

# 2SK1403, 2SK1403A

Silicon N-Channel MOS FET

# HITACHI

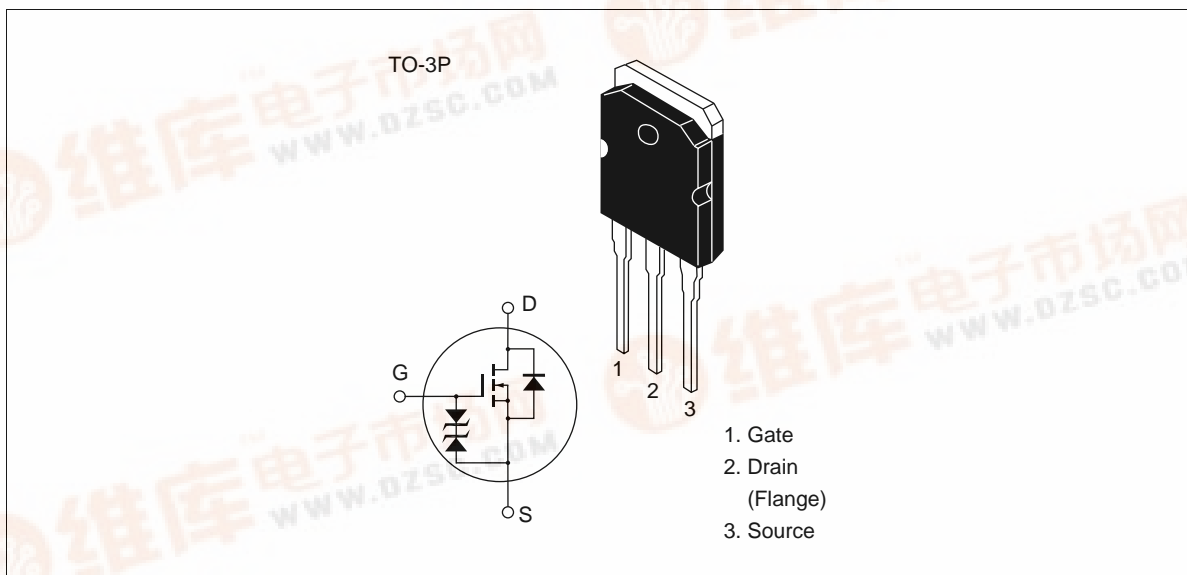
## Application

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



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## 2SK1403, 2SK1403A

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

Item		Symbol	Ratings	Unit
Drain to source voltage	2SK1403	$V_{DSS}$	600	V
	2SK1403A		650	
Gate to source voltage		$V_{GSS}$	±30	V
Drain current		$I_D$	8	A
Drain peak current		$I_{D(pulse)}^{*1}$	32	A
Body to drain diode reverse drain current		$I_{DR}$	8	A
Channel dissipation		$P_{ch}^{*2}$	100	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  $T_c = 25^\circ C$

