



# FS30ASJ-2

## High-Speed Switching Use Nch Power MOS FET

REJ03G1412-0200  
 (Previous: MEJ02G0064-0101)  
 Rev.2.00  
 Aug 07, 2006

### Features

- Drive voltage : 4 V
- $V_{DSS}$  : 100 V
- $r_{DS(ON) (max)}$  : 84 mΩ
- $I_D$  : 30 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	$I_D$	30	A	
Drain current (Pulsed)	$I_{DM}$	120	A	
Avalanche drain current (Pulsed)	$I_{DA}$	30	A	$L = 100 \mu H$
Source current	$I_S$	30	A	
Source current (Pulsed)	$I_{SM}$	120	A	
Maximum power dissipation	$P_D$	35	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

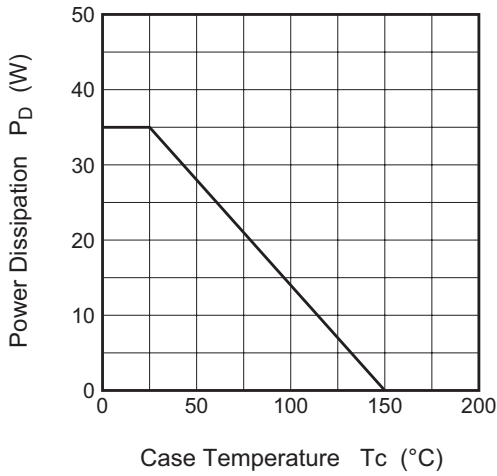
(T<sub>ch</sub> = 25°C)

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	$V_{GS(th)}$	1.0	1.5	2.0	V	$I_D = 1 \text{ mA}, V_{DS} = 10 \text{ V}$
Drain-source on-state resistance	$r_{DS(ON)}$	—	65	84	mΩ	$I_D = 15 \text{ A}, V_{GS} = 10 \text{ V}$
Drain-source on-state resistance	$r_{DS(ON)}$	—	70	91	mΩ	$I_D = 15 \text{ A}, V_{GS} = 4 \text{ V}$
Drain-source on-state voltage	$V_{DS(ON)}$	—	0.98	1.26	V	$I_D = 15 \text{ A}, V_{GS} = 10 \text{ V}$
Forward transfer admittance	$ y_{fs} $	—	23	—	S	$I_D = 15 \text{ A}, V_{DS} = 10 \text{ V}$
Input capacitance	$C_{iss}$	—	1800	—	pF	$V_{DS} = 10 \text{ V}, V_{GS} = 0 \text{ V},$ $f = 1 \text{ MHz}$
Output capacitance	$C_{oss}$	—	230	—	pF	
Reverse transfer capacitance	$C_{rss}$	—	120	—	pF	
Turn-on delay time	$t_{d(on)}$	—	17	—	ns	$V_{DD} = 50 \text{ V}, I_D = 15 \text{ A},$ $V_{GS} = 10 \text{ V},$ $R_{GEN} = R_{GS} = 50 \Omega$
Rise time	$t_r$	—	46	—	ns	
Turn-off delay time	$t_{d(off)}$	—	135	—	ns	
Fall time	$t_f$	—	95	—	ns	
Source-drain voltage	$V_{SD}$	—	1.0	1.5	V	$I_S = 15 \text{ A}, V_{GS} = 0 \text{ V}$
Thermal resistance	$R_{th(ch-c)}$	—	—	3.57	°C/W	Channel to case
Reverse recovery time	$t_{rr}$	—	80	—	ns	$I_S = 30 \text{ A}, d_i/d_t = -100 \text{ A}/\mu\text{s}$

