

## 2SK975

### Silicon N Channel MOS FET

REJ03G0905-0200  
(Previous: ADE-208-1243)  
Rev.2.00  
Sep 07, 2005

#### Application

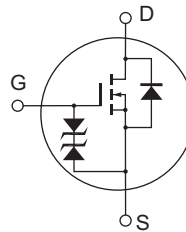
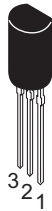
High speed power switching

#### 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 <sub>DSS</sub>	60	V
Gate to source voltage	V <sub>GSS</sub>	±20	V
Drain current	I <sub>D</sub>	1.5	A
Drain peak current	I <sub>D(pulse)</sub> <sup>*1</sup>	4.5	A
Body to drain diode reverse drain current	I <sub>DR</sub>	1.5	A
Channel dissipation	P <sub>ch</sub>	900	mW
Channel temperature	T <sub>ch</sub>	150	°C
Storage temperature	T <sub>stg</sub>	-55 to +150	°C

Note: 1. PW ≤ 10 μs, duty cycle ≤ 1%

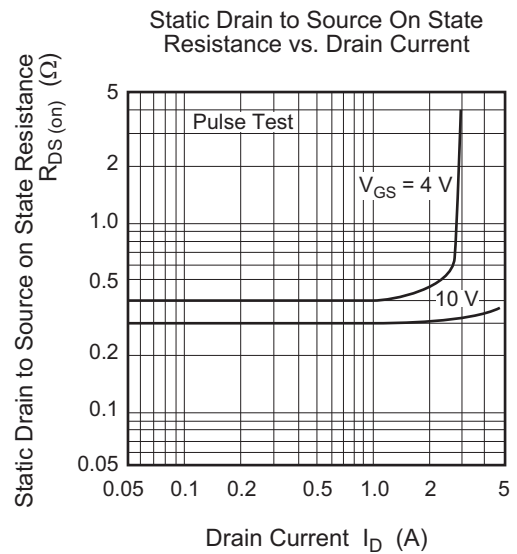
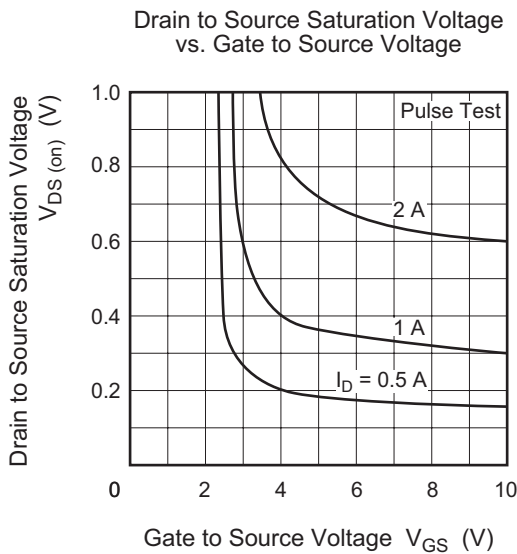
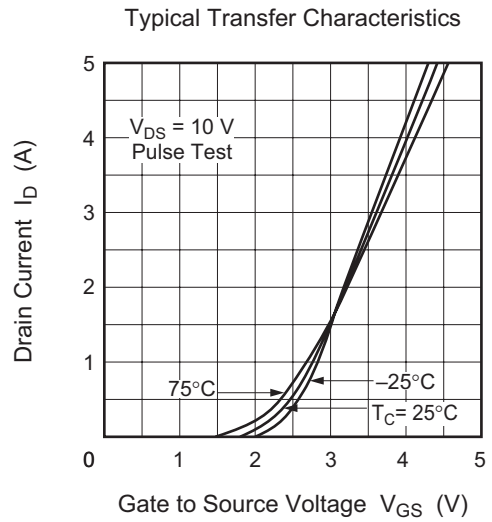
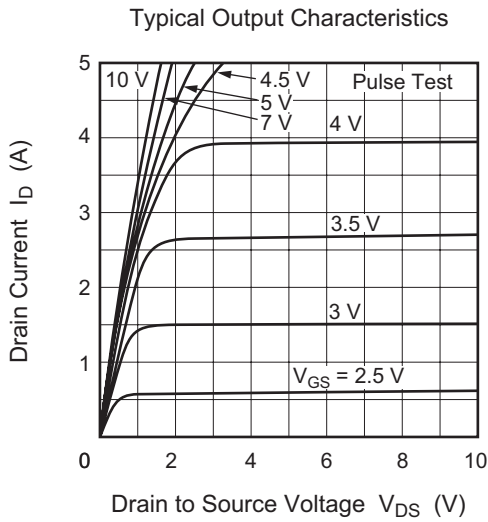
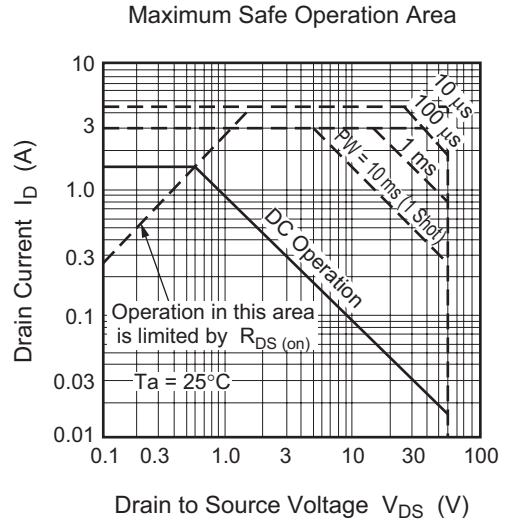
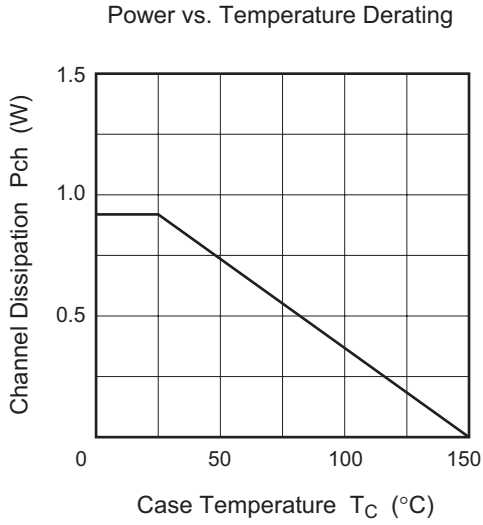
## Electrical Characteristics

