

2SK1169, 2SK1170

Silicon N Channel MOS FET

REJ03G0916-0200

(Previous: ADE-208-1254)

Rev.2.00

Sep 07, 2005

Application

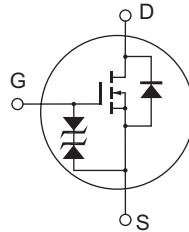
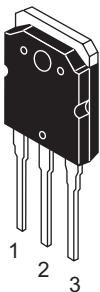
High speed power switching

Features

- Low on-resistance
- High speed switching
- Low drive current
- No secondary breakdown
- Suitable for switching regulator and DC-DC converter

Outline

RENESAS Package code: PRSS0004ZE-A
(Package name: TO-3P)



1. Gate
2. Drain
(Flange)
3. Source

Absolute Maximum Ratings

(Ta = 25°C)

Item	Symbol	Ratings	Unit
Drain to source voltage 2SK1169	V _{DSS}	450	V
2SK1170		500	
Gate to source voltage	V _{GSS}	±30	V
Drain current	I _D	20	A
Drain peak current	I _{D(pulse)} ^{*1}	80	A
Body to drain diode reverse drain current	I _{DR}	20	A
Channel dissipation	P _{ch} ^{*2}	120	W
Channel temperature	T _{ch}	150	°C
Storage temperature	T _{stg}	-55 to +150	°C

Notes: 1. PW ≤ 10 µs, duty cycle ≤ 1%

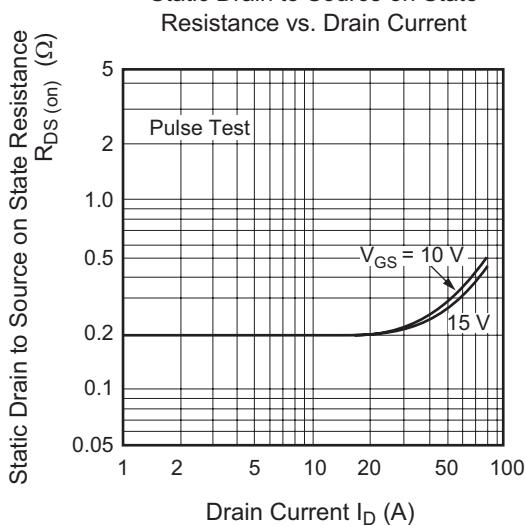
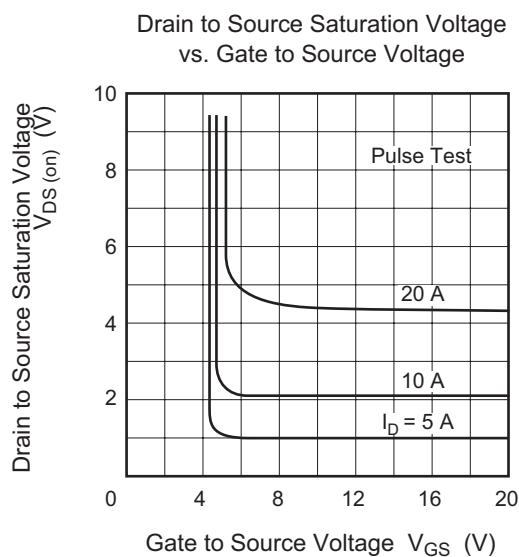
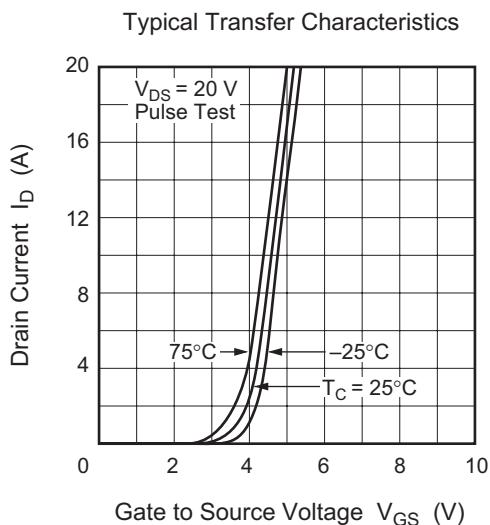
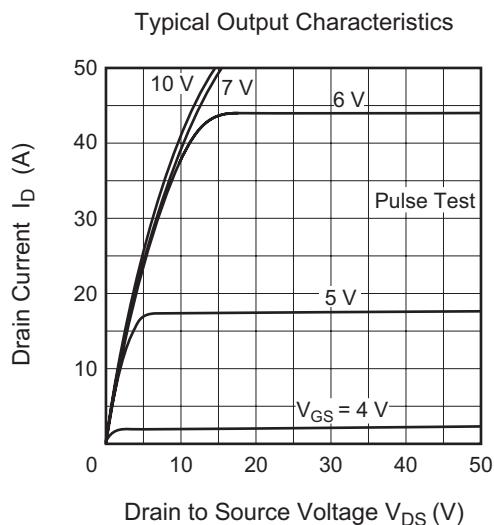
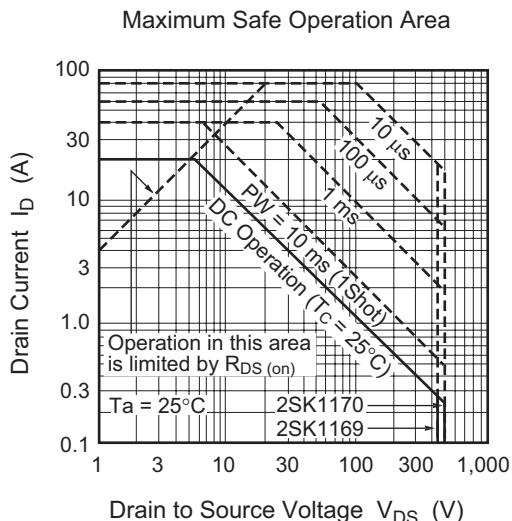
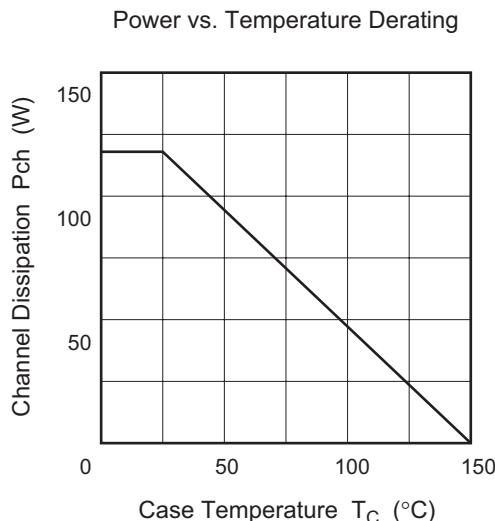
2. Value at T_C = 25°C**Electrical Characteristics**

