

To all our customers

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Renesas Technology Corp.  
Customer Support Dept.  
April 1, 2003

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Keep safety first in your circuit designs!

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# 2SK1403, 2SK1403A

Silicon N-Channel MOS FET

**RENESAS**

ADE-208-1283 (Z)

1st. Edition

Mar. 2001

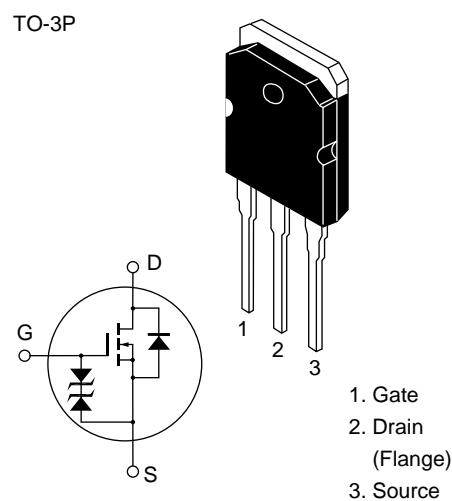
## Application

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



## Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Ratings	Unit
Drain to source voltage 2SK1403	$V_{DSS}$	600	V
		650	
Gate to source voltage	$V_{GSS}$	$\pm 30$	V
Drain current	$I_D$	8	A
Drain peak current	$I_{D(pulse)}$ <sup>*1</sup>	32	A
Body to drain diode reverse drain current	$I_{DR}$	8	A
Channel dissipation	$P_{ch}$ <sup>*2</sup>	100	W
Channel temperature	$T_{ch}$	150	°C
Storage temperature	$T_{stg}$	-55 to +150	°C

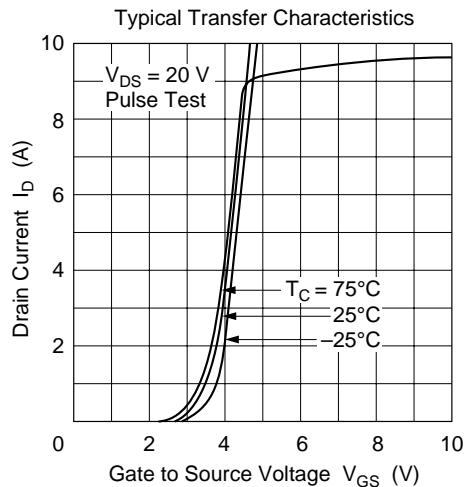
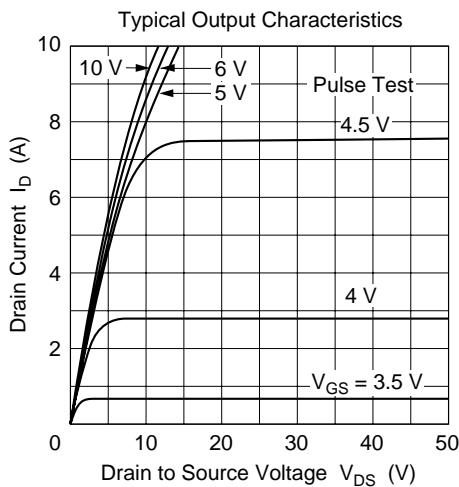
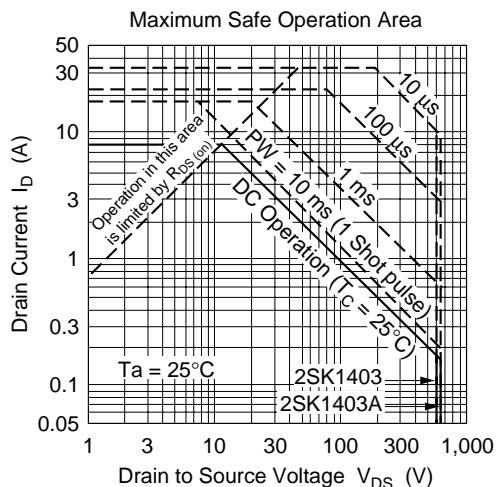
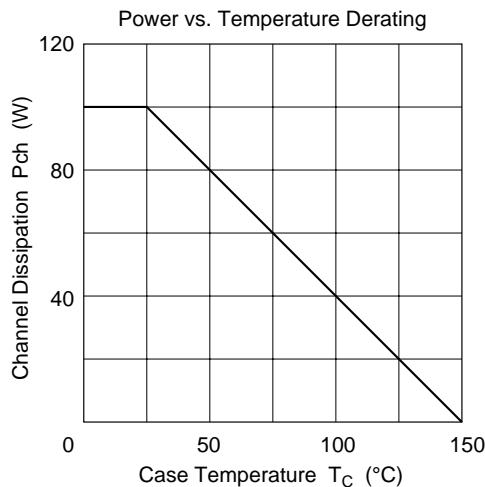
Notes: 1. PW ≤ 10 μs, duty cycle ≤ 1%

