



2SJ221

Silicon P Channel MOS FET

REJ03G0851-0200
(Previous: ADE-208-1185)
Rev.2.00
Sep 07, 2005

Description

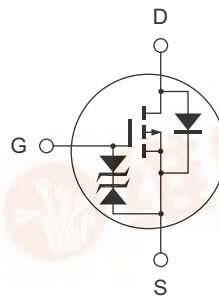
High speed power switching

Features

- Low on-resistance
- High speed switching
- Low drive current
- 4 V gate drive device
 - Can be driven from 5 V source
- Suitable for motor drive, DC-DC converter, power switch and solenoid drive

Outline

RENESAS Package code: PRSS0004AC-A
(Package name: TO-220AB)



1. Gate
2. Drain (Flange)
3. Source

Absolute Maximum Ratings

(Ta = 25°C)

Item	Symbol	Value	Unit
Drain to source voltage	V _{DSS}	-100	V
Gate to source voltage	V _{GSS}	±20	V
Drain current	I _D	-20	A
Drain peak current	I _{D (pulse)} ^{Note 1}	-80	A
Body to drain diode reverse drain current	I _{DR}	-20	A
Channel dissipation	P _{ch} ^{Note 2}	75	W
Channel temperature	T _{ch}	150	°C
Storage temperature	T _{stg}	-55 to +150	°C

Notes: 1. PW ≤ 10 μs, duty cycle ≤ 1%

2. Value at Tc = 25°C

Electrical Characteristics

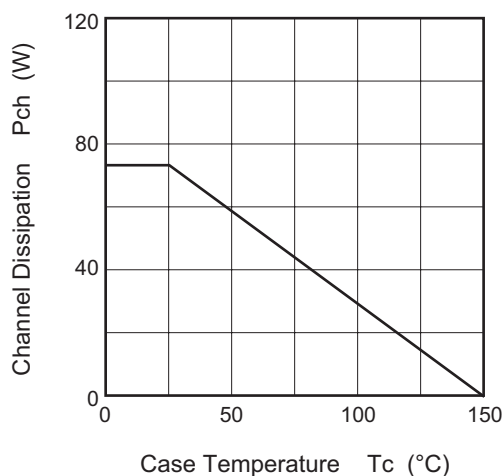
(Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	V _{(BR) DSS}	-100	—	—	V	I _D = -10 mA, V _{GS} = 0
Gate to source breakdown voltage	V _{(BR) GSS}	±20	—	—	V	I _G = ±100 μA, V _{DS} = 0
Gate to source leak current	I _{GSS}	—	—	±10	μA	V _{GS} = ±16 V, V _{DS} = 0
Zero gate voltage drain current	I _{DSS}	—	—	-250	μA	V _{DS} = -80 V, V _{GS} = 0
Gate to source cutoff voltage	V _{GS (off)}	-1.0	—	-2.0	V	I _D = -1 mA, V _{DS} = -10 V
Static drain to source on state resistance	R _{DS (on)}	—	0.12	0.16	Ω	I _D = -10 A, V _{GS} = -10 V ^{Note 3}
	R _{DS (on)}	—	0.16	0.22	Ω	I _D = -10 A, V _{GS} = -4 V ^{Note 3}
Forward transfer admittance	y _{fs}	7.5	12	—	S	I _D = -10 A, V _{DS} = -10 V ^{Note 3}
Input capacitance	C _{iss}	—	1800	—	pF	V _{DS} = -10 V
Output capacitance	C _{oss}	—	680	—	pF	V _{GS} = 0
Reverse transfer capacitance	C _{rss}	—	145	—	pF	f = 1 MHz
Turn-on delay time	t _{d (on)}	—	15	—	ns	I _D = -10 A V _{GS} = -10 V R _L = 3 Ω
Rise time	t _r	—	115	—	ns	
Turn-off delay time	t _{d (off)}	—	320	—	ns	
Fall time	t _f	—	170	—	ns	
Body to drain diode forward voltage	V _{DF}	—	-1.05	—	V	I _F = -20 A, V _{GS} = 0
Body to drain diode reverse recovery time	t _{rr}	—	280	—	ns	I _F = -20 A, V _{GS} = 0 di _F /dt = 50 A/μs

