



2SK4093

Silicon N Channel MOS FET
High Speed Power Switching

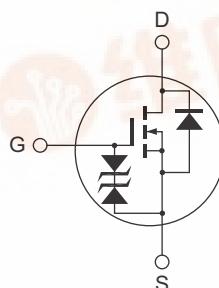
REJ03G1534-0300
Rev.3.00
Feb 01, 2008

Features

- Capable of 2.5V gate drive
- Low drive current
- Low on-resistance

Outline

RENESAS Package code: PRSS0003DC-A
(Package name: TO-92 Mod)



1. Source
2. Drain
3. Gate

Absolute Maximum Ratings

(Ta = 25°C)

Item	Symbol	Ratings	Unit
Drain to source voltage	V _{DSS}	250	V
Gate to source voltage	V _{GSS}	±10	V
Drain current	I _D ^{Note1}	1	A
Drain peak current	I _D (pulse) ^{Note2}	2	A
Body-drain diode reverse drain current	I _{DR}	0.5	A
Body-drain diode reverse drain peak current	I _{DR} (pulse) ^{Note2}	2	A
Channel dissipation	P _{ch}	0.9	W
Channel to ambient thermal impedance	θ _{ch-a}	139	°C/W
Channel temperature	T _{ch}	150	°C
Storage temperature	T _{stg}	-55 to +150	°C

