
2SK1169, 2SK1170

Silicon N-Channel MOS FET

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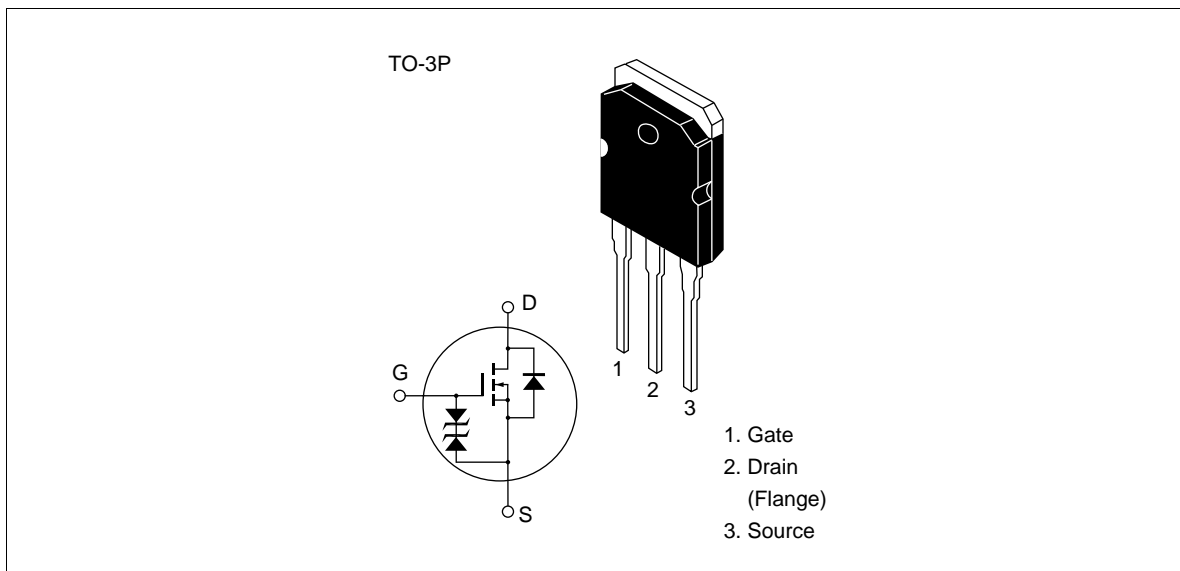
Application

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



2SK1169, 2SK1170

Absolute Maximum Ratings (Ta = 25°C)

Item		Symbol	Ratings	Unit
Drain to source voltage	2SK1169	V_{DSS}	450	V
	2SK1170		500	
Gate to source voltage		V_{GSS}	±30	V
Drain current		I_D	20	A
Drain peak current		$I_{D(pulse)}^{*1}$	80	A
Body to drain diode reverse drain current		I_{DR}	20	A
Channel dissipation		Pch^{*2}	120	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 $T_C = 25^\circ C$

