



FX6ASJ-2

High-Speed Switching Use Pch Power MOS FET

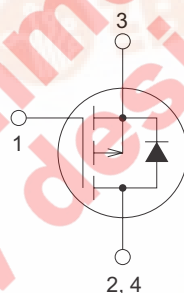
REJ03G1438-0200
(Previous: MEJ02G0279-0101)
Rev.2.00
Aug 07, 2006

Features

- Drive voltage : 4 V
- V_{DSS} : - 100 V
- $r_{DS(ON)} (max)$: 0.58 Ω
- I_D : - 6 A
- Integrated Fast Recovery Diode (TYP.) : 80 ns

Outline

RENESAS Package code: PRSS0004ZA-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

(Tc = 25°C)

Parameter	Symbol	Ratings	Unit	Conditions
Drain-source voltage	V_{DSS}	-100	V	$V_{GS} = 0$ V
Gate-source voltage	V_{GSS}	± 20	V	$V_{DS} = 0$ V
Drain current	I_D	-6	A	
Drain current (Pulsed)	I_{DM}	-24	A	
Avalanche drain current (Pulsed)	I_{DA}	-6	A	$L = 100$ μ H
Source current	I_S	-6	A	
Source current (Pulsed)	I_{SM}	-24	A	
Maximum power dissipation	P_D	30	W	
Channel temperature	T_{ch}	- 55 to +150	°C	
Storage temperature	T_{stg}	- 55 to +150	°C	
Mass	—	0.32	g	Typical value



Electrical Characteristics

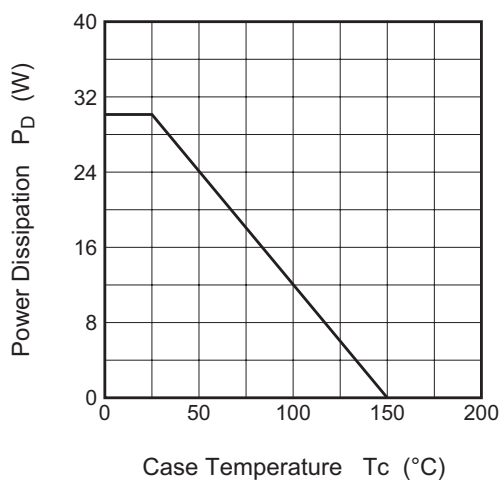
(T_{ch} = 25°C)

Parameter	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain-source breakdown voltage	$V_{(BR)DSS}$	-100	—	—	V	$I_D = -1 \text{ mA}$, $V_{GS} = 0 \text{ V}$
Gate-source leakage current	I_{GSS}	—	—	± 0.1	μA	$V_{GS} = \pm 20 \text{ V}$, $V_{DS} = 0 \text{ V}$
Drain-source leakage current	I_{DSS}	—	—	-0.1	mA	$V_{DS} = -100 \text{ V}$, $V_{GS} = 0 \text{ V}$
Gate-source threshold voltage	$V_{GS(th)}$	-1.3	-1.8	-2.3	V	$I_D = -1 \text{ mA}$, $V_{DS} = -10 \text{ V}$
Drain-source on-state resistance	$r_{DS(ON)}$	—	0.46	0.58	Ω	$I_D = -3 \text{ A}$, $V_{GS} = -10 \text{ V}$
Drain-source on-state resistance	$r_{DS(ON)}$	—	0.55	0.72	Ω	$I_D = -3 \text{ A}$, $V_{GS} = -4 \text{ V}$
Drain-source on-state voltage	$V_{DS(ON)}$	—	-1.38	-1.74	V	$I_D = -3 \text{ A}$, $V_{GS} = -10 \text{ V}$
Forward transfer admittance	$ y_{fs} $	—	4.7	—	S	$I_D = -3 \text{ A}$, $V_{DS} = -5 \text{ V}$
Input capacitance	C_{iss}	—	1110	—	pF	$V_{DS} = -10 \text{ V}$, $V_{GS} = 0 \text{ V}$, $f = 1 \text{ MHz}$
Output capacitance	C_{oss}	—	108	—	pF	
Reverse transfer capacitance	C_{rss}	—	44	—	pF	
Turn-on delay time	$t_{d(on)}$	—	9	—	ns	$V_{DD} = -50 \text{ V}$, $I_D = -3 \text{ A}$, $V_{GS} = -10 \text{ V}$, $R_{GEN} = R_{GS} = 50 \Omega$
Rise time	t_r	—	8	—	ns	
Turn-off delay time	$t_{d(off)}$	—	72	—	ns	
Fall time	t_f	—	33	—	ns	
Source-drain voltage	V_{SD}	—	-1.0	-1.5	V	$I_S = -3 \text{ A}$, $V_{GS} = 0 \text{ V}$
Thermal resistance	$R_{th(ch-c)}$	—	—	4.17	$^{\circ}\text{C/W}$	Channel to case
Reverse recovery time	t_{rr}	—	80	—	ns	$I_S = -6 \text{ A}$, $d_i/d_t = 100 \text{ A}/\mu\text{s}$

