

## 2SK1338

### Silicon N Channel MOS FET

REJ03G0935-0200  
(Previous: ADE-208-1275)  
Rev.2.00  
Sep 07, 2005

#### Application

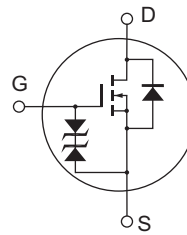
High speed power switching

#### 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: PRSS0004AC-A  
(Package name: TO-220AB)



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

## Absolute Maximum Ratings

(Ta = 25°C)

Item	Symbol	Ratings	Unit
Drain to source voltage	$V_{DSS}$	900	V
Gate to source voltage	$V_{GSS}$	$\pm 30$	V
Drain current	$I_D$	2	A
Drain peak current	$I_{D(pulse)}^{*1}$	6	A
Body to drain diode reverse drain current	$I_{DR}$	2	A
Channel dissipation	$P_{ch-2}$	50	W
Channel temperature	$T_{ch}$	150	°C
Storage temperature	$T_{stg}$	-55 to +150	°C

Notes: 1.  $PW \leq 10 \mu s$ , duty cycle  $\leq 1\%$   
 2. Value at  $T_C = 25^\circ C$

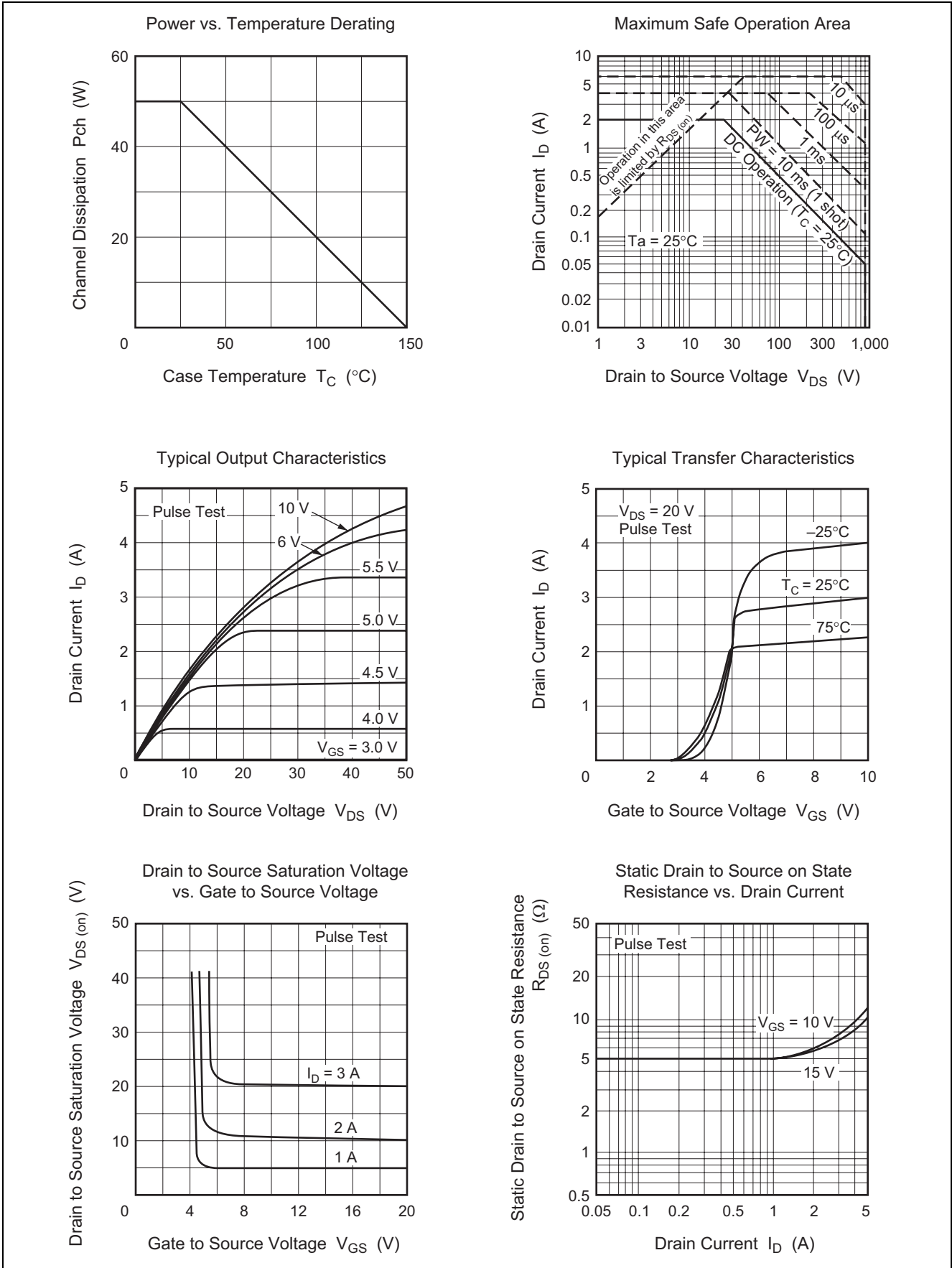
## Electrical Characteristics

(Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to Source breakdown voltage	$V_{(BR)DSS}$	900	—	—	V	$I_D = 10 \text{ mA}$ , $V_{GS} = 0$
Gate to Source breakdown voltage	$V_{(BR)GSS}$	$\pm 30$	—	—	V	$I_G = \pm 100 \mu A$ , $V_{DS} = 0$
