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# 2SK1666

Silicon N-Channel MOS FET

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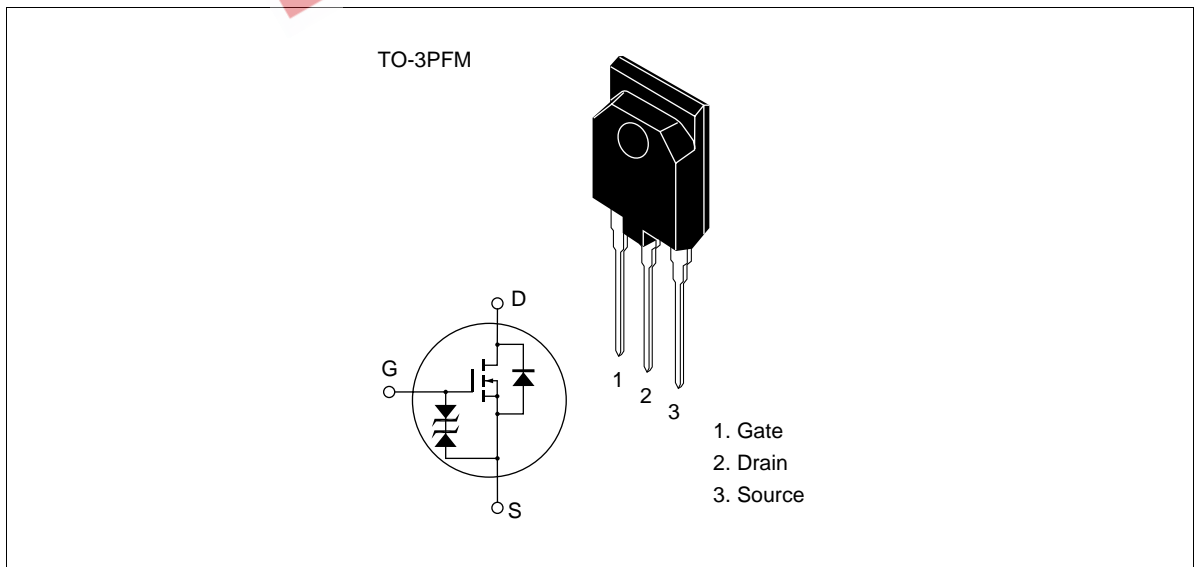
## Application

High speed power switching

## Features

- Low on-resistance
- High speed switching
- Low drive current
- Low voltage drive device
  - Can be driven from 4 V
- Suitable for motor drive, solenoid drive, DC-DC converter and etc.

## Outline



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

Item	Symbol	Ratings	Unit
Drain to source voltage	V <sub>DSS</sub>	60	V
Gate to source voltage	V <sub>GSS</sub>	±20	V
Drain current	I <sub>D</sub>	45	A
Drain peak current	I <sub>D(pulse)</sub> *1	180	A
Body to drain diode reverse drain current	I <sub>DR</sub>	45	A
Channel dissipation	Pch*2	60	W
Channel temperature	Tch	150	°C
Storage temperature	Tstg	-55 to +150	°C

