

## 2SK3446

### Silicon N Channel Power MOS FET Power Switching

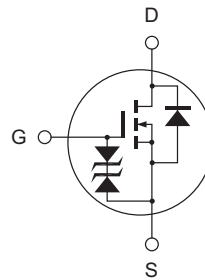
REJ03G1100-0800  
(Previous: ADE-208-1566F)  
Rev.8.00  
Sep 07, 2005

#### Features

- Capable of 2.5 V gate drive
- Low drive current
- Low on-resistance  
 $R_{DS(on)} = 1.5 \Omega$  typ. (at  $V_{GS} = 4 V$ )

#### Outline

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



1. Source
2. Drain
3. Gate

## Absolute Maximum Ratings

(Ta = 25°C)

Item	Symbol	Value	Unit
Drain to source voltage	V <sub>DSS</sub>	150	V
Gate to source voltage	V <sub>GSS</sub>	±10	V
Drain current	I <sub>D</sub>	1	A
Drain peak current	I <sub>D (pulse)</sub> <sup>Note 1</sup>	4	A
Body-drain diode reverse drain current	I <sub>DR</sub>	1	A
Channel dissipation	P <sub>ch</sub> <sup>Note 2</sup>	0.9	W
Channel temperature	T <sub>ch</sub>	150	°C
Storage temperature	T <sub>stg</sub>	-55 to +150	°C

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

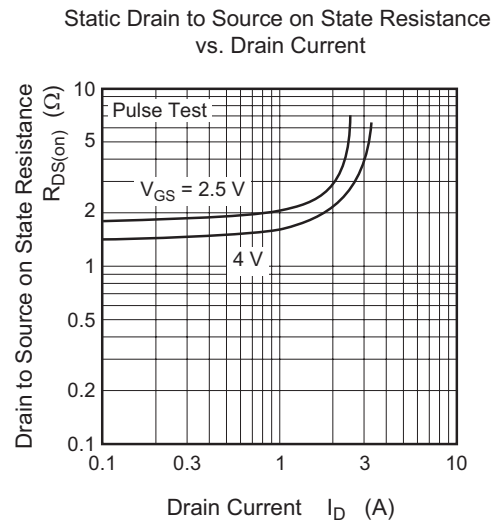
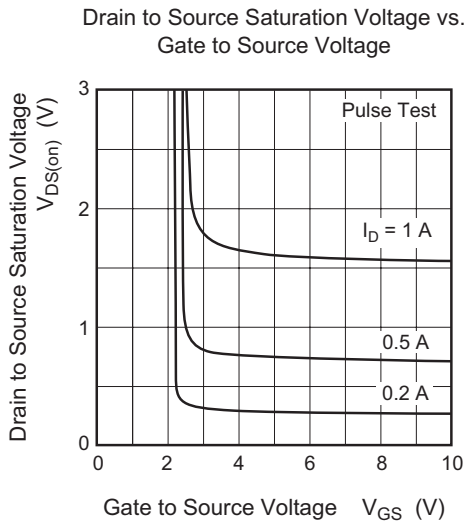
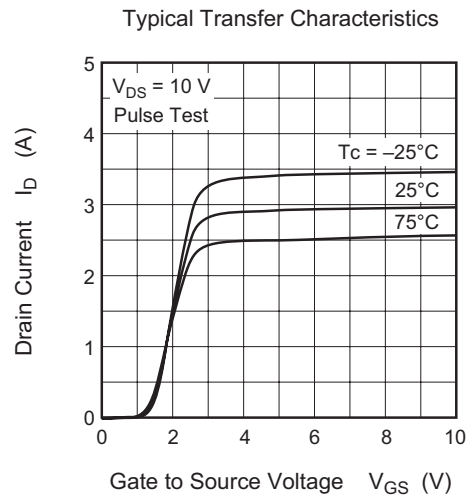
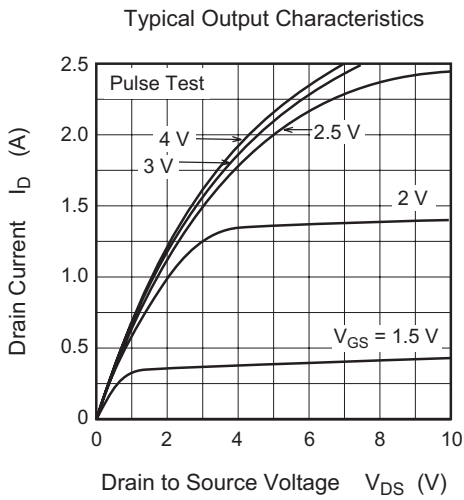
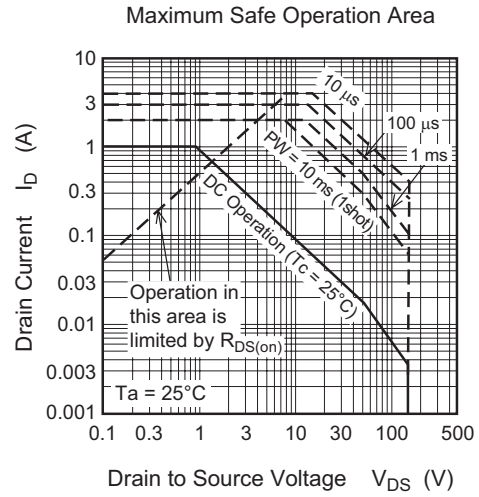
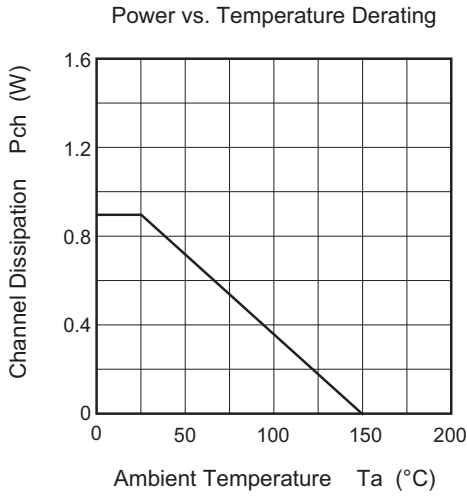
## Electrical Characteristics

