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# 2SK1401, 2SK1401A

Silicon N-Channel MOS FET

# HITACHI

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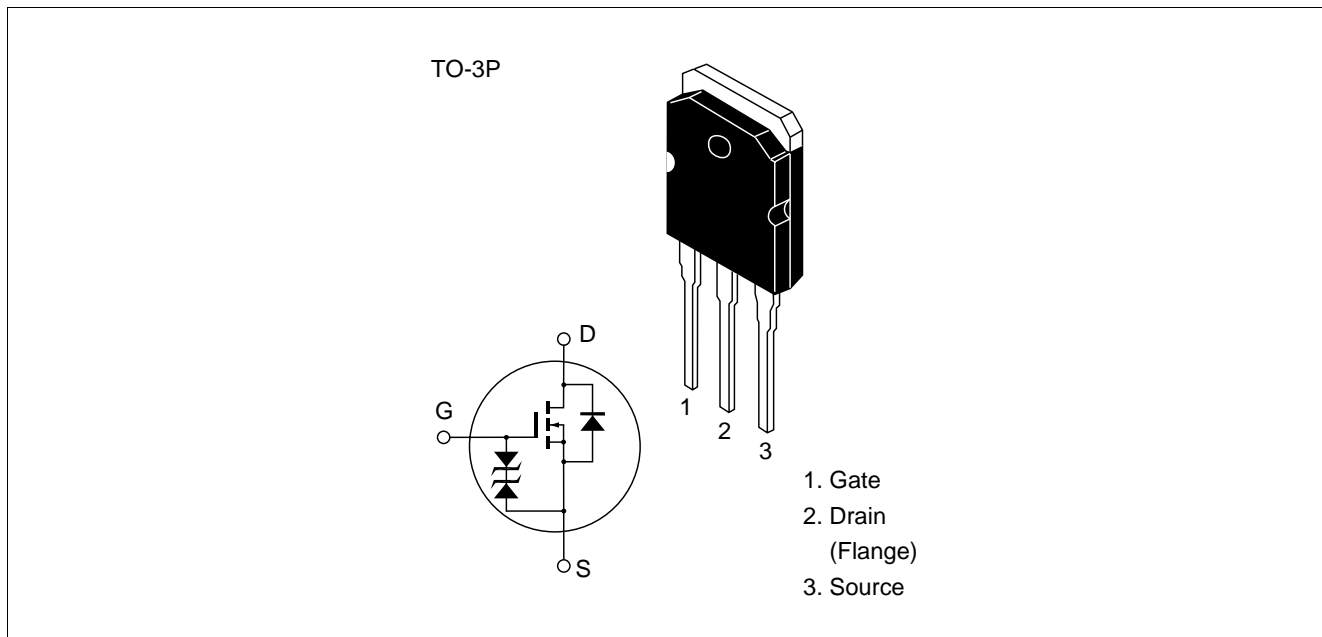
## Application

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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## 2SK1401, 2SK1401A