Note: 1. PW ≤ 10 μs, duty cycle ≤ 1%  
2. Value at T<sub>c</sub> = 25°C

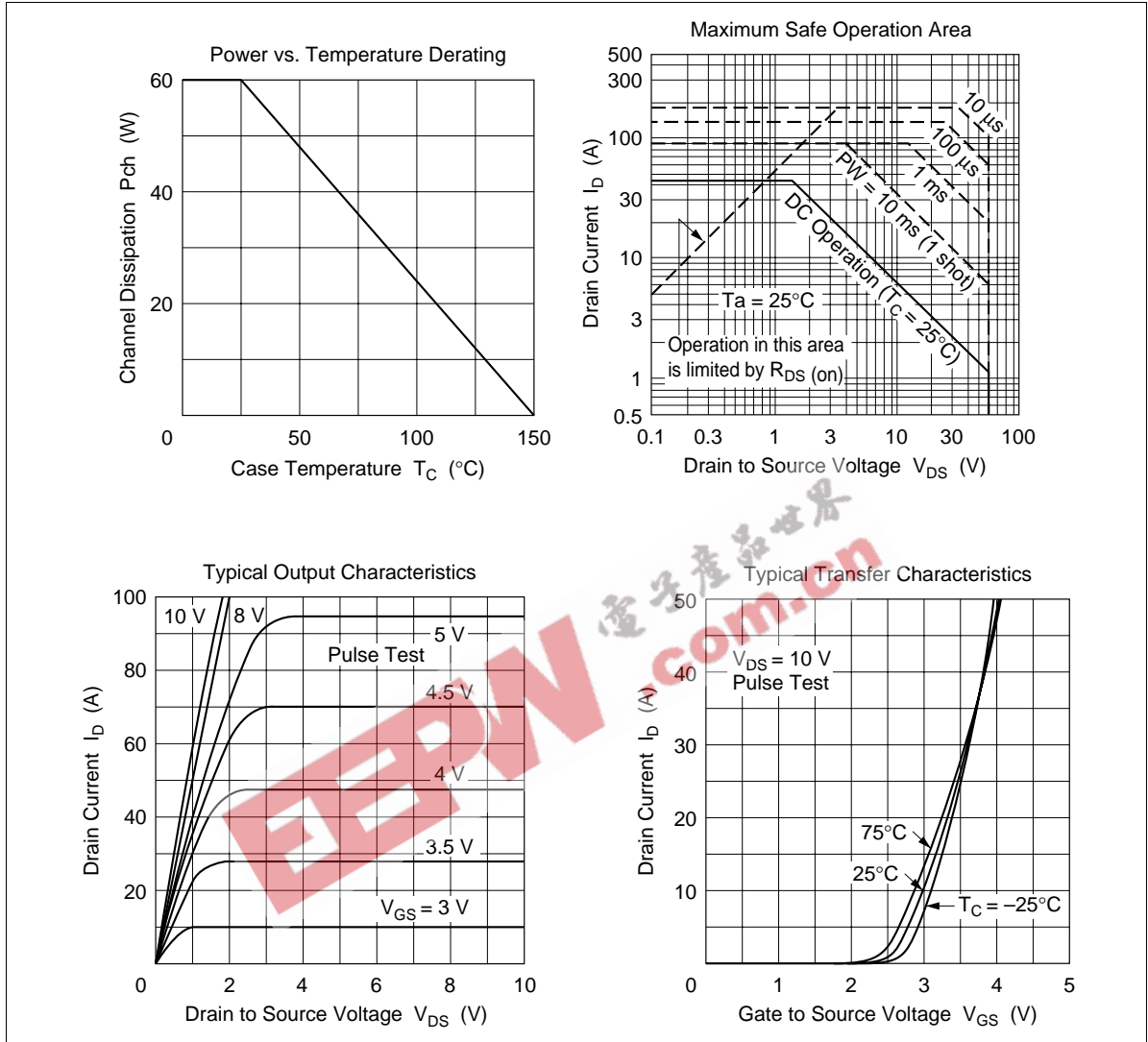
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Electrical Characteristics (T<sub>a</sub> = 25°C)

