

2SK975

R07DS0434EJ0300
 (Previous: REJ03G0905-0200)
 Rev.3.00
 Jun 07, 2011

Silicon N Channel MOS FET

Application

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: 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}	60	V
Gate to source voltage	V_{GSS}	±20	V
Drain current	I_D	1.5	A
Drain peak current	$I_{D(pulse)}^{*1}$	4.5	A
Body to drain diode reverse drain current	I_{DR}	1.5	A
Channel dissipation	Pch	900	mW
Channel temperature	Tch	150	°C
Storage temperature	Tstg	-55 to +150	°C

Note: 1. PW ≤ 10 μs, duty cycle ≤ 1%

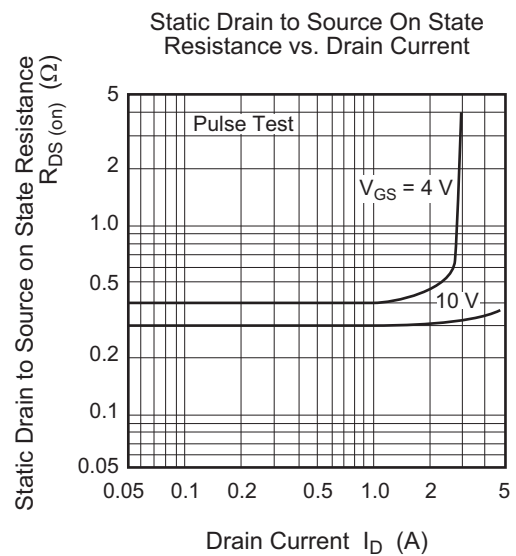
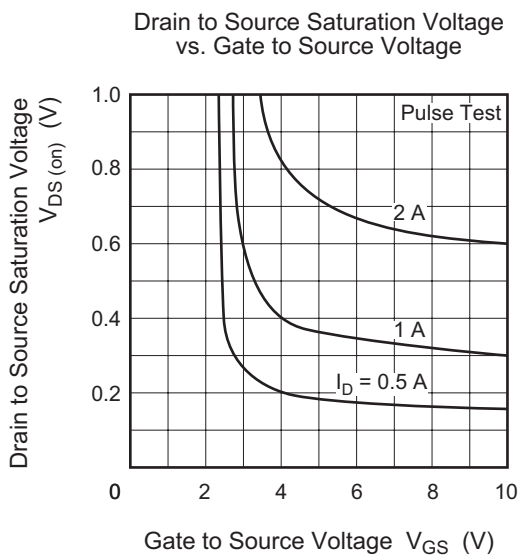
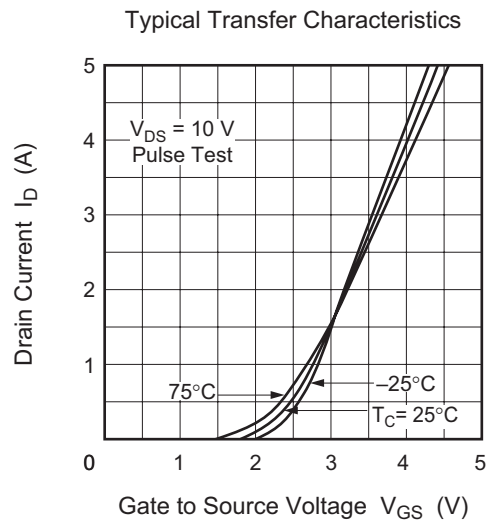
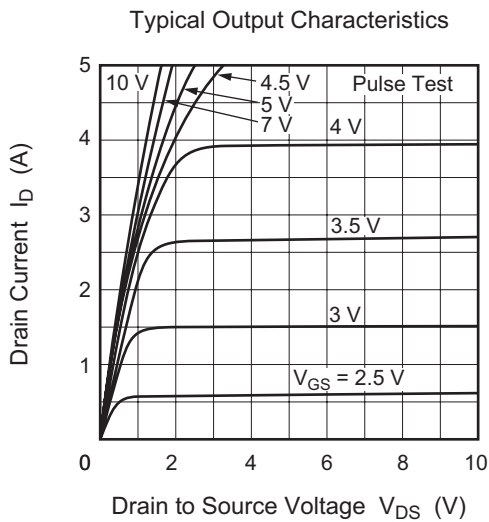
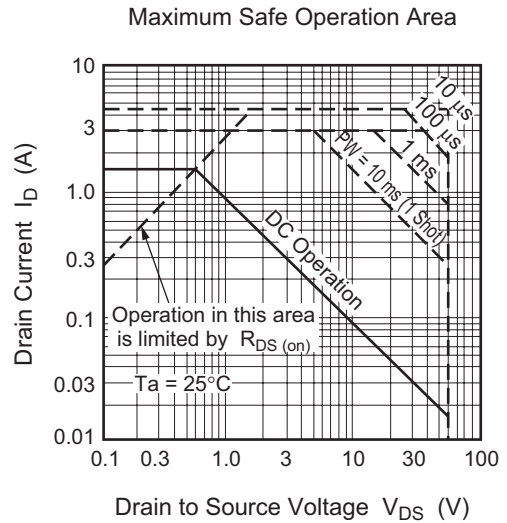
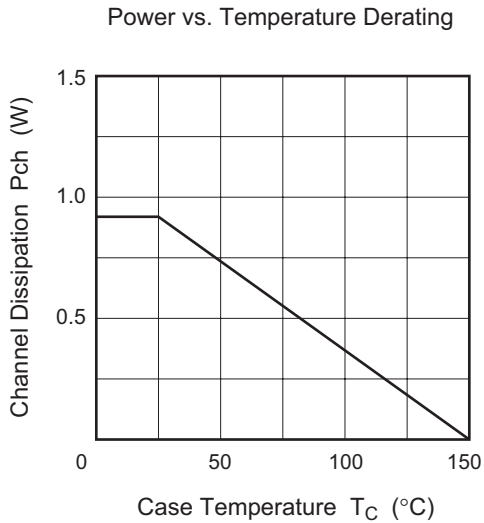
Electrical Characteristics