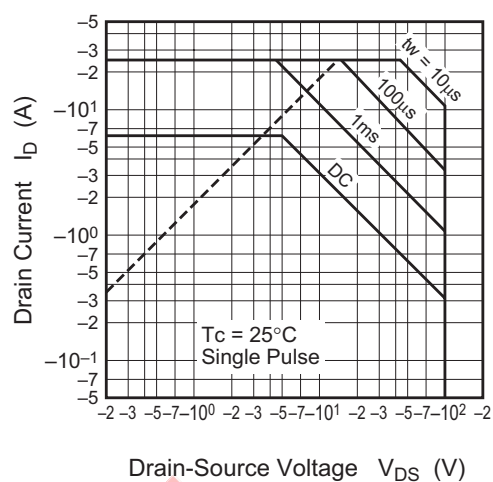
Not recommended
for new designs

Performance Curves

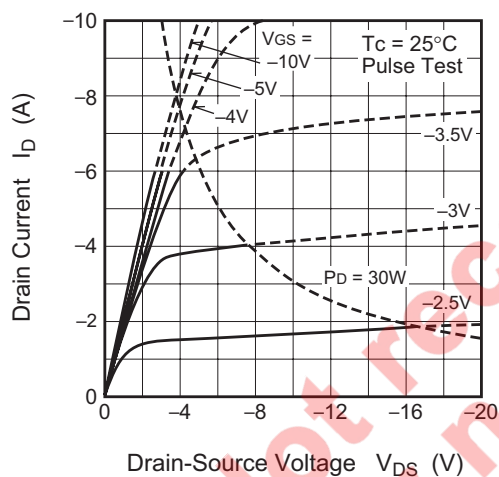
Power Dissipation Derating Curve



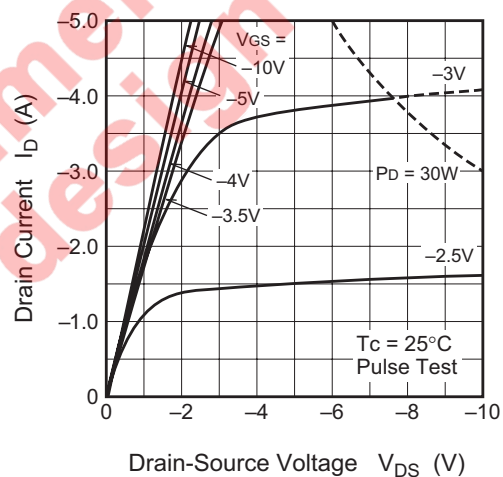
Maximum Safe Operating Area



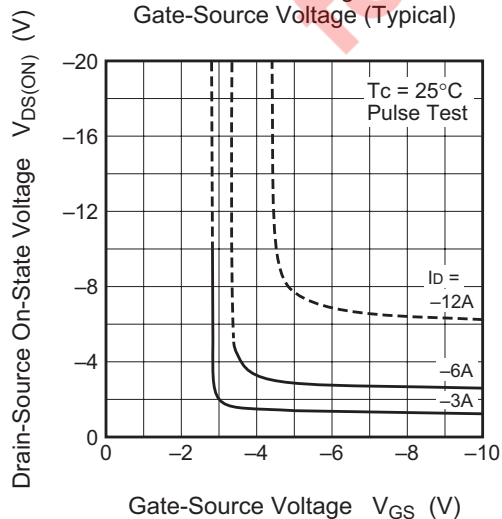
Output Characteristics (Typical)



