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

April 1st, 2010
Renesas Electronics Corporation

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

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H5N2306PF

Silicon N Channel MOS FET
High Speed Power Switching

REJ03G0031-0200Z

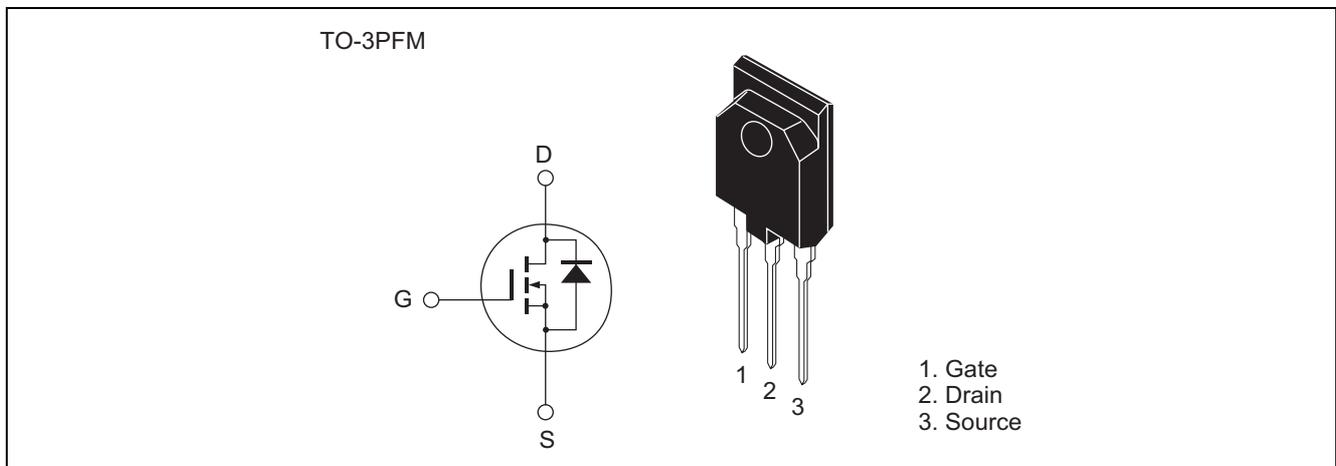
Rev.2.00

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 _{DSS}	230	V
Gate to source voltage	V _{GSS}	±30	V
Drain current	I _D	30	A
Drain peak current	I _{D (pulse)} ^{Note1}	160	A
Body-drain diode reverse drain current	I _{DR}	30	A
Body-drain diode reverse drain peak current	I _{DR (pulse)} ^{Note1}	160	A
Avalanche current	I _{AP} ^{Note3}	15	A
Channel dissipation	P _{ch} ^{Note2}	60	W
Channel to case thermal impedence	θ _{ch-c}	2.08	°C/W
Channel temperature	T _{ch}	150	°C
Storage temperature	T _{stg}	-55 to +150	°C

Notes: 1. PW ≤ 10 μs, duty cycle ≤ 1%

2. Value at T_c = 25°C3. ST_{ch} = 25°C, T_{ch} ≤ 150°C

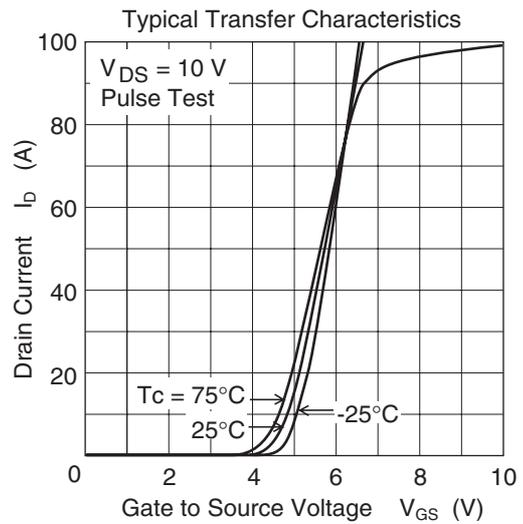
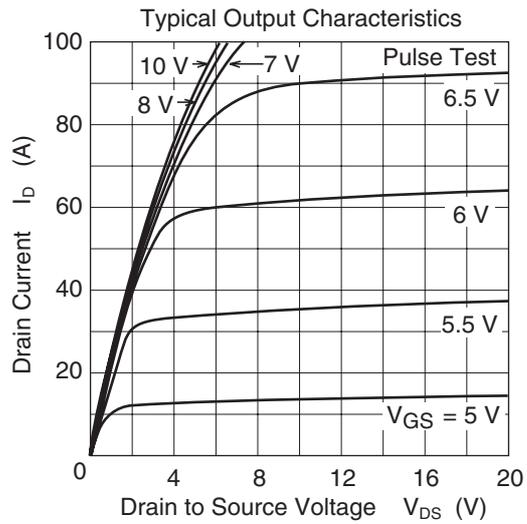
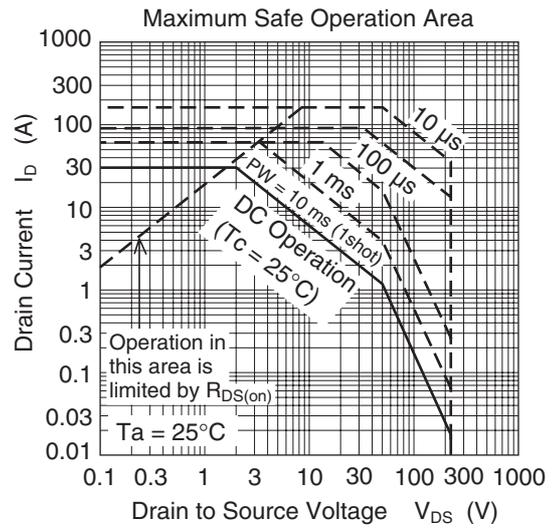
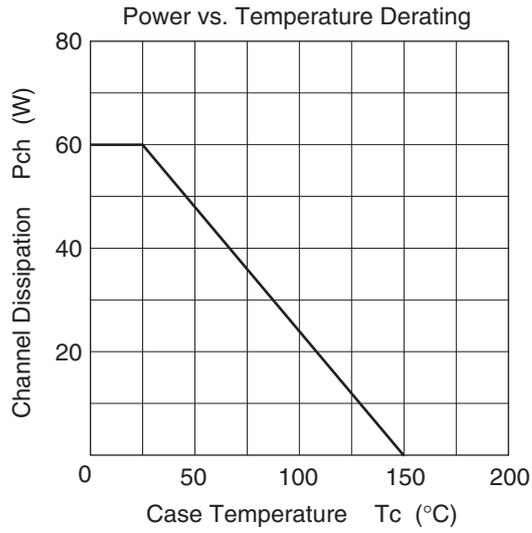
Electrical Characteristics

