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# 2SK1167, 2SK1168

Silicon N-Channel MOS FET

# HITACHI

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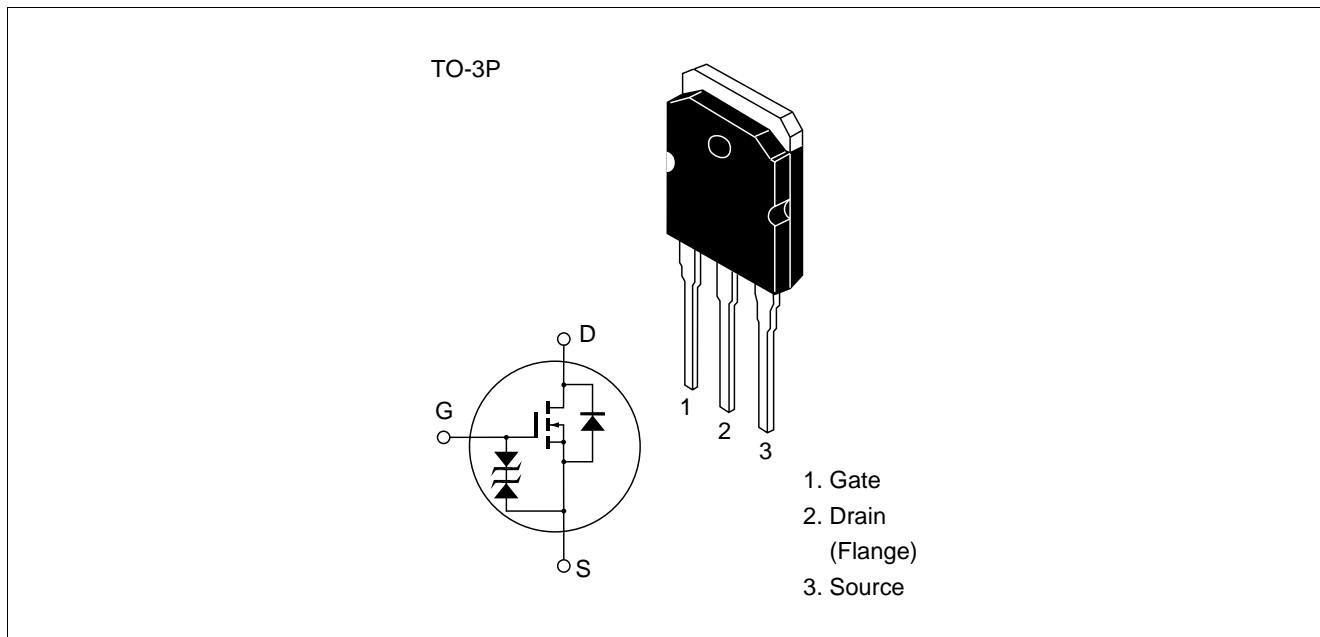
## Application

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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## 2SK1167, 2SK1168

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

Item		Symbol	Ratings	Unit
Drain to source voltage	2SK1167	$V_{DSS}$	450	V
	2SK1168		500	
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  $\leq 1\%$