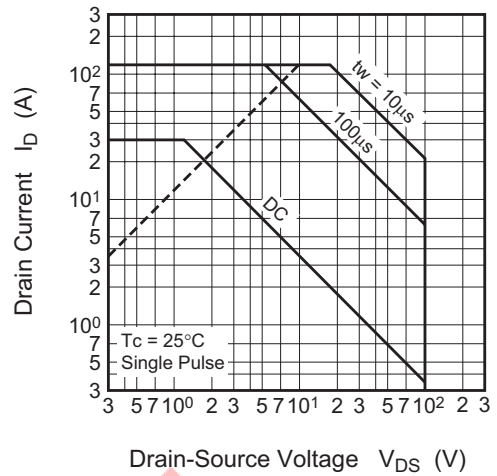
Not recommended  
for new designs

Performance Curves

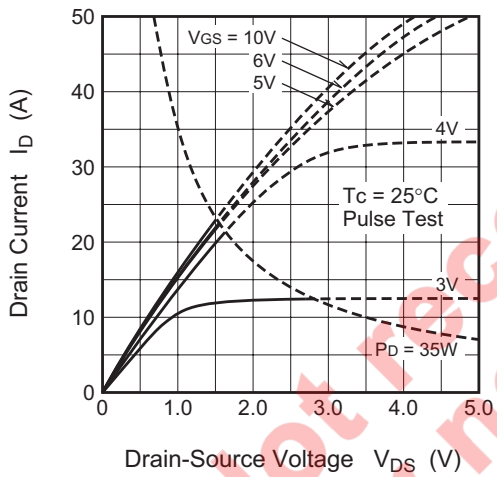
Power Dissipation Derating Curve



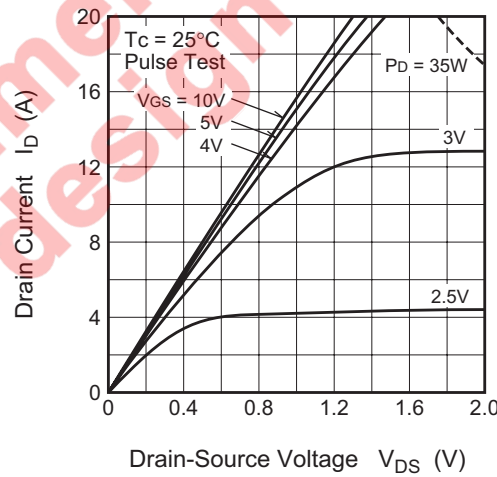
Maximum Safe Operating Area



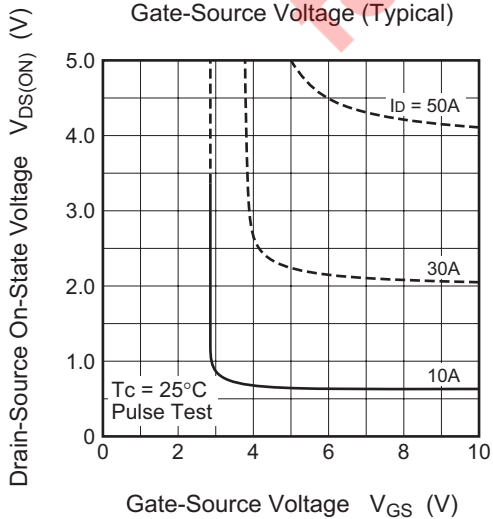
Output Characteristics (Typical)



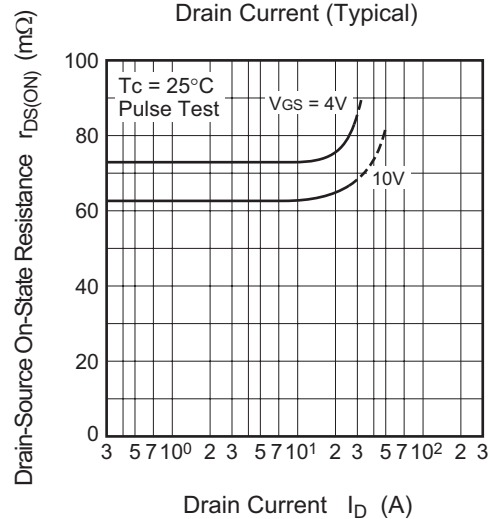
Output Characteristics (Typical)



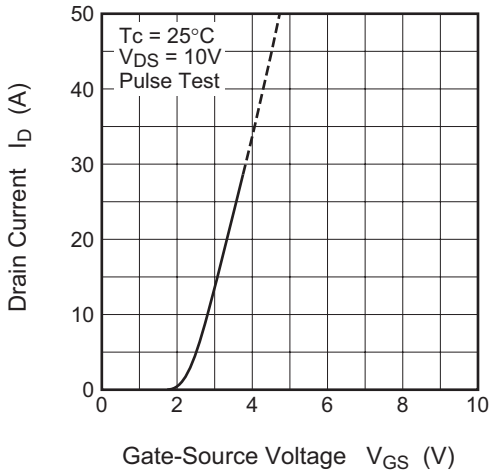
On-State Voltage vs. Gate-Source Voltage (Typical)