Notes: 1. PW ≤ 10 μs, duty cycle ≤ 30%
2. PW ≤ 10 μs, duty cycle ≤ 1%

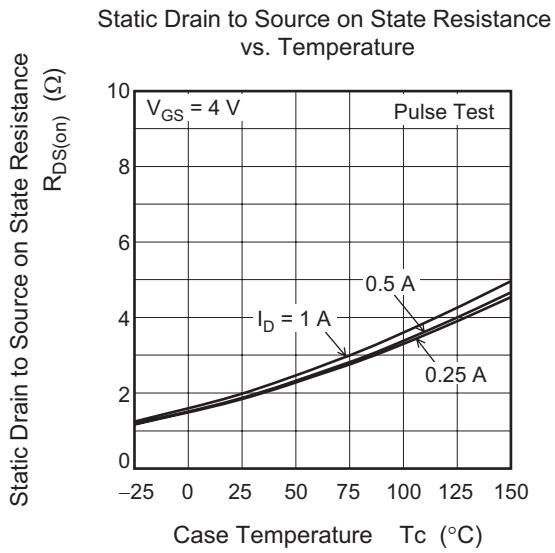
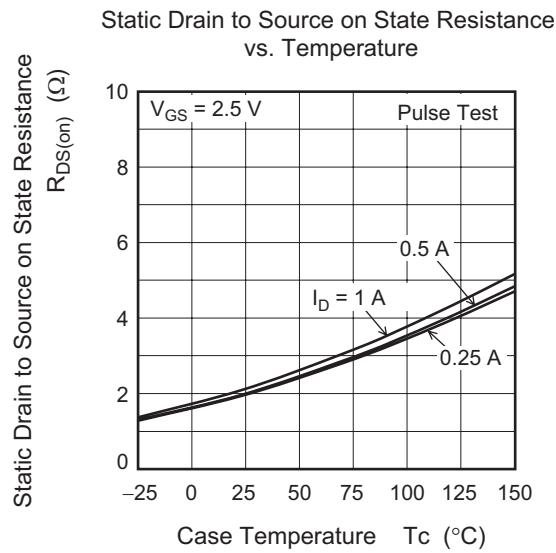
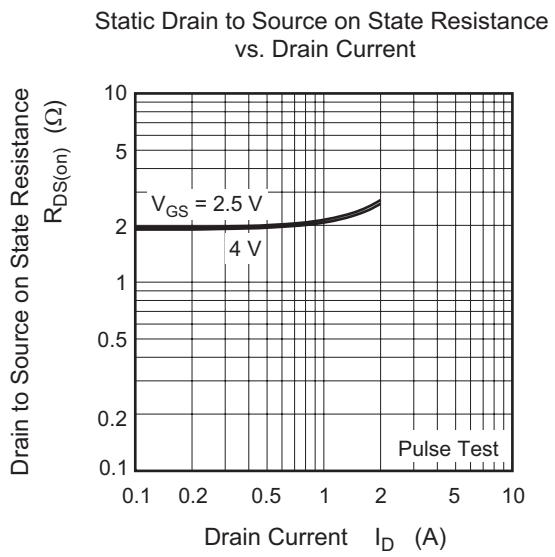
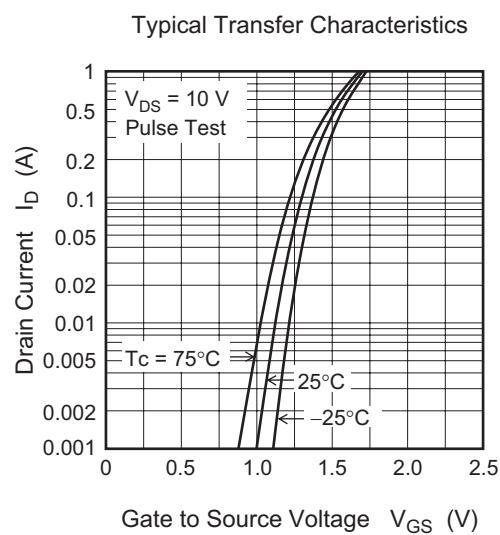
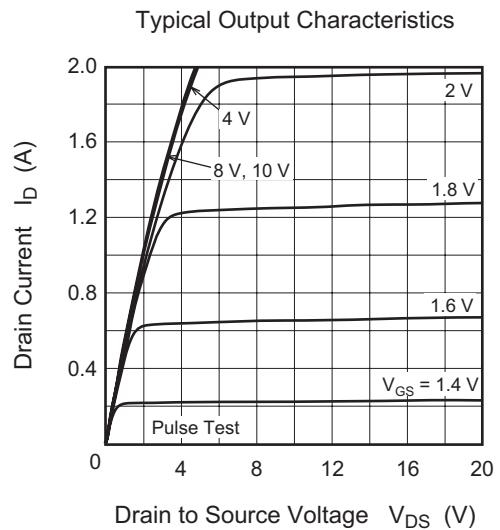
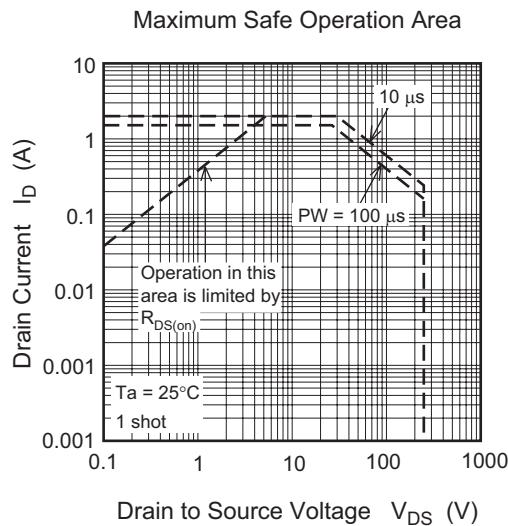
Electrical Characteristics

(Ta = 25°C)

