

## 2SK3081

Silicon N Channel MOS FET  
High Speed Power Switching

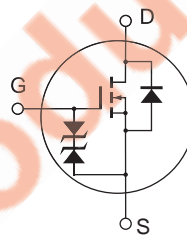
REJ03G1064-0400  
(Previous: ADE-208-636A)  
Rev.4.00  
Sep 07, 2005

### Features

- Low on-resistance  
 $R_{DS(on)} = 10 \text{ m}\Omega$  typ.
- 4 V gate drive devices.
- High speed switching

### 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	$V_{DSS}$	30	V
Gate to source voltage	$V_{GSS}$	±20	V
Drain current	$I_D$	45	A
Drain peak current	$I_{D(pulse)}$ <sup>Note1</sup>	180	A
Body-drain diode reverse drain current	$I_{DR}$	45	A
Channel dissipation	$P_{ch}$ <sup>Note2</sup>	75	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  $T_c = 25^\circ C$

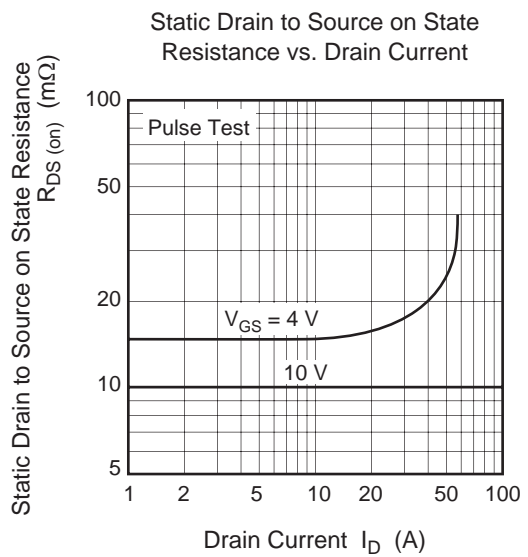
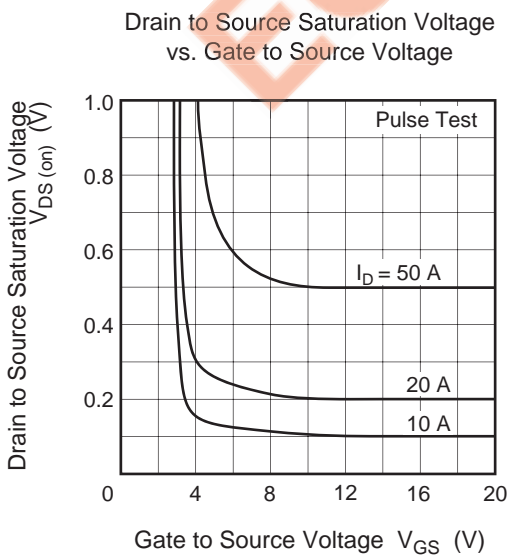
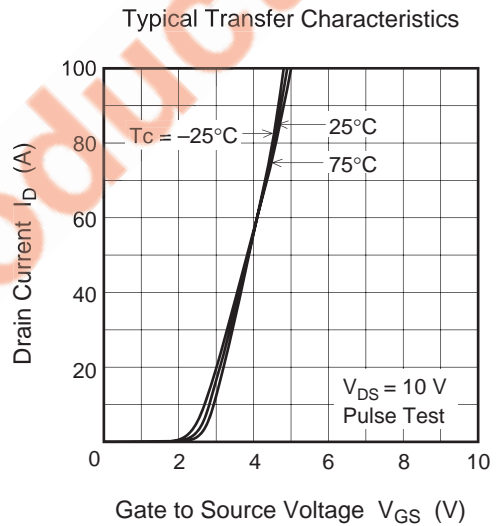
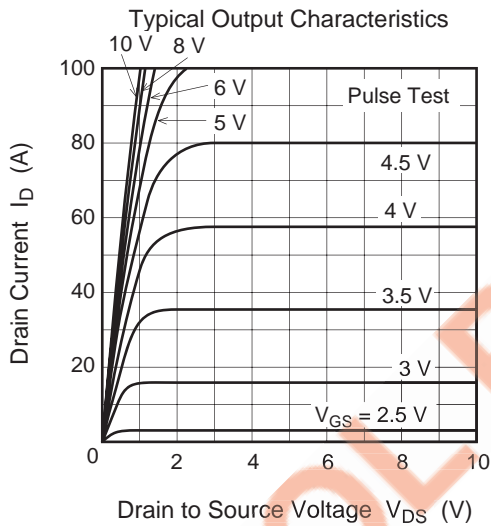
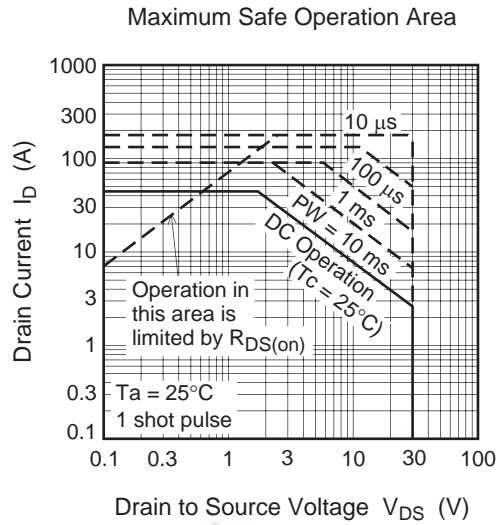
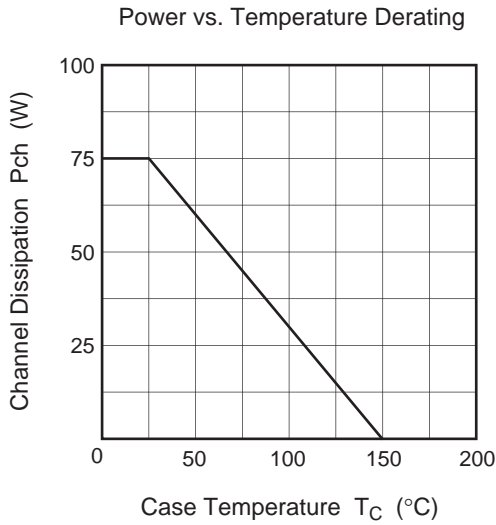
## Electrical Characteristics

