2SJ221

Silicon P Channel MOS FET

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

Description

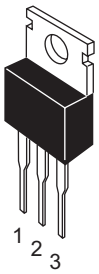
High speed power switching

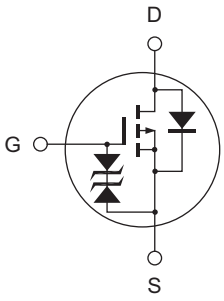
Features

- 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	Pch Note 2	75	W
Channel temperature	Tch	150	°C
Storage temperature	Tstg	–55 to +150	°C

Notes: 1. PW ≤ 10 µs, duty cycle ≤ 1%
2. Value at Tc = 25°C

Electrical Characteristics

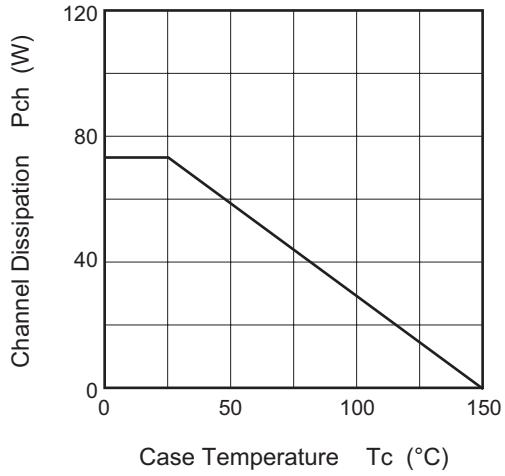
(Ta = 25°C)

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	Ciss	—	1800	—	pF	V_{DS} = –10 V V_{GS} = 0 f = 1 MHz
Output capacitance	Coss	—	680	—	pF	
Reverse transfer capacitance	Crss	—	145	—	pF	
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

