2SK1400A

Silicon N Channel MOS FET
High Speed Power Switching

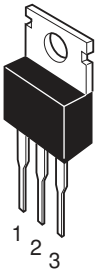
REJ03G0940-0300
Rev.3.00
Apr 01, 2010

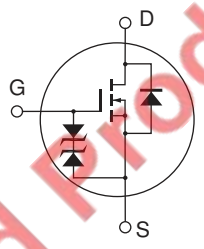
Features

- Low on-resistance
  RDS(on) = 0.6 Ω typ. (at I_D = 4 A, V_{GS} = 10 V, Ta = 25°C)
- High speed switching
- Low drive current

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	Ratings	Unit
Drain to source voltage	V_{DSS}	350	V
Gate to source voltage	V_{GSS}	±30	V
Drain current	I_D	7	A
Drain peak current	$I_{D(pulse)}$ Note1	28	A
Body to drain diode reverse drain current	I_{DR}	7	A
Channel dissipation	Pch Note2	50	W
Channel temperature	Tch	150	°C
Storage temperature	Tstg	–55 to +150	°C

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

Electrical Characteristics

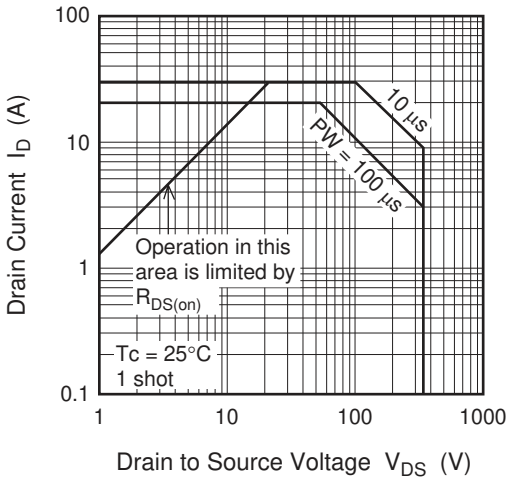
(Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	350	—	—	V	I_D = 10 mA, V_{GS} = 0
Gate to source breakdown voltage	$V_{(BR)GSS}$	±30	—	—	V	I_G = ±100 μA, V_{DS} = 0
Gate to source leak current	I_{GSS}	—	—	±10	μA	V_{GS} = ±25 V, V_{DS} = 0
Zero gate voltage drain current	I_{DSS}	—	—	250	μA	V_{DS} = 280 V, V_{GS} = 0
Gate to source cutoff voltage	$V_{GS(off)}$	2.0	—	3.0	V	I_D = 1 mA, V_{DS} = 10 V
Static drain to source on state resistance	$R_{DS(on)}$	—	0.6	0.8	Ω	I_D = 4 A, V_{GS} = 10 V Note3
Forward transfer admittance	$\|y_{fs}\|$	3.0	5.0	—	S	I_D = 4 A, V_{DS} = 10 V Note3
Input capacitance	Ciss	—	635	—	pF	V_{DS} = 10 V V_{GS} = 0 f = 1 MHz
Output capacitance	Coss	—	230	—	pF	
Reverse transfer capacitance	Crss	—	40	—	pF	
Turn-on delay time	$t_{d(on)}$	—	10	—	ns	I_D = 4 A V_{GS} = 10 V R_L = 7.5 Ω
Rise time	t_r	—	50	—	ns	
Turn-off delay time	$t_{d(off)}$	—	60	—	ns	
Fall time	t_f	—	40	—	ns	
Body to drain diode forward voltage	V_{DF}	—	1.0	—	V	I_F = 7 A, V_{GS} = 0 Note3
Body to drain diode reverse recovery time	t_{rr}	—	240	—	ns	I_F = 7 A, V_{GS} = 0 di_F/dt = 100 A/μs