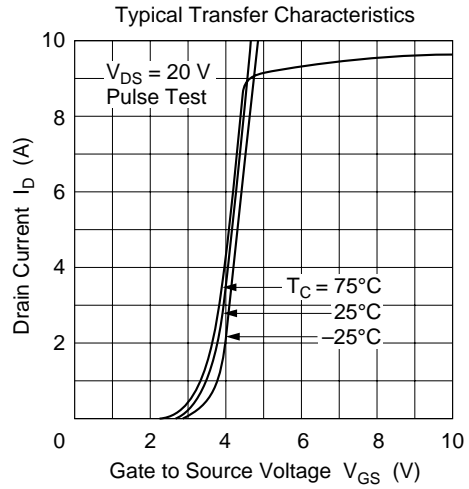
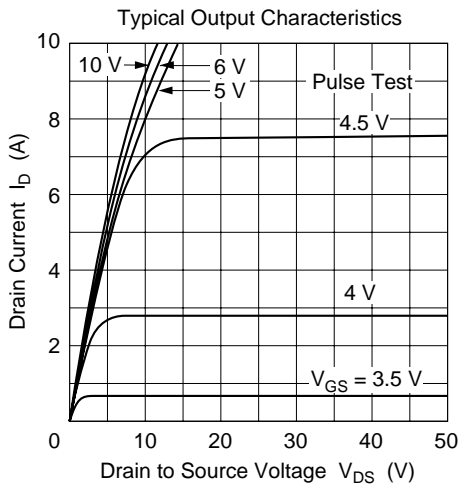
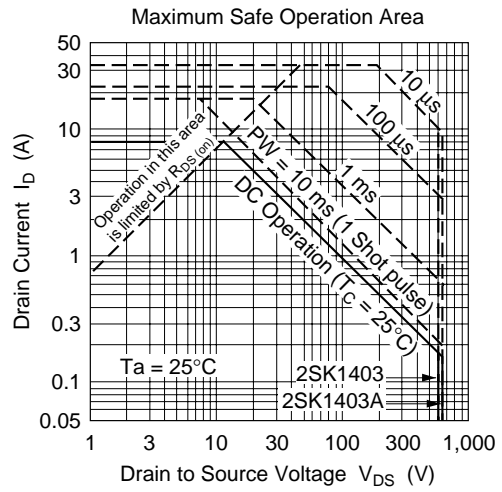
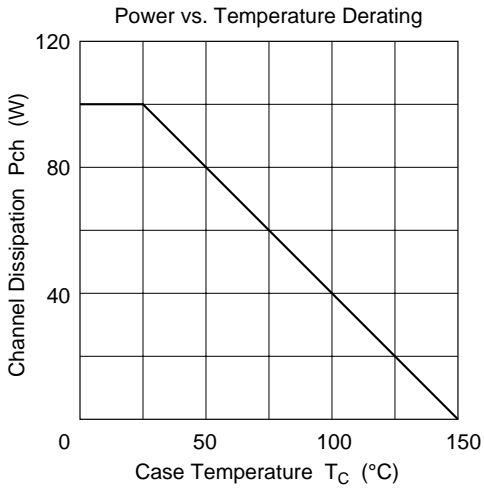
## 2SK1403, 2SK1403A

