

To our customers,

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## Old Company Name in Catalogs and Other Documents

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Renesas Electronics website: <http://www.renesas.com>

April 1<sup>st</sup>, 2010  
Renesas Electronics Corporation

Issued by: Renesas Electronics Corporation (<http://www.renesas.com>)

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## H5N2305PF

Silicon N Channel MOS FET  
High Speed Power Switching

REJ03G0026-0200Z

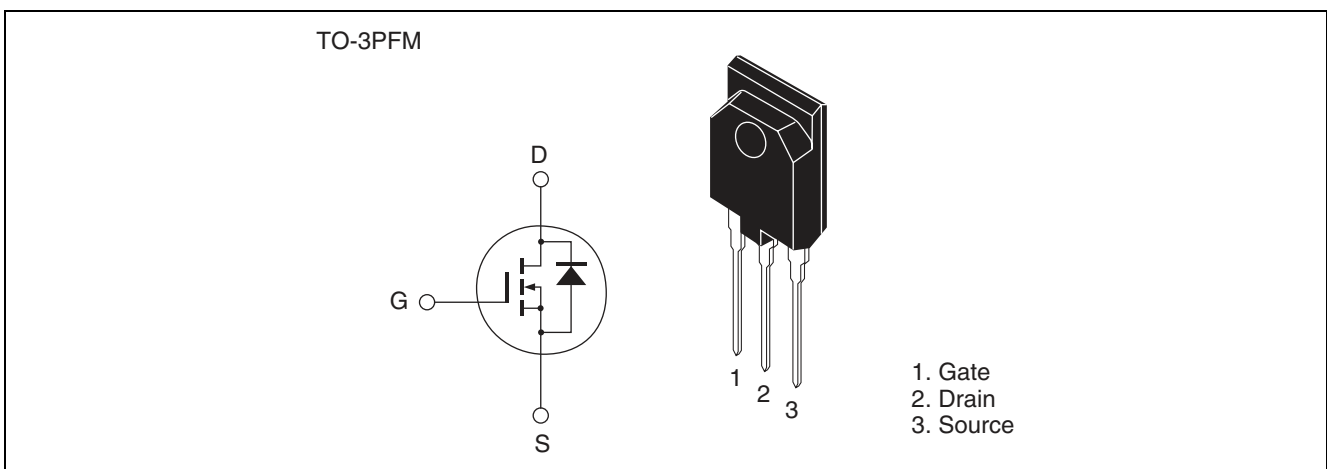
Rev.2.00

Jun.25.2004

### Features

- Low on-resistance
- Low leakage current
- High speed switching

### Outline



## Absolute Maximum Rating

(Ta = 25°C)

Item	Symbol	Rating	Unit
Drain to source voltage	V <sub>DSS</sub>	230	V
Gate to source voltage	V <sub>GSS</sub>	±30	V
Drain current	I <sub>D</sub>	35	A
Drain peak current	I <sub>D (pulse)</sub> <sup>Note1</sup>	140	A
Body-drain diode reverse drain current	I <sub>DR</sub>	35	A
Body-drain diode reverse drain peak current	I <sub>DR (pulse)</sub> <sup>Note1</sup>	140	A
Avalanche current	I <sub>AP</sub> <sup>Note3</sup>	18	A
Channel dissipation	P <sub>ch</sub> <sup>Note2</sup>	60	W
Channel to case thermal impedance	θ <sub>ch-c</sub>	2.08	°C /W
Channel temperature	T <sub>ch</sub>	150	°C
Storage temperature	T <sub>stg</sub>	-55 to +150	°C