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

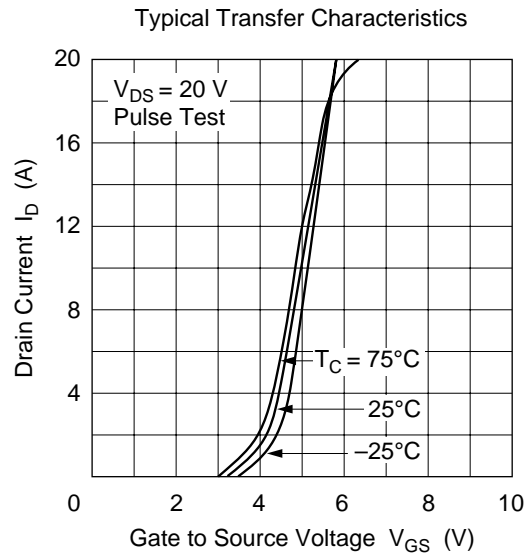
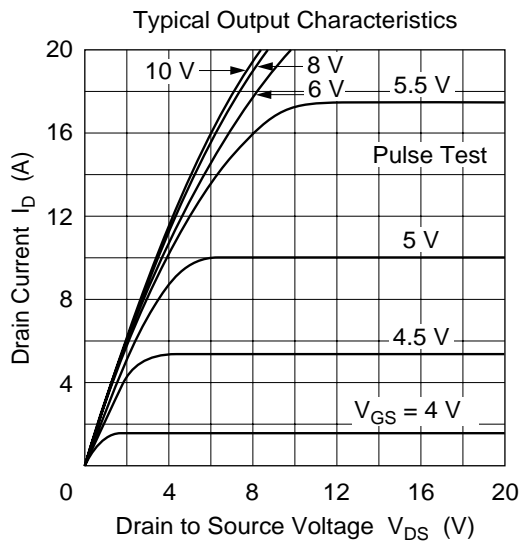
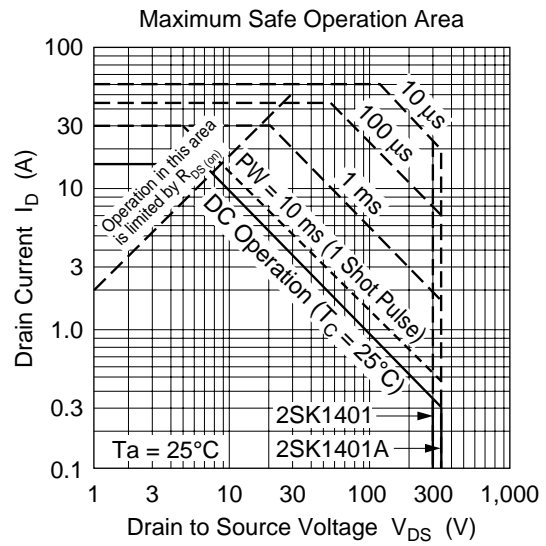
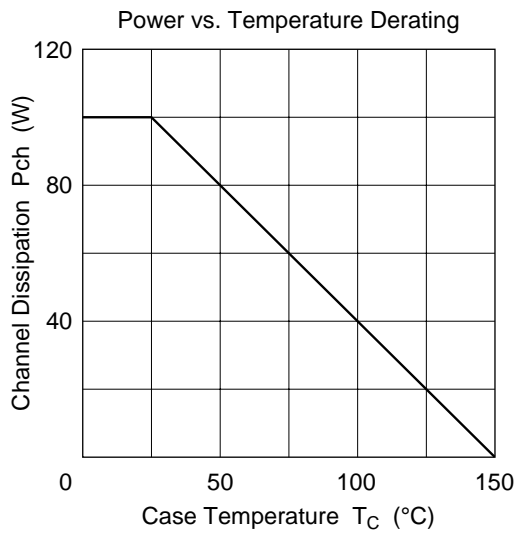
Item		Symbol	Ratings	Unit
Drain to source voltage	2SK1401	$V_{DSS}$	300	V
	2SK1401A		350	
Gate to source voltage		$V_{GSS}$	±30	V
Drain current		$I_D$	15	A
Drain peak current		$I_{D(pulse)}^{*1}$	60	A
Body to drain diode reverse drain current		$I_{DR}$	15	A
Channel dissipation		$P_{ch}^{*2}$	100	W
Channel temperature		Tch	150	°C
Storage temperature		Tstg	-55 to +150	°C