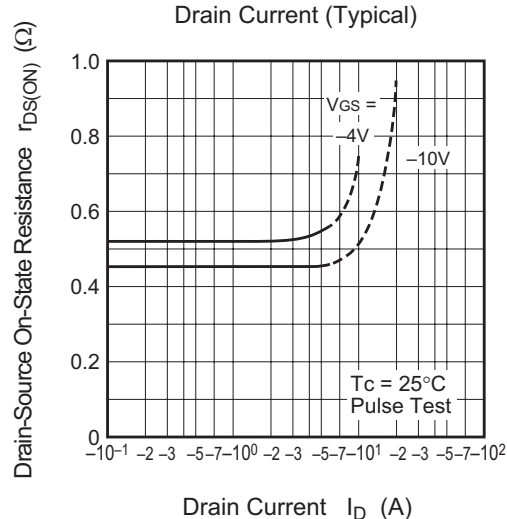
Output Characteristics (Typical)



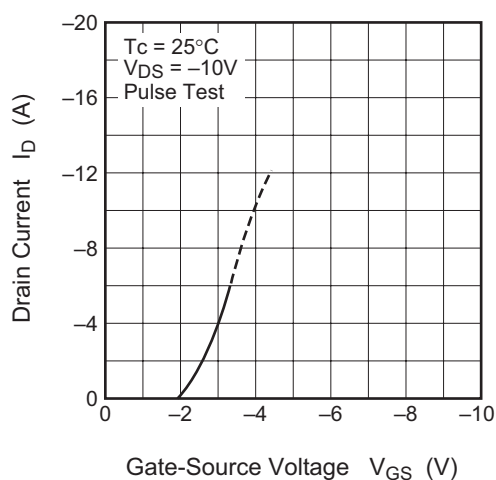
On-State Voltage vs. Gate-Source Voltage (Typical)



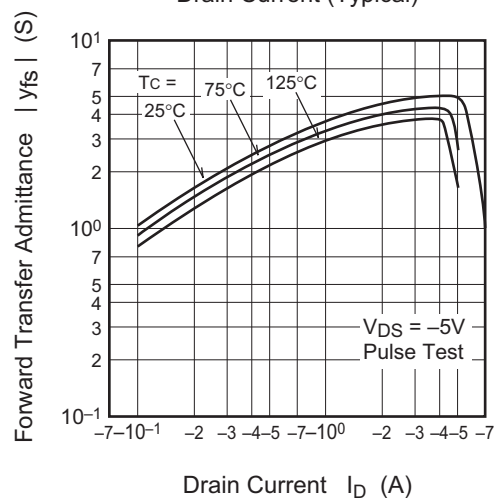
On-State Resistance vs. Drain Current (Typical)



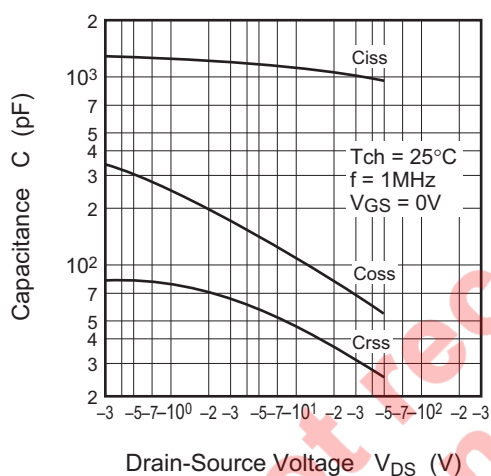
Transfer Characteristics (Typical)



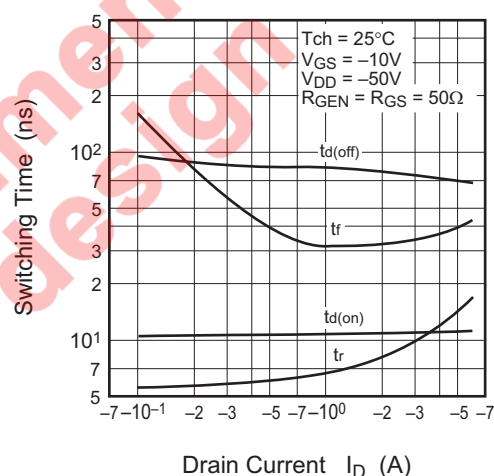
Forward Transfer Admittance vs. Drain Current (Typical)