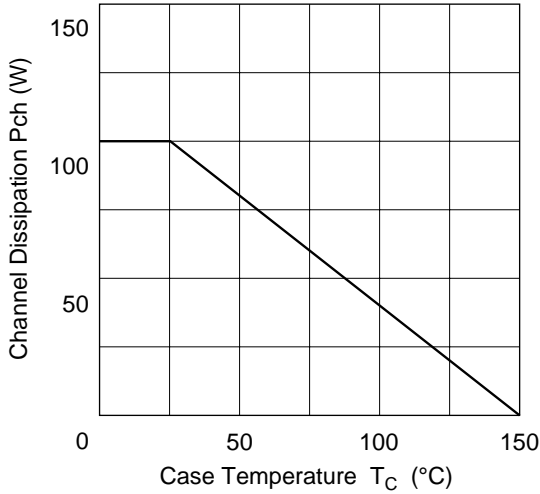
2. Value at  $T_c = 25^\circ C$

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

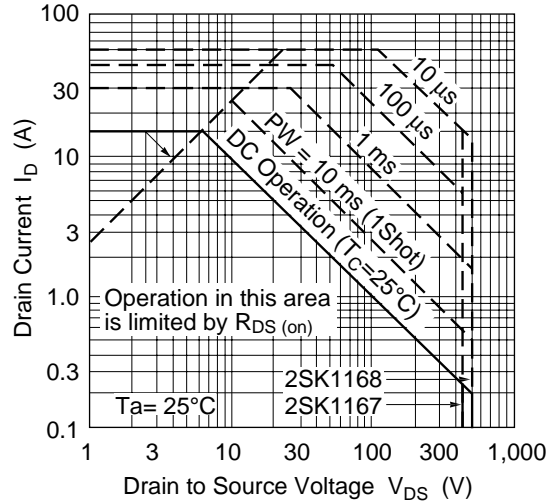
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	2SK1167 $V_{(BR)DSS}$ 2SK1168	450 500	—	—	V	$I_D = 10 \text{ mA}, V_{GS} = 0$
Gate to source breakdown voltage	$V_{(BR)GSS}$	±30	—	—	V	$I_G = \pm 100 \mu\text{A}, V_{DS} = 0$
Gate to source leak current	$I_{GSS}$	—	—	±10	μA	$V_{GS} = \pm 25 \text{ V}, V_{DS} = 0$
Zero gate voltage drain current	2SK1167 $I_{DSS}$ 2SK1168	—	—	250	μA	$V_{DS} = 360 \text{ V}, V_{GS} = 0$ $V_{DS} = 400 \text{ V}, V_{GS} = 0$
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	2SK1167 $R_{DS(on)}$ 2SK1168	—	0.25 0.30	0.36 0.40	Ω	$I_D = 8 \text{ A}, V_{GS} = 10 \text{ V}^{*1}$
Forward transfer admittance	yfs	8	13	—	S	$I_D = 8 \text{ A}, V_{DS} = 10 \text{ V}^{*1}$
Input capacitance	Ciss	—	2050	—	pF	$V_{DS} = 10 \text{ V}, V_{GS} = 0,$
Output capacitance	Coss	—	600	—	pF	f = 1 MHz
Reverse transfer capacitance	Crss	—	75	—	pF	
Turn-on delay time	$t_{d(on)}$	—	30	—	ns	$I_D = 8 \text{ A}, V_{GS} = 10 \text{ V},$
Rise time	$t_r$	—	110	—	ns	$R_L = 3.75 \Omega$
Turn-off delay time	$t_{d(off)}$	—	150	—	ns	
Fall time	$t_f$	—	70	—	ns	
Body to drain diode forward voltage	$V_{DF}$	—	1.0	—	V	$I_F = 15 \text{ A}, V_{GS} = 0$
Body to drain diode reverse recovery time	$t_{rr}$	—	500	—	ns	$I_F = 15 \text{ A}, V_{GS} = 0,$ $di_F/dt = 100 \text{ A}/\mu\text{s}$