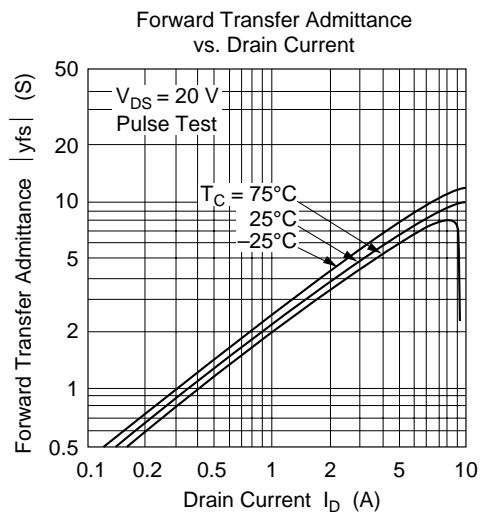
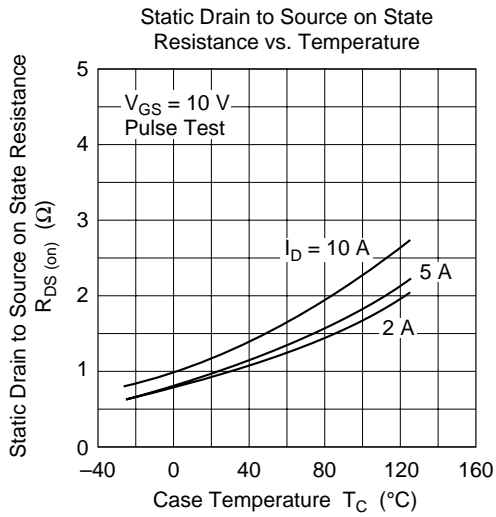
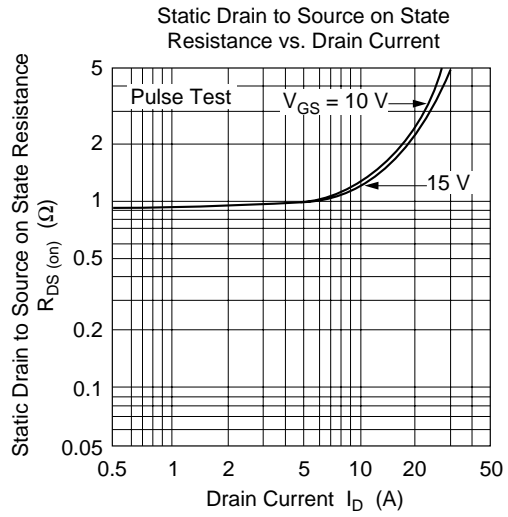
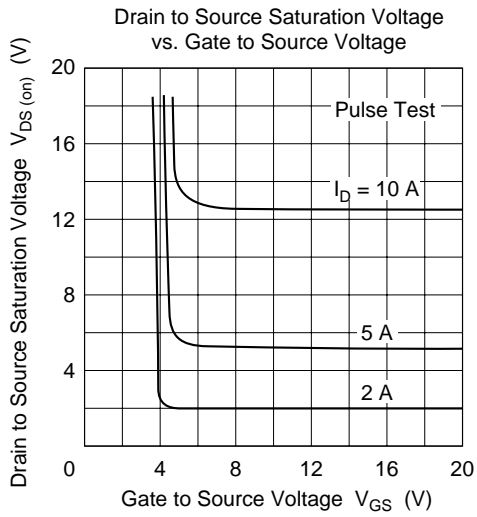
### Electrical Characteristics (Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	K1403 K1403A	$V_{(BR)DSS}$ 600 650	—	—	V	$I_D = 10 \text{ mA}, V_{GS} = 0$
Gate to source breakdown voltage		$V_{(BR)GSS}$ $\pm 30$	—	—	V	$I_G = \pm 100 \mu\text{A}, V_{DS} = 0$
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	K1403 K1403A	$I_{DSS}$	—	250	$\mu\text{A}$	$V_{DS} = 500 \text{ V}, V_{GS} = 0$ $V_{DS} = 550 \text{ V}, V_{GS} = 0$
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	K1403 K1403A	$R_{DS(on)}$	— 0.9 1.0	1.3 1.4	$\Omega$	$I_D = 4 \text{ A}, V_{GS} = 10 \text{ V}^{*1}$
Forward transfer admittance		$ y_{fs} $	4.0	6.5	S	$I_D = 4 \text{ A}, V_{DS} = 10 \text{ V}^{*1}$
Input capacitance		$C_{iss}$	—	1180	pF	$V_{DS} = 10 \text{ V}, V_{GS} = 0,$
Output capacitance		$C_{oss}$	—	265	pF	$f = 1 \text{ MHz}$
Reverse transfer capacitance		$C_{rss}$	—	50	pF	
Turn-on delay time		$t_{d(on)}$	—	15	ns	$I_D = 4 \text{ A}, V_{GS} = 10 \text{ V},$
Rise time		$t_r$	—	50	ns	$R_L = 7.5 \Omega$
Turn-off delay time		$t_{d(off)}$	—	105	ns	
Fall time		$t_f$	—	45	ns	
Body to drain diode forward voltage		$V_{DF}$	—	0.95	V	$I_F = 8 \text{ A}, V_{GS} = 0$
Body to drain diode reverse recovery time		$t_{rr}$	—	420	ns	$I_F = 8 \text{ A}, V_{GS} = 0,$ $di_F/dt = 100 \text{ A}/\mu\text{s}$