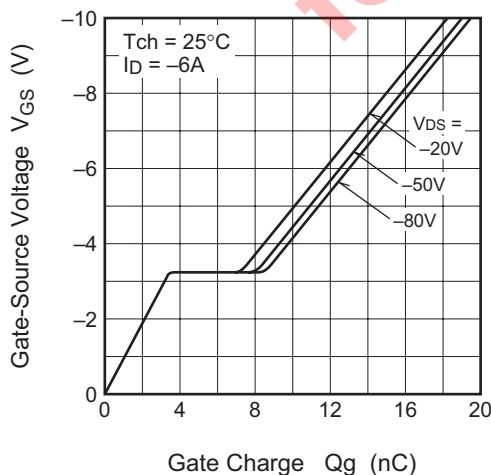
Capacitance vs. Drain-Source Voltage (Typical)



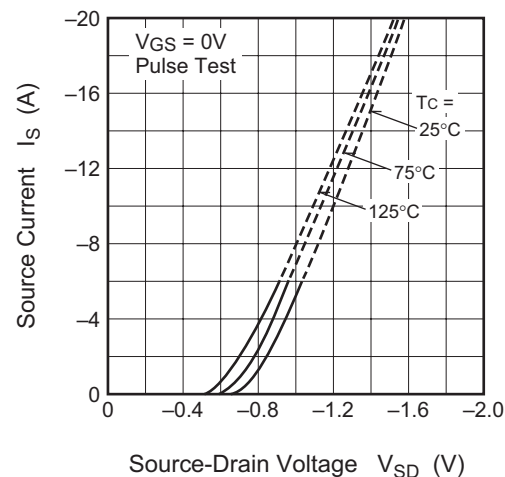
Switching Characteristics (Typical)



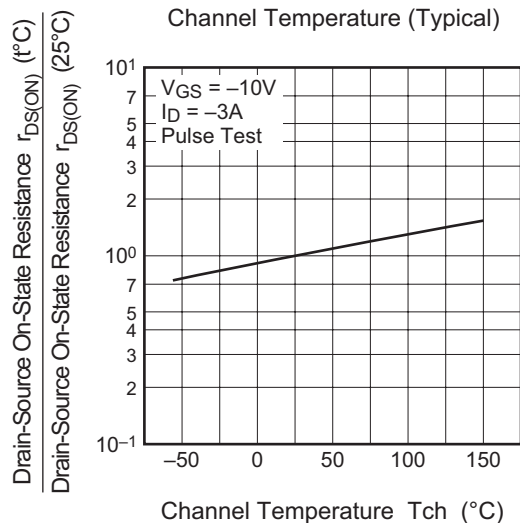
Gate-Source Voltage vs. Gate Charge (Typical)



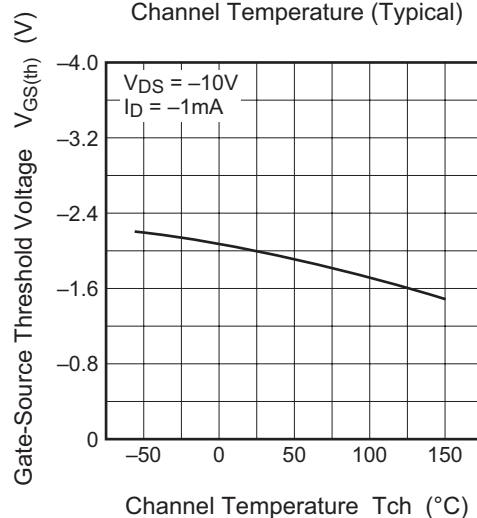
Source-Drain Diode Forward Characteristics (Typical)



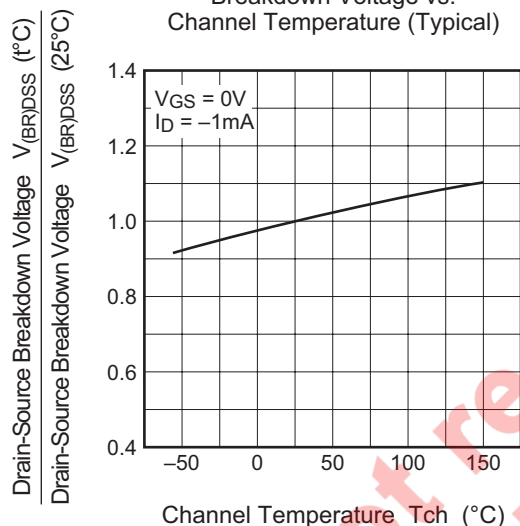
On-State Resistance vs.
Channel Temperature (Typical)