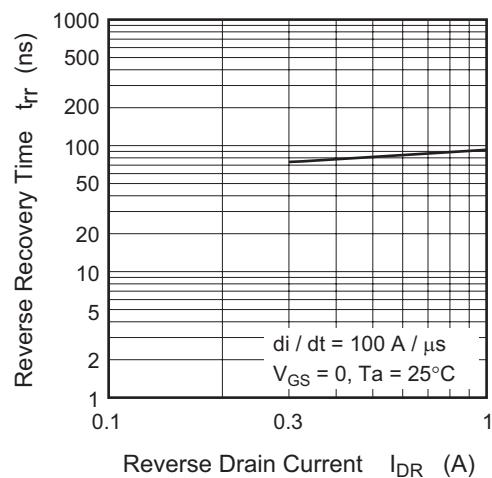
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	250	—	—	V	$I_D = 10 \text{ mA}, V_{GS} = 0$
Gate to source breakdown voltage	$V_{(BR)GSS}$	±10	—	—	V	$I_G = \pm 100 \mu\text{A}, V_{DS} = 0$
Zero gate voltage drain current	I_{DSS}	—	—	1	μA	$V_{DS} = 250 \text{ V}, V_{GS} = 0$
Gate to source leak current	I_{GSS}	—	—	±10	μA	$V_{GS} = \pm 8 \text{ V}, V_{DS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	0.5	—	1.5	V	$V_{DS} = 10 \text{ V}, I_D = 1 \text{ mA}$
Static drain to source on state resistance	$R_{DS(on)}$	—	1.9	2.6	Ω	$I_D = 0.5 \text{ A}, V_{GS} = 4 \text{ V}$ ^{Note3}
Static drain to source on state resistance	$R_{DS(on)}$	—	2.0	2.7	Ω	$I_D = 0.5 \text{ A}, V_{GS} = 2.5 \text{ V}$ ^{Note3}
Input capacitance	C_{iss}	—	140	—	pF	$V_{DS} = 25 \text{ V}$ $V_{GS} = 0$ $f = 1 \text{ MHz}$
Output capacitance	C_{oss}	—	18	—	pF	
Reverse transfer capacitance	C_{rss}	—	6	—	pF	
Turn-on delay time	$t_{d(on)}$	—	14	—	ns	$I_D = 0.5 \text{ A}$ $V_{GS} = 4 \text{ V}$ $R_L = 250 \Omega$ $R_g = 10 \Omega$
Rise time	t_r	—	17	—	ns	
Turn-off delay time	$t_{d(off)}$	—	46	—	ns	
Fall time	t_f	—	16	—	ns	
Total gate charge	Q_g	—	5.5	—	nC	$V_{DD} = 200 \text{ V}$ $V_{GS} = 4 \text{ V}$ $I_D = 1 \text{ A}$
Gate to source charge	Q_{gs}	—	0.4	—	nC	
Gate to drain charge	Q_{gd}	—	3.1	—	nC	
Body-drain diode forward voltage	V_{DF}	—	0.78	1.20	V	$I_F = 0.5 \text{ A}, V_{GS} = 0$ ^{Note3}
Body-drain diode reverse recovery time	t_{rr}	—	80	—	ns	$I_F = 0.5 \text{ A}, V_{GS} = 0$ $di_F/dt = 100 \text{ A}/\mu\text{s}$

Notes: 3. Pulse test

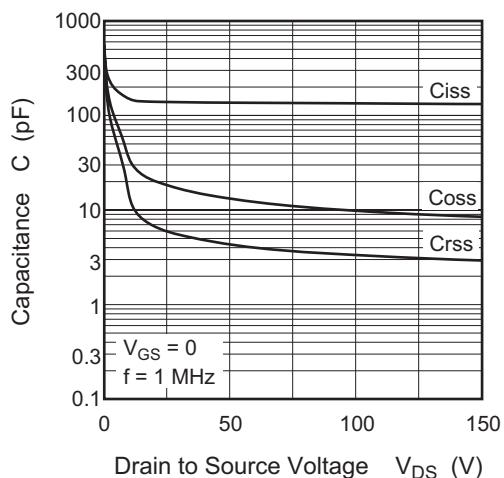
Main Characteristics



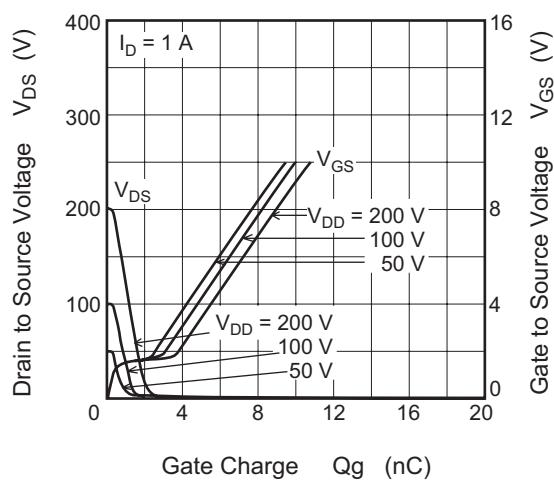
Body-Drain Diode Reverse Recovery Time



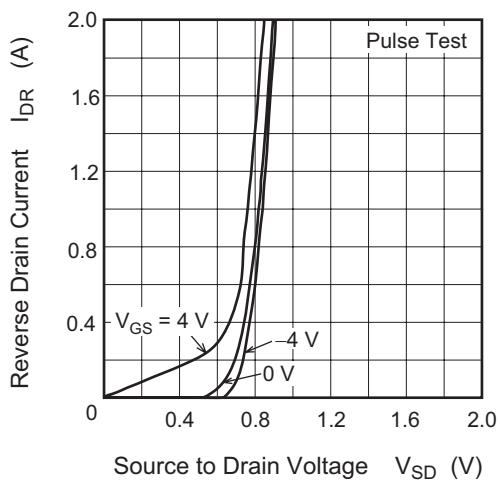
Typical Capacitance vs. Drain to Source Voltage