Note: 1. Pulse test

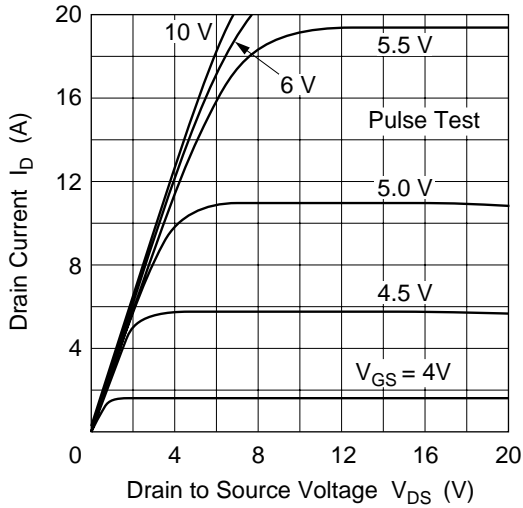
Power vs. Temperature Derating



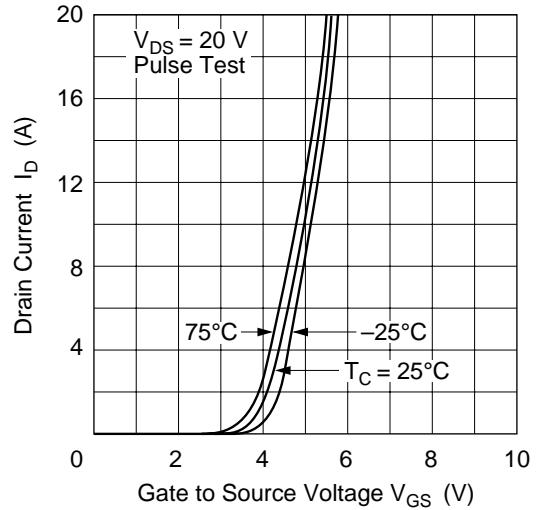
Maximum Safe Operation Area

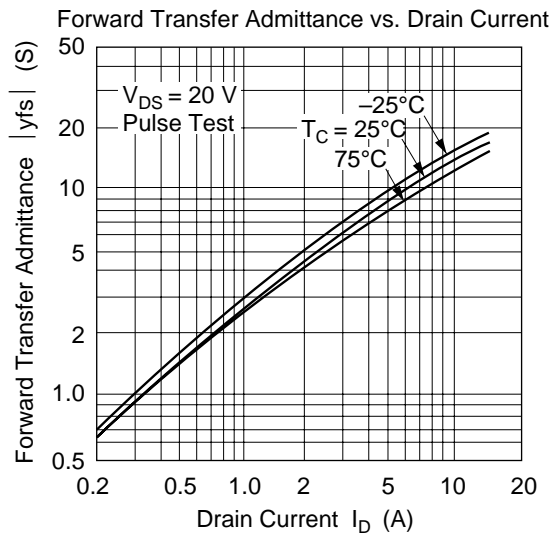
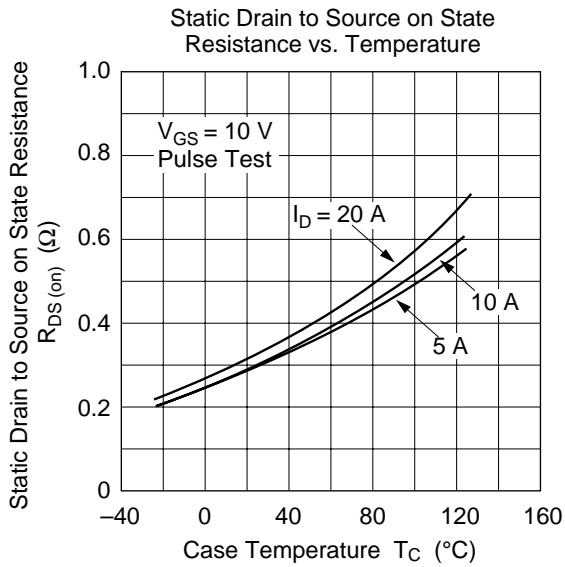
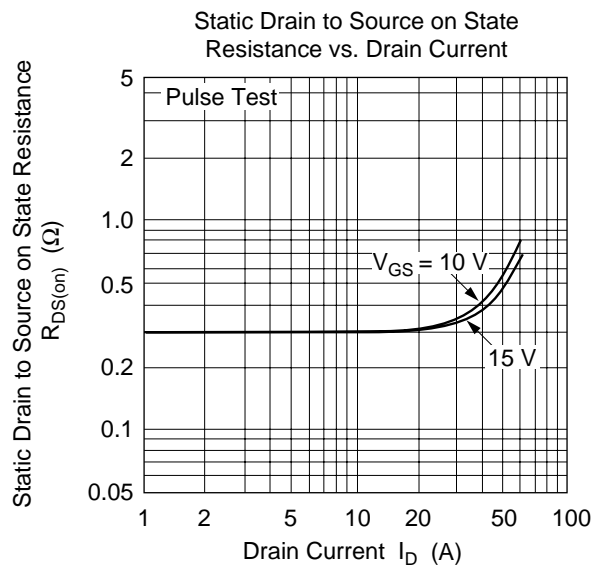
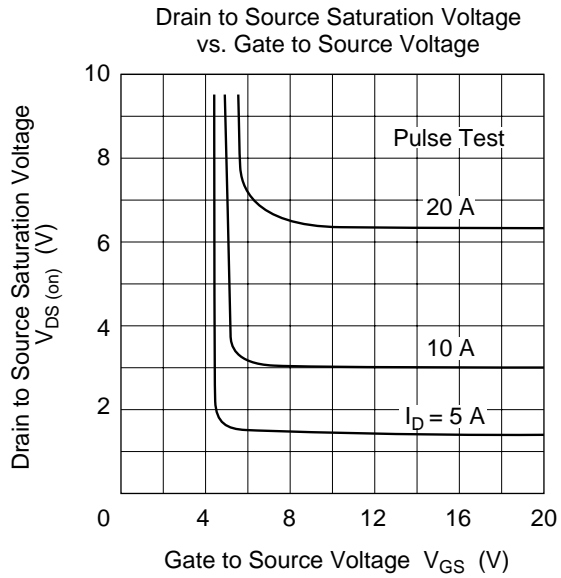