Notes: 1. PW ≤ 10 ∞s, duty cycle ≤ 1%

2. Value at Tc = 25°C

3. STch = 25°C, Tch ≤ 150°C

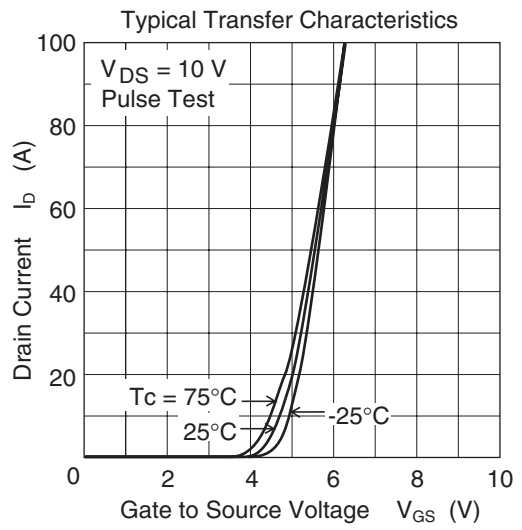
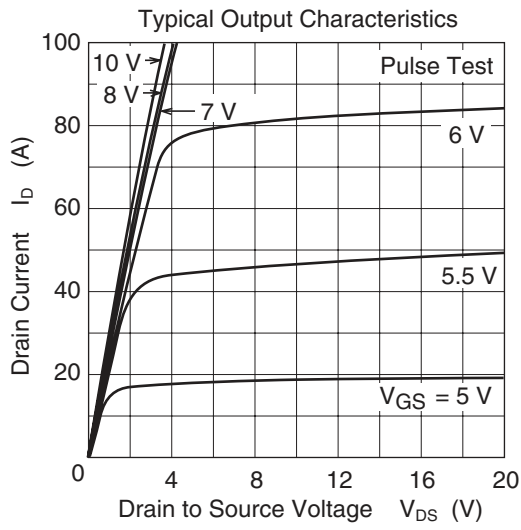
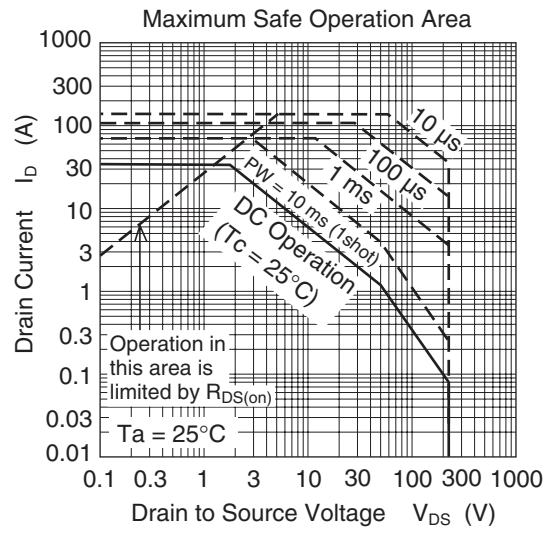
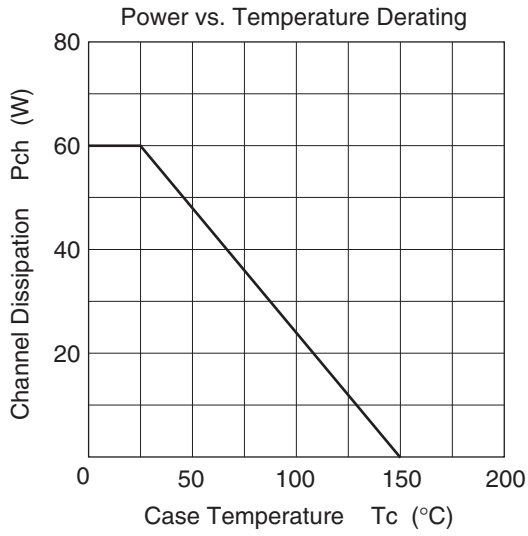
## Electrical Characteristics