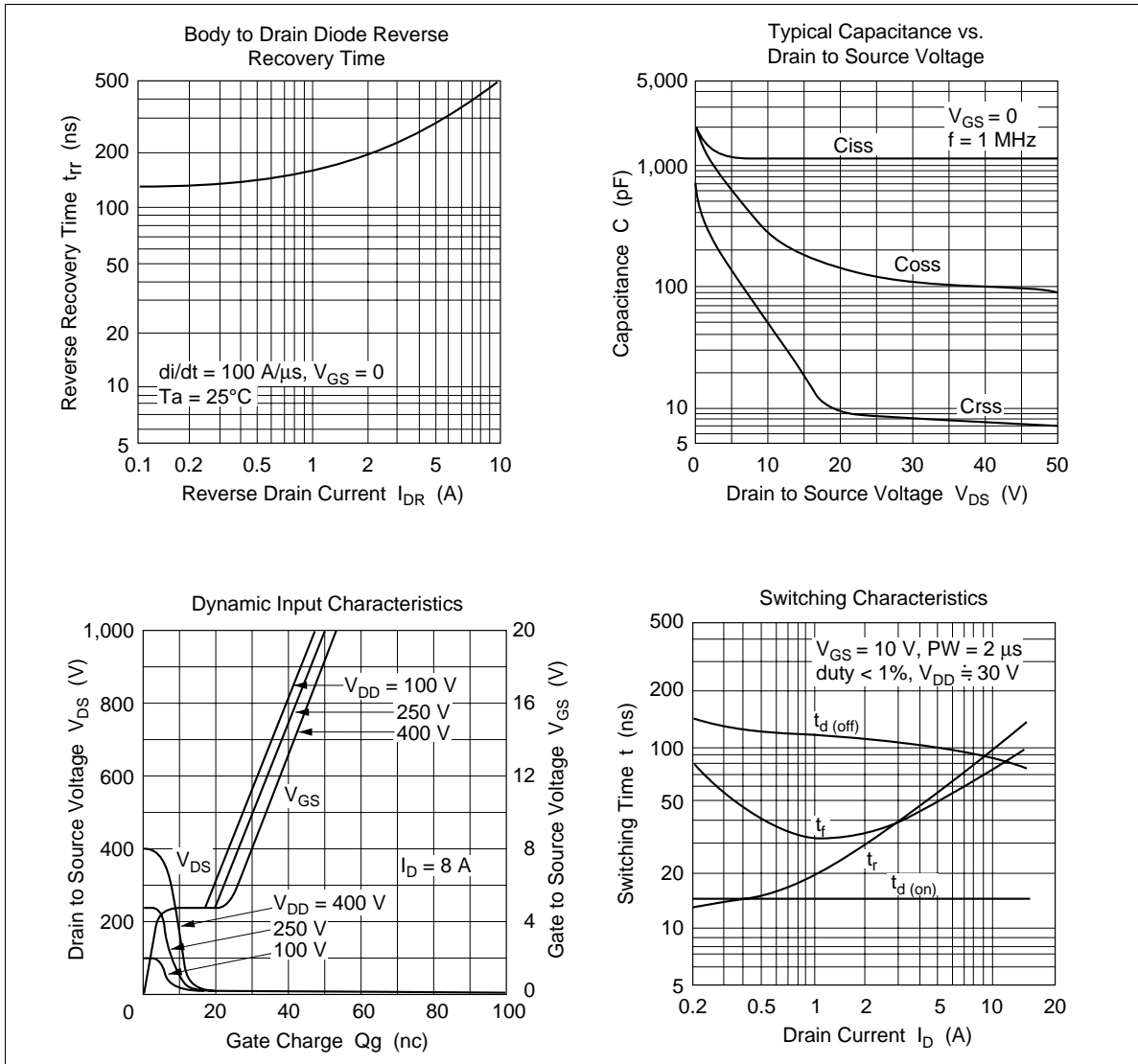
Note: 1. Pulse test

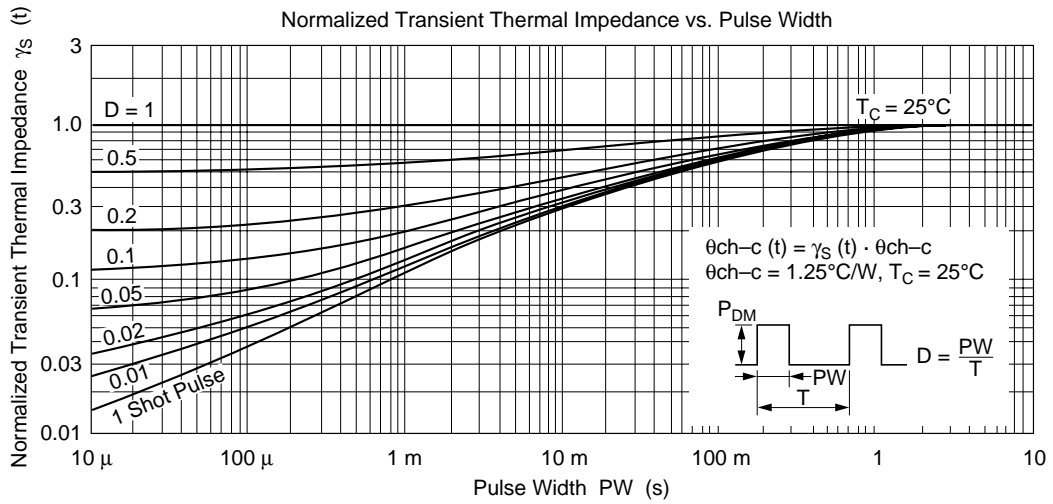
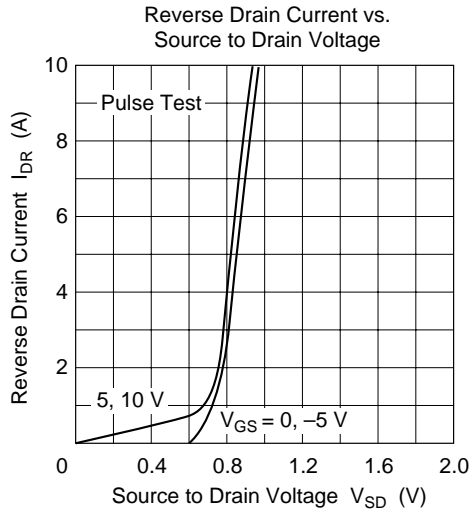
# 2SK1403, 2SK1403A



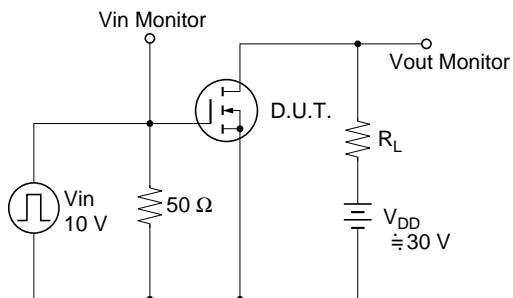