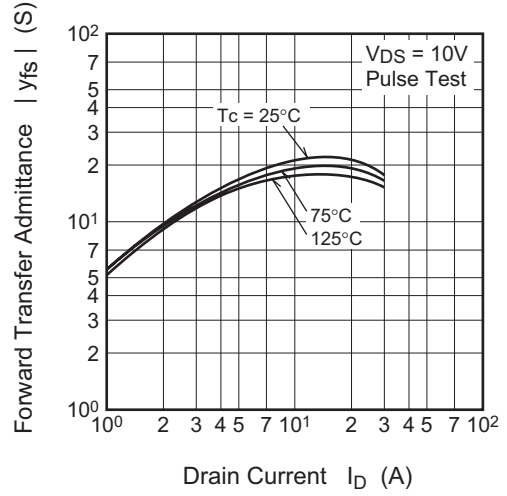
On-State Resistance vs. Drain Current (Typical)



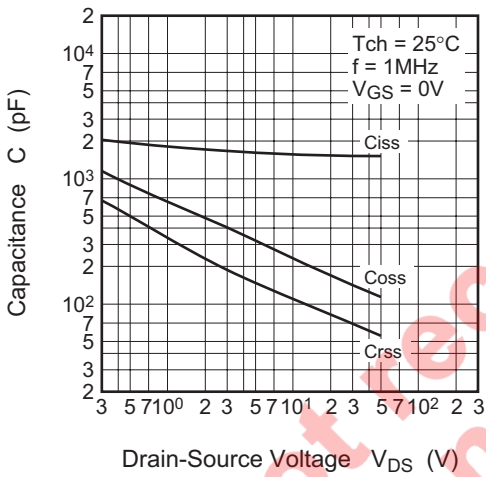
Transfer Characteristics (Typical)



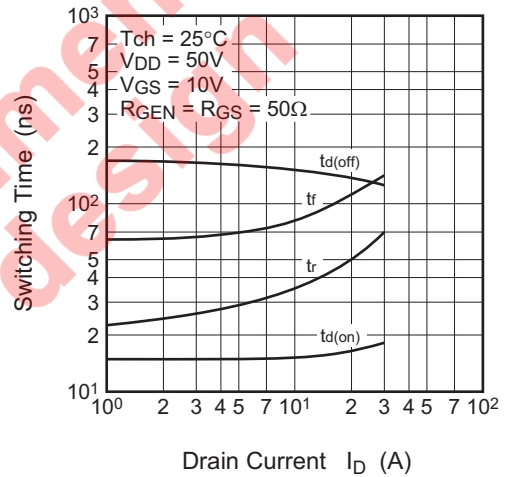
Forward Transfer Admittance vs. Drain Current (Typical)



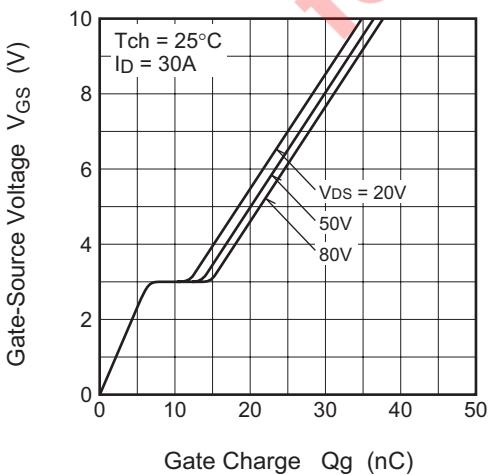
Capacitance vs. Drain-Source Voltage (Typical)



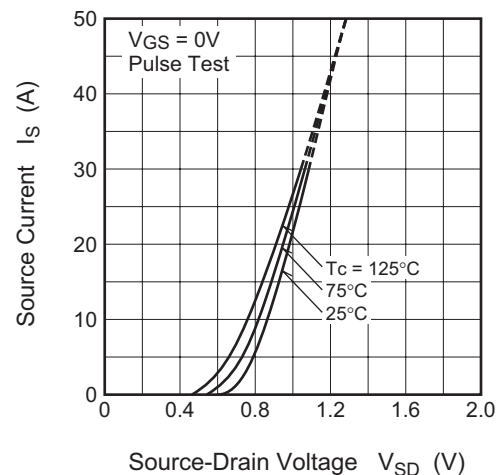
Switching Characteristics (Typical)