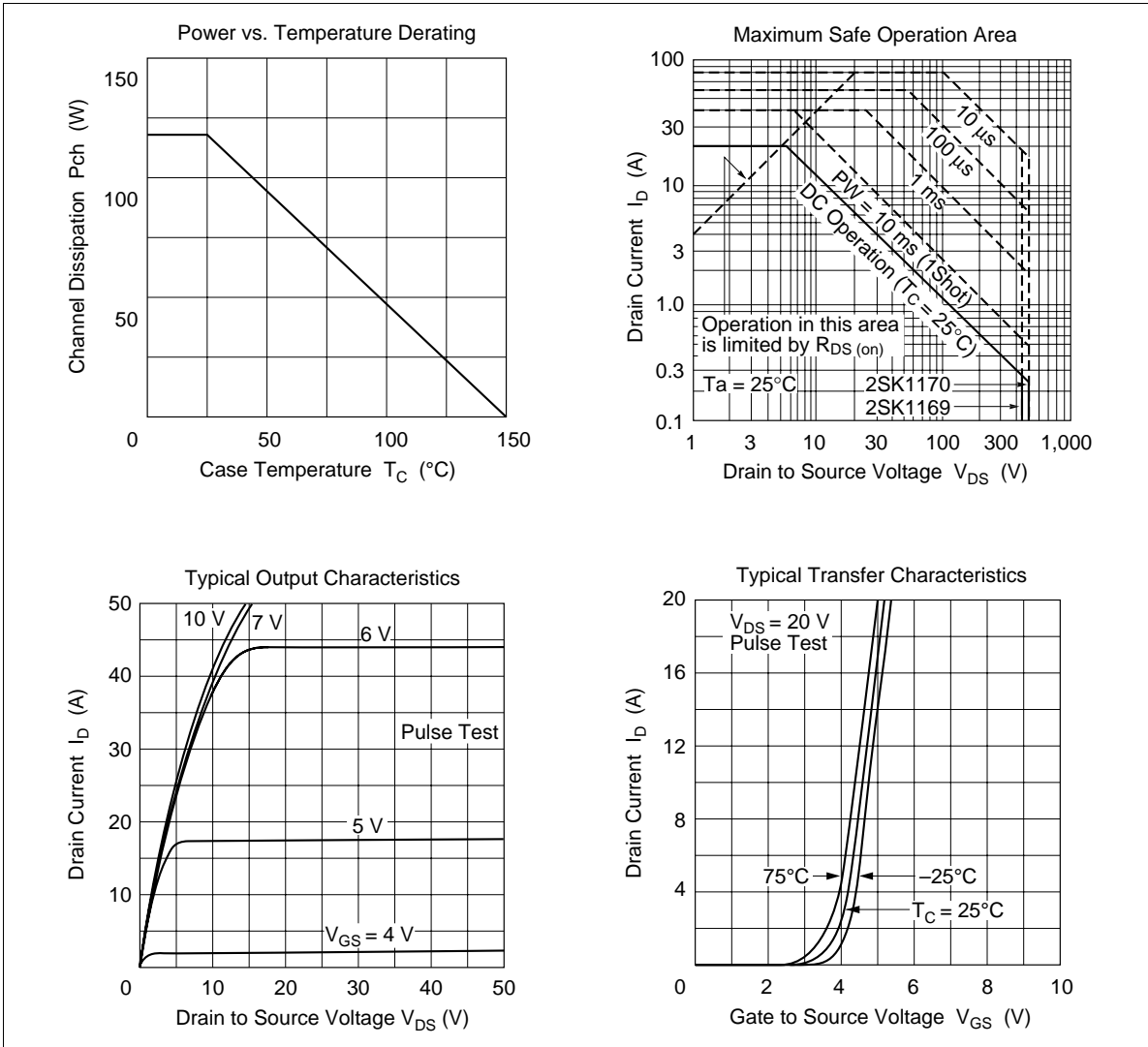
2SK1169, 2SK1170

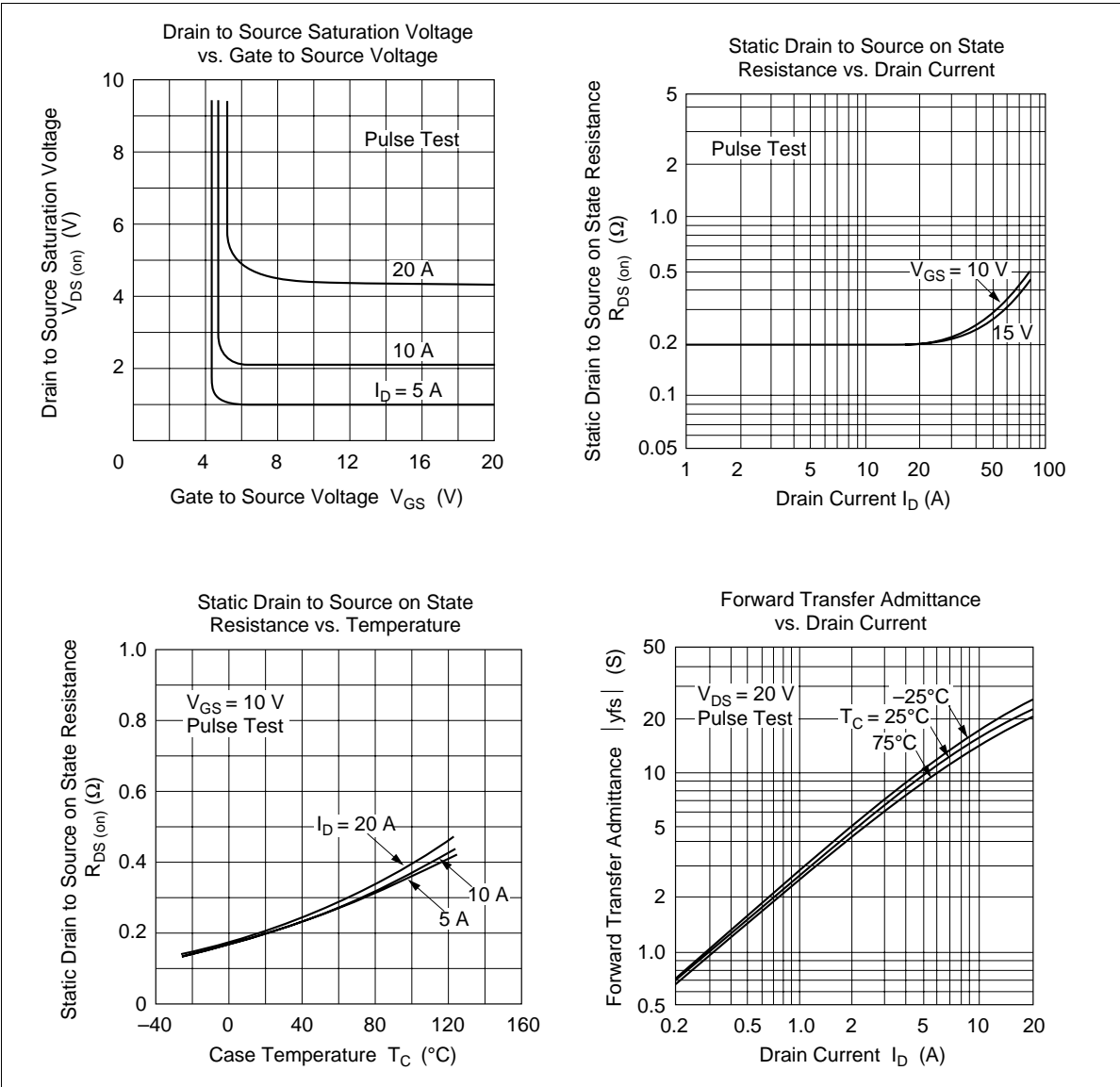
Electrical Characteristics (Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	2SK1169 $V_{(BR)DSS}$ 2SK1170	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	2SK1169 I_{DSS} 2SK1170	—	—	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	2SK1169 $R_{DS(on)}$ 2SK1170	— —	0.20 0.22	0.25 0.27	Ω	$I_D = 10 \text{ A}, V_{GS} = 10 \text{ V}^{*1}$
Forward transfer admittance	yfs	10	16	—	S	$I_D = 10 \text{ A}, V_{DS} = 10 \text{ V}^{*1}$
Input capacitance	Ciss	—	2800	—	pF	$V_{DS} = 10 \text{ V}, V_{GS} = 0,$
Output capacitance	Coss	—	780	—	pF	$f = 1 \text{ MHz}$
Reverse transfer capacitance	Crss	—	90	—	pF	
Turn-on delay time	$t_{d(on)}$	—	32	—	ns	$I_D = 10 \text{ A}, V_{GS} = 10 \text{ V},$
Rise time	t_r	—	115	—	ns	$R_L = 3 \Omega$
Turn-off delay time	$t_{d(off)}$	—	200	—	ns	
Fall time	t_f	—	90	—	ns	
Body to drain diode forward voltage	V_{DF}	—	1.0	—	V	$I_F = 20 \text{ A}, V_{GS} = 0$
Body to drain diode reverse recovery time	t_{rr}	—	500	—	ns	$I_F = 20 \text{ A}, V_{GS} = 0,$ $di_F/dt = 100 \text{ A}/\mu\text{s}$