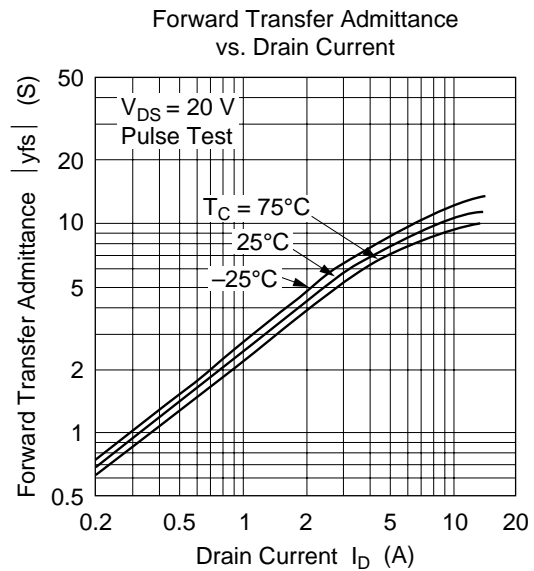
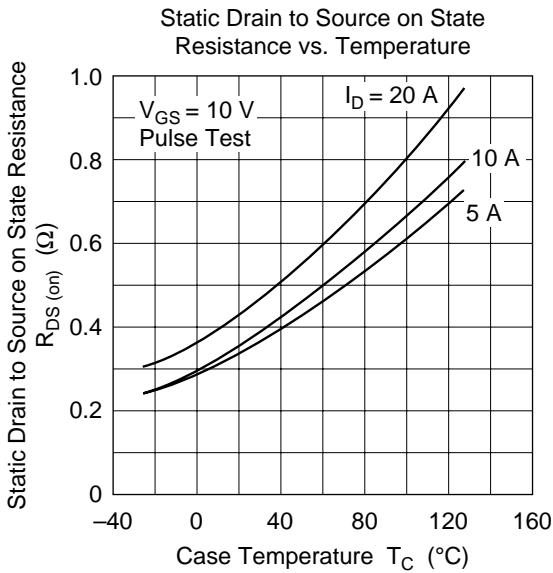
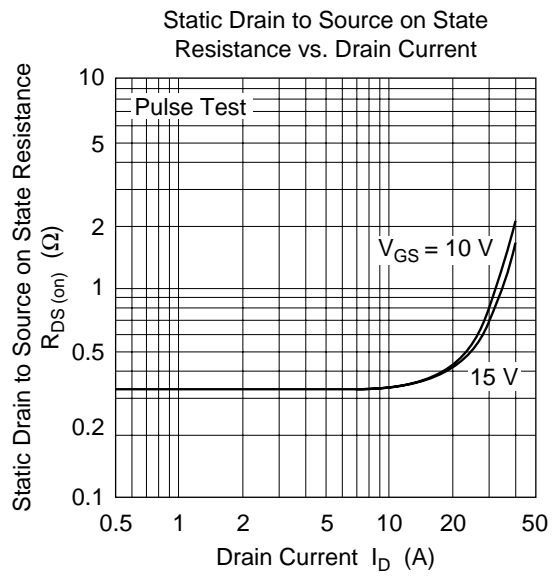
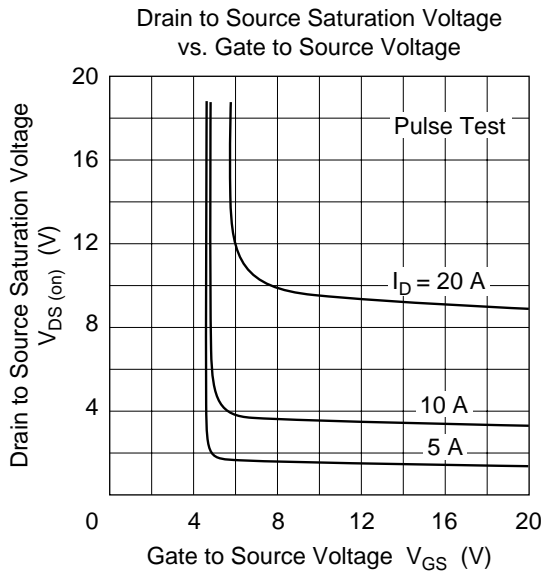
- Notes: 1.  $PW \leq 10 \mu s$ , duty cycle  $\leq 1\%$   
2. Value at  $T_c = 25^\circ C$

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

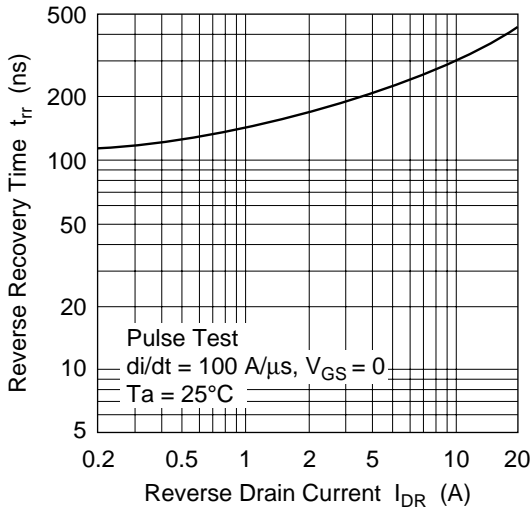
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	K1401 V <sub>(BR)DSS</sub> K1401A	300 350	—	—	V	I <sub>D</sub> = 10 mA, V <sub>GS</sub> = 0
Gate to source breakdown voltage	V <sub>(BR)GSS</sub>	±30	—	—	V	I <sub>G</sub> = ±100 μA, V <sub>DS</sub> = 0
Gate to source leak current	I <sub>GSS</sub>	—	—	±10	μA	V <sub>GS</sub> = ±25 V, V <sub>DS</sub> = 0
Zero gate voltage drain current	K1401 I <sub>DSS</sub> K1401A	—	—	250	μA	V <sub>DS</sub> = 240 V, V <sub>GS</sub> = 0 V <sub>DS</sub> = 280 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	K1401 R <sub>DS(on)</sub> K1401A	—	0.25 0.30	0.35 0.40	Ω	I <sub>D</sub> = 8 A, V <sub>GS</sub> = 10 V *1
Forward transfer admittance	yfs	6	9.5	—	S	I <sub>D</sub> = 8 A, V <sub>DS</sub> = 10 V *1
Input capacitance	Ciss	—	1250	—	pF	V <sub>DS</sub> = 10 V, V <sub>GS</sub> = 0,
Output capacitance	Coss	—	420	—	pF	f = 1 MHz
Reverse transfer capacitance	Crss	—	70	—	pF	
Turn-on delay time	t <sub>d(on)</sub>	—	15	—	ns	I <sub>D</sub> = 8 A, V <sub>GS</sub> = 10 V,
Rise time	t <sub>r</sub>	—	80	—	ns	R <sub>L</sub> = 3.75 Ω
Turn-off delay time	t <sub>d(off)</sub>	—	100	—	ns	
Fall time	t <sub>f</sub>	—	55	—	ns	
Body to drain diode forward voltage	V <sub>DF</sub>	—	1.05	—	V	I <sub>F</sub> = 15 A, V <sub>GS</sub> = 0
Body to drain diode reverse recovery time	t <sub>rr</sub>	—	370	—	ns	I <sub>F</sub> = 15 A, V <sub>GS</sub> = 0, di <sub>F</sub> /dt = 100 A/μs