Gate to Source leak current	$I_{GSS}$	—	—	$\pm 10$	$\mu A$	$V_{GS} = \pm 25 \text{ V}$ , $V_{DS} = 0$
Zero Gate voltage Drain current	$I_{DSS}$	—	—	250	$\mu A$	$V_{DS} = 720 \text{ V}$ , $V_{GS} = 0$
Gate to Source cutoff voltage	$V_{GS(off)}$	2.0	—	3.0	V	$I_D = 1 \text{ mA}$ , $V_{DS} = 10 \text{ V}$
Static Drain to Source on state resistance	$R_{DS(on)}$	—	5.0	7.0	$\Omega$	$I_D = 1 \text{ A}$ , $V_{GS} = 10 \text{ V}^{*3}$
Forward transfer admittance	$ y_{fs} $	0.9	1.5	—	S	$I_D = 1 \text{ A}$ , $V_{DS} = 20 \text{ V}^{*3}$
Input capacitance	$C_{iss}$	—	425	—	pF	$V_{DS} = 10 \text{ V}$ , $V_{GS} = 0$ , $f = 1 \text{ MHz}$
Output capacitance	$C_{oss}$	—	175	—	pF	
Reverse transfer capacitance	$C_{rss}$	—	85	—	pF	
Turn-on delay time	$t_{d(on)}$	—	10	—	ns	$I_D = 1 \text{ A}$ , $V_{GS} = 10 \text{ V}$ , $R_L = 30 \Omega$
Rise time	$t_r$	—	35	—	ns	
Turn-off delay time	$t_{d(off)}$	—	60	—	ns	
Fall time	$t_f$	—	50	—	ns	
Body to Drain diode forward voltage	$V_{DF}$	—	0.9	—	V	$I_F = 2 \text{ A}$ , $V_{GS} = 0$
Body to Drain diode reverse recovery time	$t_{rr}$	—	700	—	ns	$I_F = 2 \text{ A}$ , $V_{GS} = 0$ , $di_F/dt = 100 \text{ A}/\mu s$