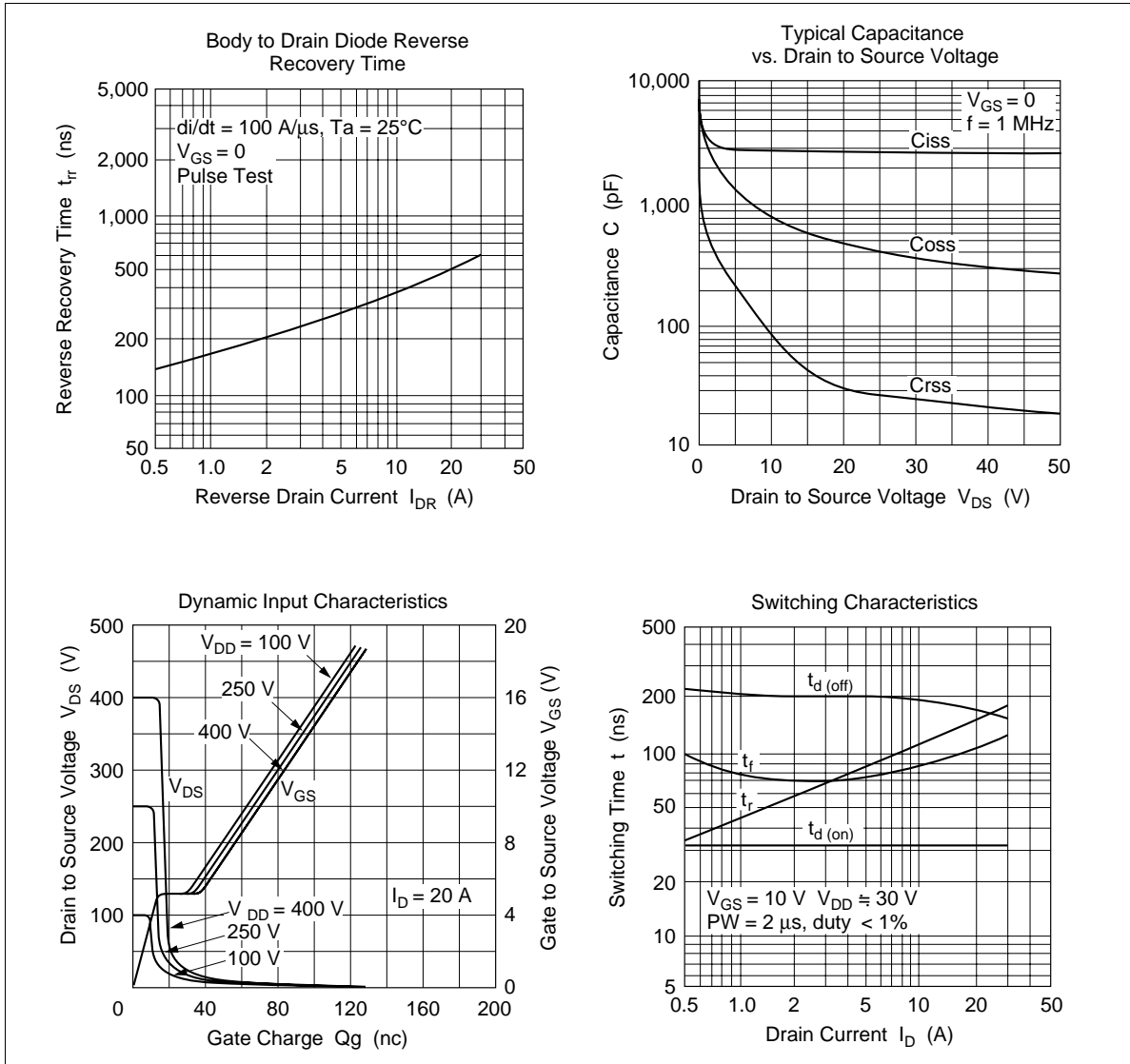
Note: 1. Pulse test

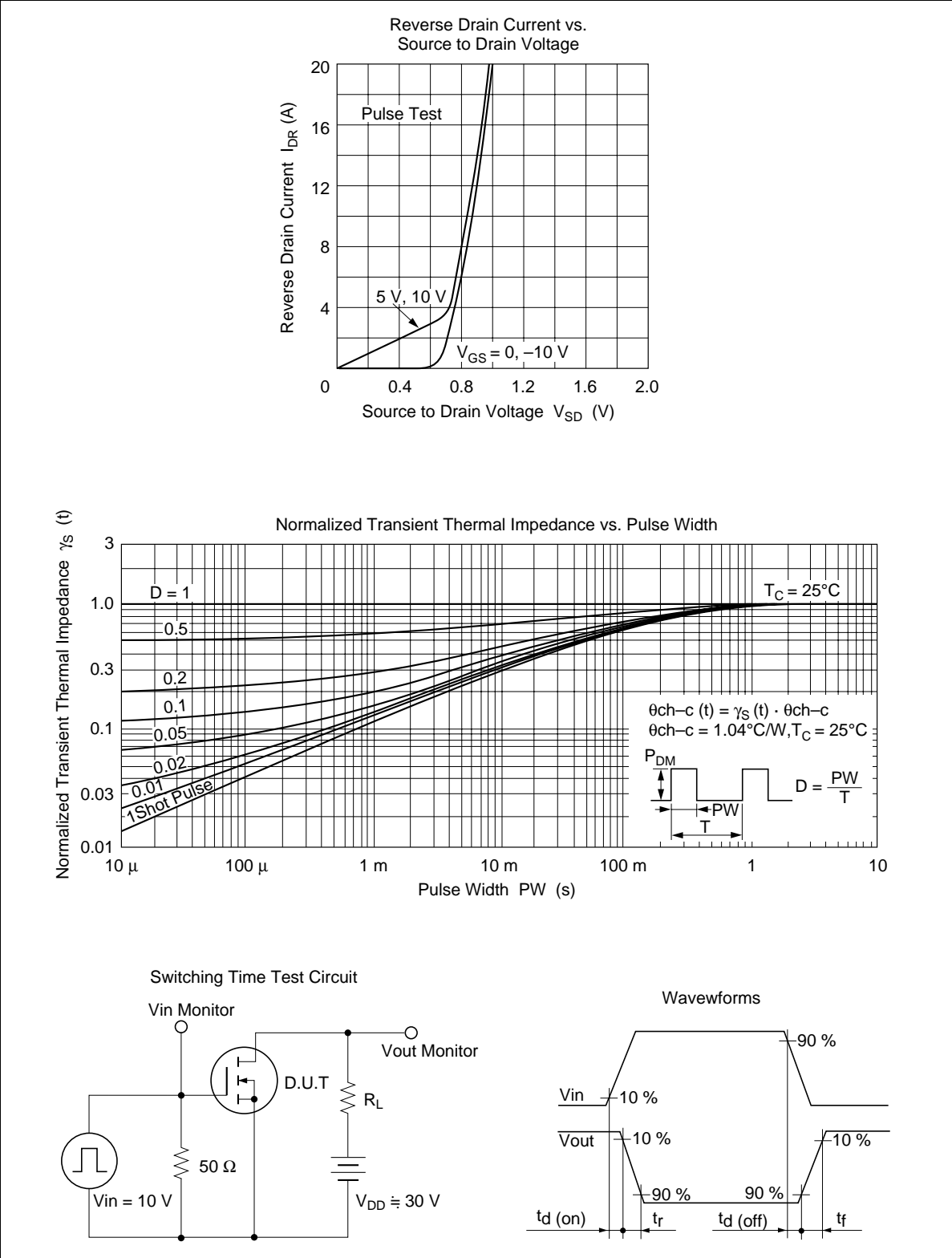
2SK1169, 2SK1170



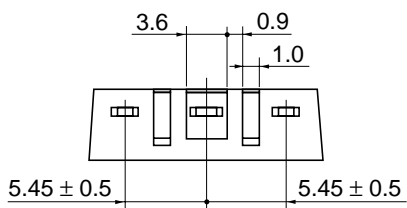
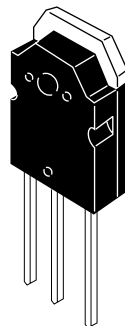