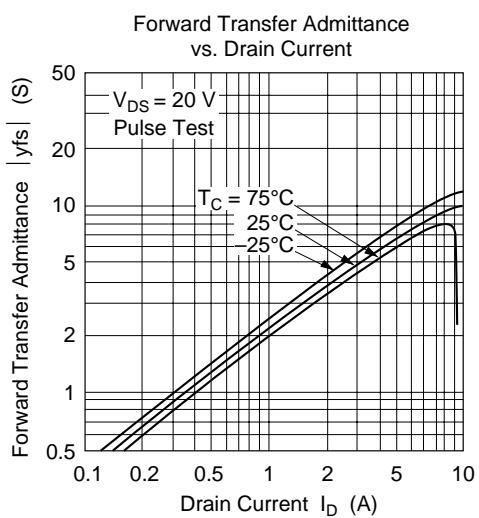
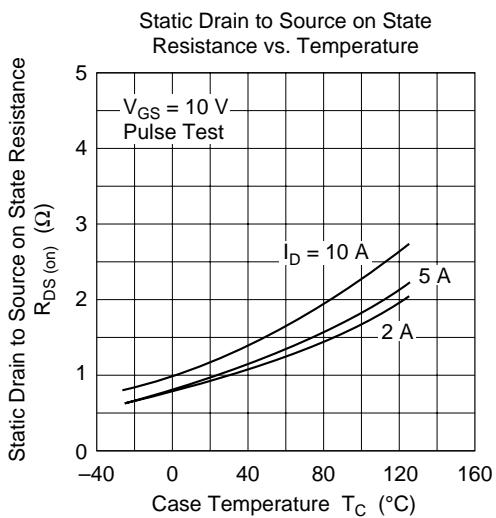
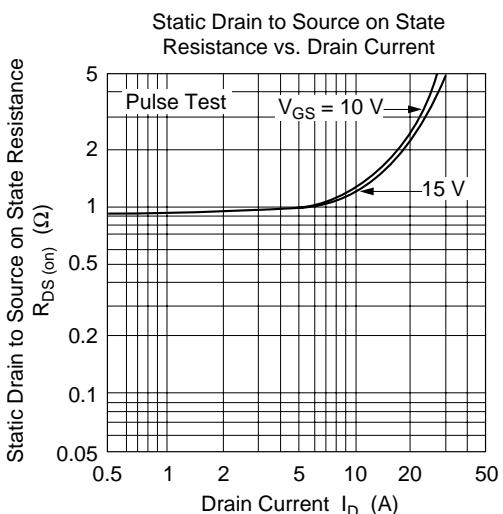
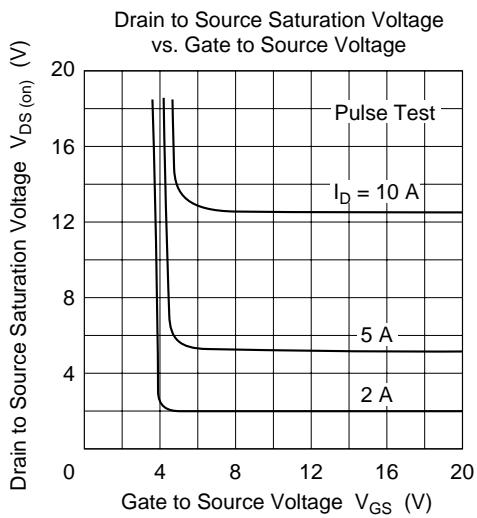
2. Value at  $T_c = 25^\circ\text{C}$