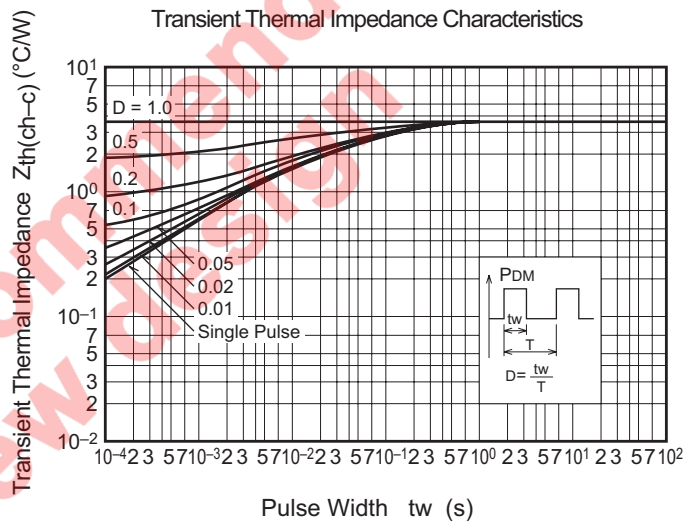
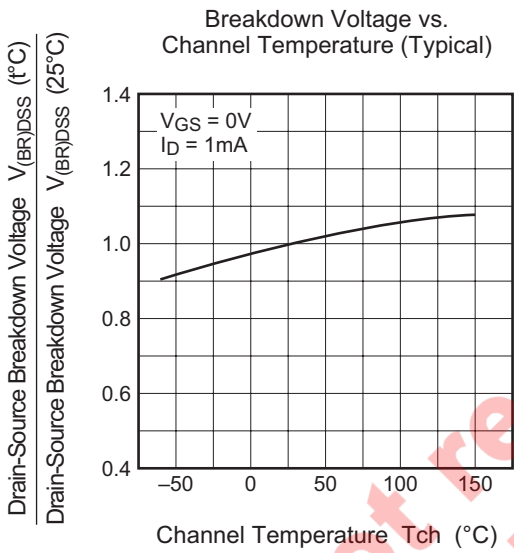
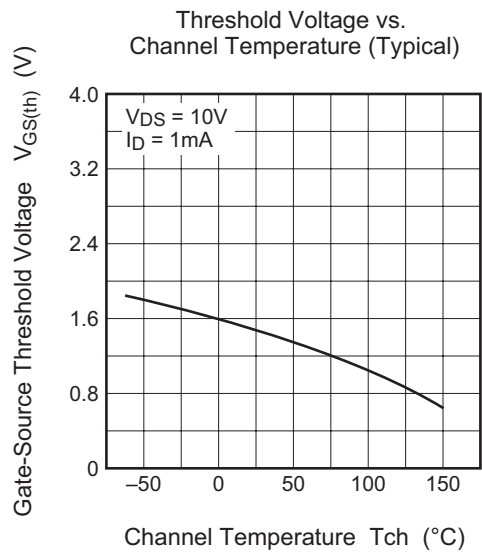
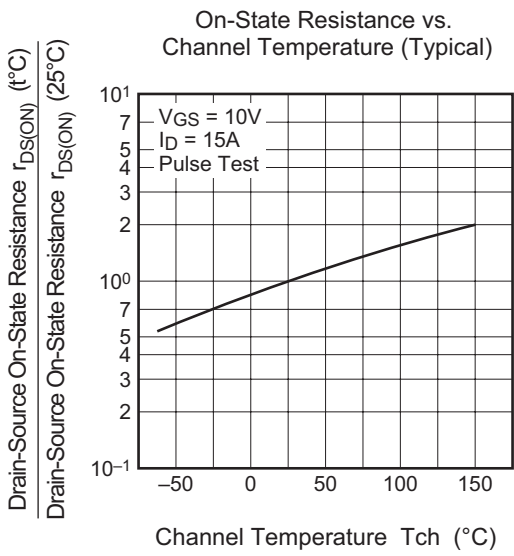


Gate-Source Voltage vs. Gate Charge (Typical)

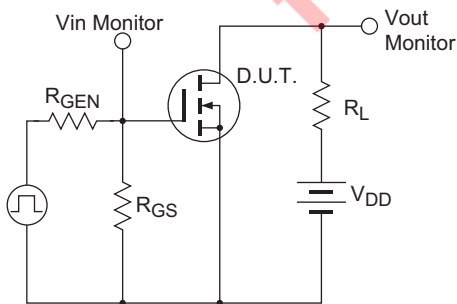


Source-Drain Diode Forward Characteristics (Typical)