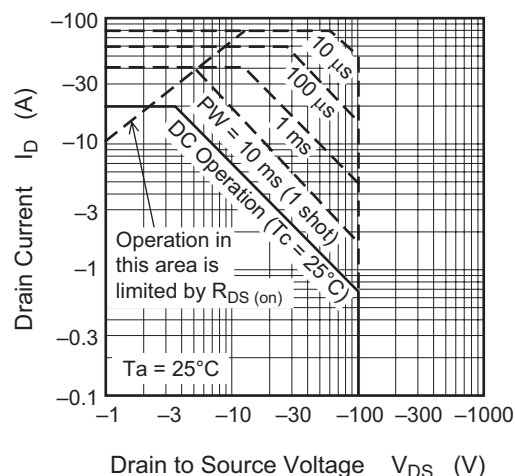
Note: 3. Pulse test

Main Characteristics

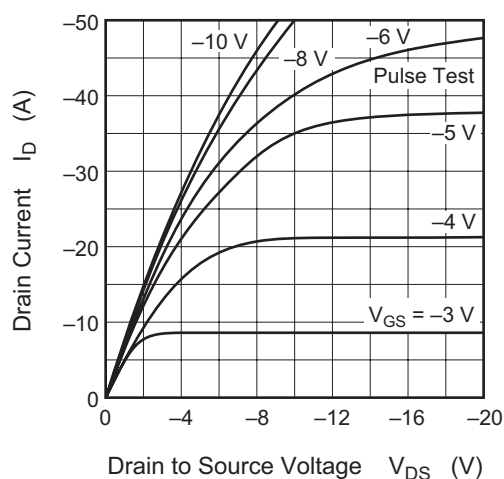
Power vs. Temperature Derating



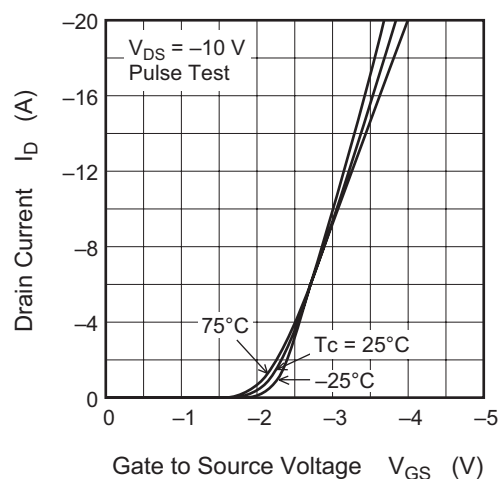
Maximum Safe Operation Area



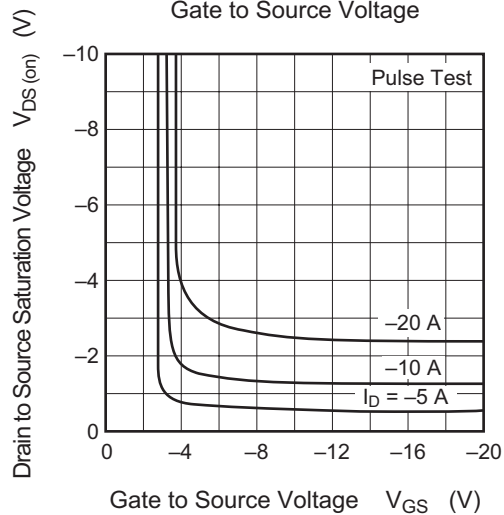