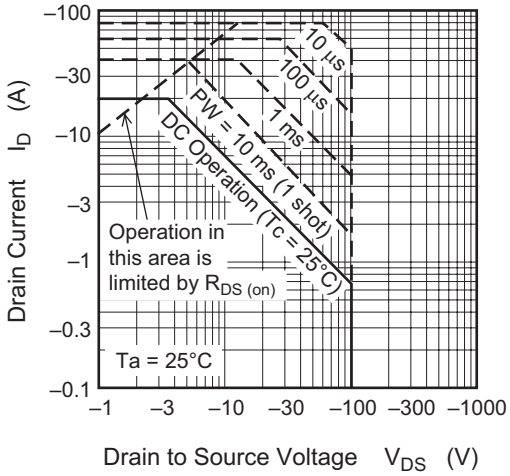
Note: 3. Pulse test

Main Characteristics

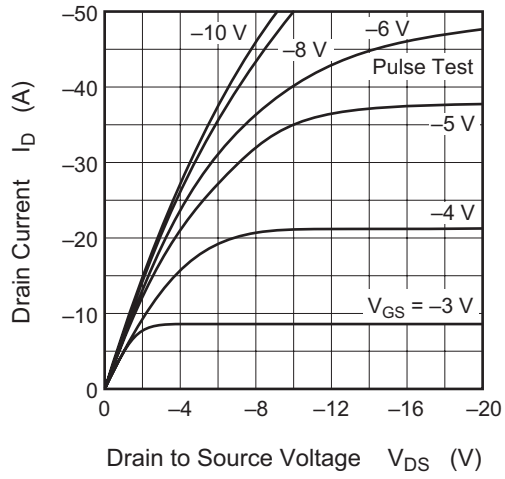
Power vs. Temperature Derating



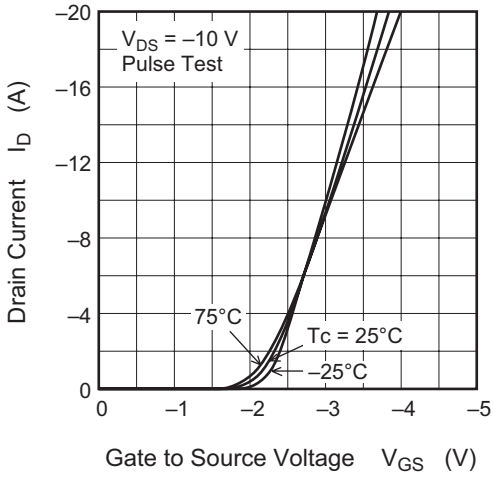
Maximum Safe Operation Area



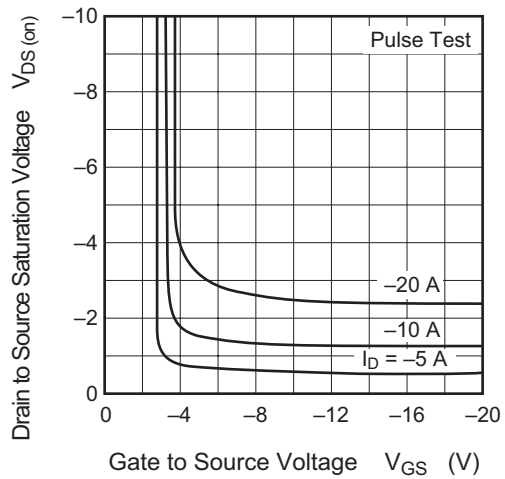
Typical Output Characteristics



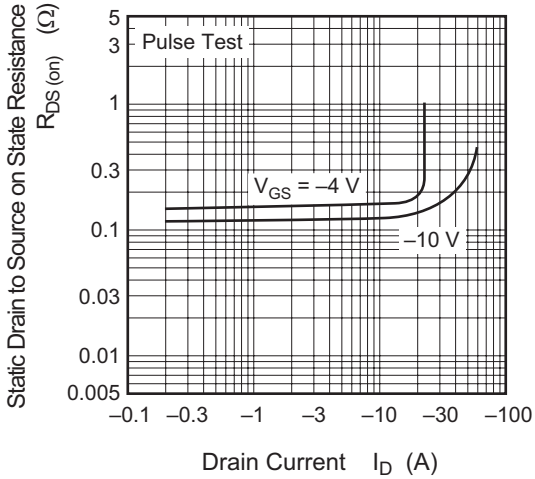
Typical Transfer Characteristics



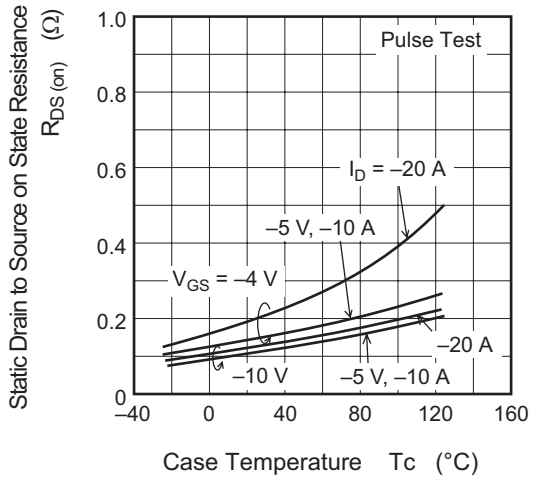
Drain to Source Saturation Voltage vs. Gate to Source Voltage



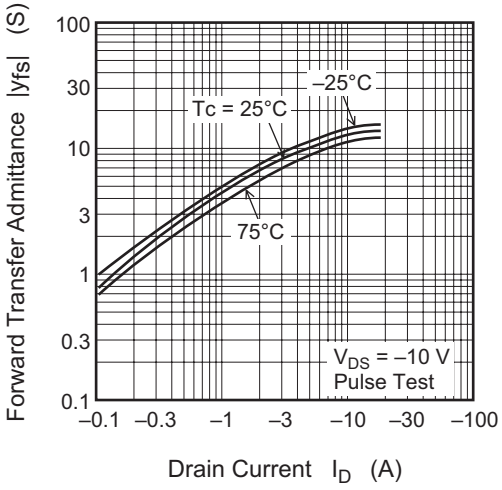
Static Drain to Source on State Resistance vs. Drain Current



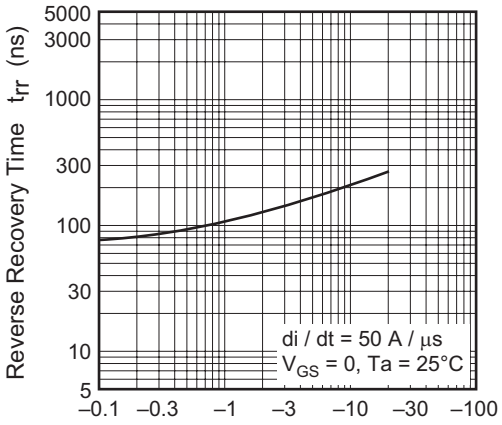
Static Drain to Source on State Resistance vs. Case Temperature