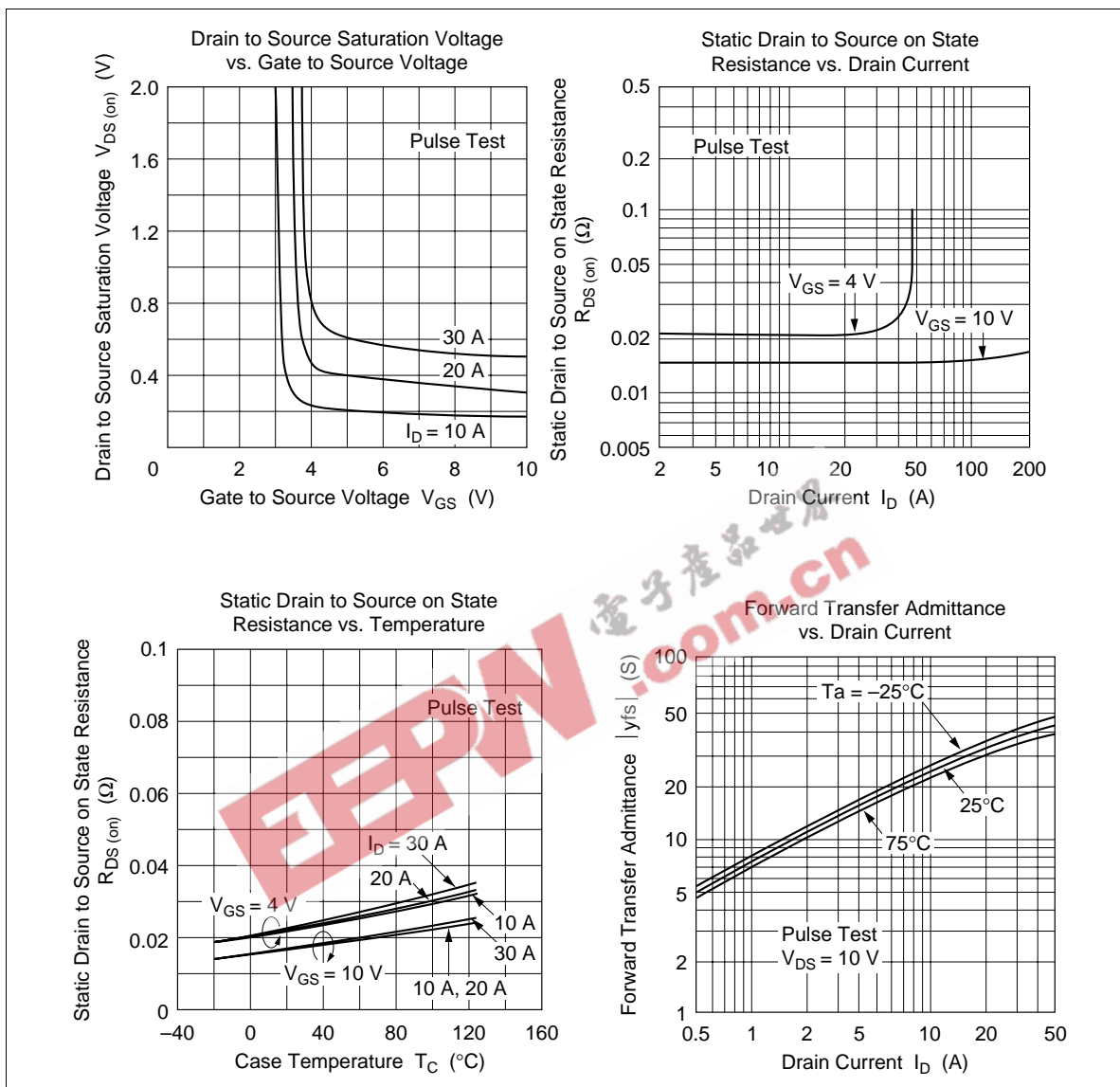
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	60	—	—	V	$I_D = 10 \text{ mA}, V_{GS} = 0$
Gate to source breakdown voltage	$V_{(BR)GSS}$	±20	—	—	V	$I_G = \pm 100 \text{ } \mu\text{A}, V_{DS} = 0$
Gate to source leak current	$I_{GSS}$	—	—	±10	μA	$V_{GS} = \pm 16 \text{ V}, V_{DS} = 0$
Zero gate voltage drain current	$I_{DSS}$	—	—	250	μA	$V_{DS} = 50 \text{ V}, V_{GS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	1.0	—	2.5	V	$I_D = 1 \text{ mA}, V_{DS} = 10 \text{ V}$
Static drain to source on state resistance	$R_{DS(on)}$	—	0.016	0.02	Ω	$I_D = 20 \text{ A}, V_{GS} = 10 \text{ V}^{*1}$
			—	0.022	0.035	Ω
Forward transfer admittance	y <sub>fs</sub>	20	32	—	S	$I_D = 20 \text{ A}, V_{DS} = 10 \text{ V}^{*1}$
Input capacitance	C <sub>iss</sub>	—	3950	—	pF	$V_{DS} = 10 \text{ V}, V_{GS} = 0,$
Output capacitance	C <sub>oss</sub>	—	1920	—	pF	$f = 1 \text{ MHz}$
Reverse transfer capacitance	C <sub>rss</sub>	—	360	—	pF	
Turn-on delay time	$t_{d(on)}$	—	30	—	ns	$I_D = 20 \text{ A}, V_{GS} = 10 \text{ V},$
Rise time	$t_r$	—	180	—	ns	$R_L = 1.5 \text{ } \Omega$
Turn-off delay time	$t_{d(off)}$	—	630	—	ns	
Fall time	$t_f$	—	290	—	ns	
Body to drain diode forward voltage	$V_{DF}$	—	1.3	—	V	$I_F = 45 \text{ A}, V_{GS} = 0$
Body to drain diode reverse recovery time	$t_{rr}$	—	140	—	ns	$I_F = 45 \text{ A}, V_{GS} = 0,$ $di_F/dt = 50 \text{ A}/\mu\text{s}$