Note: 1. Pulse test

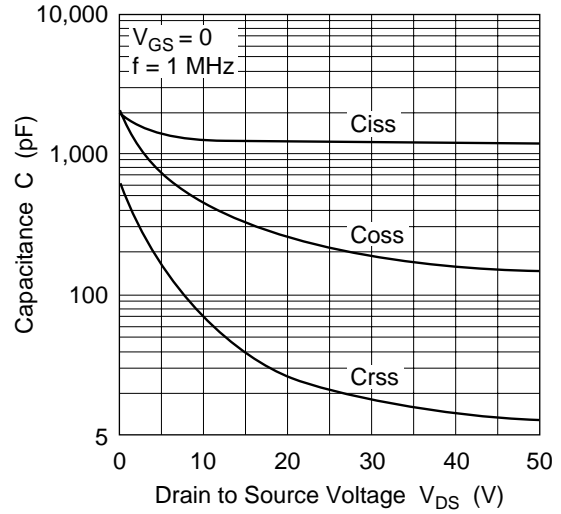




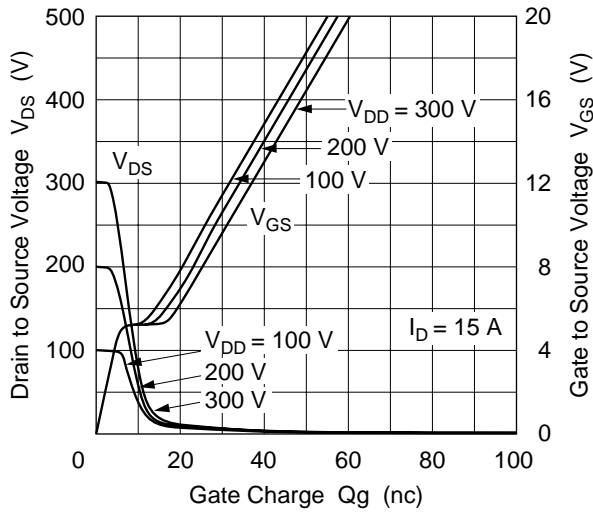
Body to Drain Diode Reverse Recovery Time



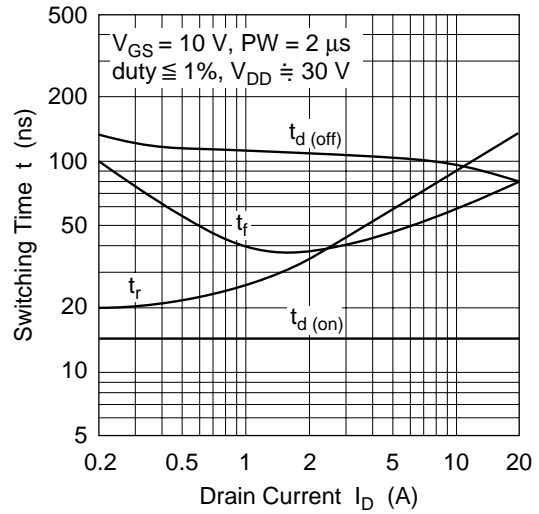
Typical Capacitance vs. Drain to Source Voltage

