

# 2SK1400A

Silicon N Channel MOS FET  
High Speed Power Switching

REJ03G0940-0300

Rev.3.00

Apr 01, 2010

## Features

- Low on-resistance  
RDS(on) = 0.6 Ω typ. (at I<sub>D</sub> = 4 A, V<sub>GS</sub> = 10 V, T<sub>a</sub> = 25°C)
- High speed switching
- Low drive current

## Outline

RENESAS Package code: PRSS0004AC-A  
(Package name: TO-220AB)

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

## Absolute Maximum Ratings

(T<sub>a</sub> = 25°C)

Item	Symbol	Ratings	Unit
Drain to source voltage	V <sub>DSS</sub>	350	V
Gate to source voltage	V <sub>GSS</sub>	±30	V
Drain current	I <sub>D</sub>	7	A
Drain peak current	I <sub>D(pulse)</sub> <sup>Note1</sup>	28	A
Body to drain diode reverse drain current	I <sub>DR</sub>	7	A
Channel dissipation	P <sub>ch</sub> <sup>Note2</sup>	50	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 T<sub>C</sub> = 25°C

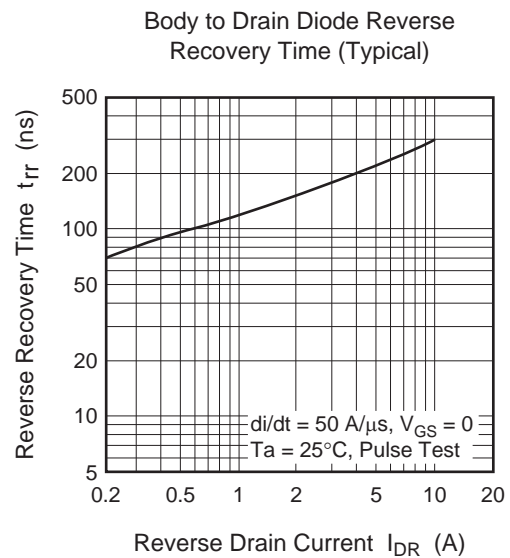
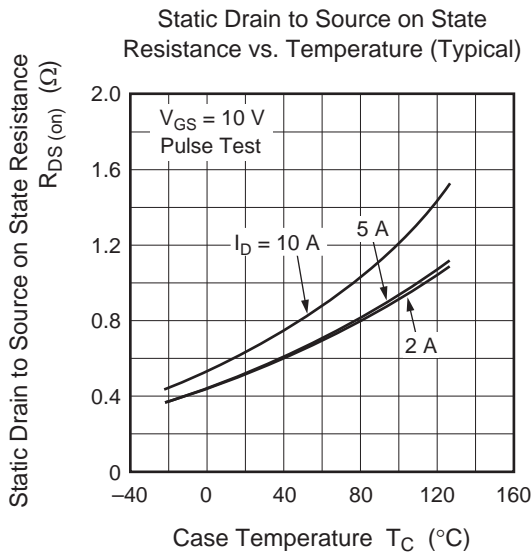
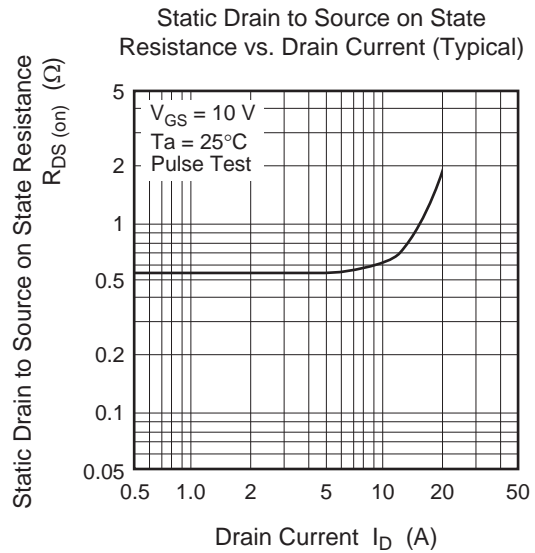
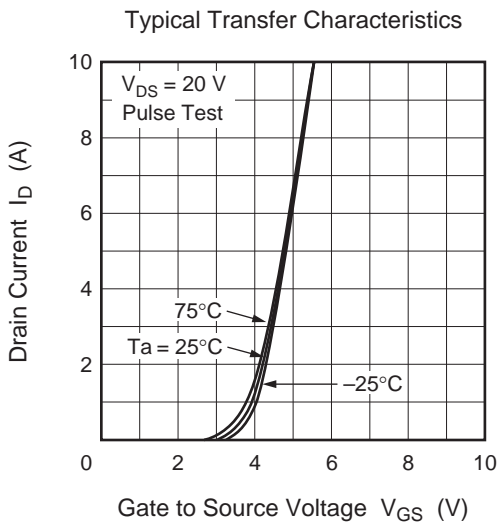
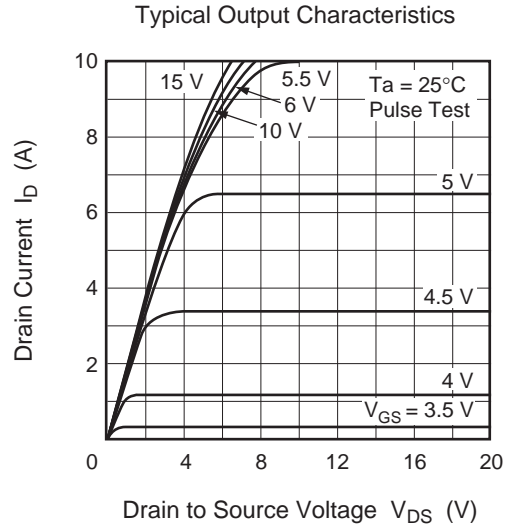
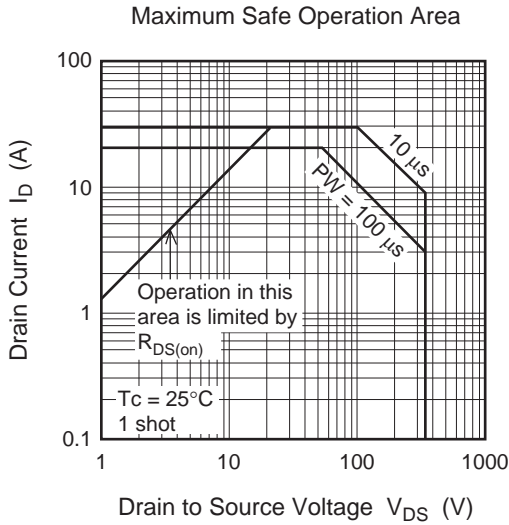
## Electrical Characteristics