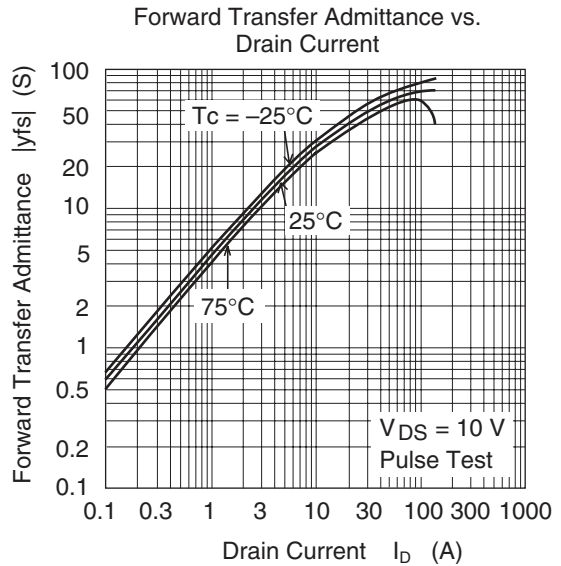
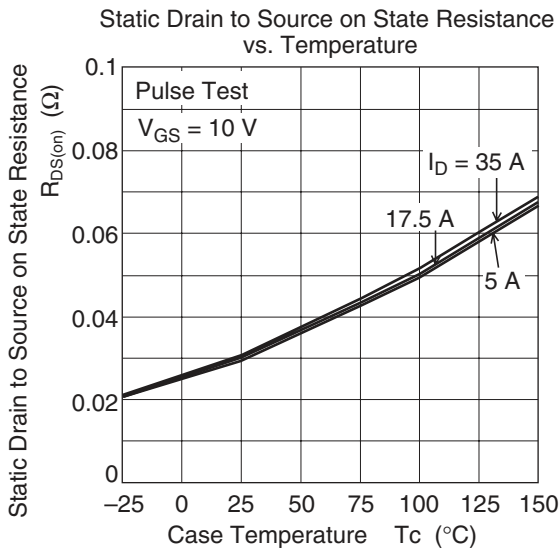
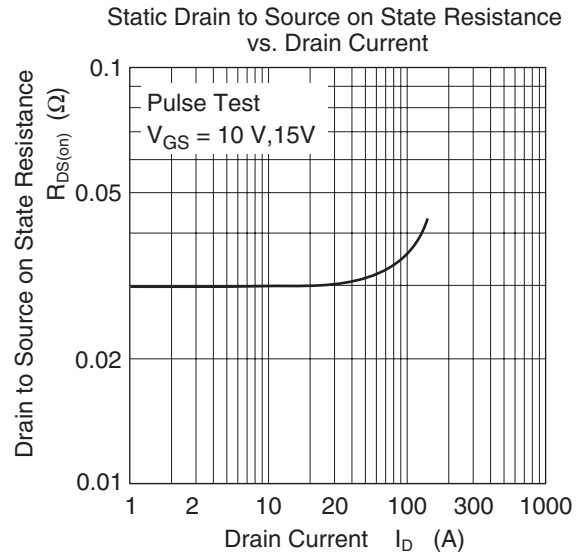
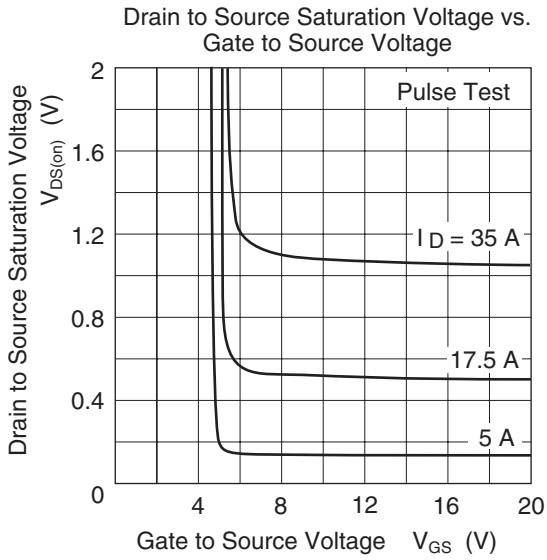
(Ta = 25°C)