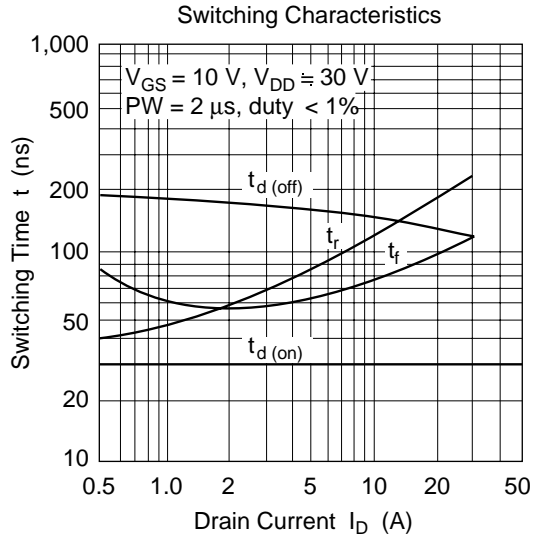
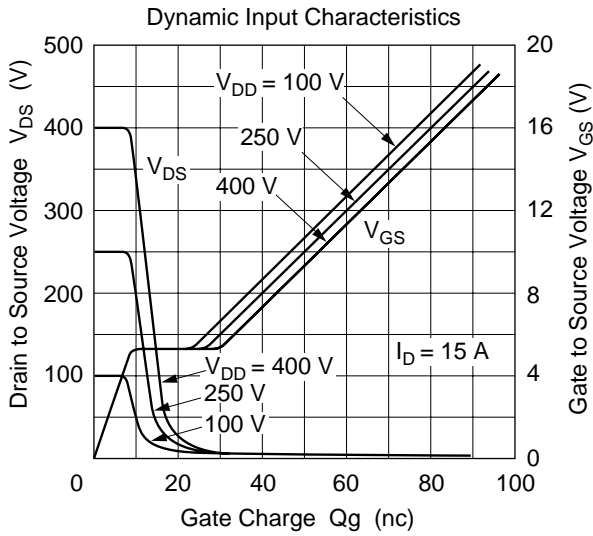
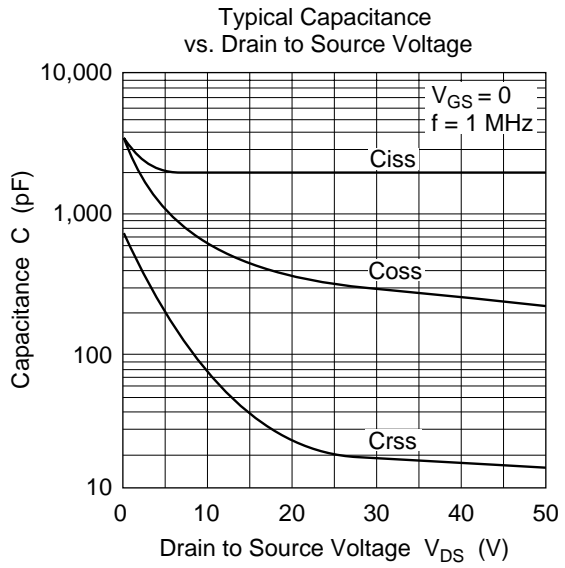
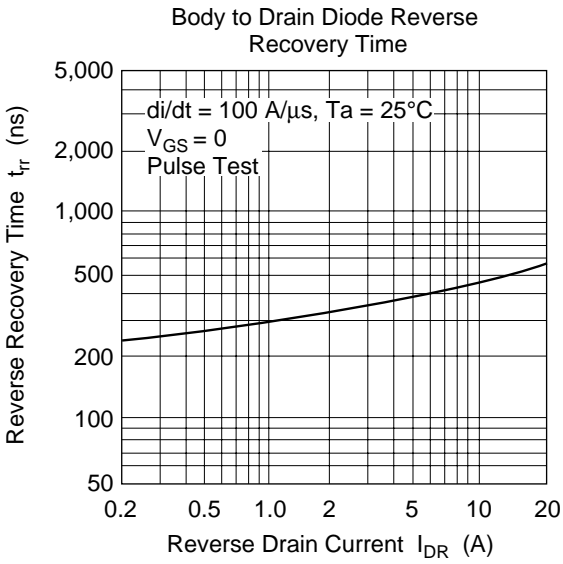
Typical Output Characteristics