(Ta = 25°C)

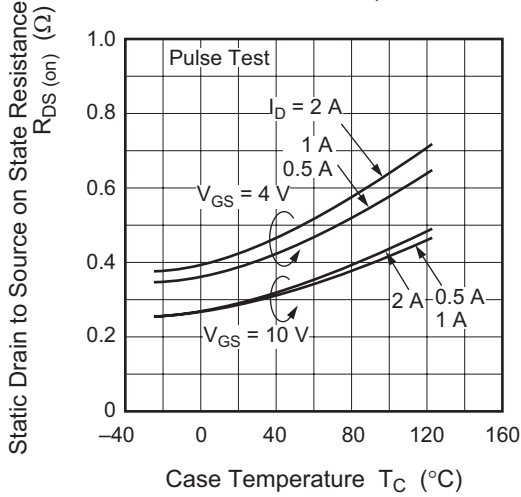
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	V <sub>(BR)DSS</sub>	60	—	—	V	I <sub>D</sub> = 10 mA, V <sub>GS</sub> = 0
Gate to source breakdown voltage	V <sub>(BR)GSS</sub>	±20	—	—	V	I <sub>G</sub> = ±100 μA, V <sub>DS</sub> = 0
Gate to source leak current	I <sub>GSS</sub>	—	—	±10	μA	V <sub>GS</sub> = ±16 V, V <sub>DS</sub> = 0
Zero gate voltage drain current	I <sub>DSS</sub>	—	—	100	μA	V <sub>DS</sub> = 50 V, V <sub>GS</sub> = 0
Gate to source cutoff voltage	V <sub>GS(off)</sub>	1.0	—	2.0	V	I <sub>D</sub> = 1 mA, V <sub>DS</sub> = 10 V
Static drain to source on state resistance	R <sub>DS(off)</sub>	—	0.3	0.4	Ω	I <sub>D</sub> = 1 A, V <sub>GS</sub> = 10 V <sup>*2</sup>
			0.4	0.55	Ω	I <sub>D</sub> = 1 A, V <sub>GS</sub> = 4 V <sup>*2</sup>
Forward transfer admittance	y <sub>fs</sub>	0.9	1.5	—	S	I <sub>D</sub> = 1 A, V <sub>DS</sub> = 10 V <sup>*2</sup>
Input capacitance	C <sub>iss</sub>	—	140	—	pF	V <sub>DS</sub> = 10 V, V <sub>GS</sub> = 0, f = 1 MHz
Output capacitance	C <sub>oss</sub>	—	70	—	pF	
Reverse transfer capacitance	C <sub>rss</sub>	—	20	—	pF	
Turn-on delay time	t <sub>d(on)</sub>	—	3	—	ns	I <sub>D</sub> = 1 A, V <sub>GS</sub> = 10 V, R <sub>L</sub> = 30 Ω
Rise time	t <sub>r</sub>	—	12	—	ns	
Turn-off delay time	t <sub>d(off)</sub>	—	50	—	ns	
Fall time	t <sub>f</sub>	—	30	—	ns	
Body to drain diode forward voltage	V <sub>DF</sub>	—	0.9	—	V	I <sub>F</sub> = 1.5 A, V <sub>GS</sub> = 0
Body to drain diode reverse recovery time	t <sub>rr</sub>	—	45	—	ns	I <sub>F</sub> = 1.5 A, V <sub>GS</sub> = 0, di <sub>F</sub> /dt = 50 A/μs