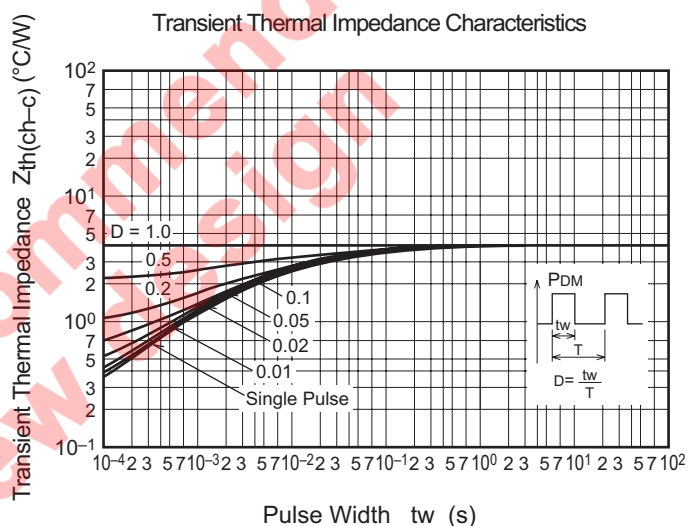
Threshold Voltage vs.
Channel Temperature (Typical)



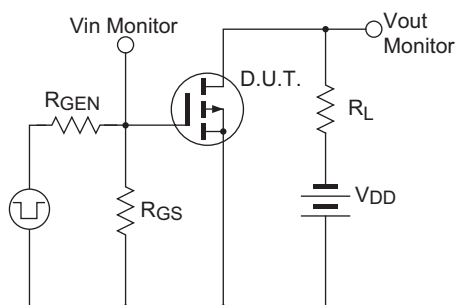
Breakdown Voltage vs.
Channel Temperature (Typical)



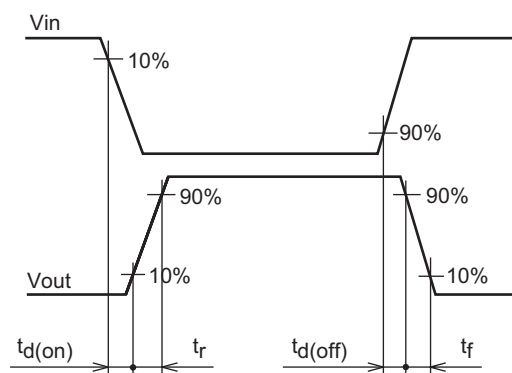
Transient Thermal Impedance Characteristics



Switching Time Measurement Circuit



Switching Waveform



Package Dimensions

Package Name	JEITA Package Code	RENESAS Code	Previous Code	MASS[Typ.]	Unit: mm
MP-3A	SC-63	PRSS0004ZA-A	—	0.32g	

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	FX6ASJ-2-T13
Surface-mounted type	Plastic Magazine (Tube)	75	Type name	FX6ASJ-2

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

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Tel: <1> (408) 382-7500, Fax: <1> (408) 382-7501

Renesas Technology Europe Limited

Dukes Meadow, Millboard Road, Bourne End, Buckinghamshire, SL8 5FH, U.K.
Tel: <44> (1628) 585-100, Fax: <44> (1628) 585-900

Renesas Technology (Shanghai) Co., Ltd.

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Tel: <86> (21) 5877-1818, Fax: <86> (21) 6887-7898

Renesas Technology Hong Kong Ltd.

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Tel: <852> 2265-6688, Fax: <852> 2730-6071

Renesas Technology Taiwan Co., Ltd.

10th Floor, No.99, Fushing North Road, Taipei, Taiwan
Tel: <886> (2) 2715-2888, Fax: <886> (2) 2713-2999

Renesas Technology Singapore Pte. Ltd.

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Tel: <65> 6213-0200, Fax: <65> 6278-8001

Renesas Technology Korea Co., Ltd.

Kukje Center Bldg. 18th Fl., 191, 2-ka, Hangang-ro, Yongsan-ku, Seoul 140-702, Korea
Tel: <82> (2) 796-3115, Fax: <82> (2) 796-2145

Renesas Technology Malaysia Sdn. Bhd

Unit 906, Block B, Menara Amcorp, Amcorp Trade Centre, No.18, Jalan Persiaran Barat, 46050 Petaling Jaya, Selangor Darul Ehsan, Malaysia
Tel: <603> 7955-9390, Fax: <603> 7955-9510