(Ta = 25°C)

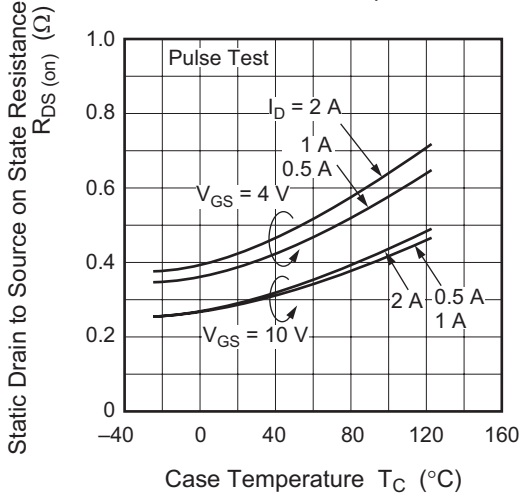
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	60	—	—	V	$I_D = 10 \text{ mA}$, $V_{GS} = 0$
Gate to source breakdown voltage	$V_{(BR)GSS}$	± 20	—	—	V	$I_G = \pm 100 \text{ }\mu\text{A}$, $V_{DS} = 0$
Gate to source leak current	I_{GSS}	—	—	± 10	μA	$V_{GS} = \pm 16 \text{ V}$, $V_{DS} = 0$
Zero gate voltage drain current	I_{DSS}	—	—	100	μA	$V_{DS} = 50 \text{ V}$, $V_{GS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	1.0	—	2.0	V	$I_D = 1 \text{ mA}$, $V_{DS} = 10 \text{ V}$
Static drain to source on state resistance	$R_{DS(off)}$	—	0.3	0.4	Ω	$I_D = 1 \text{ A}$, $V_{GS} = 10 \text{ V}^{*2}$
			0.4	0.55	Ω	$I_D = 1 \text{ A}$, $V_{GS} = 4 \text{ V}^{*2}$
Forward transfer admittance	$ y_{fs} $	0.9	1.5	—	S	$I_D = 1 \text{ A}$, $V_{DS} = 10 \text{ V}^{*2}$
Input capacitance	C_{iss}	—	140	—	pF	$V_{DS} = 10 \text{ V}$, $V_{GS} = 0$, $f = 1 \text{ MHz}$
Output capacitance	C_{oss}	—	70	—	pF	
Reverse transfer capacitance	C_{rss}	—	20	—	pF	
Turn-on delay time	$t_{d(on)}$	—	3	—	ns	$I_D = 1 \text{ A}$, $V_{GS} = 10 \text{ V}$, $R_L = 30 \text{ }\Omega$
Rise time	t_r	—	12	—	ns	
Turn-off delay time	$t_{d(off)}$	—	50	—	ns	
Fall time	t_f	—	30	—	ns	
Body to drain diode forward voltage	V_{DF}	—	0.9	—	V	$I_F = 1.5 \text{ A}$, $V_{GS} = 0$
Body to drain diode reverse recovery time	t_{rr}	—	45	—	ns	$I_F = 1.5 \text{ A}$, $V_{GS} = 0$, $di_F/dt = 50 \text{ A}/\mu\text{s}$