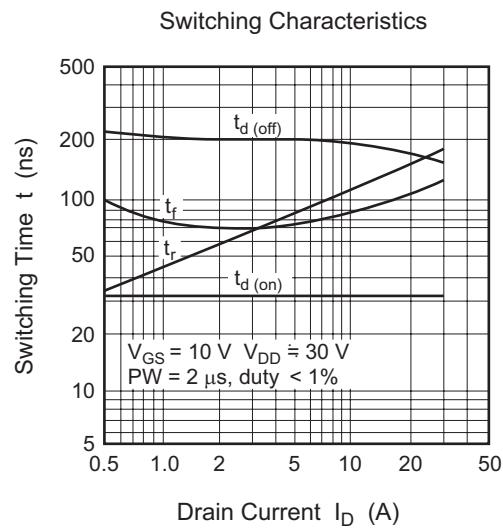
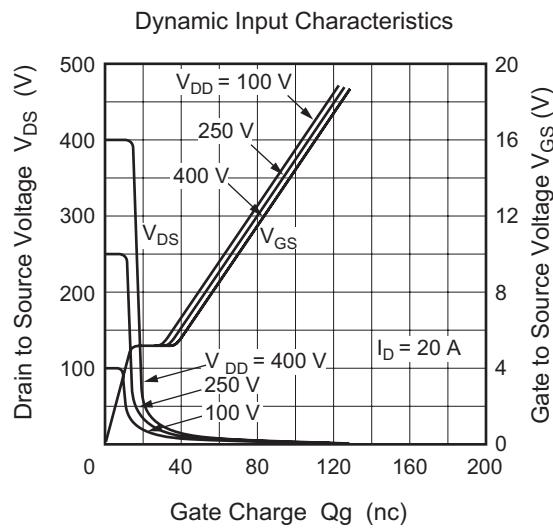
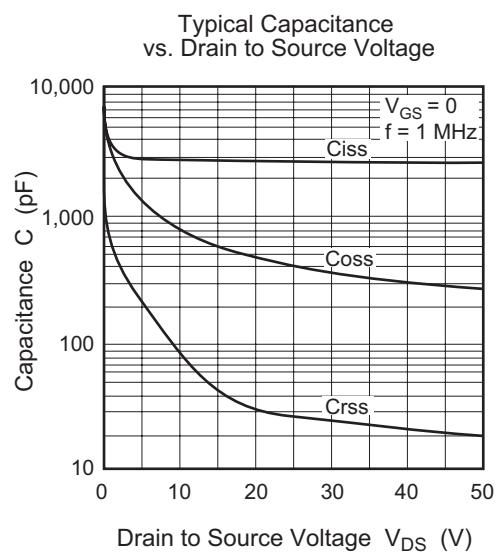
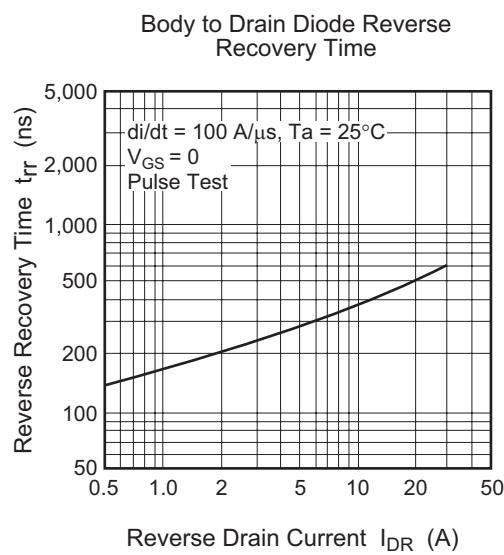
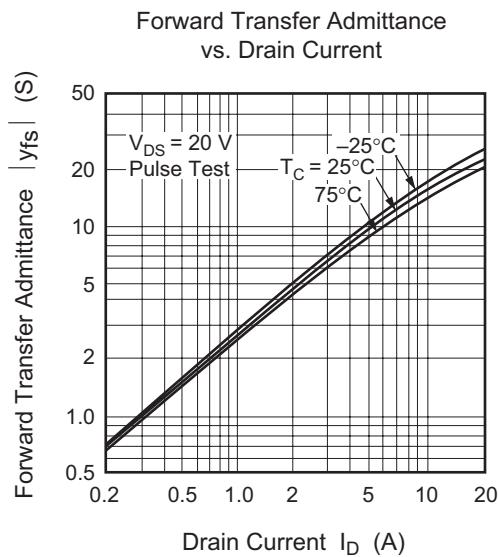
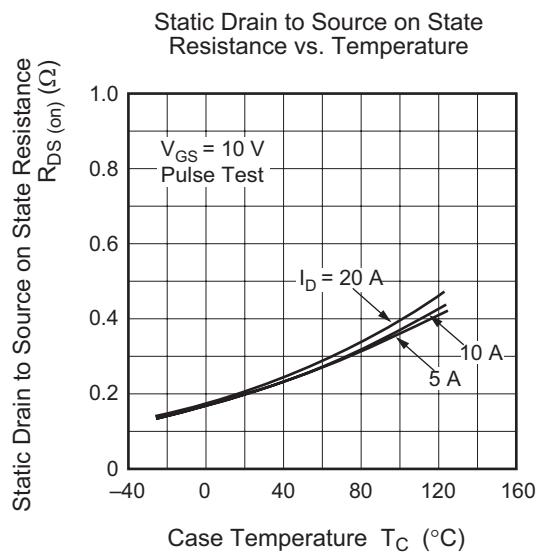
(Ta = 25°C)

