
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

TO-3P



2SK1403, 2SK1403A

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		Tch	150	°C
Storage temperature		Tstg	-55 to +150	°C

Notes: 1. $PW \leq 10 \mu s$, duty cycle $\leq 1\%$

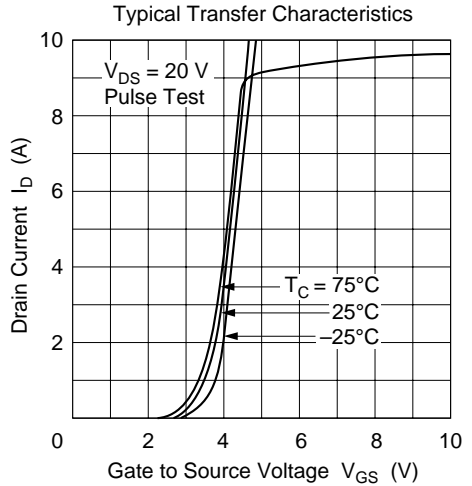
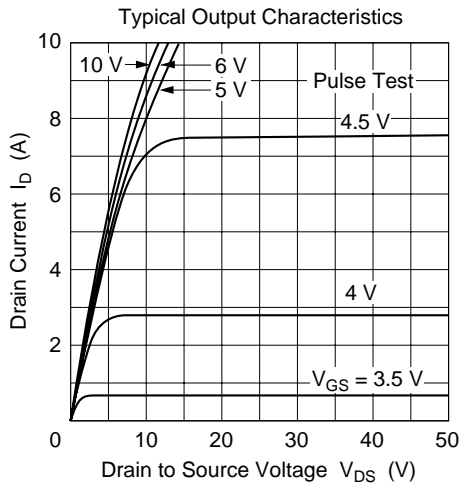
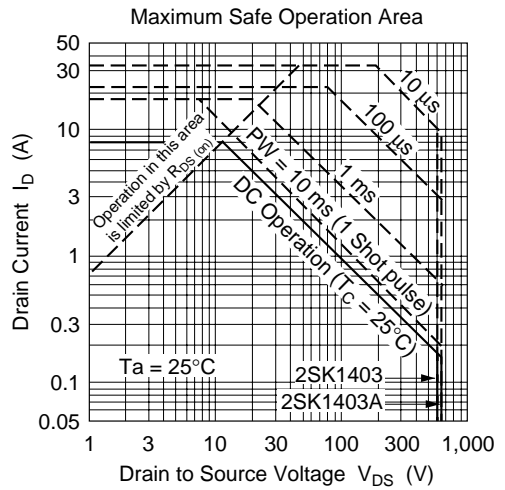
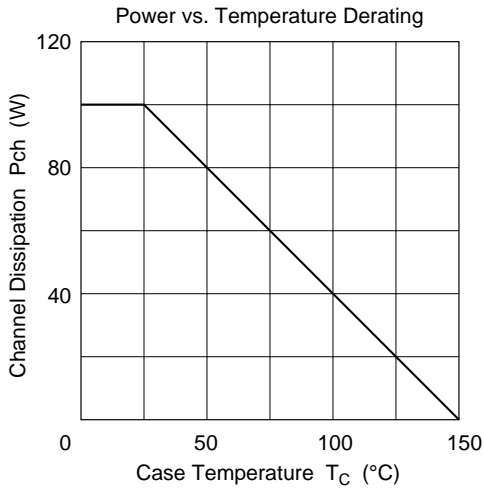
2. Value at $T_c = 25^\circ C$