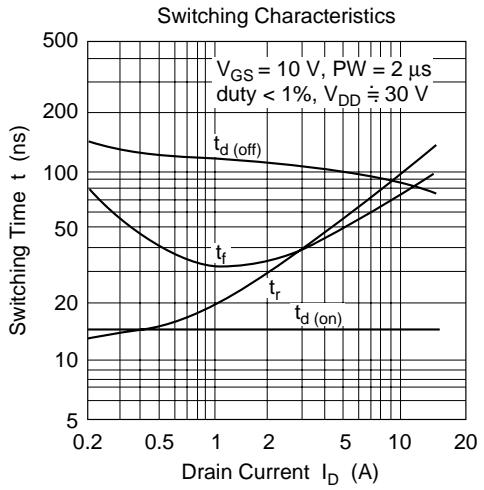
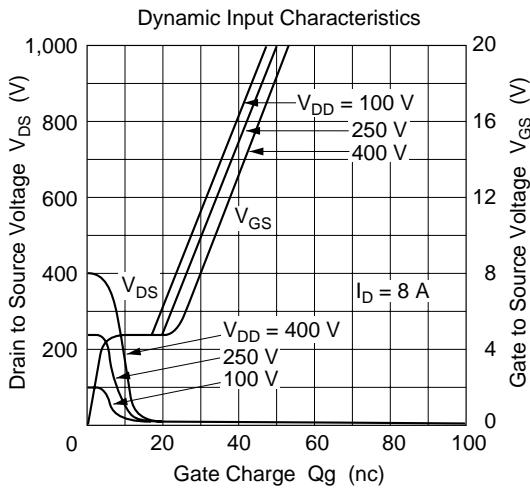
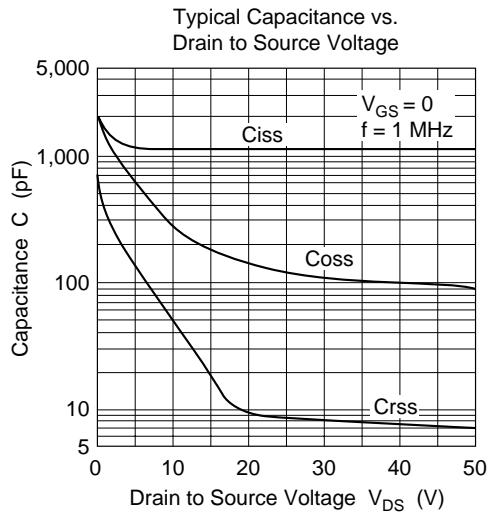
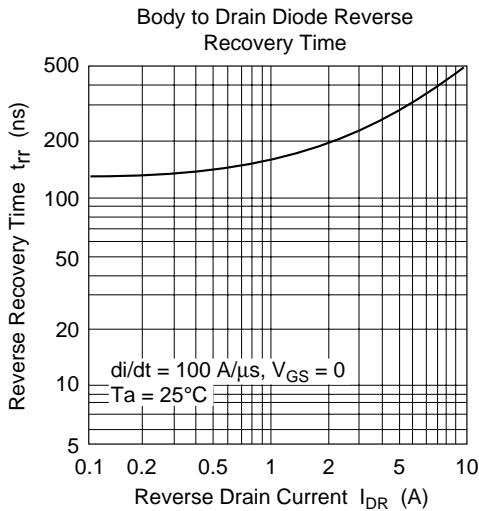
## Electrical Characteristics (Ta = 25°C)