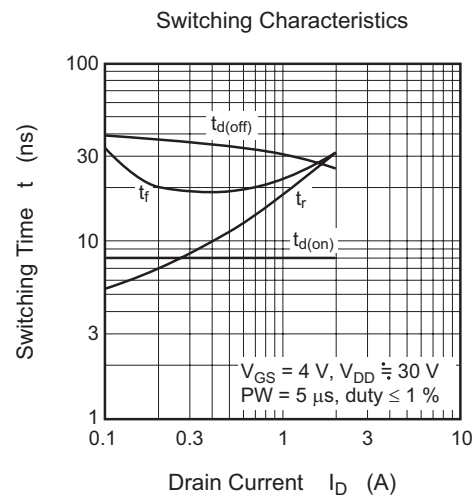
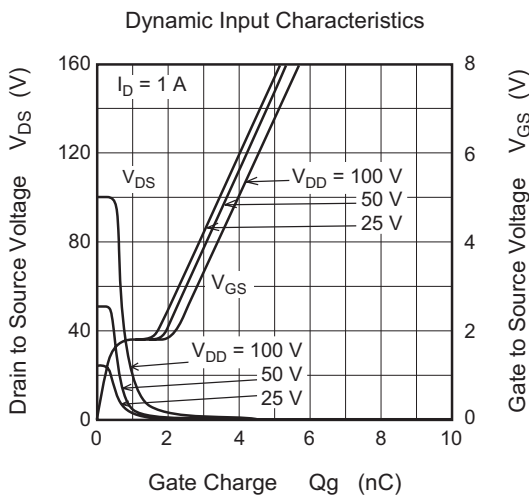
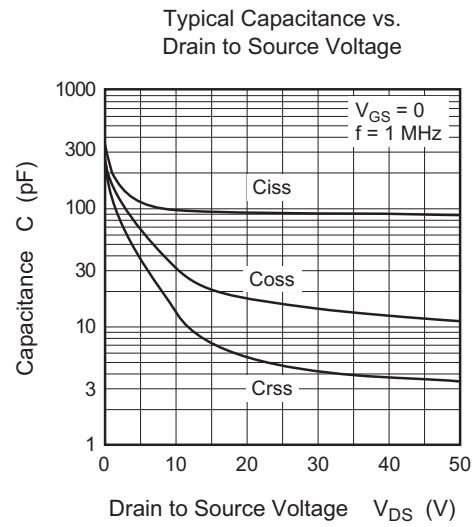
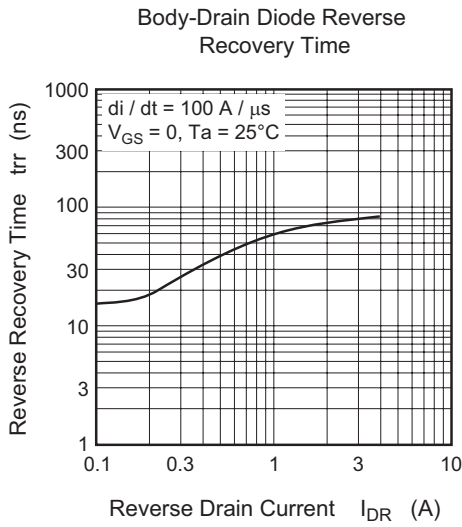
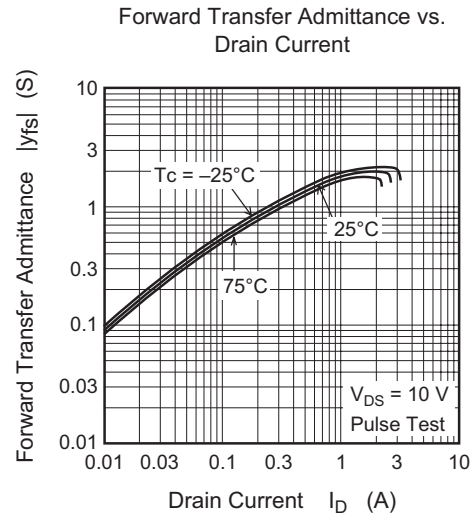
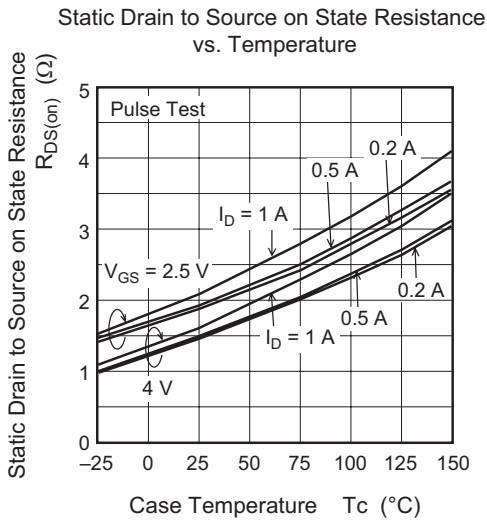
(Ta = 25°C)