Note: 1. Pulse test

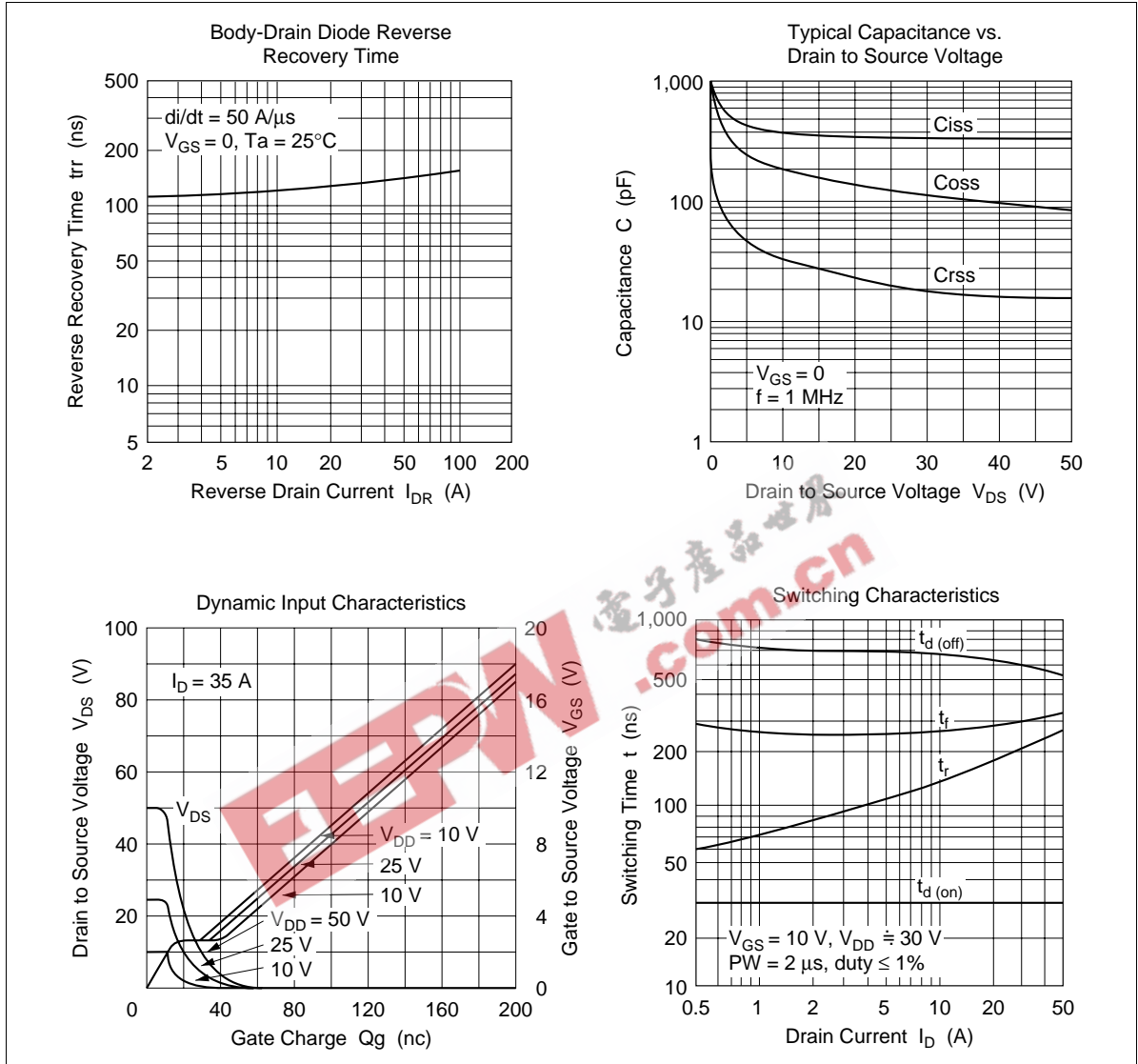