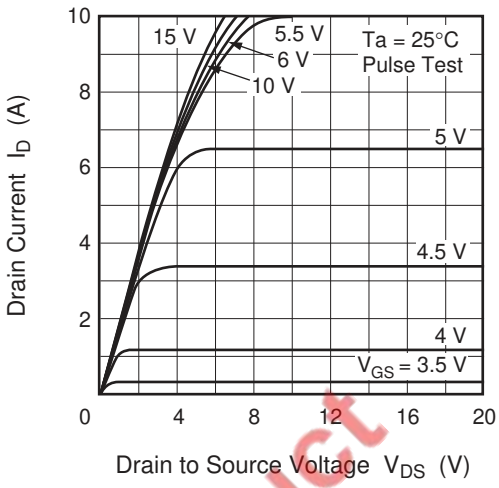
Note: 3. Pulse test

Main Characteristics

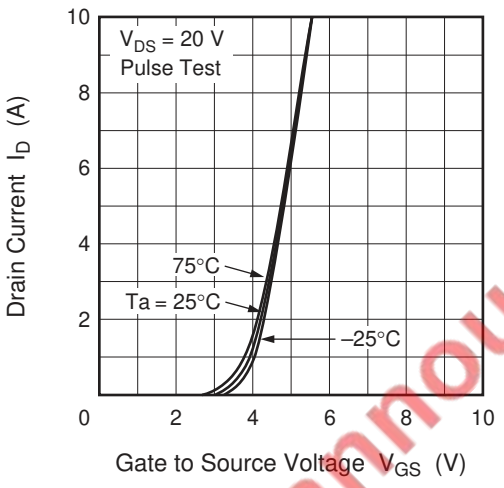
Maximum Safe Operation Area



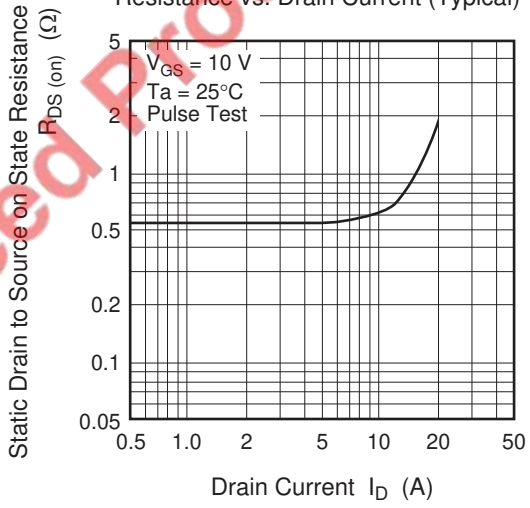
Typical Output Characteristics



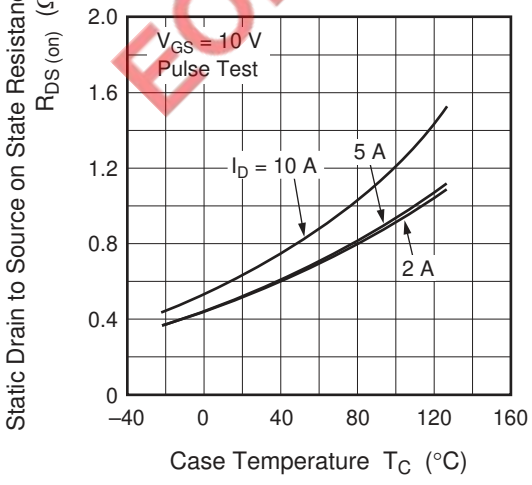
Typical Transfer Characteristics



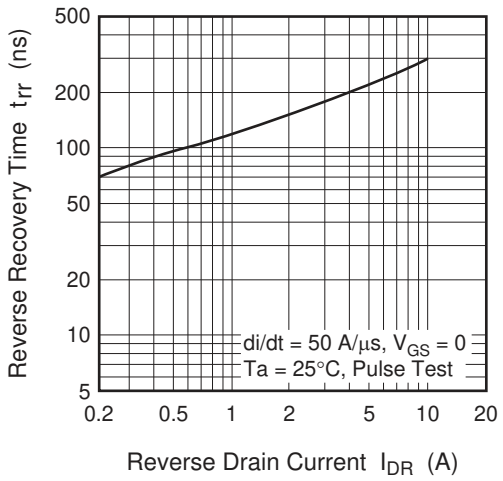
Static Drain to Source on State Resistance vs. Drain Current (Typical)