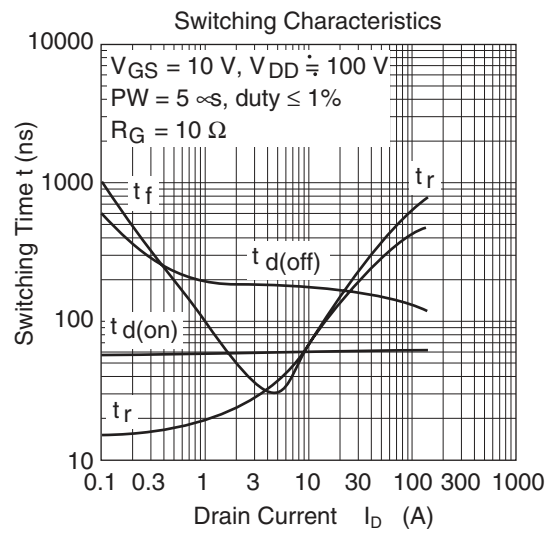
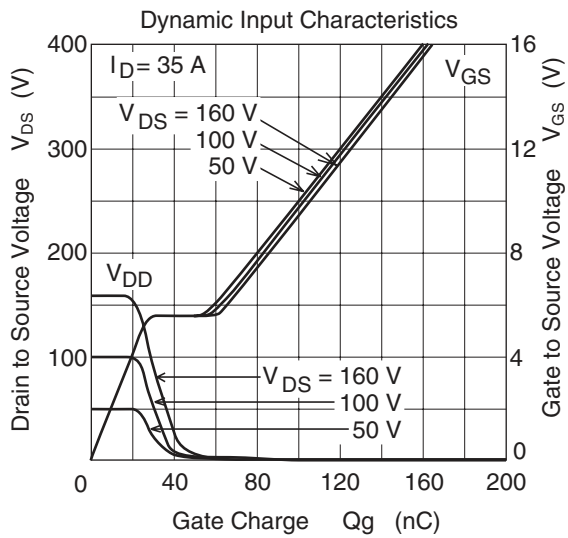
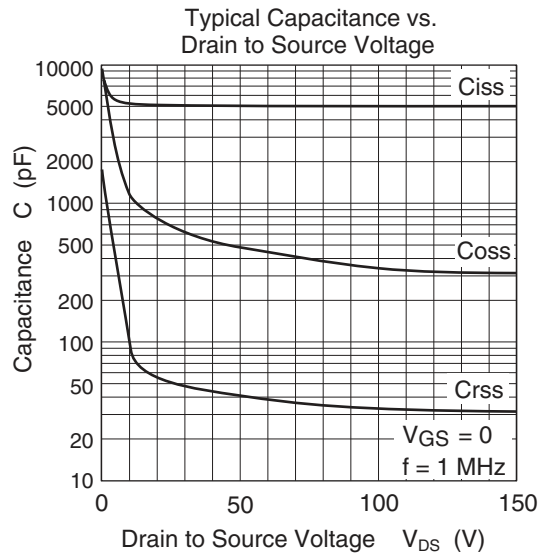
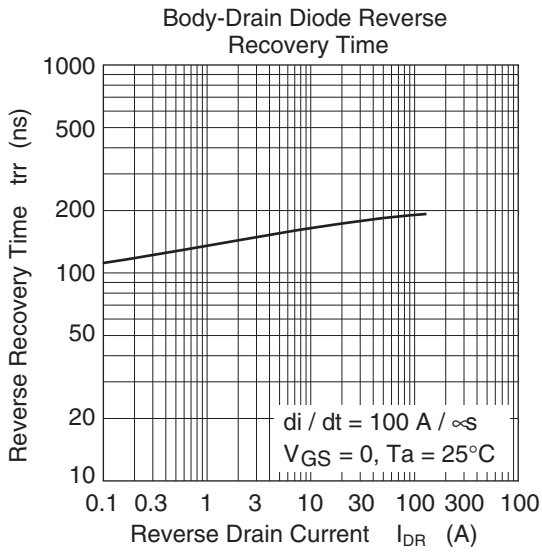
Item	Symbol	Min	Typ	Max	Unit	Test condition
Drain to Source breakdown voltage	$V_{(BR)DSS}$	230	—	—	V	$I_D = 10 \text{ mA}$ , $V_{GS} = 0$
Zero gate voltage drain current	$I_{DSS}$	—	—	1	$\infty$ A	$V_{DS} = 230 \text{ V}$ , $V_{GS} = 0$
Gate to source leak current	$I_{GSS}$	—	—	$\pm 0.1$	$\infty$ A	$V_{GS} = \pm 30 \text{ V}$ , $V_{DS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	2.5	—	4.0	V	$V_{DS} = 10 \text{ V}$ , $I_D = 1 \text{ mA}$
Forward transfer admittance	$ y_{fs} $	22	38	—	S	$I_D = 17.5 \text{ A}$ , $V_{DS} = 10 \text{ V}$ <sup>Note4</sup>
Static drain to source on state resistance	$R_{DS(on)}$	—	0.030	0.038	$\Omega$	$I_D = 17.5 \text{ A}$ , $V_{GS} = 10 \text{ V}$ <sup>Note4</sup>
Input capacitance	$C_{iss}$	—	5200	—	pF	$V_{DS} = 25 \text{ V}$
Output capacitance	$C_{oss}$	—	690	—	pF	$V_{GS} = 0$
Reverse transfer capacitance	$C_{rss}$	—	50	—	pF	$f = 1 \text{ MHz}$
Turn-on delay time	$t_{d(on)}$	—	60	—	ns	$I_D = 17.5 \text{ A}$
Rise time	$t_r$	—	130	—	ns	$R_L = 5.7 \Omega$
Turn-off delay time	$t_{d(off)}$	—	180	—	ns	$V_{GS} = 10 \text{ V}$
Fall time	$t_f$	—	120	—	ns	$R_g = 10 \Omega$
Total gate charge	$Q_g$	—	105	—	nC	$V_{DD} = 160 \text{ V}$
Gate to source charge	$Q_{gs}$	—	25	—	nC	$V_{GS} = 10 \text{ V}$
Gate to drain charge	$Q_{gd}$	—	37	—	nC	$I_D = 35 \text{ A}$
Body-drain diode forward voltage	$V_{DF}$	—	0.92	1.4	V	$I_F = 35 \text{ A}$ , $V_{GS} = 0$ <sup>Note4</sup>
Body-drain diode reverse recovery time	$t_{rr}$	—	180	—	ns	$I_F = 35 \text{ A}$ , $V_{GS} = 0$ $diF/dt = 100 \text{ A}/\infty\text{s}$
Body-drain diode reverse recovery charge	$Q_{rr}$	—	1.3	—	$\infty$ C	