Typical Output Characteristics



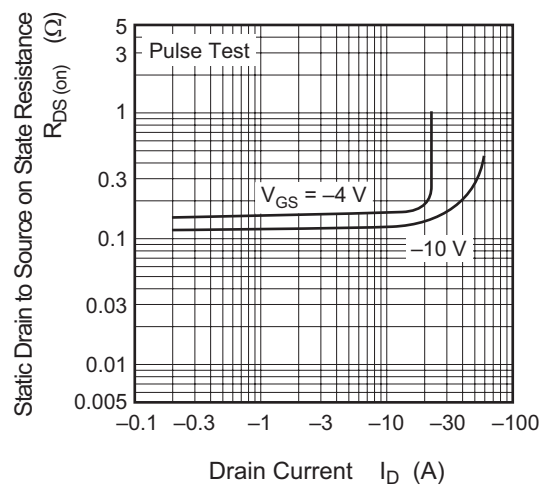
Typical Transfer Characteristics

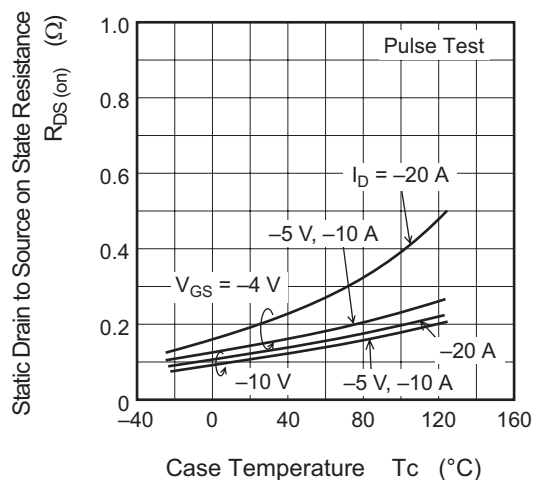
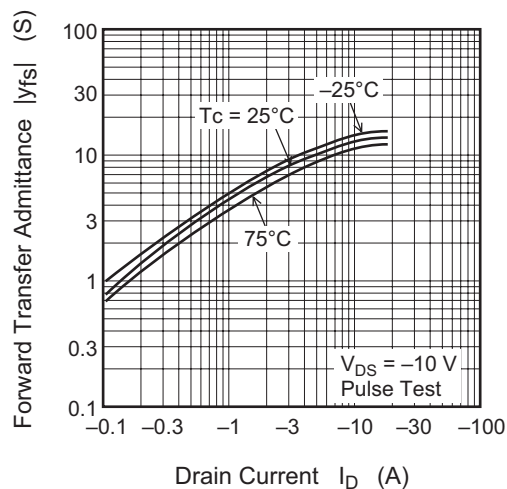
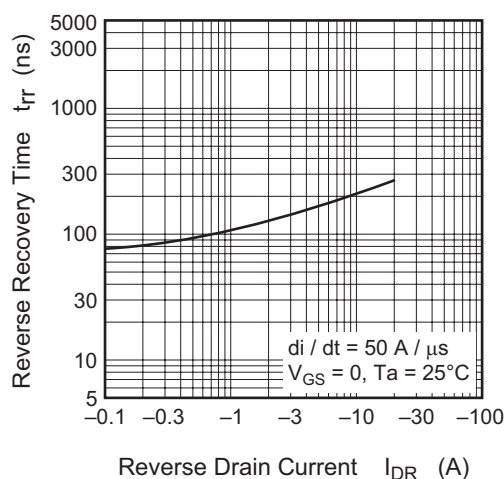
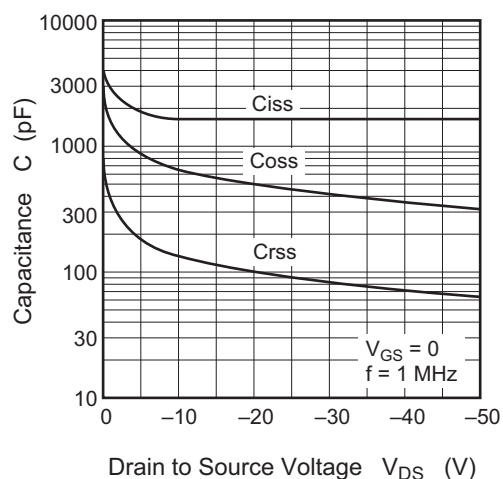