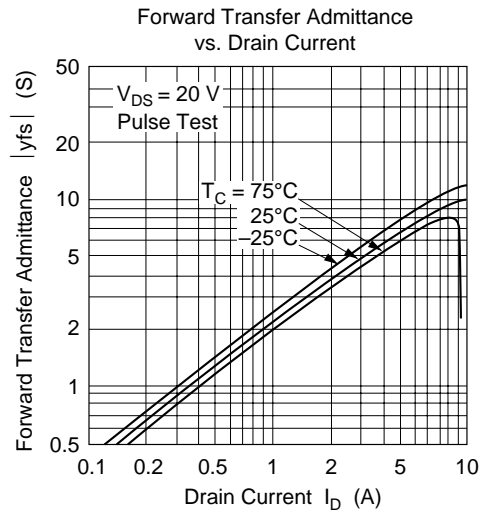
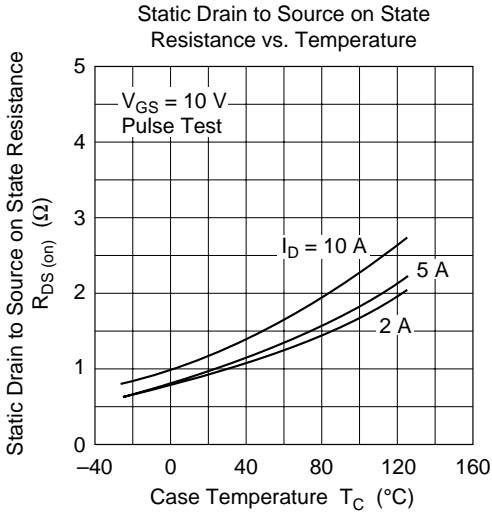
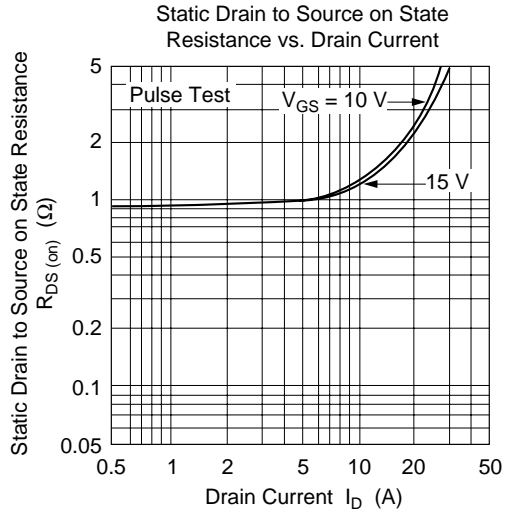
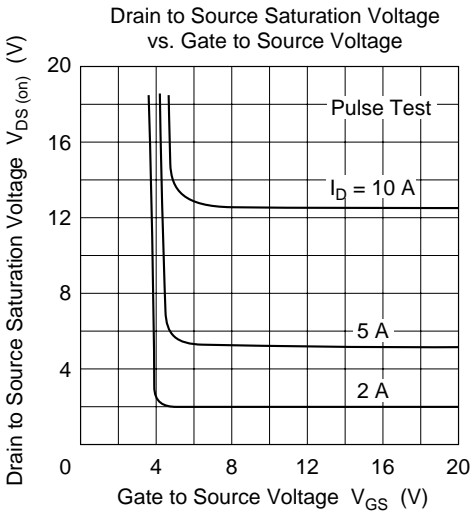
Electrical Characteristics (Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	K1403 K1403A	$V_{(BR)DSS}$	600	—	—	V $I_D = 10 \text{ mA}, V_{GS} = 0$
Gate to source breakdown voltage		$V_{(BR)GSS}$	±30	—	—	V $I_G = \pm 100 \text{ } \mu\text{A}, V_{DS} = 0$
Gate to source leak current		I_{GSS}	—	—	±10	μA $V_{GS} = \pm 25 \text{ V}, V_{DS} = 0$
Zero gate voltage drain current	K1403 K1403A	I_{DSS}	—	—	250	μA $V_{DS} = 500 \text{ V}, V_{GS} = 0$ $V_{DS} = 550 \text{ V}, V_{GS} = 0$
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	1.3	Ω $I_D = 4 \text{ A}, V_{GS} = 10 \text{ V}^{*1}$
Forward transfer admittance		yfs	4.0	6.5	—	S $I_D = 4 \text{ A}, V_{DS} = 10 \text{ V}^{*1}$
Input capacitance		Ciss	—	1180	—	pF $V_{DS} = 10 \text{ V}, V_{GS} = 0,$
Output capacitance		Coss	—	265	—	pF $f = 1 \text{ MHz}$
Reverse transfer capacitance		Crss	—	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 $R_L = 7.5 \text{ } \Omega$
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 $I_F = 8 \text{ A}, V_{GS} = 0,$ $di_F/dt = 100 \text{ A}/\mu\text{s}$