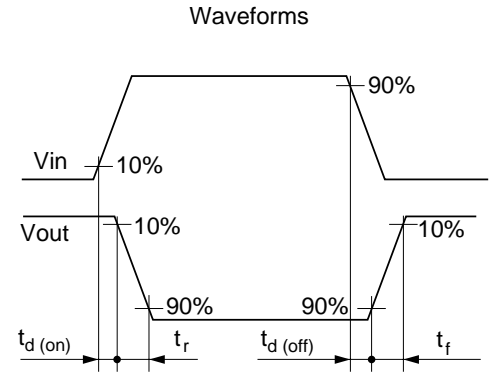
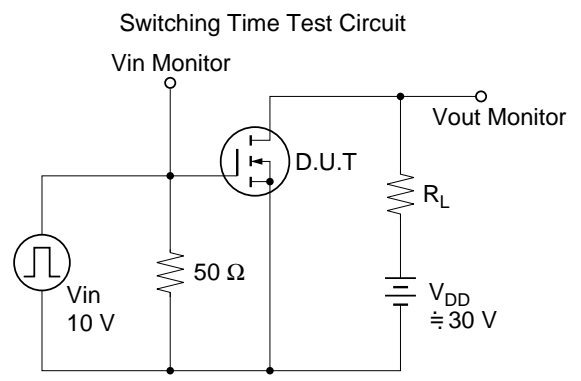
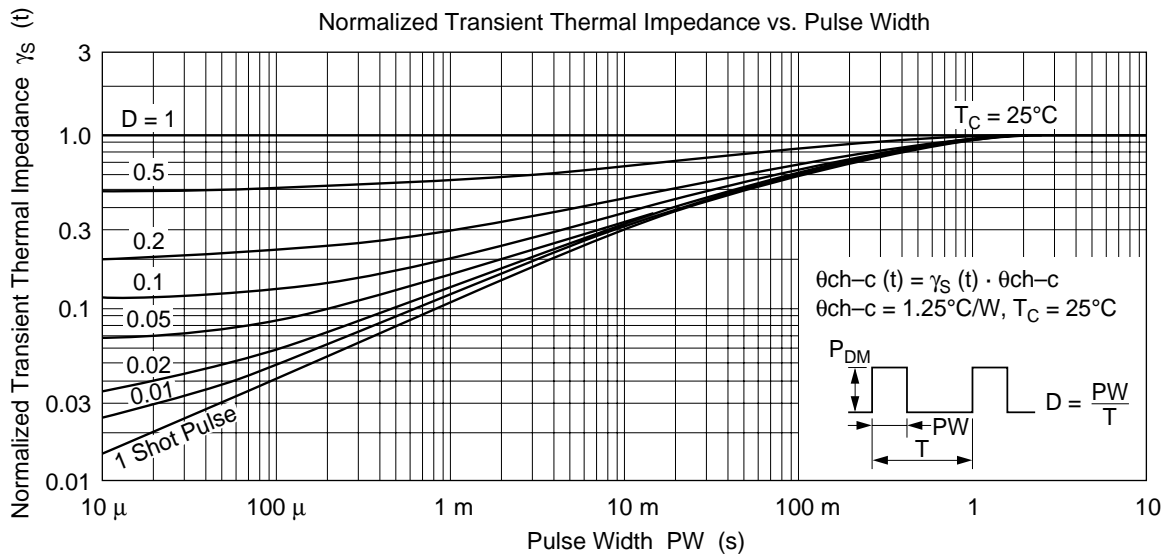
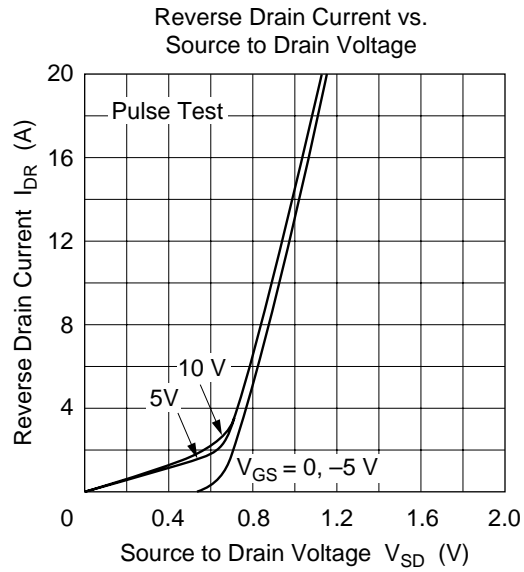