Note: 2. Pulse test

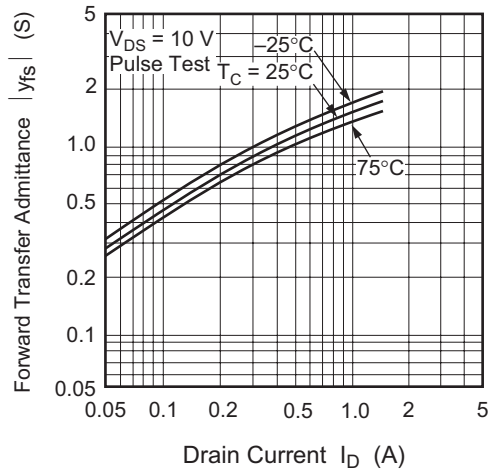
Main Characteristics



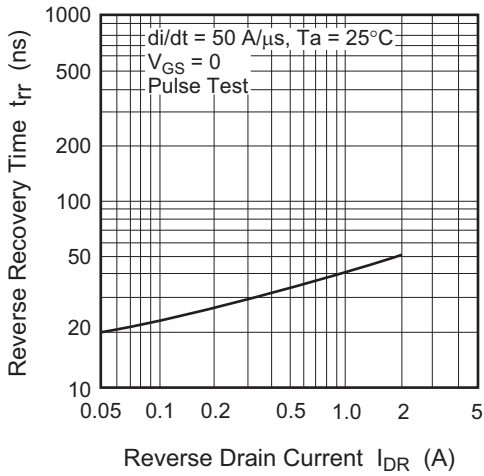
Static Drain to Source on State Resistance vs. Temperature



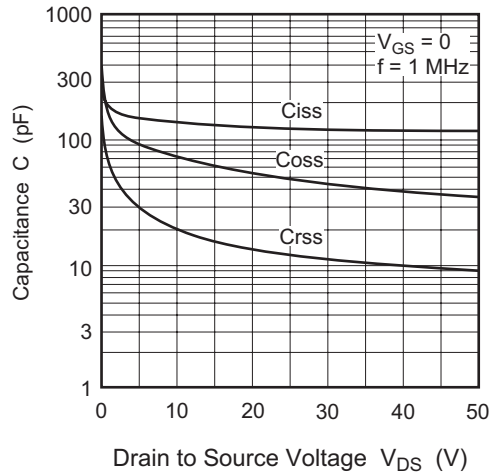
Forward Transfer Admittance vs. Drain Current



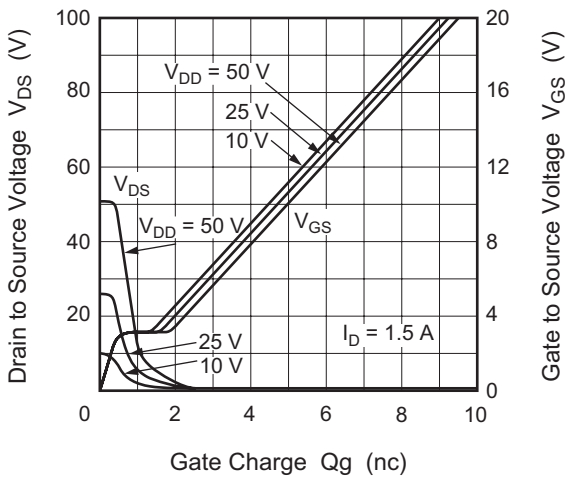
Body to Drain Diode Reverse Recovery Time



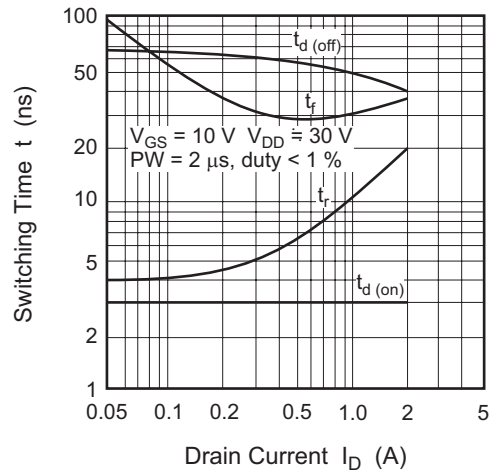
Typical Capacitance vs. Drain to Source Voltage