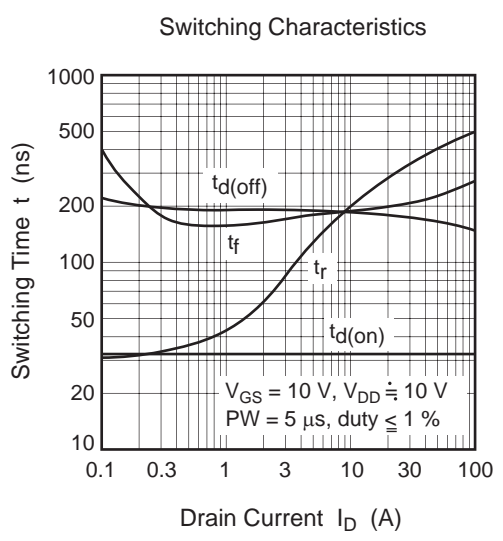
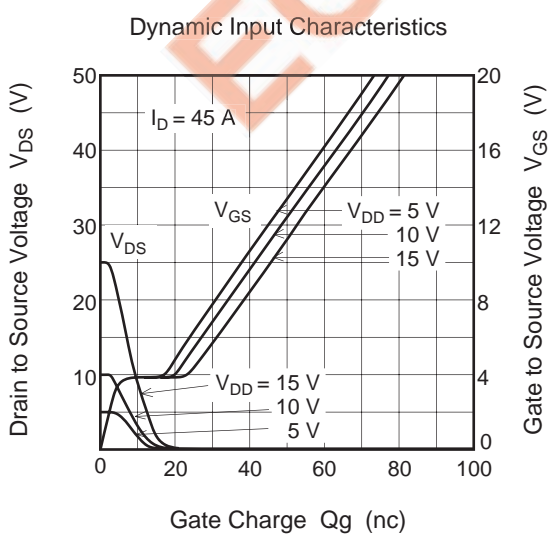
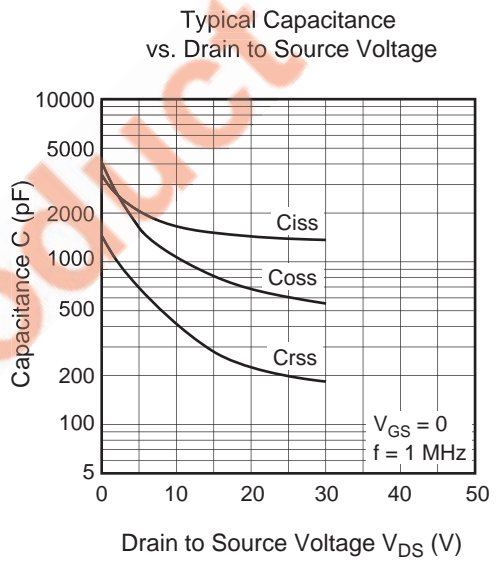
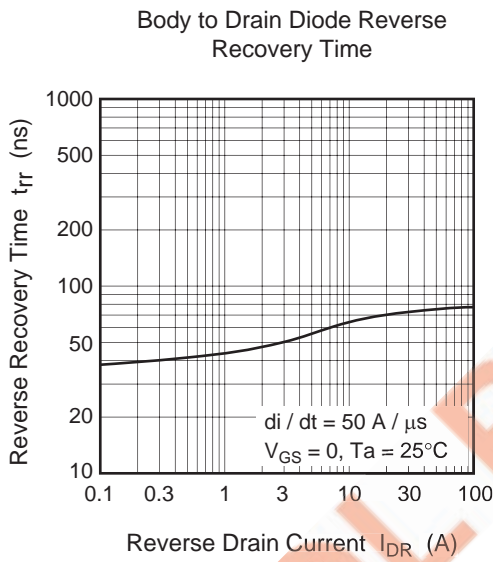
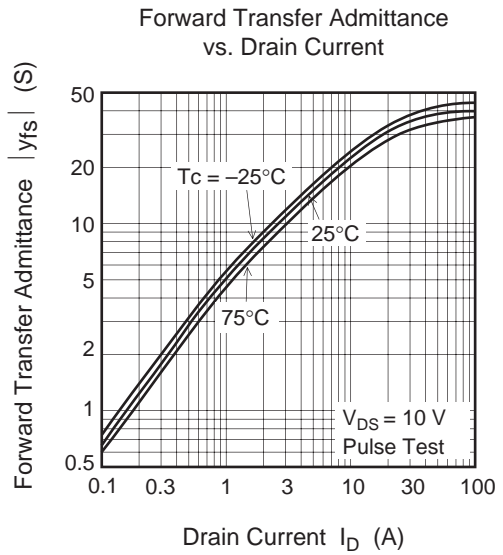
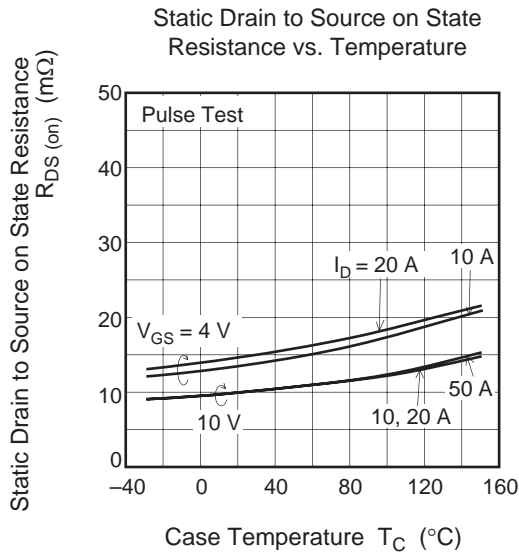
(Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	30	—	—	V	$I_D = 10\text{ mA}$ , $V_{GS} = 0$
Gate to source breakdown voltage	$V_{(BR)GSS}$	±20	—	—	V	$I_G = \pm 100\ \mu A$ , $V_{DS} = 0$
Zero gate voltage drain current	$I_{DSS}$	—	—	10	$\mu A$	$V_{DS} = 30\text{ V}$ , $V_{GS} = 0$
Gate to source leak current	$I_{GSS}$	—	—	±10	$\mu A$	$V_{GS} = \pm 16\text{ V}$ , $V_{DS} = 0$
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	$R_{DS(on)}$	—	10	14	m $\Omega$	$I_D = 20\text{ A}$ , $V_{GS} = 10\text{ V}$ <sup>Note3</sup>