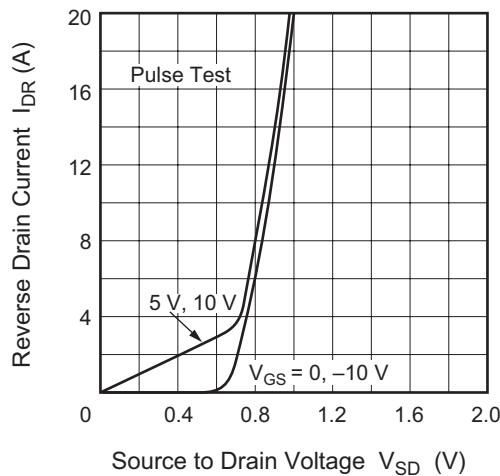
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage 2SK1169	V _{(BR)DSS}	450	—	—	V	I _D = 10 mA, V _{GS} = 0
2SK1170		500	—	—	—	
Gate to source breakdown voltage	V _{(BR)GSS}	±30	—	—	V	I _G = ±100 µA, V _{DS} = 0
Gate to source leak current	I _{GSS}	—	—	±10	µA	V _{GS} = ±25 V, V _{DS} = 0
Zero gate voltage drain current 2SK1169	I _{DSS}	—	—	250	µA	V _{DS} = 360 V, V _{GS} = 0
2SK1170		—	—	—	—	V _{DS} = 400 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 2SK1169	R _{DS(on)}	—	0.20	0.25	Ω	I _D = 10 A, V _{GS} = 10 V ^{*3}
2SK1170		—	0.22	0.27	—	
Forward transfer admittance	y _{fs}	10	16	—	S	I _D = 10 A, V _{DS} = 10 V ^{*3}
Input capacitance	C _{iss}	—	2800	—	pF	V _{DS} = 10 V, V _{GS} = 0, f = 1 MHz
Output capacitance	C _{oss}	—	780	—	pF	
Reverse transfer capacitance	C _{rss}	—	90	—	pF	—
Turn-on delay time	t _{d(on)}	—	32	—	ns	I _D = 10 A, V _{GS} = 10 V, R _L = 3 Ω
Rise time	t _r	—	115	—	ns	
Turn-off delay time	t _{d(off)}	—	200	—	ns	
Fall time	t _f	—	90	—	ns	
Body to drain diode forward voltage	V _{DF}	—	1.0	—	V	I _F = 20 A, V _{GS} = 0
Body to drain diode reverse recovery time	t _{rr}	—	500	—	ns	I _F = 20 A, V _{GS} = 0, di _F /dt = 100 A/µs