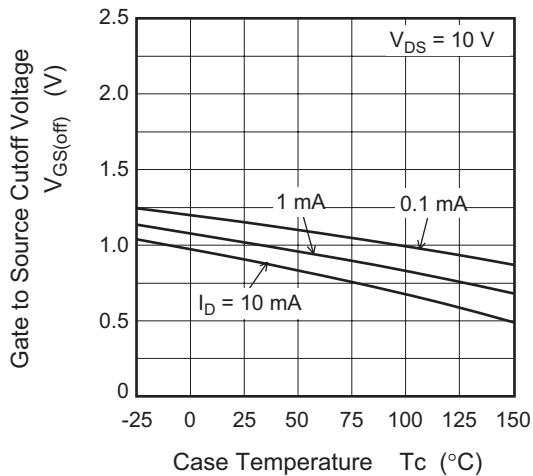
Dynamic Input Characteristics

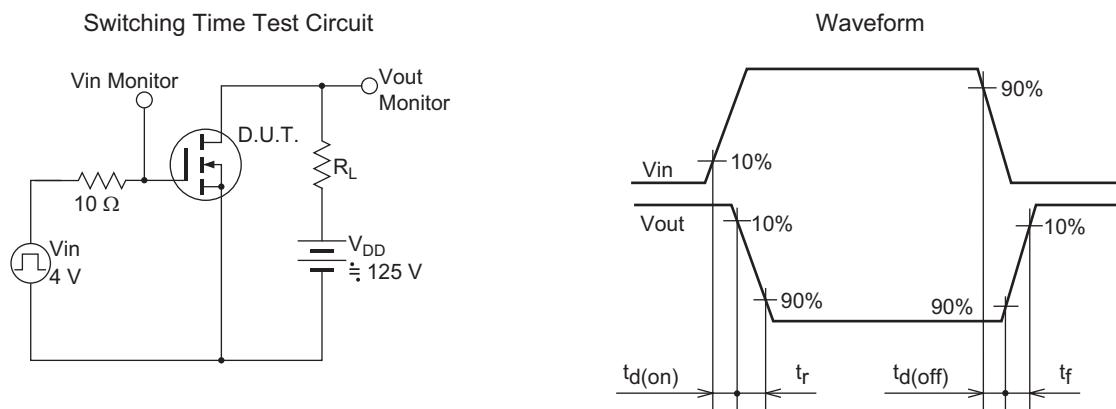
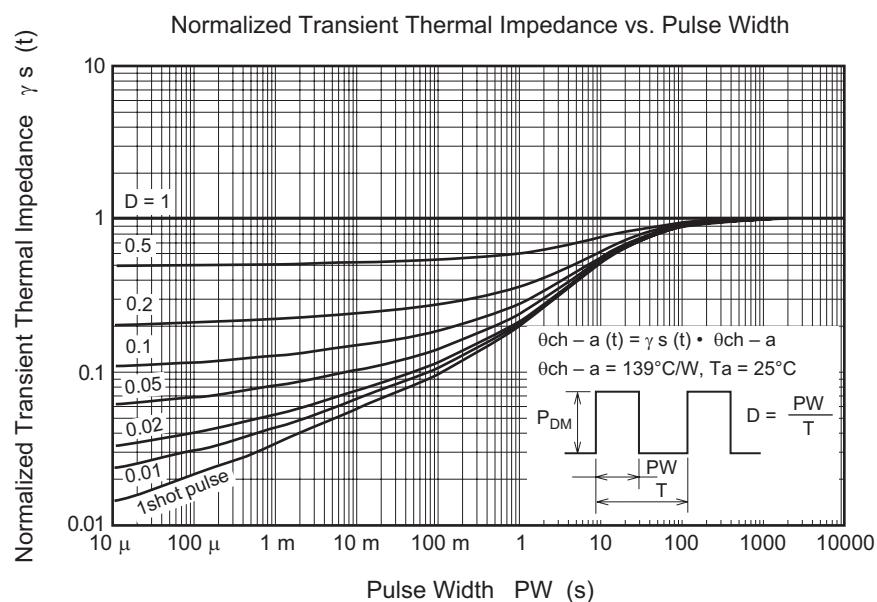