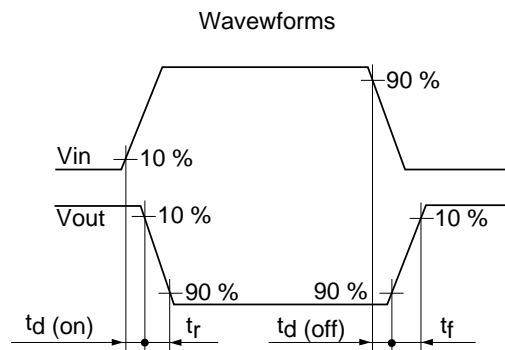
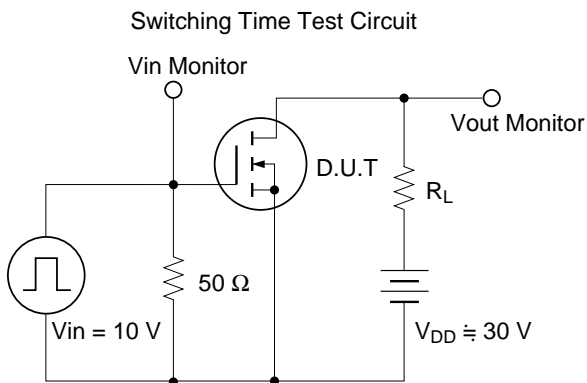
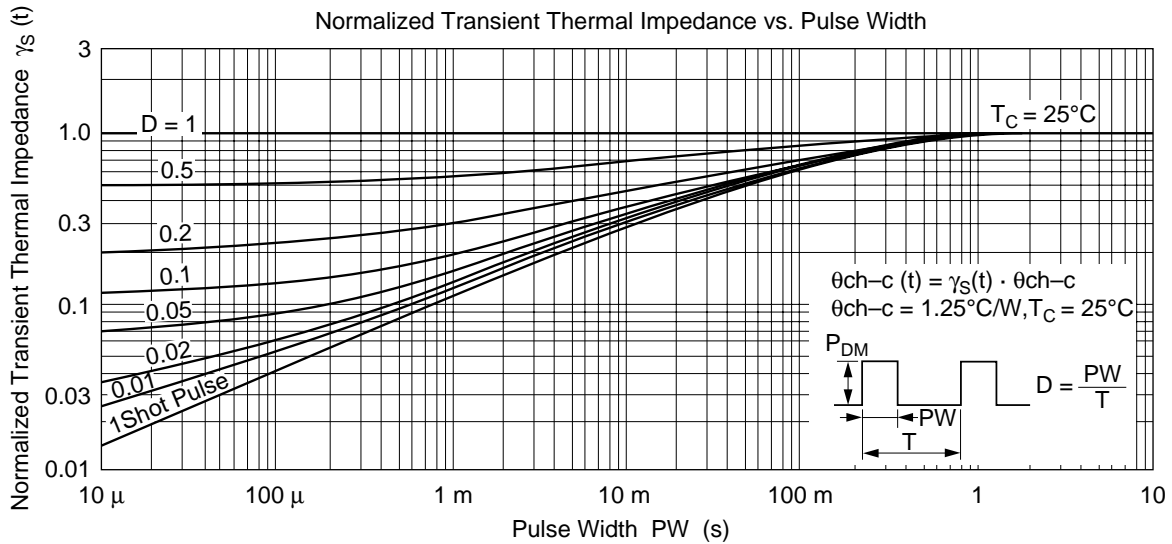
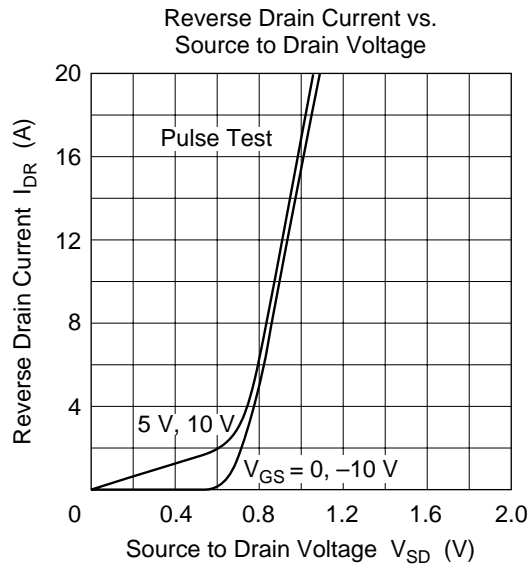