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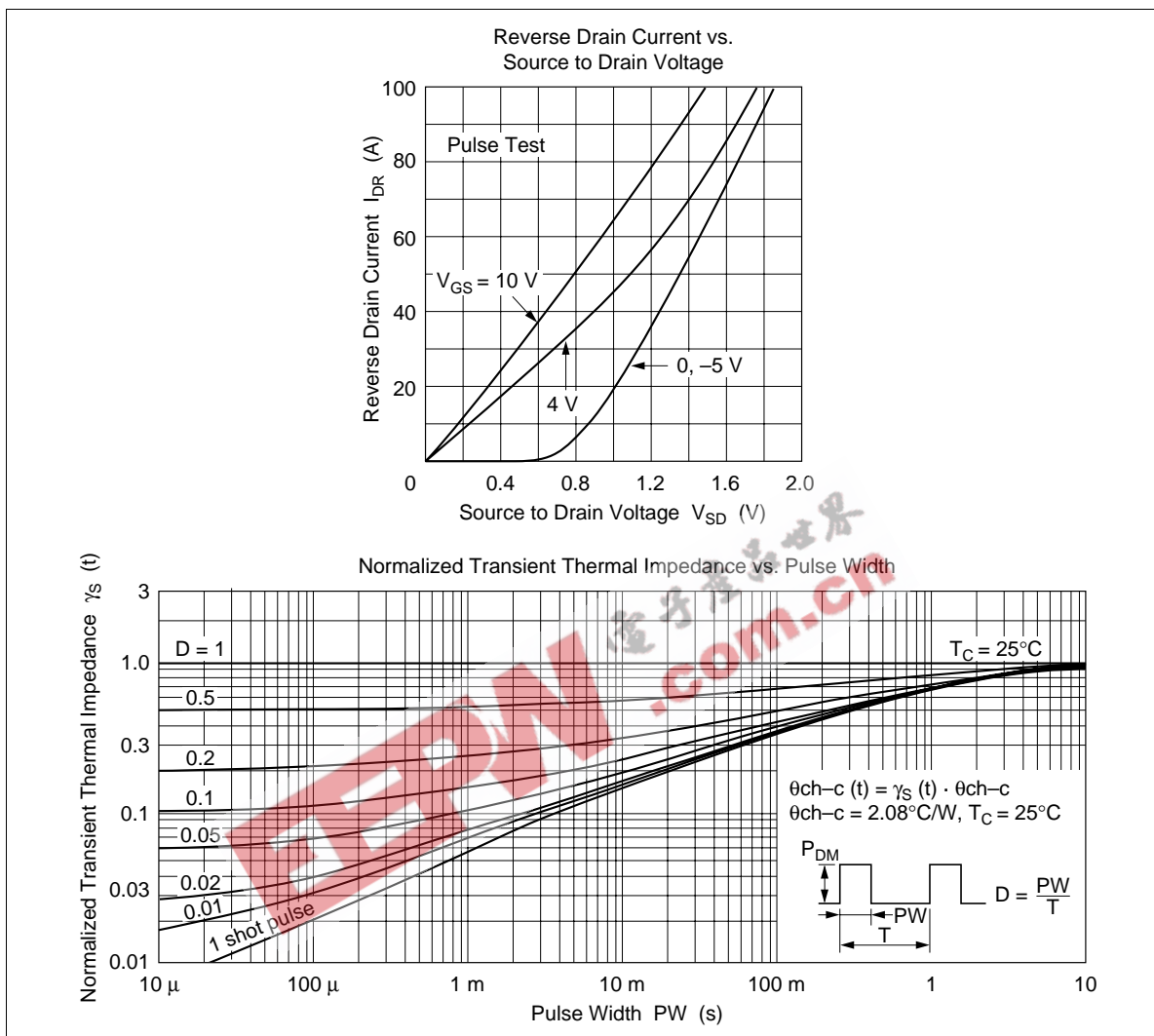