(Ta = 25°C)

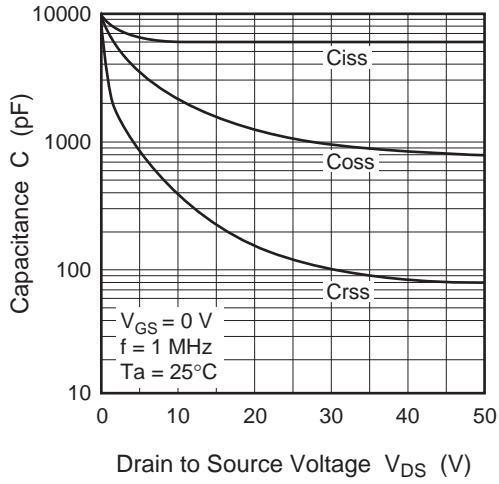
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	350	—	—	V	$I_D = 10 \text{ mA}$ , $V_{GS} = 0$
Gate to source breakdown voltage	$V_{(BR)GSS}$	$\pm 30$	—	—	V	$I_G = \pm 100 \text{ }\mu\text{A}$ , $V_{DS} = 0$
Gate to source leak current	$I_{GSS}$	—	—	$\pm 10$	$\mu\text{A}$	$V_{GS} = \pm 25 \text{ V}$ , $V_{DS} = 0$
Zero gate voltage drain current	$I_{DSS}$	—	—	250	$\mu\text{A}$	$V_{DS} = 280 \text{ V}$ , $V_{GS} = 0$
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	$R_{DS(on)}$	—	0.6	0.8	$\Omega$	$I_D = 4 \text{ A}$ , $V_{GS} = 10 \text{ V}$ <sup>Note3</sup>
Forward transfer admittance	$ y_{fs} $	3.0	5.0	—	S	$I_D = 4 \text{ A}$ , $V_{DS} = 10 \text{ V}$ <sup>Note3</sup>
Input capacitance	$C_{iss}$	—	635	—	pF	$V_{DS} = 10 \text{ V}$
Output capacitance	$C_{oss}$	—	230	—	pF	$V_{GS} = 0$
Reverse transfer capacitance	$C_{rss}$	—	40	—	pF	$f = 1 \text{ MHz}$
Turn-on delay time	$t_{d(on)}$	—	10	—	ns	$I_D = 4 \text{ A}$
Rise time	$t_r$	—	50	—	ns	$V_{GS} = 10 \text{ V}$
Turn-off delay time	$t_{d(off)}$	—	60	—	ns	$R_L = 7.5 \text{ }\Omega$
Fall time	$t_f$	—	40	—	ns	
Body to drain diode forward voltage	$V_{DF}$	—	1.0	—	V	$I_F = 7 \text{ A}$ , $V_{GS} = 0$ <sup>Note3</sup>
Body to drain diode reverse recovery time	$t_{rr}$	—	240	—	ns	$I_F = 7 \text{ A}$ , $V_{GS} = 0$ $di_F/dt = 100 \text{ A}/\mu\text{s}$