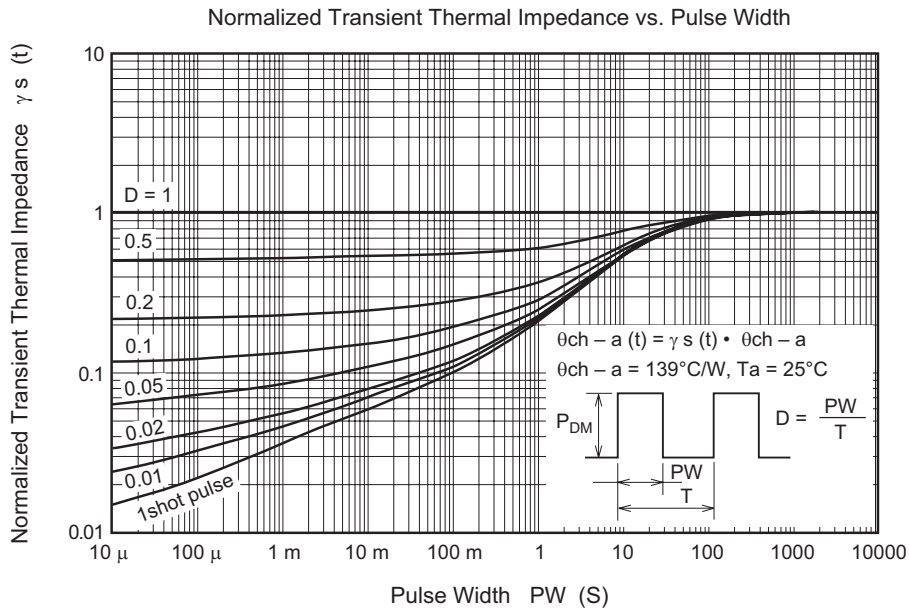
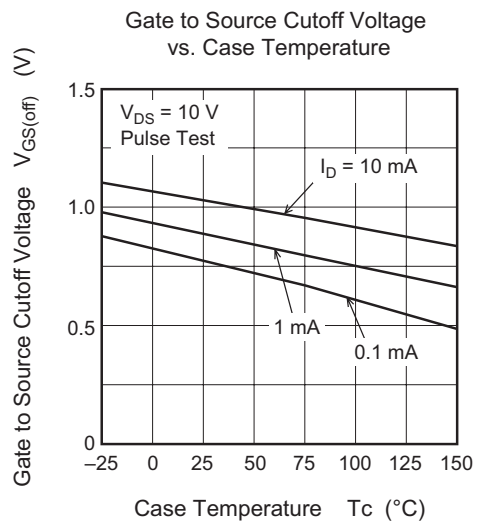
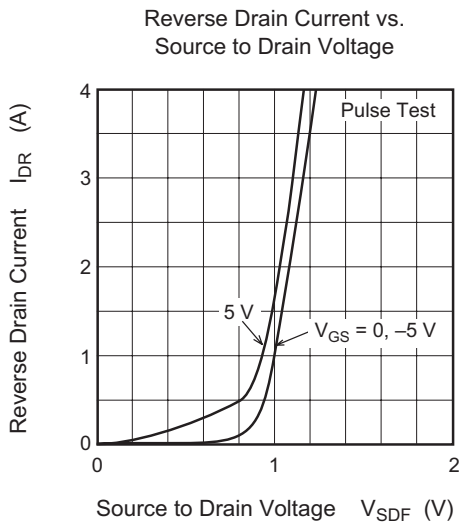
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	V <sub>(BR) DSS</sub>	150	—	—	V	I <sub>D</sub> = 10 mA, V <sub>GS</sub> = 0
Gate to source breakdown voltage	V <sub>(BR) GSS</sub>	±10	—	—	V	I <sub>G</sub> = ±100 μA, V <sub>DS</sub> = 0
Gate to source leak current	I <sub>GSS</sub>	—	—	±10	μA	V <sub>GS</sub> = ±8 V, V <sub>DS</sub> = 0
Zero gate voltage drain current	I <sub>DSS</sub>	—	—	1	μA	V <sub>DS</sub> = 150 V, V <sub>GS</sub> = 0
Gate to source cutoff voltage	V <sub>GS (off)</sub>	0.5	—	1.5	V	V <sub>DS</sub> = 10 V, I <sub>D</sub> = 1 mA
Static drain to source on state resistance	R <sub>DS (on)</sub>	—	1.5	1.95	Ω	I <sub>D</sub> = 0.5 A, V <sub>GS</sub> = 4 V <sup>Note 3</sup>
	R <sub>DS (on)</sub>	—	1.9	2.5	Ω	I <sub>D</sub> = 0.5 A, V <sub>GS</sub> = 2.5 V <sup>Note 3</sup>