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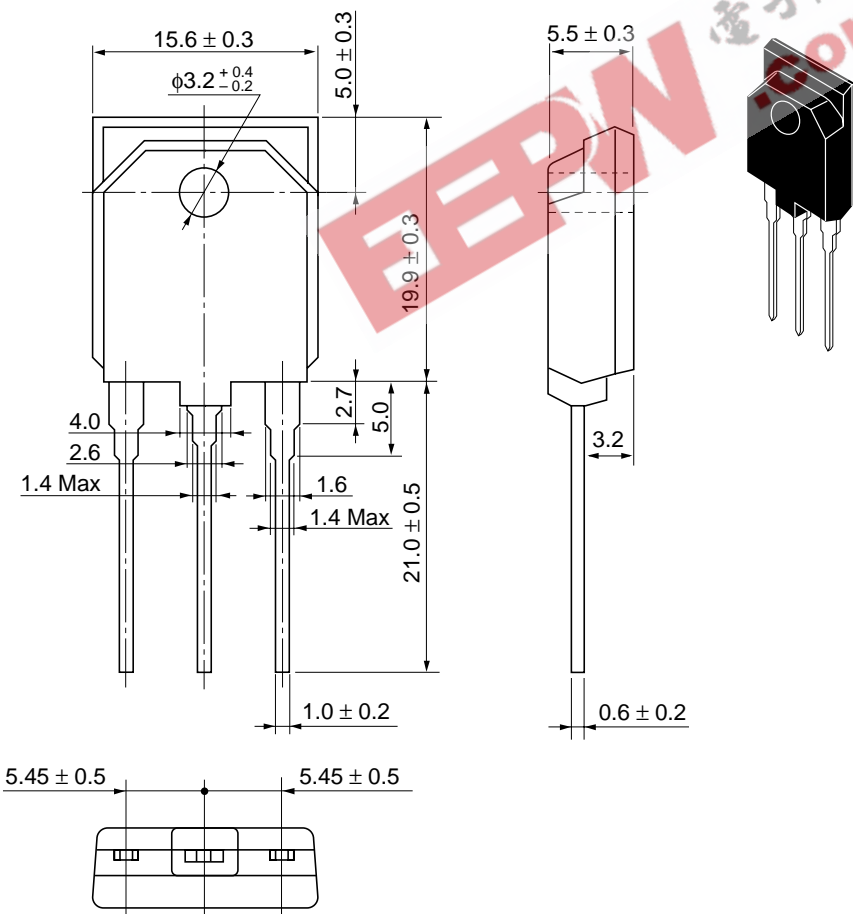


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Unit: mm



Hitachi Code	TO-3PFM
JEDEC	—
EIAJ	—
Weight (reference value)	5.6 g



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