Dynamic Input Characteristics

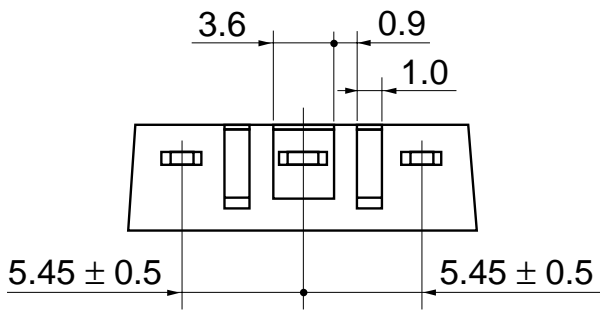
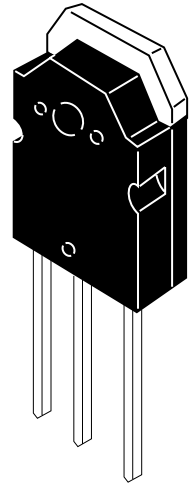
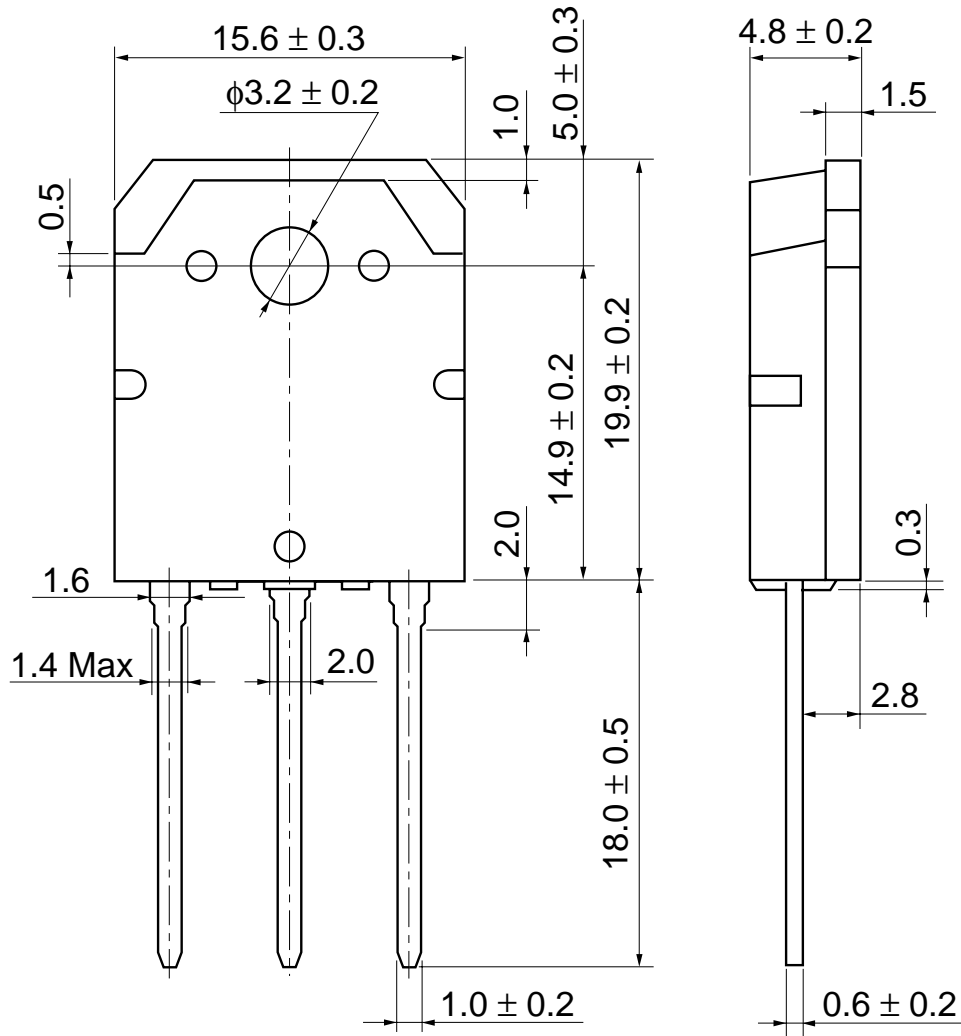


Switching Characteristics





Unit: mm



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



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