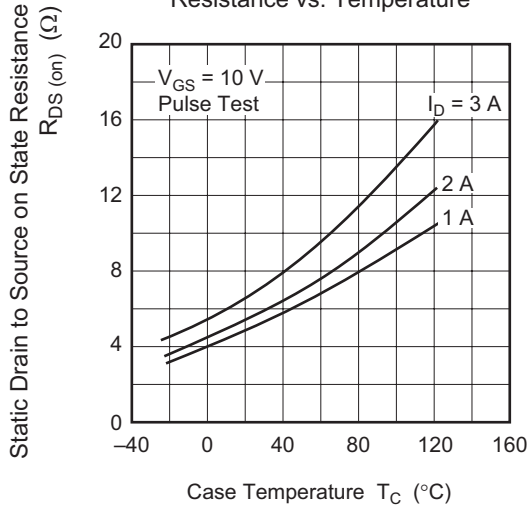
Note: 3. Pulse test

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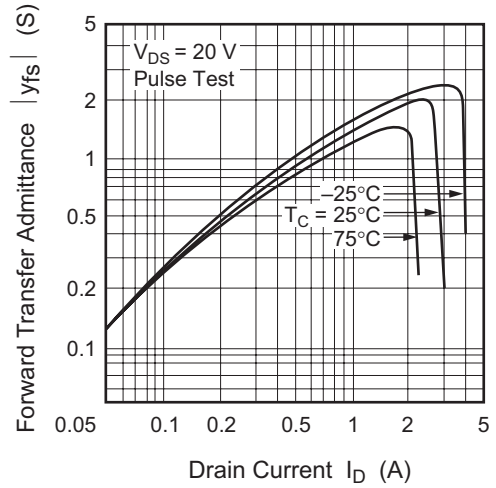


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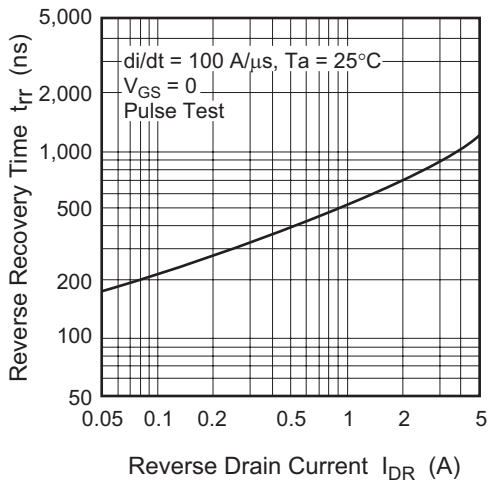
Static Drain to Source on State Resistance vs. Temperature



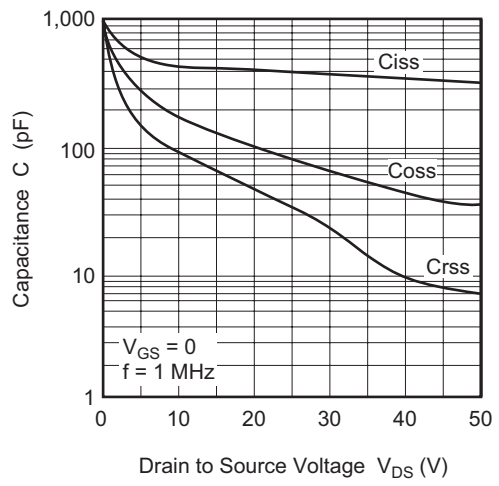
Forward Transfer Admittance vs. Drain Current



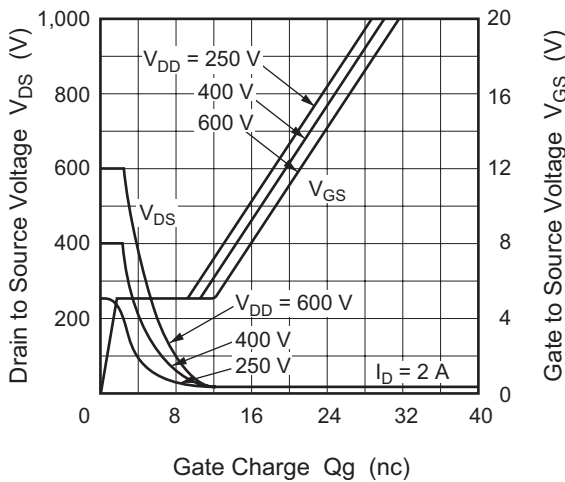
Body to Drain Diode Reverse Recovery Time