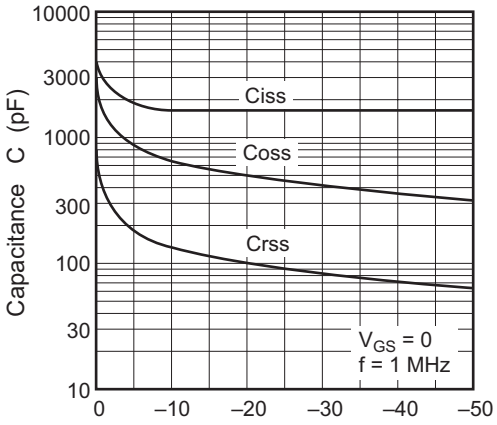
Forward Transfer Admittance vs. Drain Current



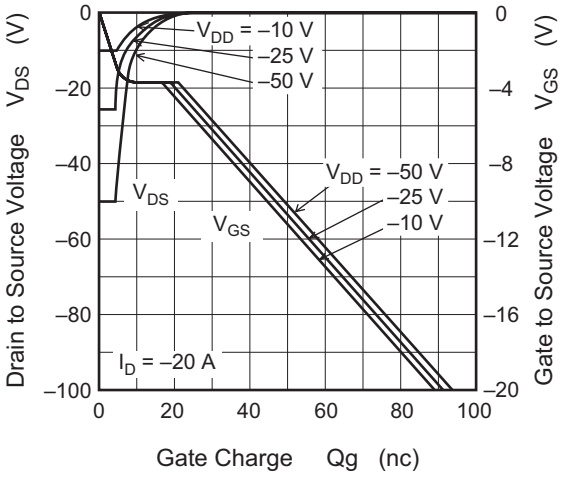
Body-Drain Diode Reverse Recovery Time



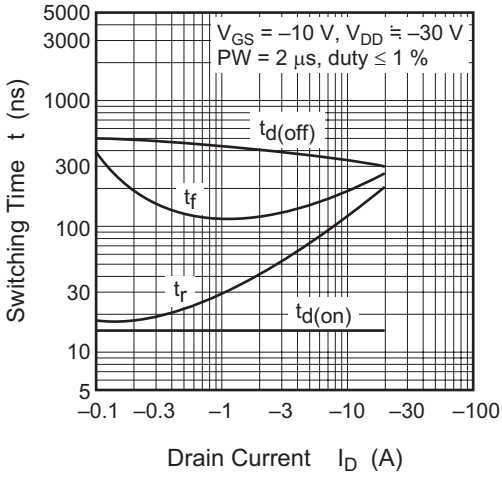
Typical Capacitance vs. Drain to Source Voltage