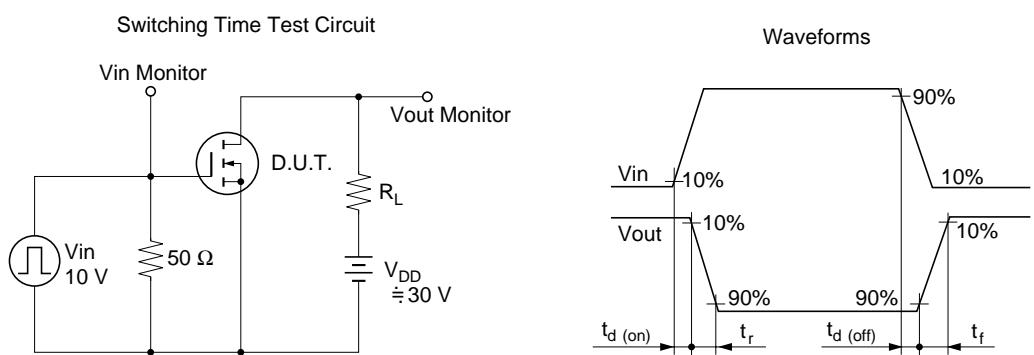
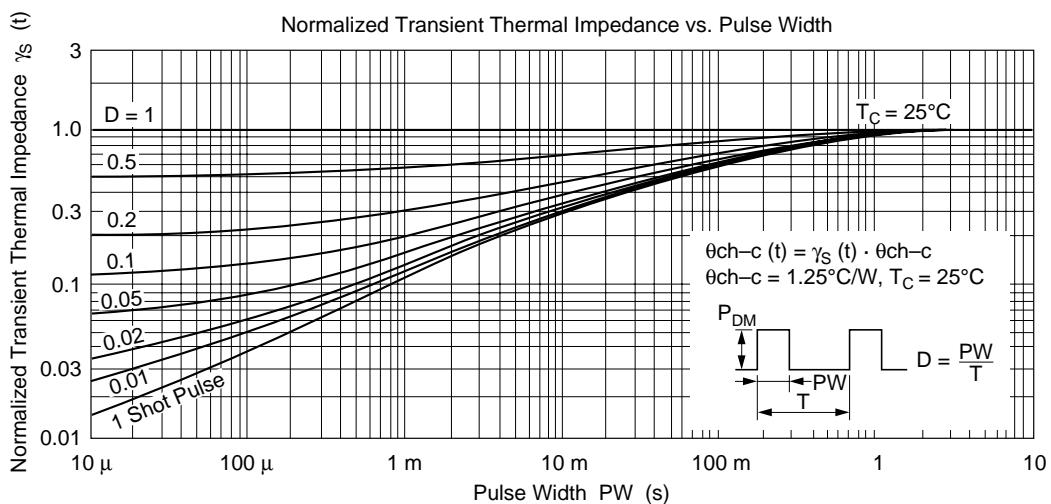
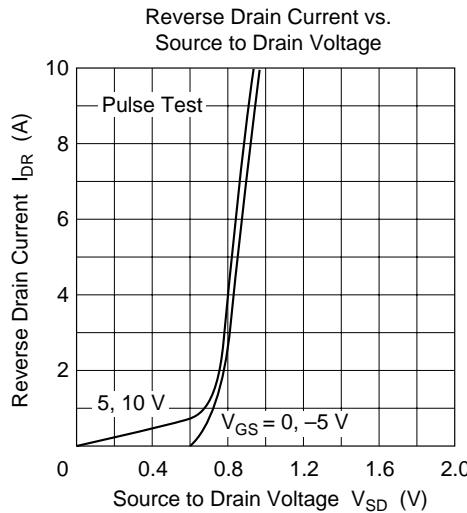
Item		Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	K1403 K1403A	V <sub>(BR)DSS</sub>	600	—	—	V	I <sub>D</sub> = 10 mA, V <sub>GS</sub> = 0
Gate to source breakdown voltage		V <sub>(BR)GSS</sub>	650	—	—	V	I <sub>G</sub> = ±100 μA, V <sub>DS</sub> = 0
Gate to source leak current		I <sub>GSS</sub>	—	—	±10	μA	V <sub>GS</sub> = ±25 V, V <sub>DS</sub> = 0
Zero gate voltage drain current	K1403 K1403A	I <sub>DSS</sub>	—	—	250	μA	V <sub>DS</sub> = 500 V, V <sub>GS</sub> = 0
							V <sub>DS</sub> = 550 V, V <sub>GS</sub> = 0
Gate to source cutoff voltage		V <sub>GS(off)</sub>	2.0	—	3.0	V	I <sub>D</sub> = 1 mA, V <sub>DS</sub> = 10 V
Static drain to source on state resistance	K1403 K1403A	R <sub>DS(on)</sub>	—	0.9	1.3	Ω	I <sub>D</sub> = 4 A, V <sub>GS</sub> = 10 V * <sup>1</sup>
			—	1.0	1.4		
Forward transfer admittance		y <sub>fs</sub>	4.0	6.5	—	S	I <sub>D</sub> = 4 A, V <sub>DS</sub> = 10 V * <sup>1</sup>
Input capacitance		C <sub>iss</sub>	—	1180	—	pF	V <sub>DS</sub> = 10 V, V <sub>GS</sub> = 0,
Output capacitance		C <sub>oss</sub>	—	265	—	pF	f = 1 MHz
Reverse transfer capacitance		C <sub>rss</sub>	—	50	—	pF	
Turn-on delay time		t <sub>d(on)</sub>	—	15	—	ns	I <sub>D</sub> = 4 A, V <sub>GS</sub> = 10 V,
Rise time		t <sub>r</sub>	—	50	—	ns	R <sub>L</sub> = 7.5 Ω
Turn-off delay time		t <sub>d(off)</sub>	—	105	—	ns	
Fall time		t <sub>f</sub>	—	45	—	ns	
Body to drain diode forward voltage		V <sub>DF</sub>	—	0.95	—	V	I <sub>F</sub> = 8 A, V <sub>GS</sub> = 0
Body to drain diode reverse recovery time		t <sub>rr</sub>	—	420	—	ns	I <sub>F</sub> = 8 A, V <sub>GS</sub> = 0, di <sub>F</sub> /dt = 100 A/μs