Reverse Drain Current vs. Source to Drain Voltage



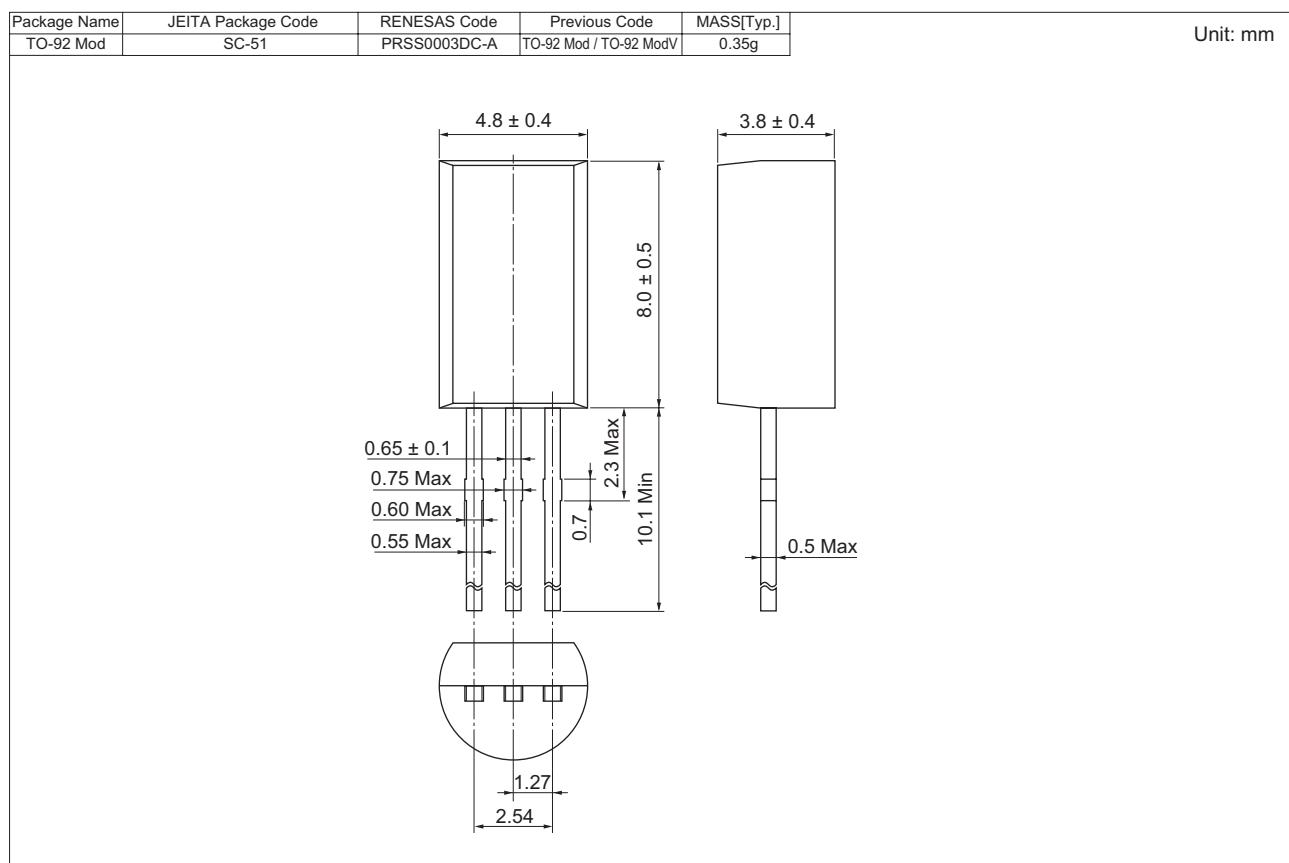
Gate to Source Cutoff Voltage vs. Case Temperature





2SK4093

Package Dimensions



Ordering Information

Part No.	Quantity	Shipping Container
2SK4093TZ-E	2500 pcs	Hold Box, Radial Taping

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