	$R_{DS(on)}$	—	15	25	m $\Omega$	$I_D = 20\text{ A}$ , $V_{GS} = 4\text{ V}$ <sup>Note3</sup>
Forward transfer admittance	$ y_{fs} $	20	30	—	S	$I_D = 20\text{ A}$ , $V_{DS} = 10\text{ V}$ <sup>Note3</sup>
Input capacitance	$C_{iss}$	—	1570	—	pF	$V_{DS} = 10\text{ V}$ , $V_{GS} = 0$ , $f = 1\text{ MHz}$
Output capacitance	$C_{oss}$	—	1100	—	pF	
Reverse transfer capacitance	$C_{rss}$	—	410	—	pF	
Turn-on delay time	$t_{d(on)}$	—	32	—	ns	$V_{GS} = 10\text{ V}$ , $I_D = 20\text{ A}$ , $R_L = 0.5\ \Omega$
Rise time	$t_r$	—	300	—	ns	
Turn-off delay time	$t_{d(off)}$	—	180	—	ns	
Fall time	$t_f$	—	200	—	ns	
Body-drain diode forward voltage	$V_{DF}$	—	1.0	—	V	$I_F = 45\text{ A}$ , $V_{GS} = 0$
Body-drain diode reverse recovery time	$t_{rr}$	—	75	—	ns	$I_F = 45\text{ A}$ , $V_{GS} = 0$ $di_F/dt = 50\text{ A}/\mu s$