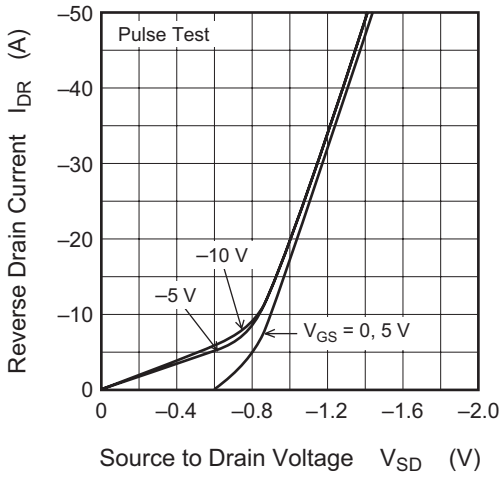
Dynamic Input Characteristics



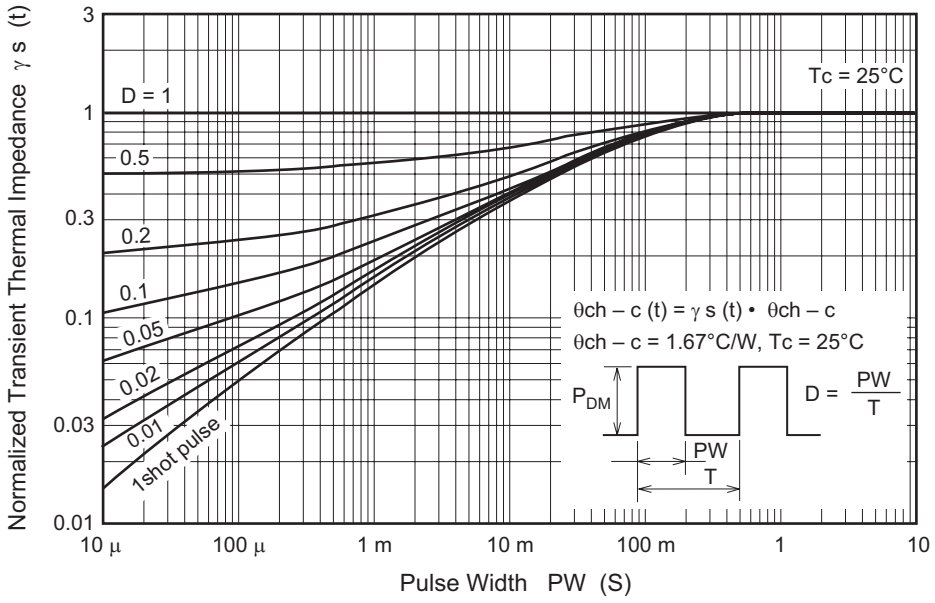
Switching Characteristics



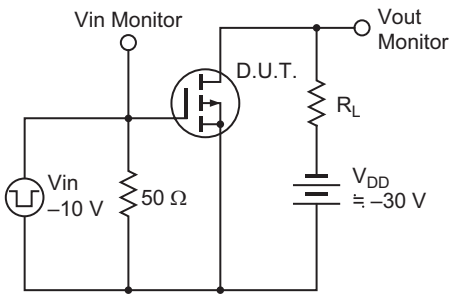
Reverse Drain Current vs.
Source to Drain Voltage



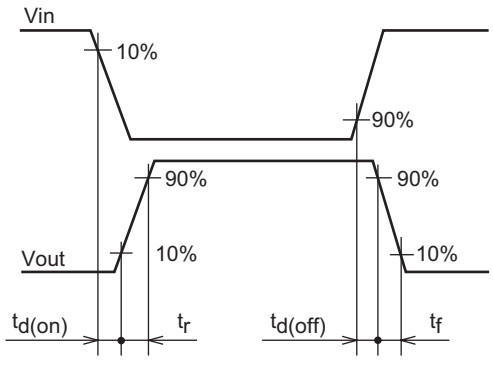
Normalized Transient Thermal Impedance vs. Pulse Width



Switching Time Test Circuit



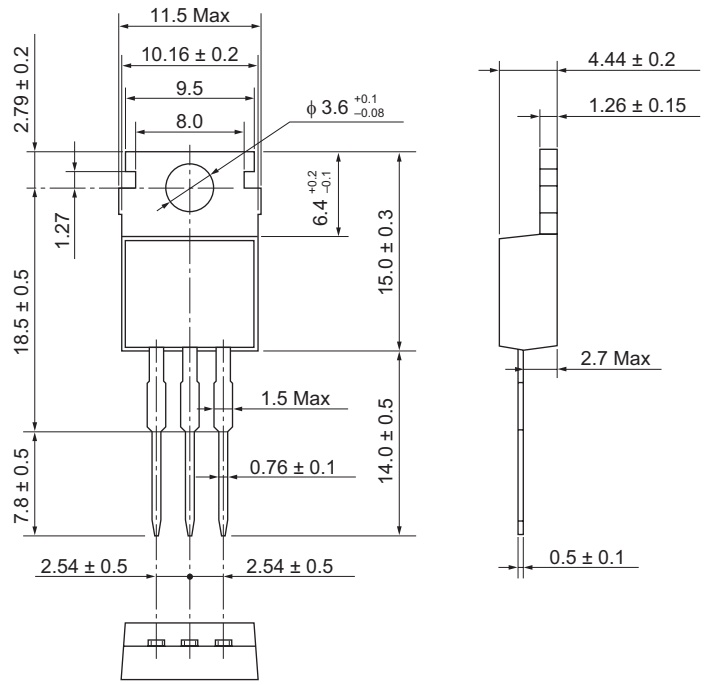
Waveform



Package Dimensions

JEITA Package Code	RENESAS Code	Package Name	MASS[Typ.]
SC-46	PRSS0004AC-A	TO-220AB / TO-220ABV	1.8g

Unit: mm



Ordering Information

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

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