Note: 3. Pulse test

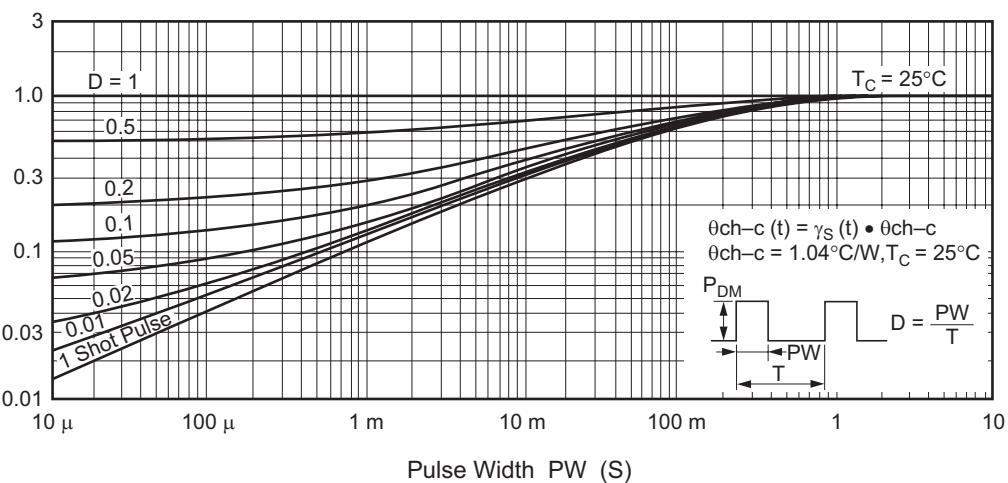
Main Characteristics



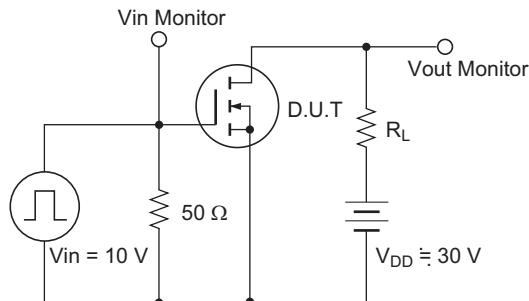


Reverse Drain Current vs.
Source to Drain VoltageNormalized Transient Thermal Impedance $\gamma_S(t)$