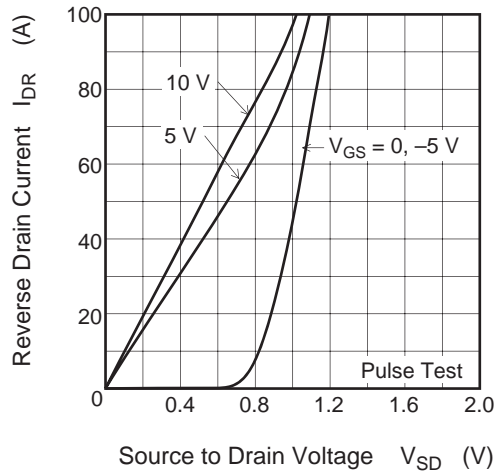
Note: 3. Pulse test

Main Characteristics

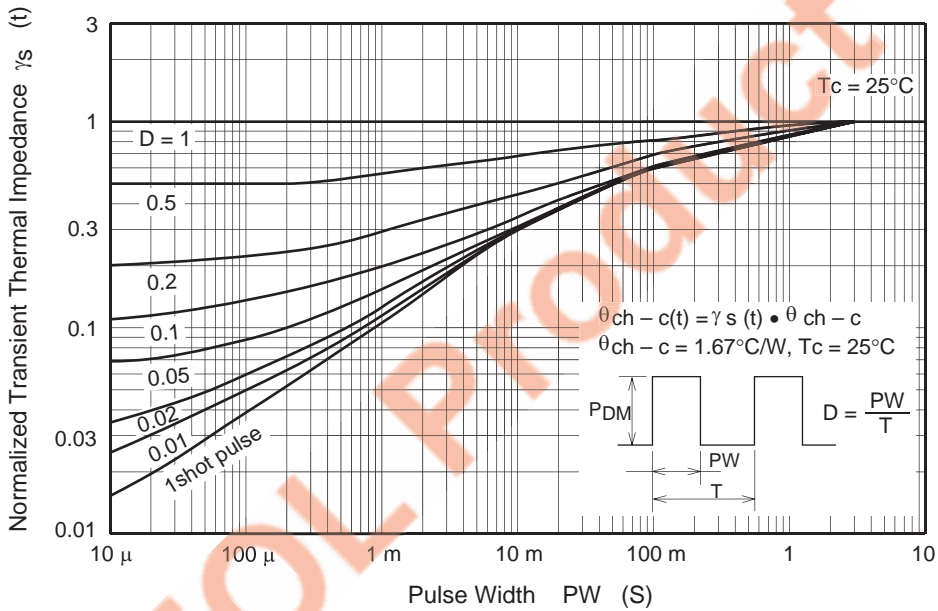




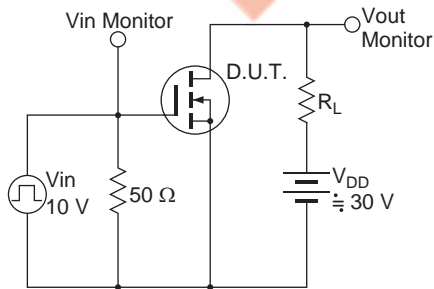
Reverse Drain Current vs. Source to Drain Voltage



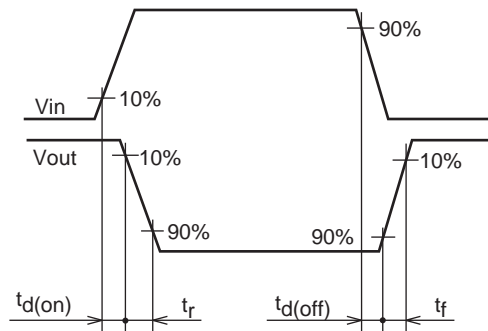
Normalized Transient Thermal Impedance vs. Pulse Width