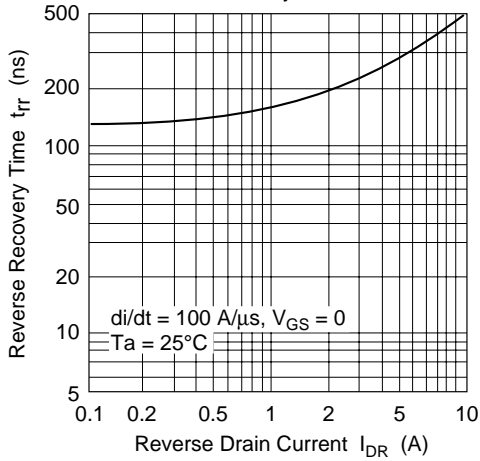
Note: 1. Pulse test

2SK1403, 2SK1403A

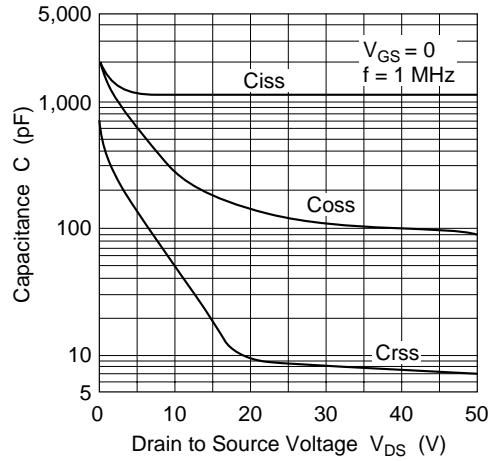




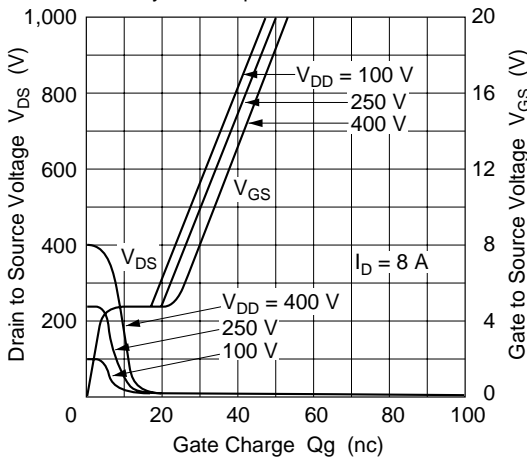
Body to Drain Diode Reverse Recovery Time



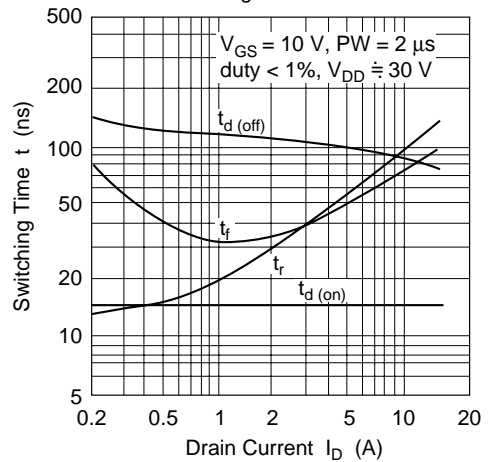
Typical Capacitance vs. Drain to Source Voltage