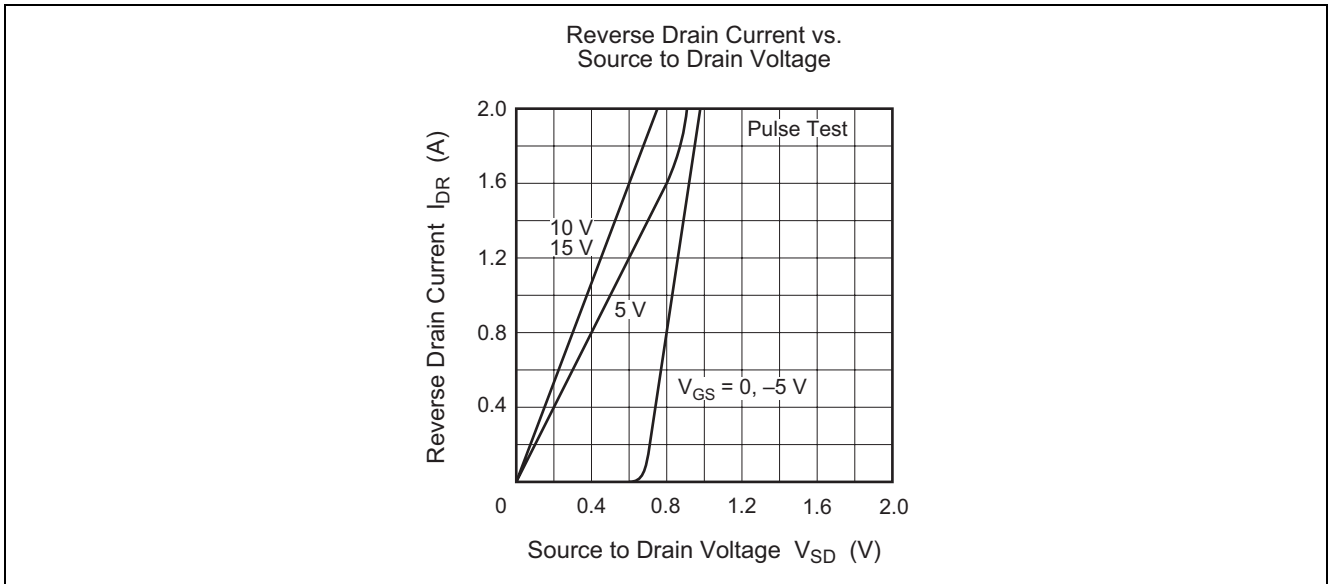


Dynamic Input Characteristics

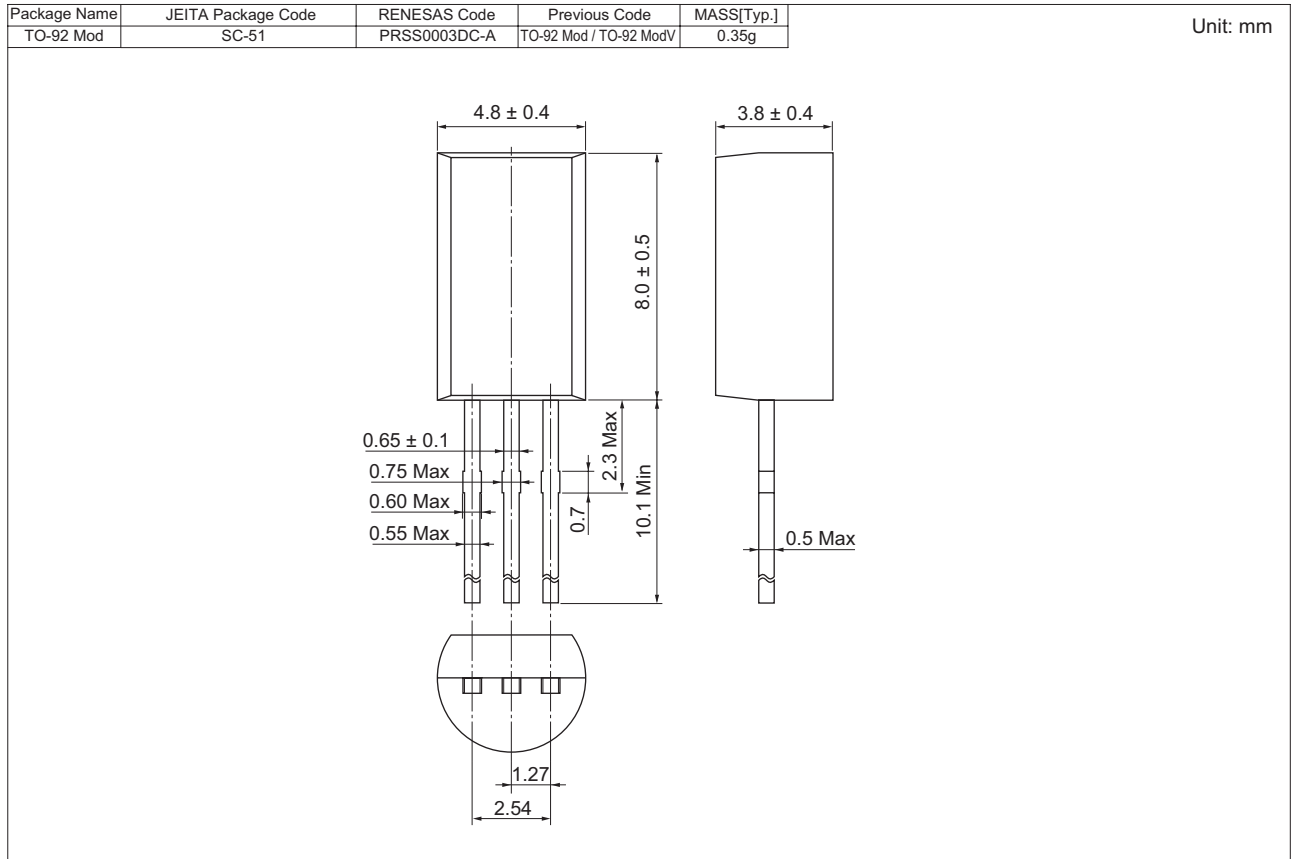


Switching Characteristics





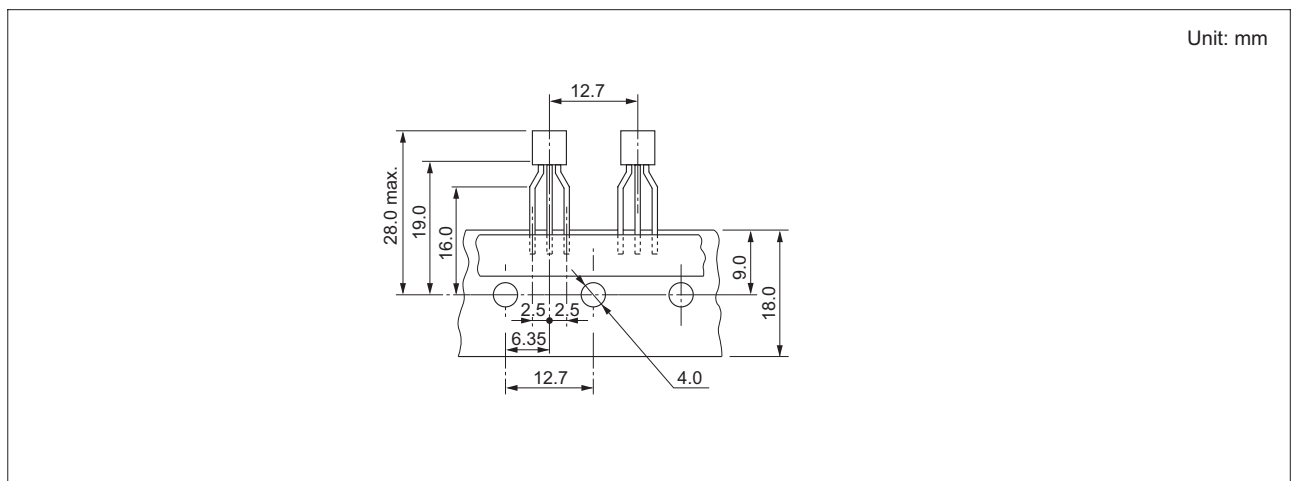
Package Dimensions



Ordering Information

Part Name	Quantity	Shipping Container
2SK975TZ-E	2500 pcs	Hold Box, Radial Taping

- Notes: 1. For some grades, production may be terminated. Please contact the Renesas sales office to check the state of production before ordering the product.
 2. Leads is forming applied as following figure.



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