## 2SK1403, 2SK1403A

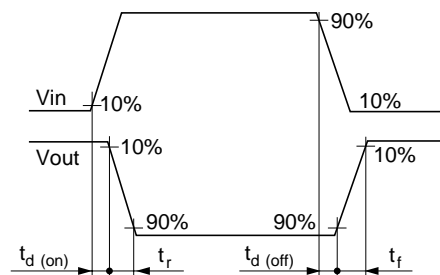




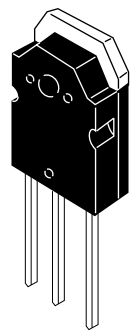
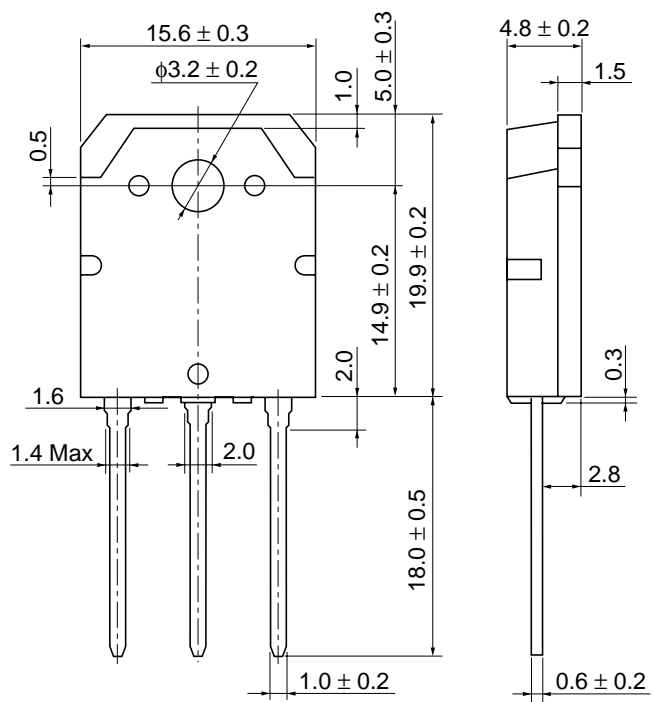
Switching Time Test Circuit



Waveforms



Unit: mm





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