Note: 3. Pulse test

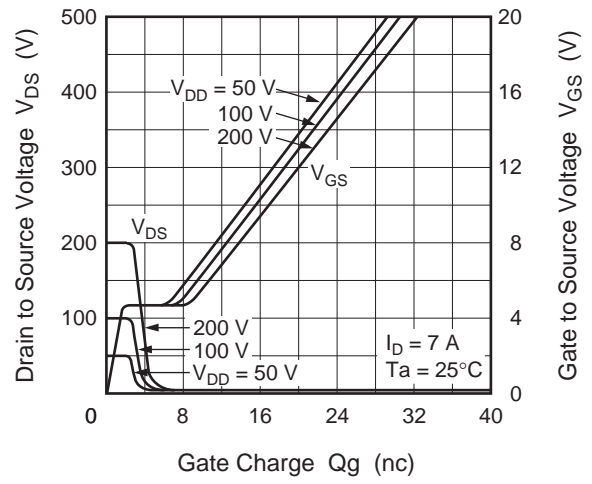
### Main Characteristics



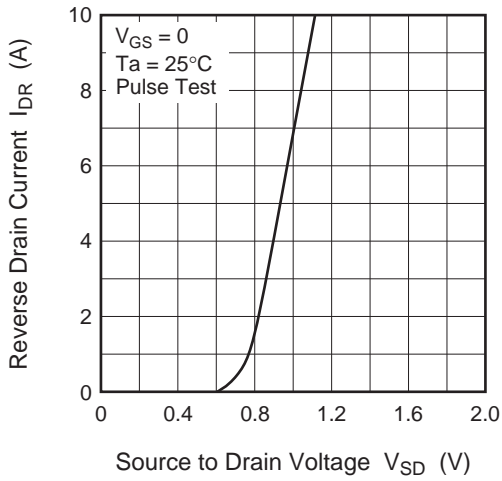
Typical Capacitance vs. Drain to Source Voltage

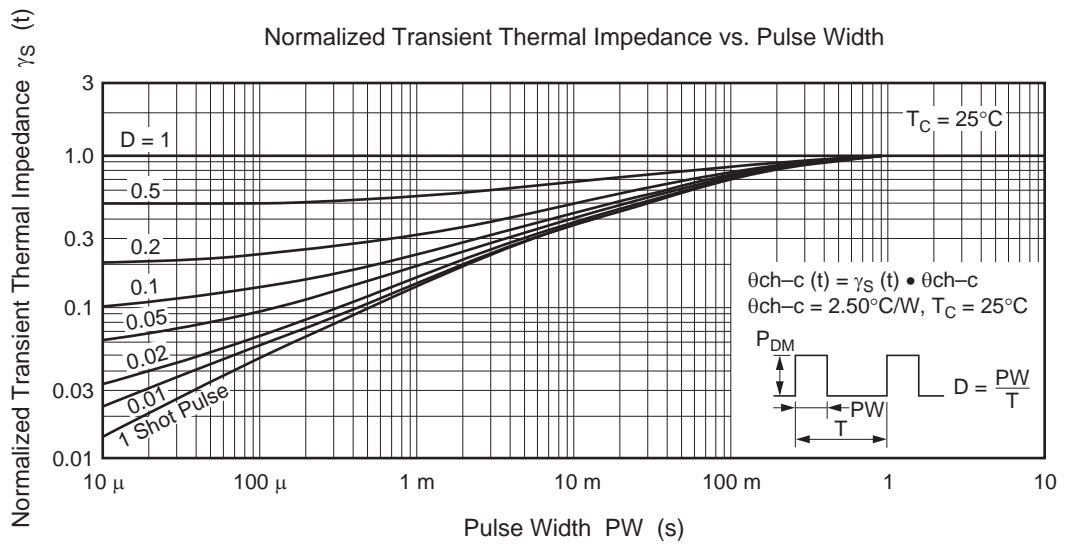


Dynamic Input Characteristics (Typical)