Note: 2. Pulse test

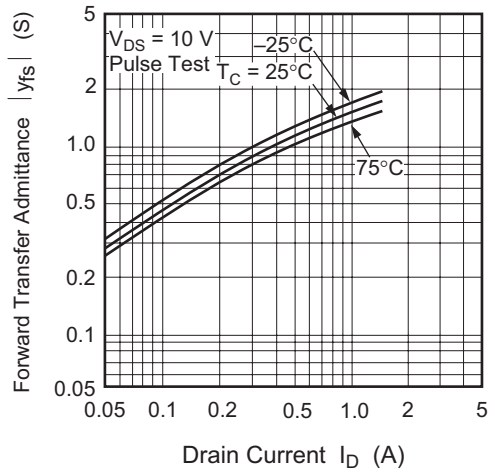
Main Characteristics



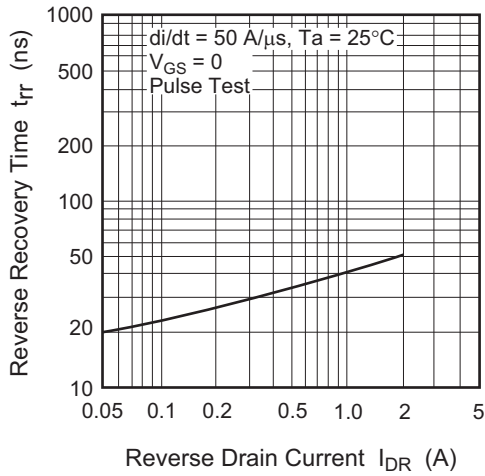
Static Drain to Source on State Resistance vs. Temperature



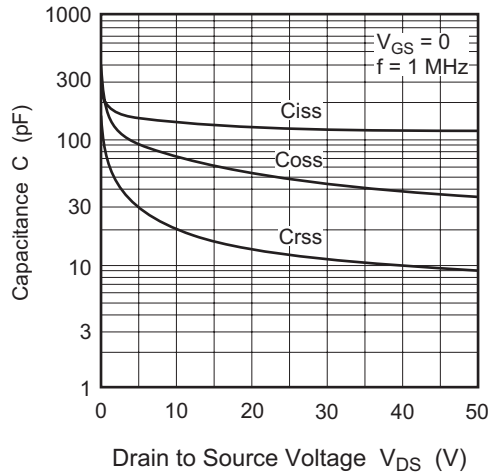
Forward Transfer Admittance vs. Drain Current