Notes: 4. Pulse test

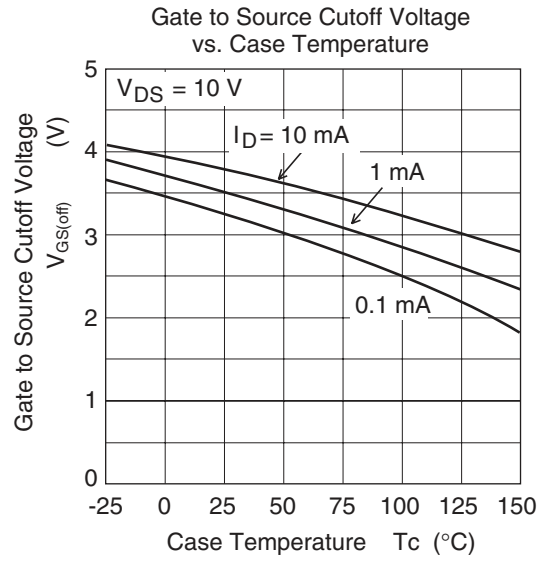
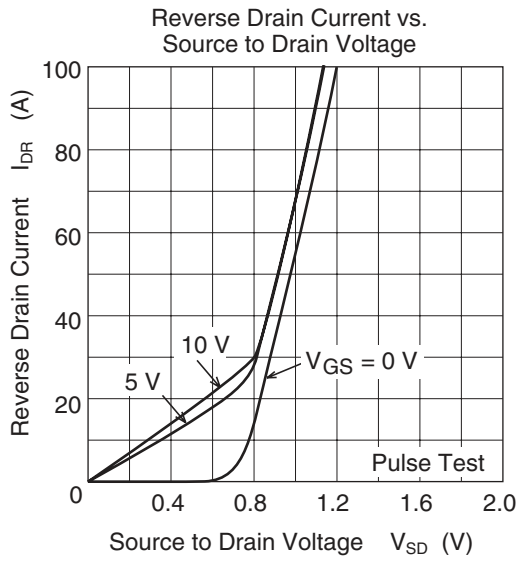
Main Characteristics