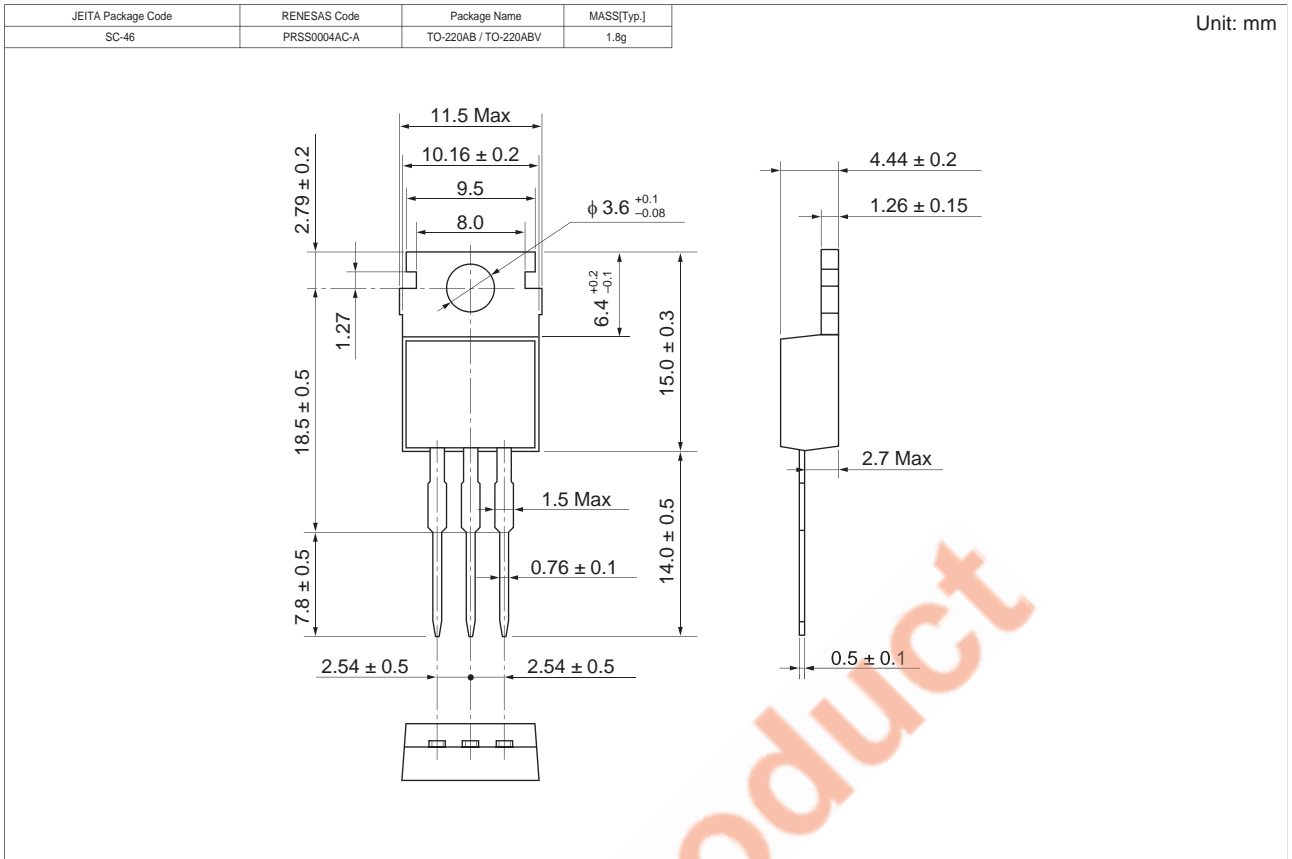
Switching Time Test Circuit



Waveform



### Package Dimensions



### Ordering Information

Part Name	Quantity	Shipping Container
2SK3081-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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Tel: <1> (408) 382-7500, Fax: <1> (408) 382-7501

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#### **Renesas Technology Taiwan Co., Ltd.**

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Tel: <886> (2) 2715-2888, Fax: <886> (2) 2713-2999

#### **Renesas Technology (Shanghai) Co., Ltd.**

Unit2607 Ruijing Building, No.205 Maoming Road (S), Shanghai 200020, China  
Tel: <86> (21) 6472-1001, Fax: <86> (21) 6415-2952

#### **Renesas Technology Singapore Pte. Ltd.**

1 Harbour Front Avenue, #06-10, Keppel Bay Tower, Singapore 098632  
Tel: <65> 6213-0200, Fax: <65> 6278-8001

#### **Renesas Technology Korea Co., Ltd.**

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Tel: <82> 2-796-3115, Fax: <82> 2-796-2145

#### **Renesas Technology Malaysia Sdn. Bhd.**

Unit 906, Block B, Menara Amcorp, Amcorp Trade Centre, No.18, Jalan Persiaran Barat, 46050 Petaling Jaya, Selangor Darul Ehsan, Malaysia  
Tel: <603> 7955-9390, Fax: <603> 7955-9510