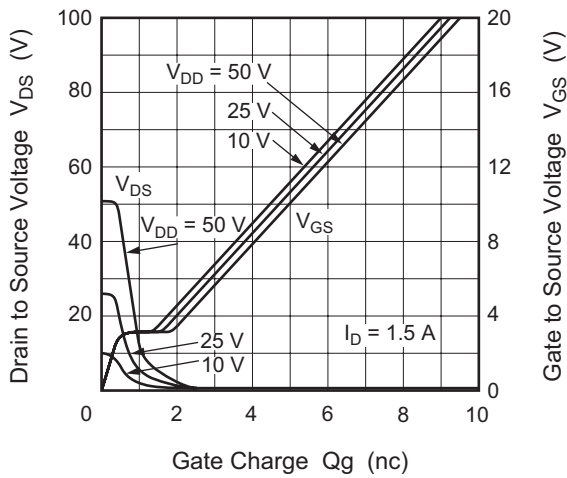
Body to Drain Diode Reverse Recovery Time



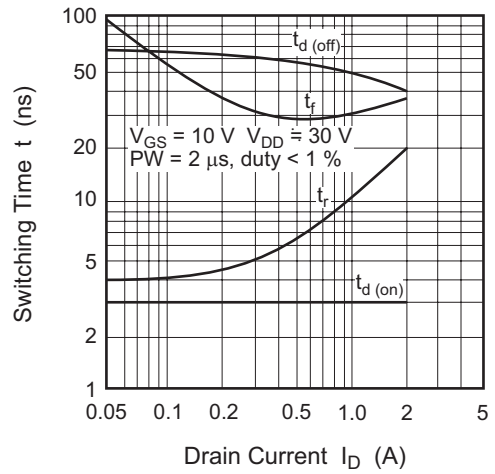
Typical Capacitance vs. Drain to Source Voltage