Forward transfer admittance	y <sub>fs</sub>	0.8	1.4	—	S	I <sub>D</sub> = 0.5 A, V <sub>DS</sub> = 10 V <sup>Note 3</sup>
Input capacitance	C <sub>iss</sub>	—	98	—	pF	V <sub>DS</sub> = 10 V
Output capacitance	C <sub>oss</sub>	—	31	—	pF	V <sub>GS</sub> = 0
Reverse transfer capacitance	C <sub>rss</sub>	—	14	—	pF	f = 1 MHz
Total gate charge	Q <sub>g</sub>	—	3.5	—	nC	V <sub>DD</sub> = 100 V
Gate to source charge	Q <sub>gs</sub>	—	0.5	—	nC	V <sub>GS</sub> = 4 V
Gate to drain charge	Q <sub>gd</sub>	—	1.8	—	nC	I <sub>D</sub> = 1 A
Turn-on delay time	t <sub>d (on)</sub>	—	8	—	ns	V <sub>GS</sub> = 4 V
Rise time	t <sub>r</sub>	—	12	—	ns	I <sub>D</sub> = 0.5 A
Turn-off delay time	t <sub>d (off)</sub>	—	34	—	ns	R <sub>L</sub> = 60 Ω
Fall time	t <sub>f</sub>	—	19	—	ns	
Body-drain diode forward voltage	V <sub>DF</sub>	—	1.0	1.5	V	I <sub>F</sub> = 1 A, V <sub>GS</sub> = 0
Body-drain diode reverse recovery time	t <sub>rr</sub>	—	60	—	ns	I <sub>F</sub> = 1 A, V <sub>GS</sub> = 0 di <sub>F</sub> /dt = 100 A/μs