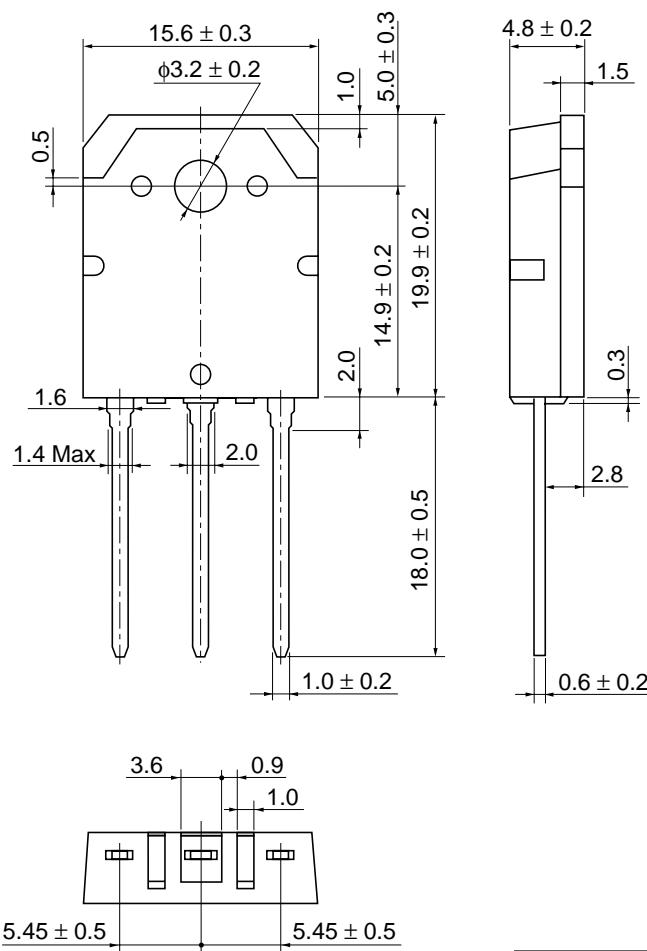
Note: 1. Pulse test





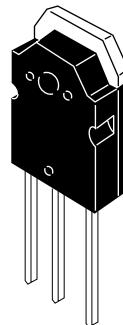




**Package Dimensions**

As of January, 2001

Unit: mm



Hitachi Code	TO-3P
JEDEC	—
EIAJ	Conforms
Mass (reference value)	5.0 g

## Cautions

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