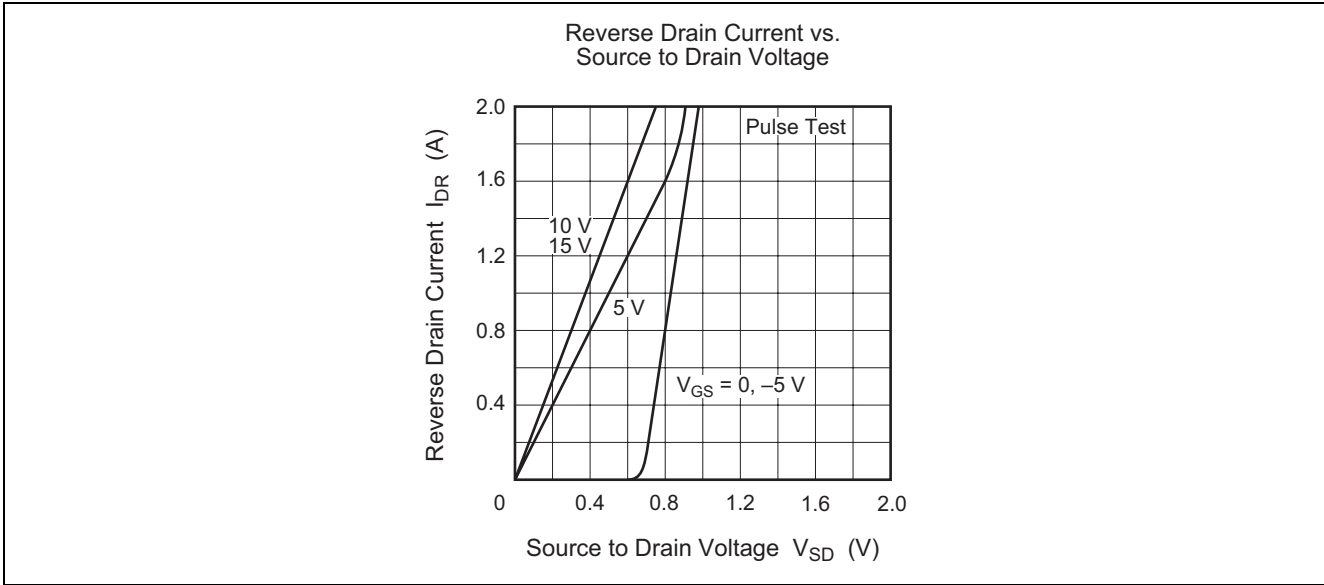


Dynamic Input Characteristics

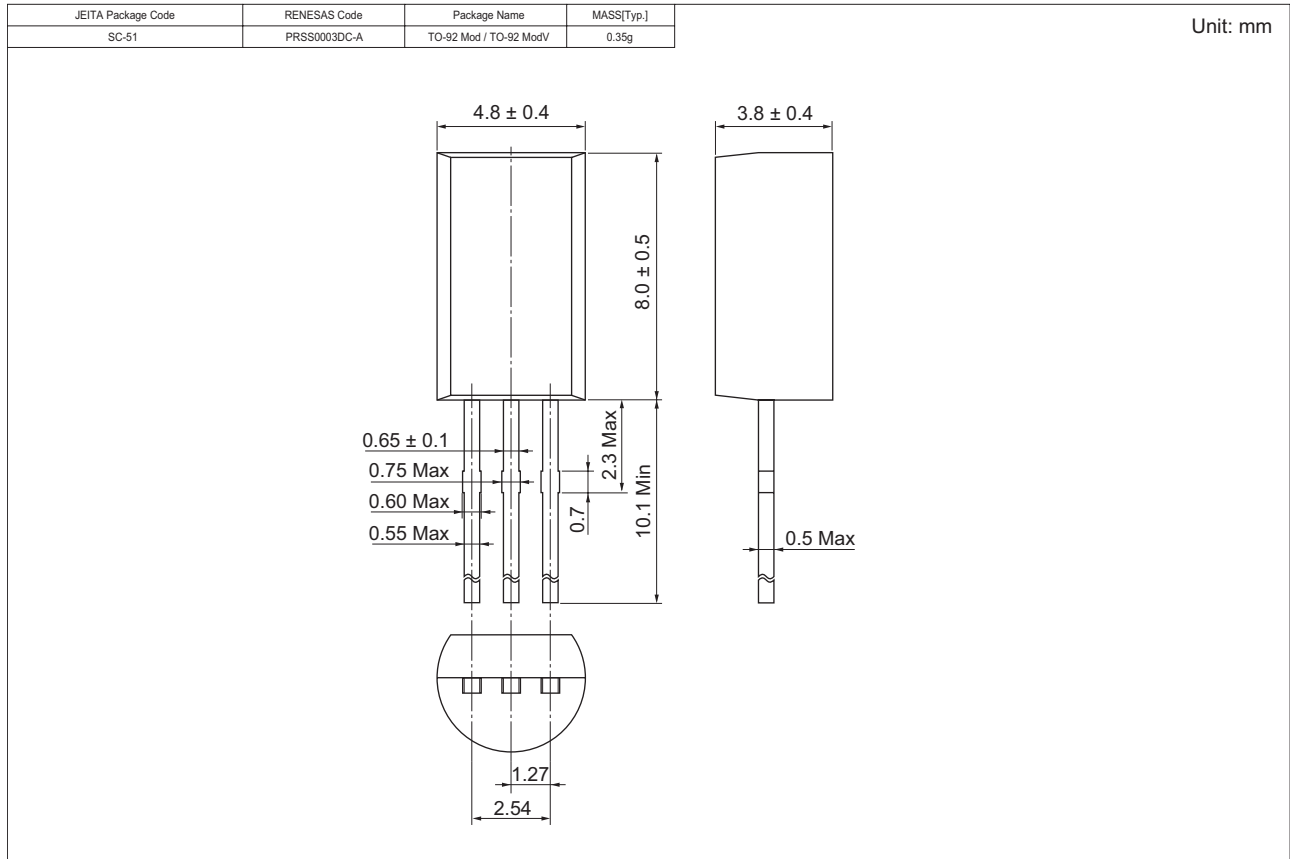


Switching Characteristics





## Package Dimensions



## Ordering Information

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

Note: For some grades, production may be terminated. Please contact the Renesas sales office to check the state of production before ordering the product.

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