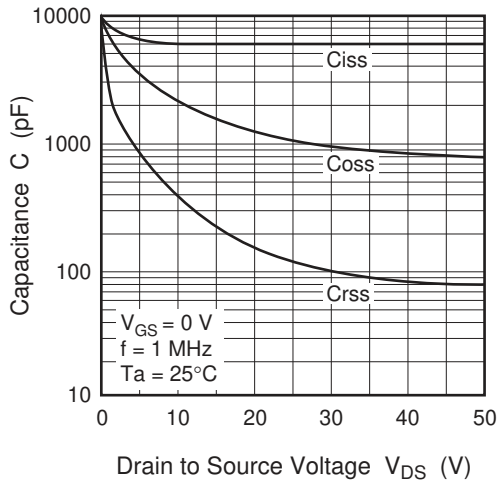
Static Drain to Source on State Resistance vs. Temperature (Typical)



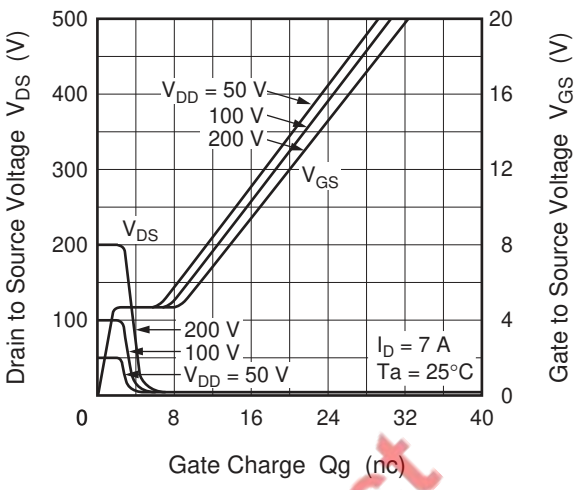
Body to Drain Diode Reverse Recovery Time (Typical)



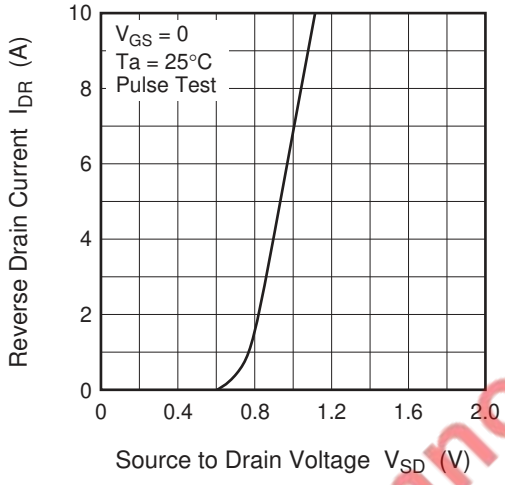
Typical Capacitance vs.
Drain to Source Voltage