Note: 3. Pulse test

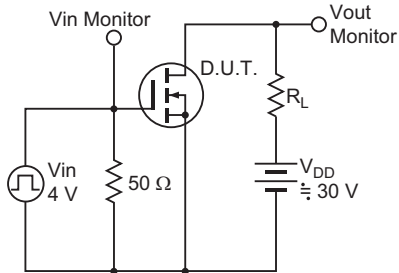
Main Characteristics



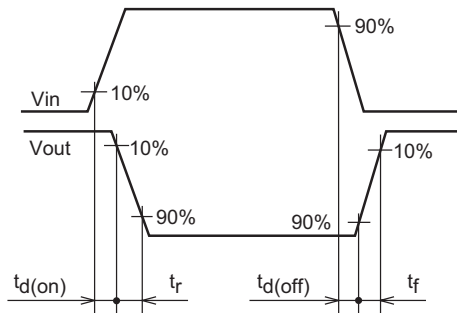




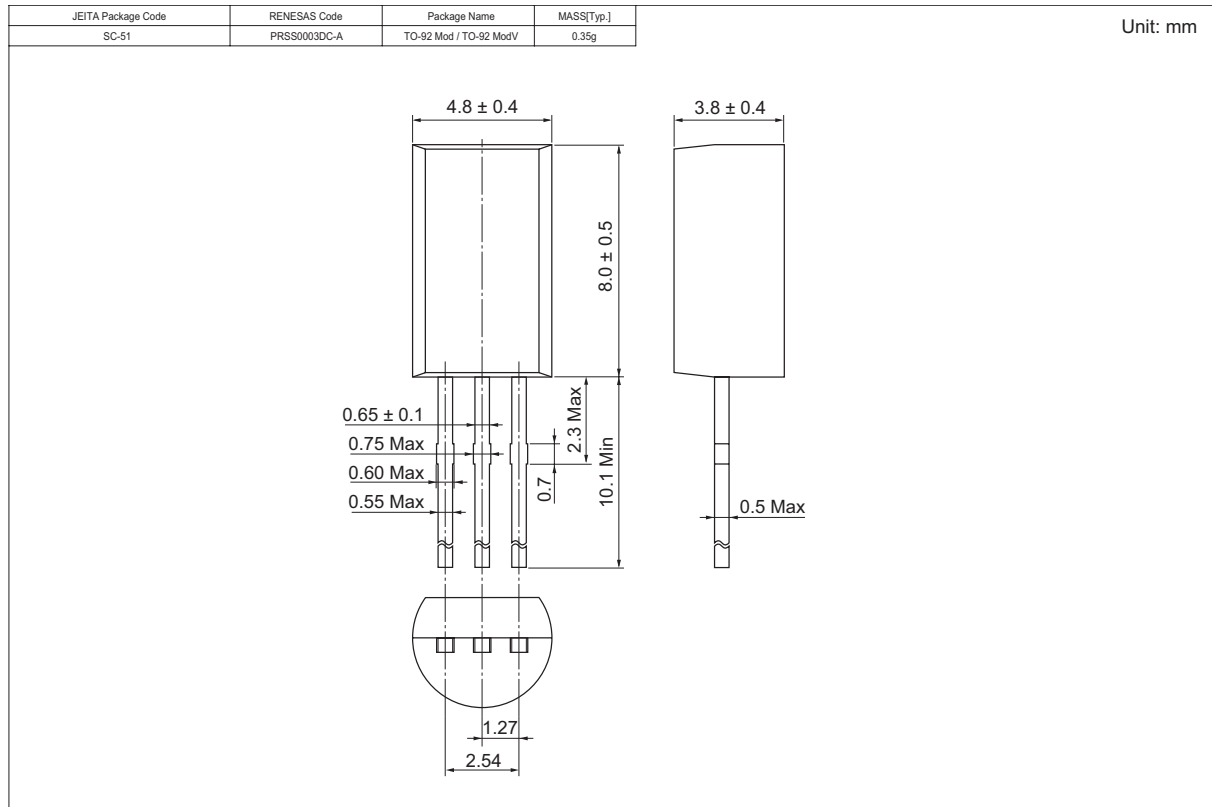
Switching Time Test Circuit



Waveform



## Package Dimensions



## Ordering Information

Part Name	Quantity	Shipping Container
2SK3446TZ-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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