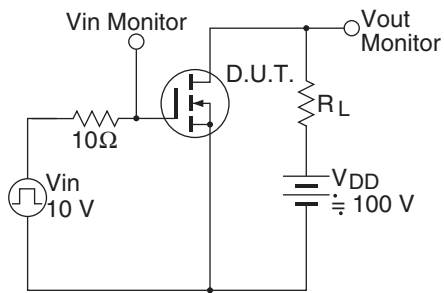




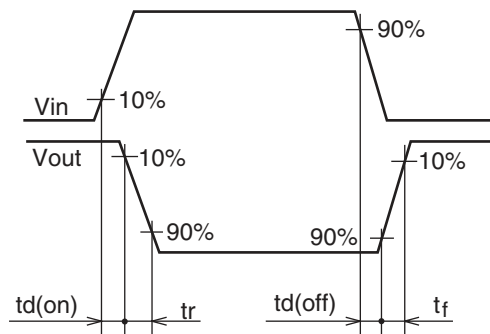


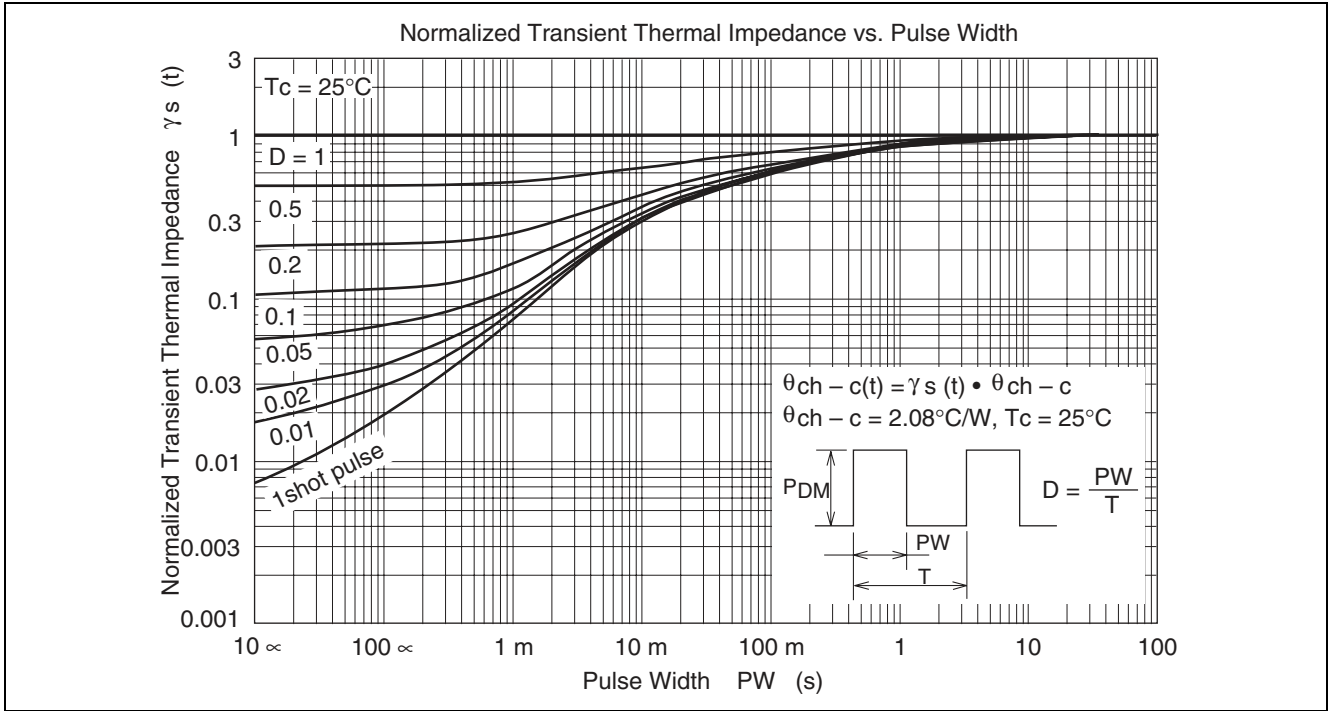


Switching Time Test Circuit



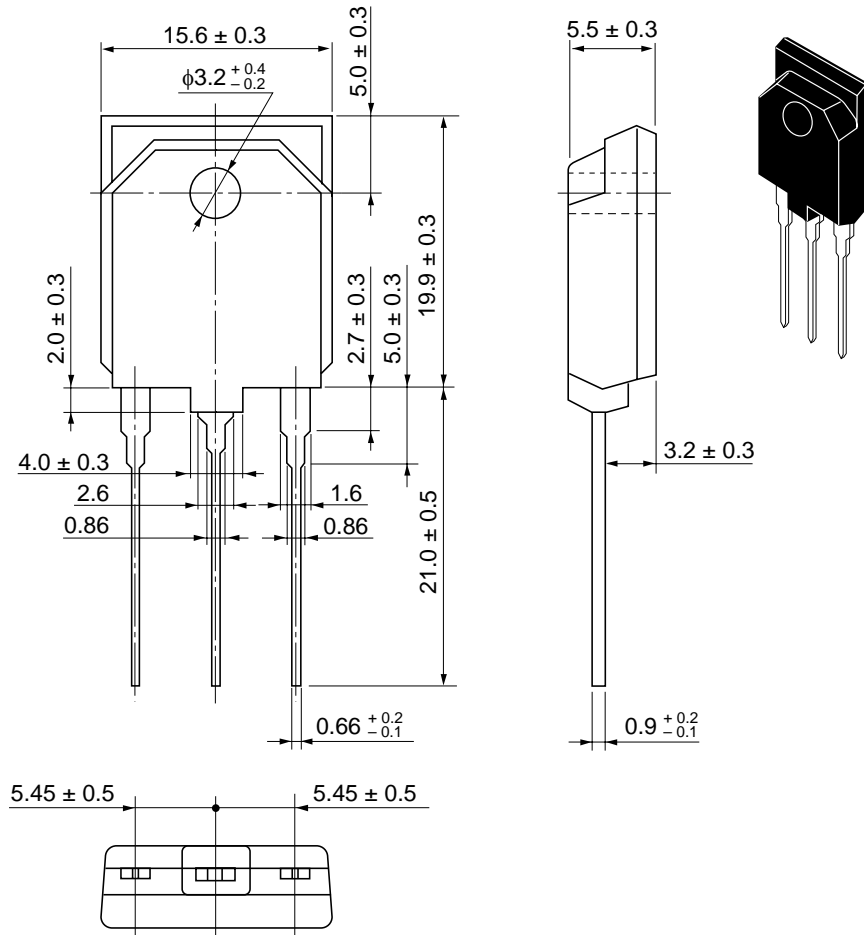
Waveform





Package Dimensions

As of January, 2003  
Unit: mm



Package Code	TO-3PFM
JEDEC	—
JEITA	—
Mass (reference value)	5.2 g

Ordering Information

Part Name	Quantity	Shipping Container
H5N2305PF-E	30 pcs	Plastic magazine

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