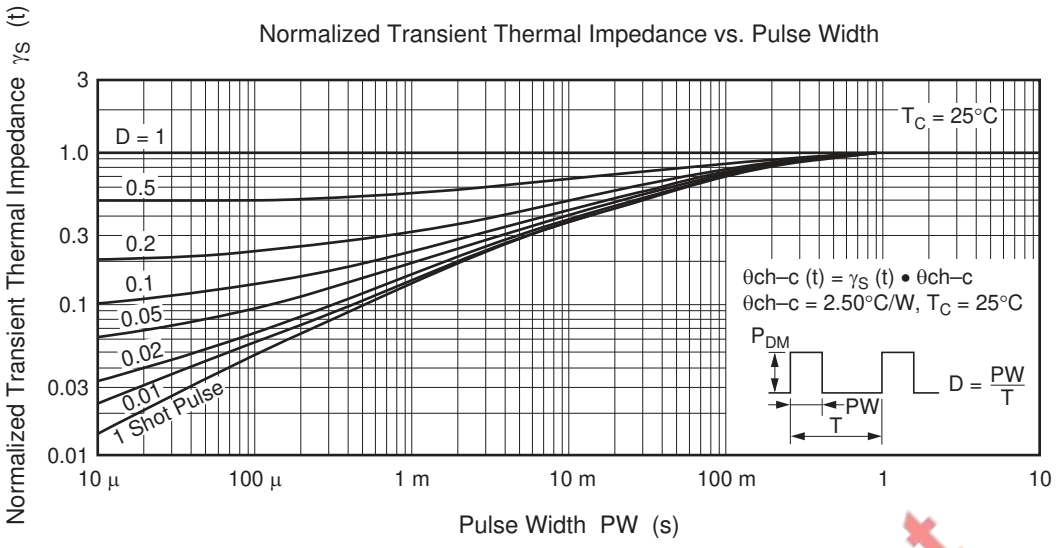


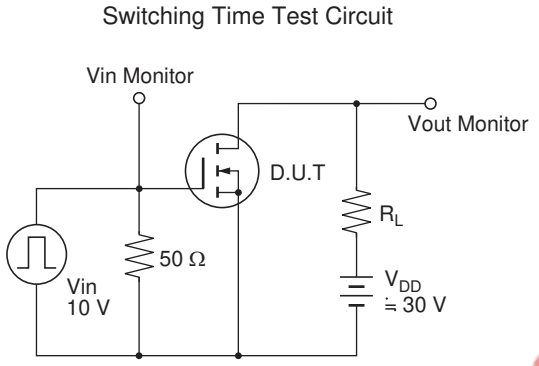
Dynamic Input Characteristics (Typical)

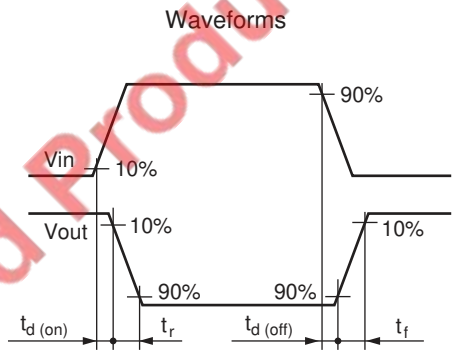


Reverse Drain Current vs.
Source to Drain Voltage (Typical)





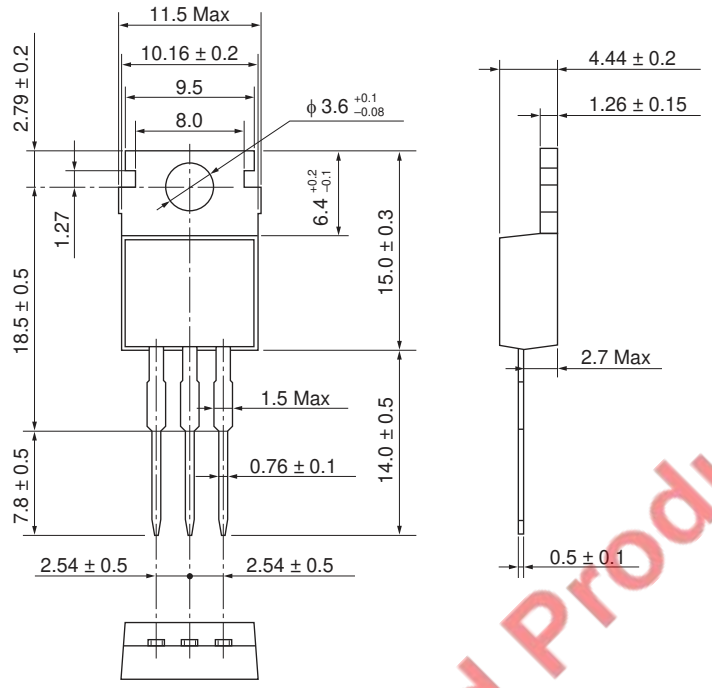




Package Dimensions

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

Unit: mm



Ordering Information

Part No.	Quantity	Shipping Container
2SK1400A-E	600 pcs	Box (Tube)

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