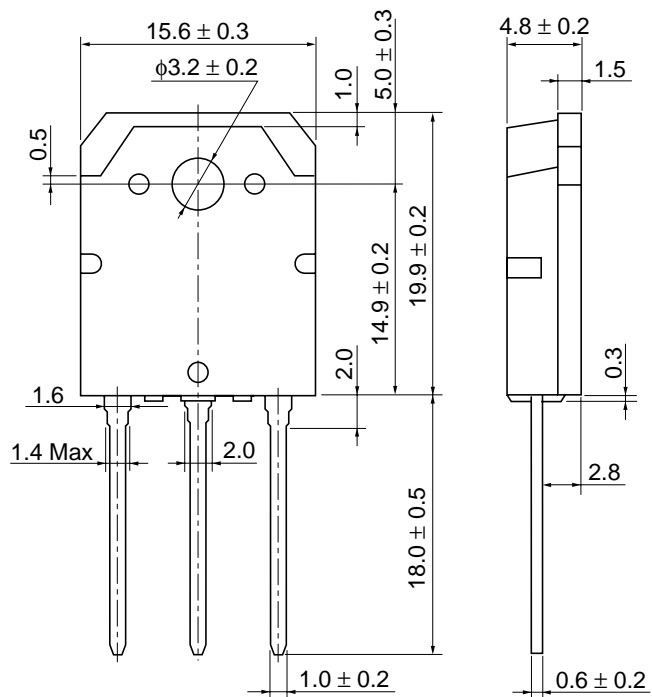


2SK1169, 2SK1170





Unit: mm



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

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