Typical Transfer Characteristics

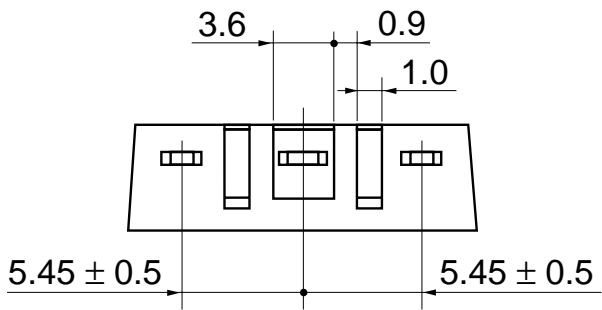
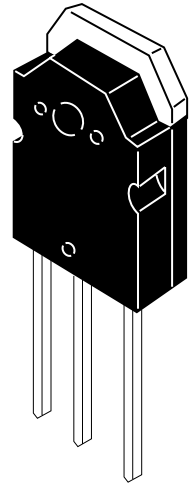
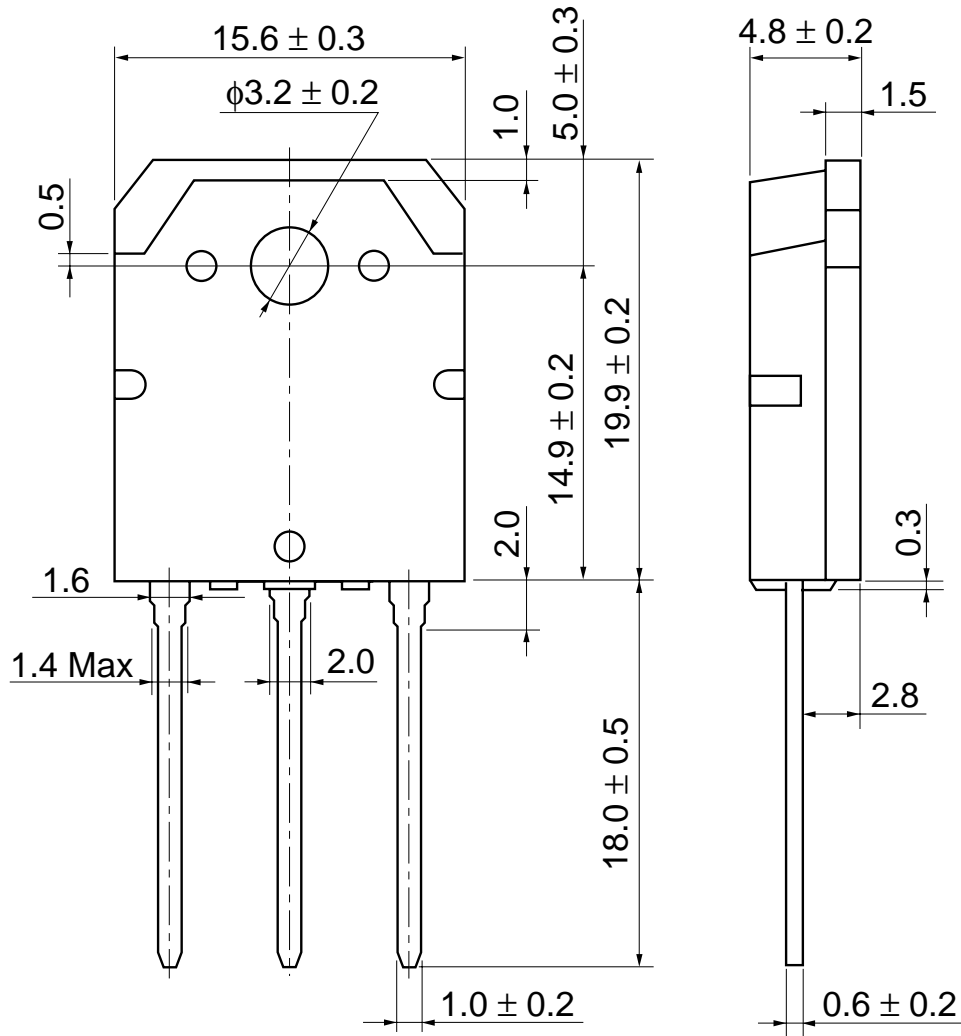








Unit: mm



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



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