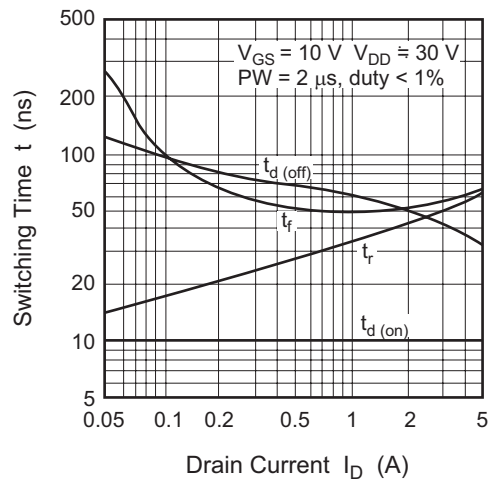
Typical Capacitance vs. Drain to Source Voltage



Dynamic Input Characteristics

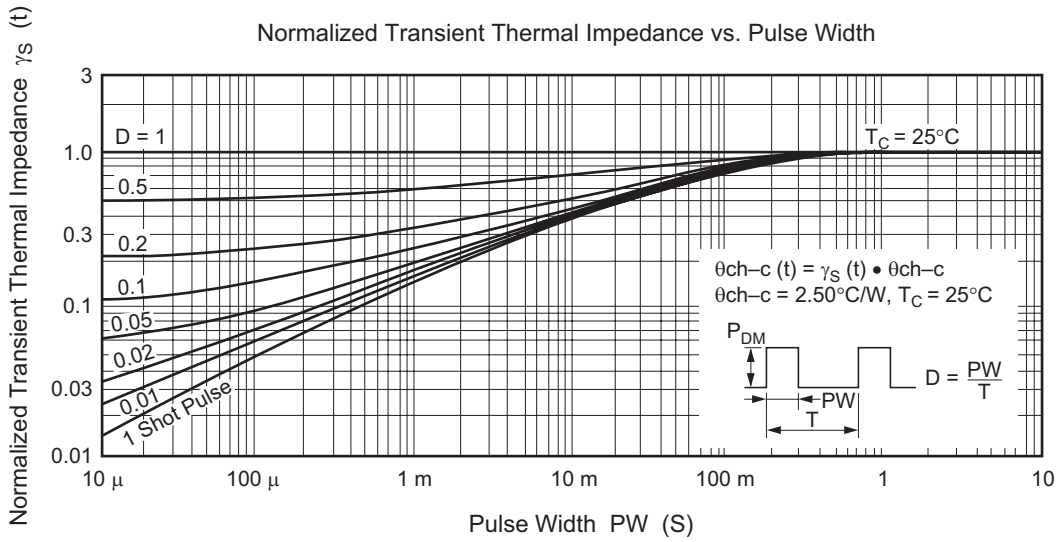
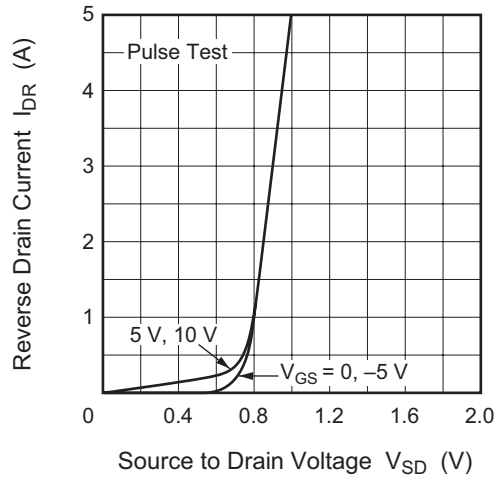


Switching Characteristics

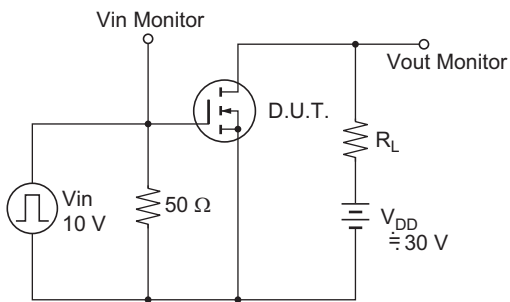


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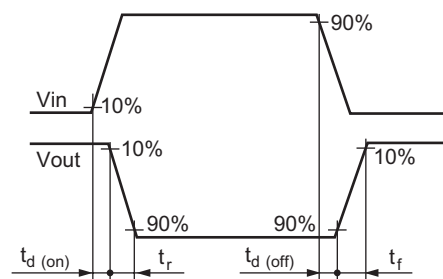
Reverse Drain Current vs. Source to Drain Voltage