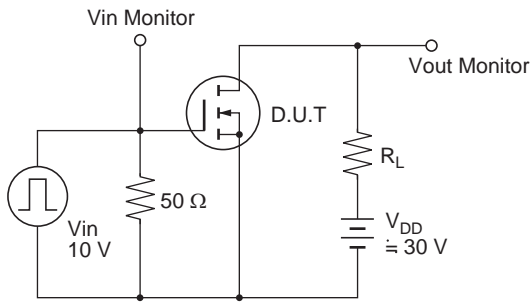


Reverse Drain Current vs. Source to Drain Voltage (Typical)

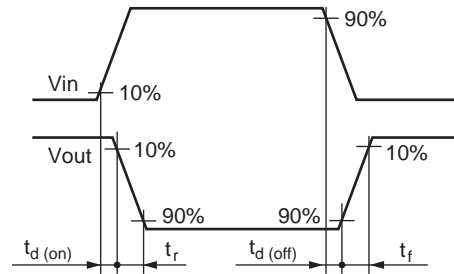




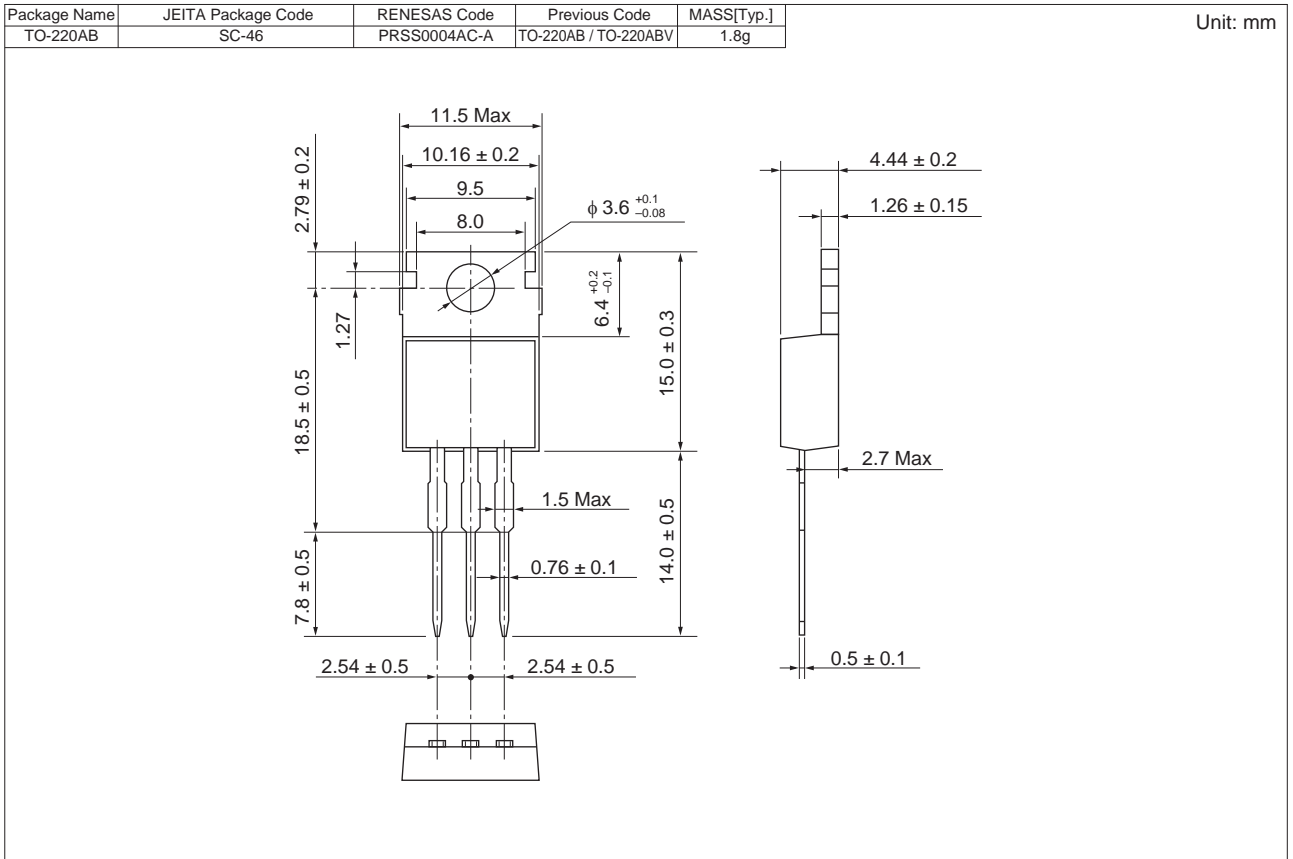
Switching Time Test Circuit



Waveforms



### Package Dimensions



### Ordering Information

Part No.	Quantity	Shipping Container
2SK1400A-E	600 pcs	Box (Tube)

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