	$R_{th(ch-c)}$	—	—	5.0	$^{\circ}\text{C/W}$	Channel to case
Reverse recovery time	t_{rr}	—	30	—	ns	$I_S = -10 \text{ A}$, $\text{dis}/\text{dt} = -50 \text{ A}/\mu\text{s}$

Switching Time Measurement Circuit



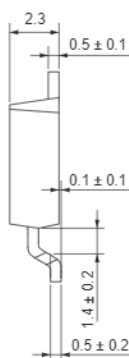
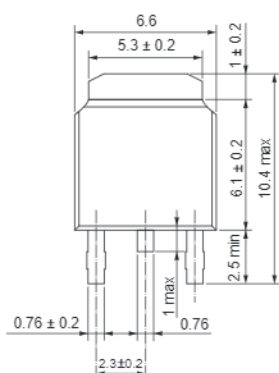
Switching Waveform



Package Dimensions

MP-3A

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



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

Symbol	Dimension in Millimeters		
	Min	Typ	Max
A	—	—	—
A ₁	—	—	—
A ₂	—	—	—
b	—	—	—
D	—	—	—
E	—	—	—
e	—	—	—
x	—	—	—
y	—	—	—
y ₁	—	—	—
ZD	—	—	—
ZE	—	—	—

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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