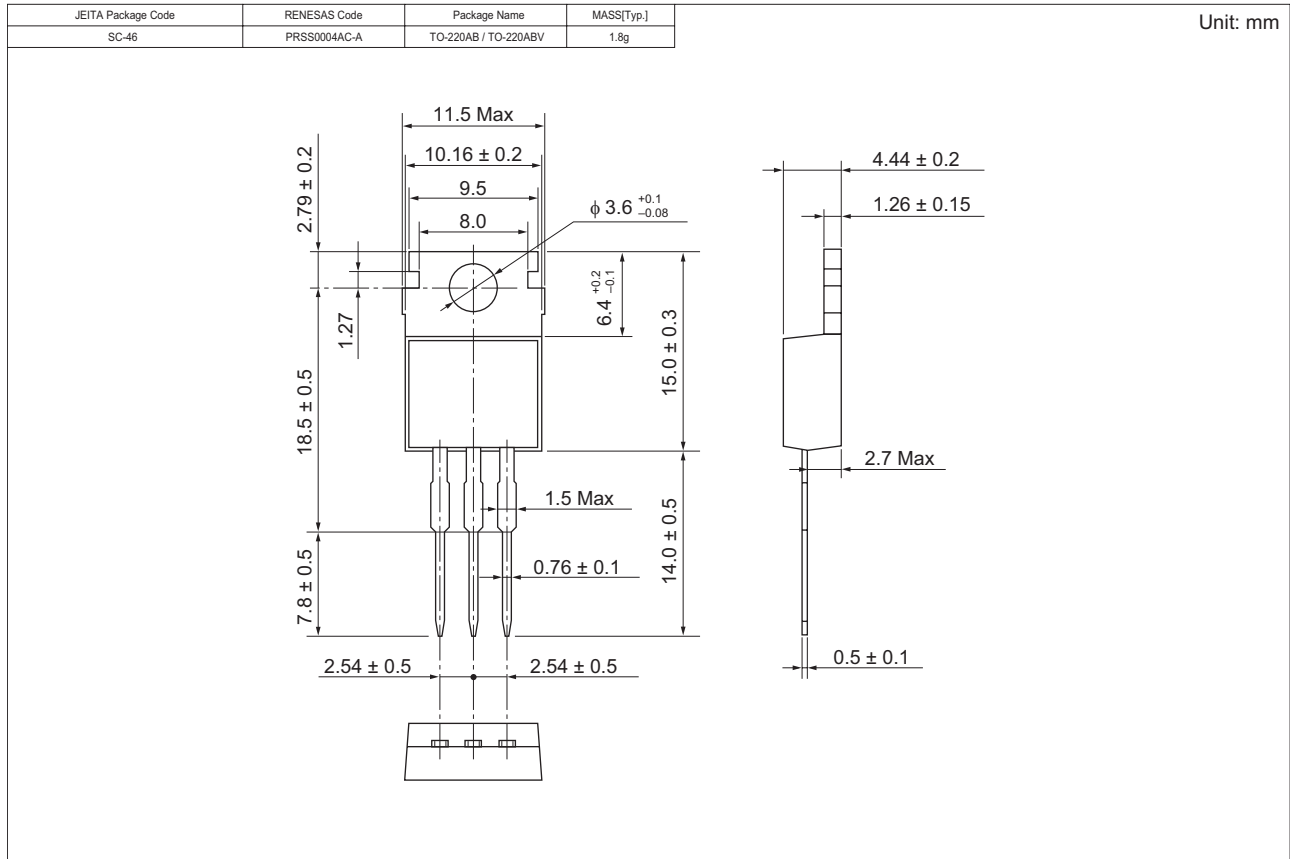
Switching Time Test Circuit



Waveforms



Package Dimensions



Ordering Information

Part Name	Quantity	Shipping Container
2SK1338-E	500 pcs	Box (Sack)

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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