Drain to Source Saturation Voltage vs. Gate to Source Voltage

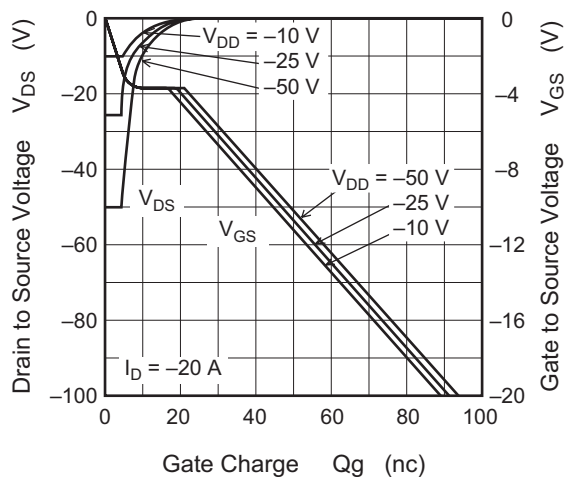


Static Drain to Source on State Resistance vs. Drain Current

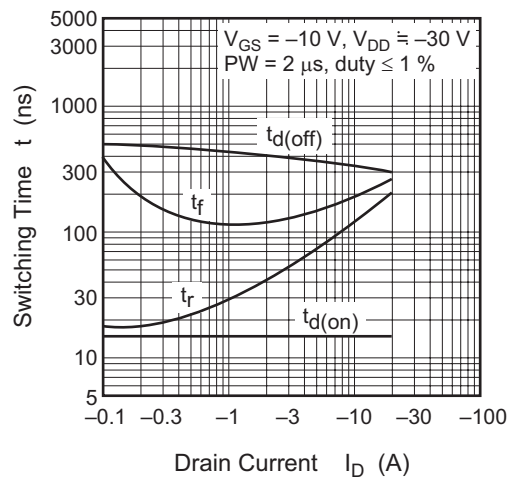


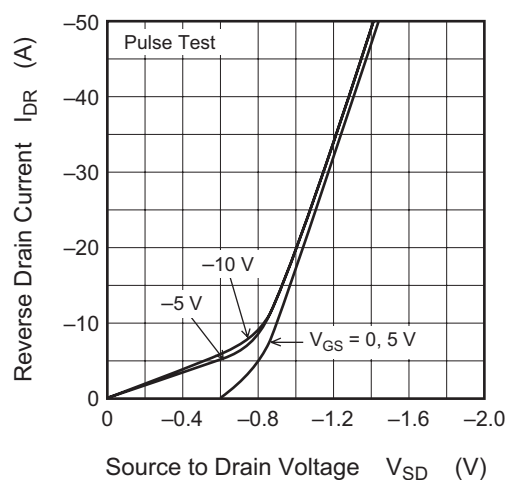
Static Drain to Source on State Resistance
vs. Case TemperatureForward Transfer Admittance vs.
Drain CurrentBody-Drain Diode Reverse
Recovery TimeTypical Capacitance vs.
Drain to Source Voltage

Dynamic Input Characteristics

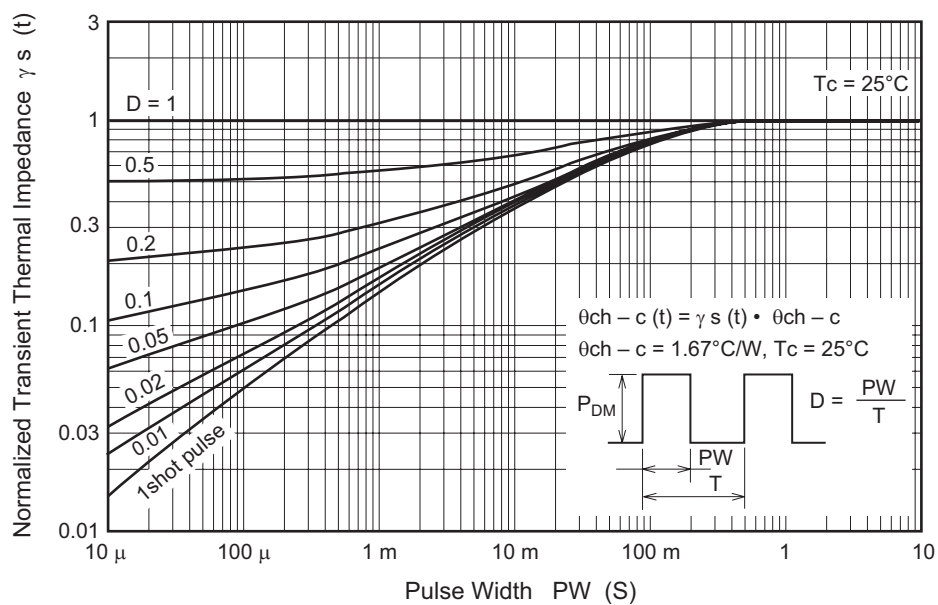


Switching Characteristics

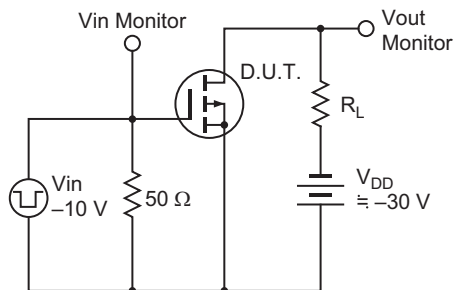


Reverse Drain Current vs.
Source to Drain Voltage

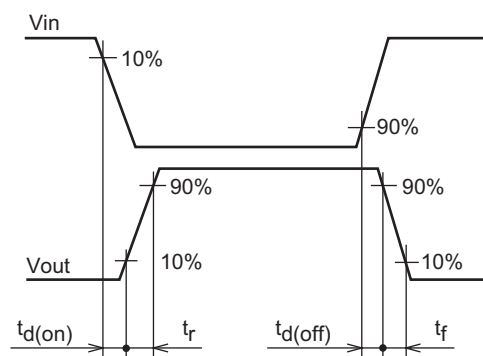
Normalized Transient Thermal Impedance vs. Pulse Width