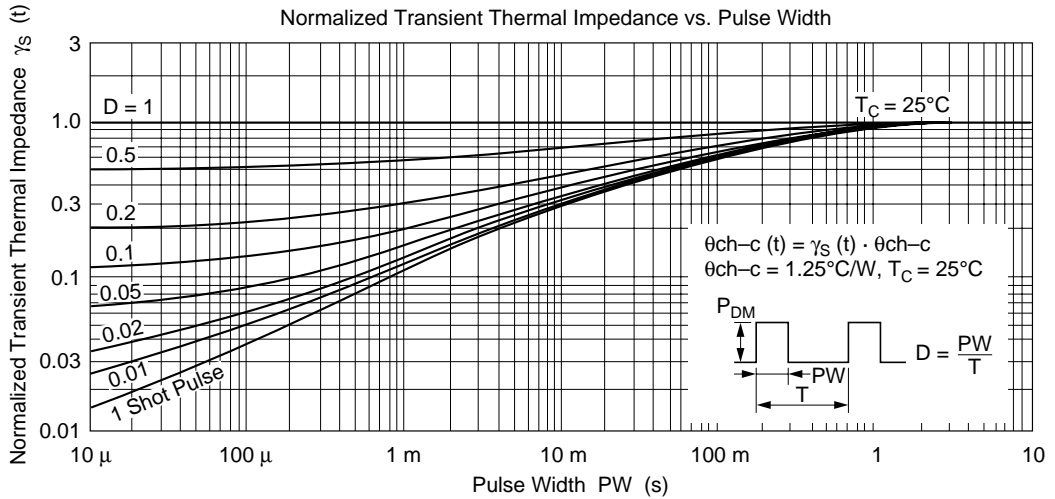
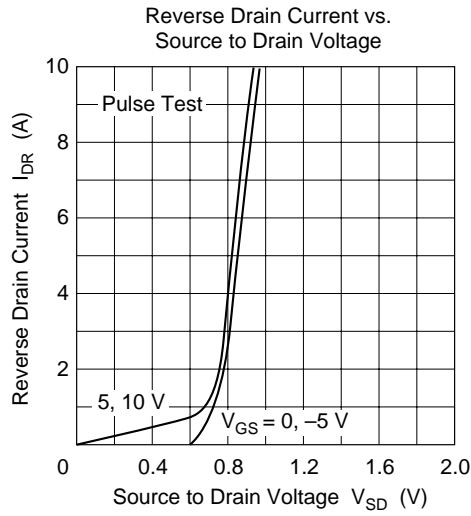


Dynamic Input Characteristics

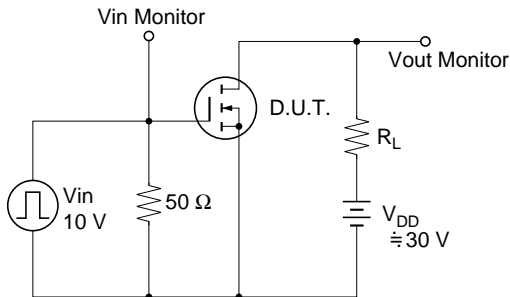


Switching Characteristics

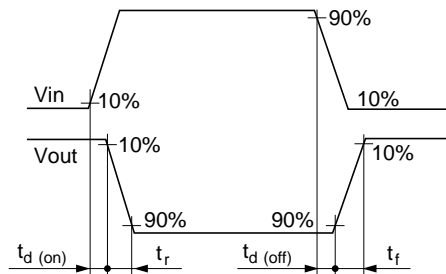


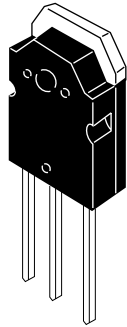
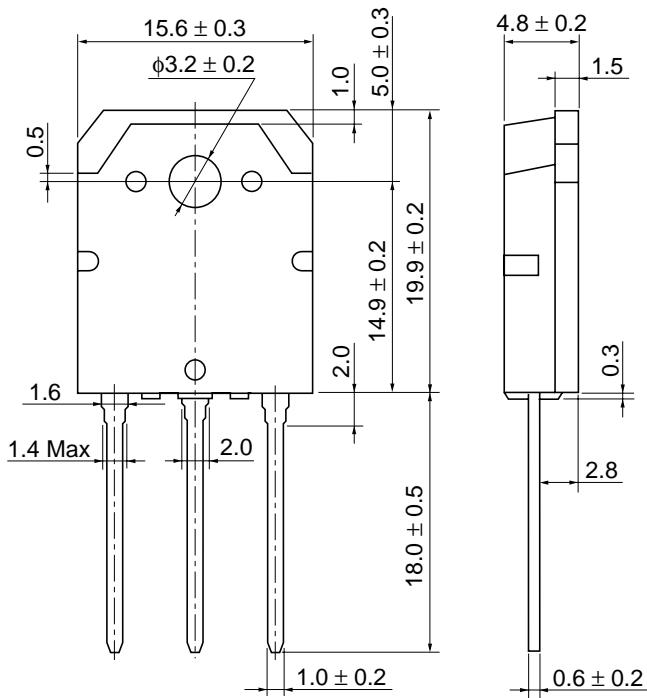


Switching Time Test Circuit



Waveforms





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

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