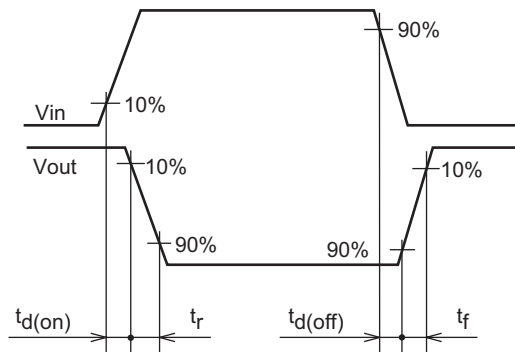




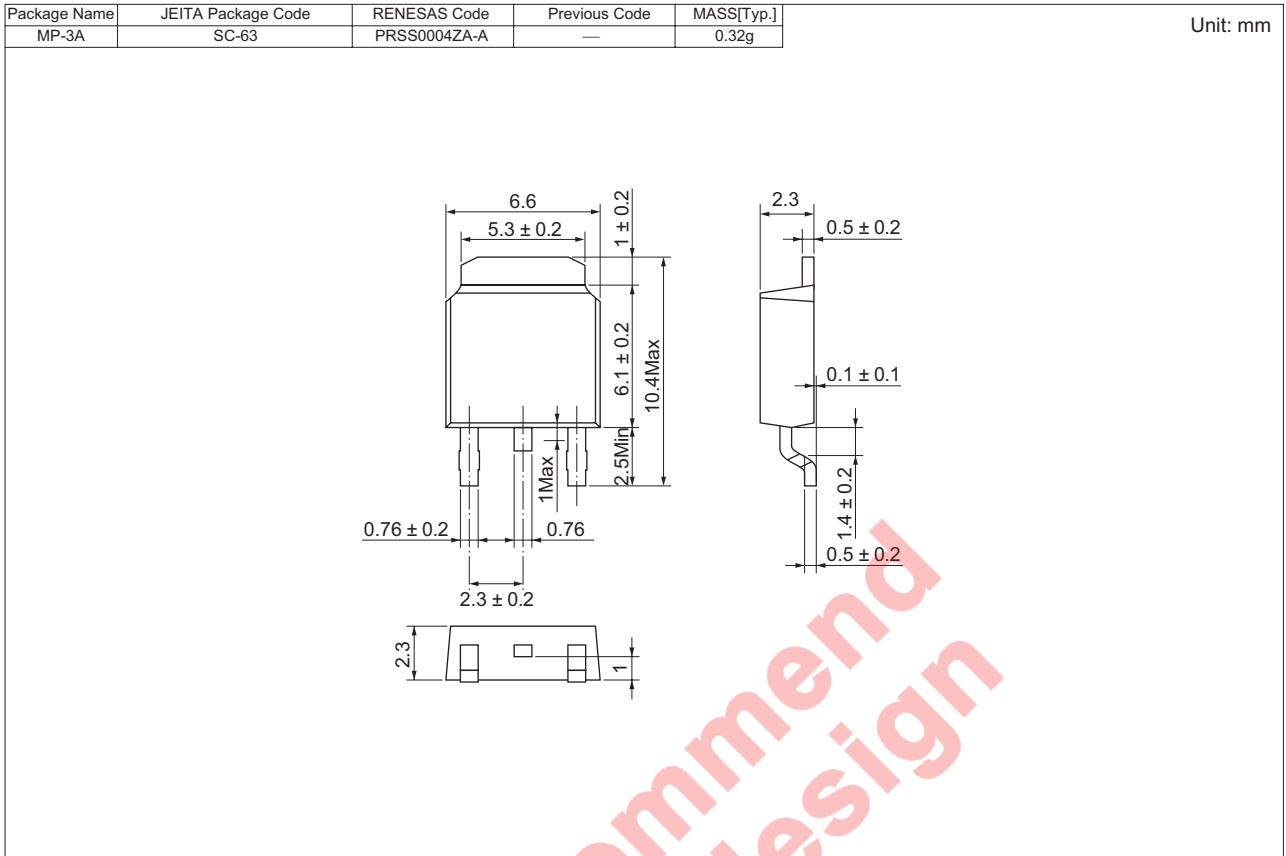
Switching Time Measurement Circuit



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	FS30ASJ-2-T13
Surface-mounted type	Plastic Magazine (Tube)	75	Type name	FS30ASJ-2

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

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