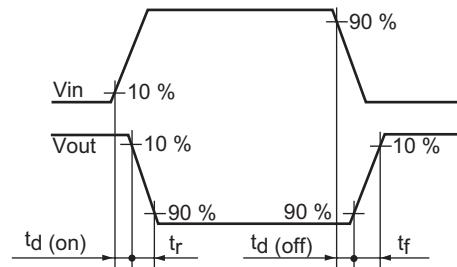
Normalized Transient Thermal Impedance vs. Pulse Width



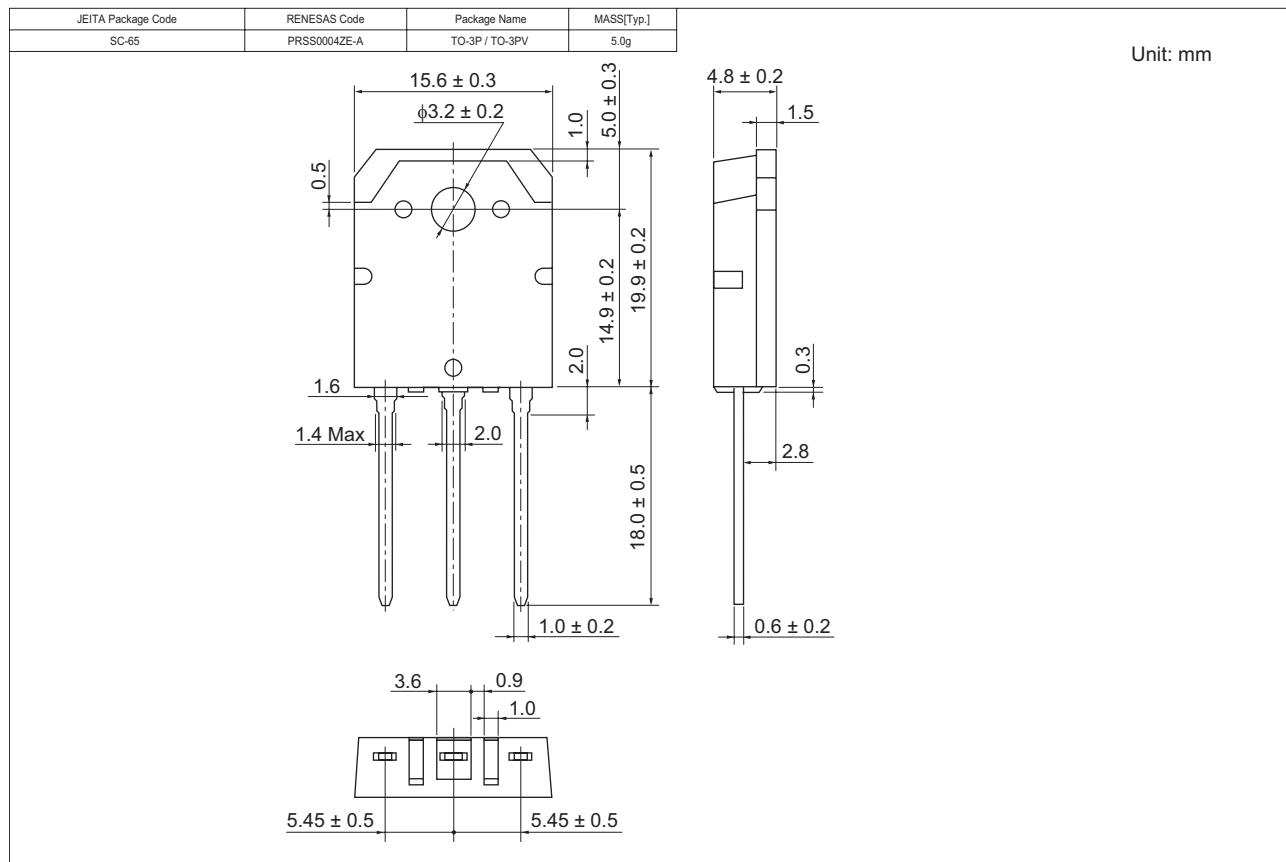
Switching Time Test Circuit



Waveforms



Package Dimensions



Ordering Information

Part Name	Quantity	Shipping Container
2SK1169-E	360 pcs	Box (Tube)
2SK1170-E	360 pcs	Box (Tube)

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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