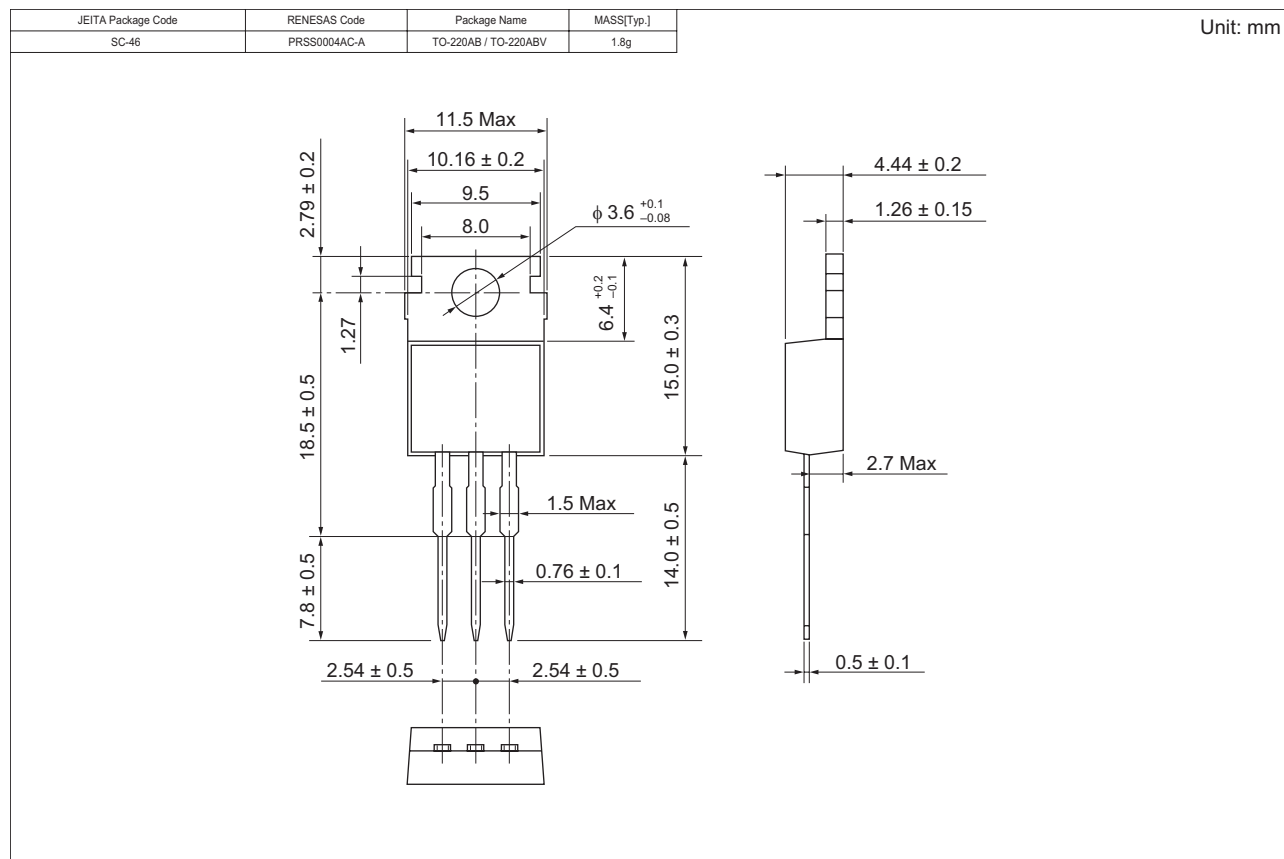
Switching Time Test Circuit



Waveform



Package Dimensions



Ordering Information

Part Name	Quantity	Shipping Container
2SJ221-E	500 pcs	Box (Sack)

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