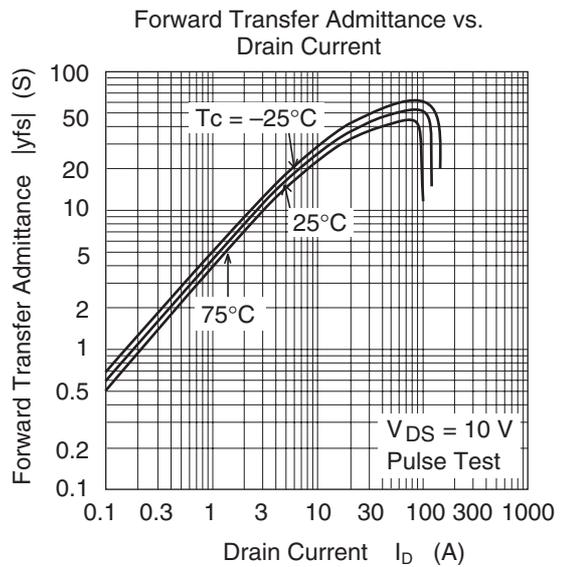
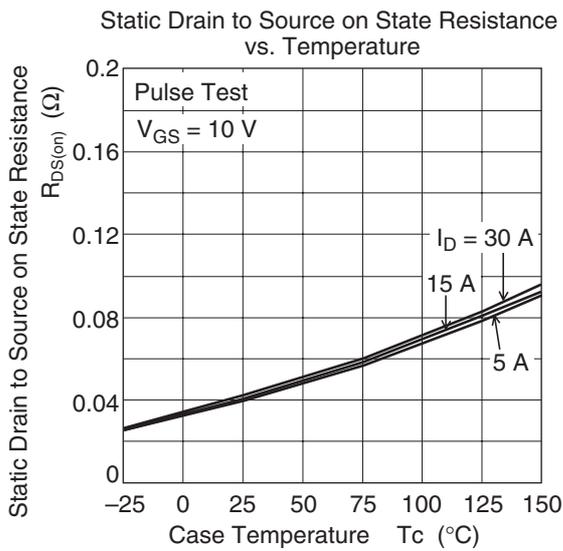
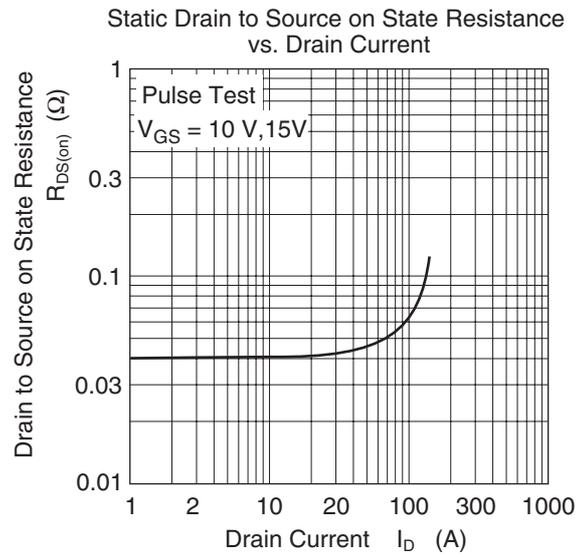
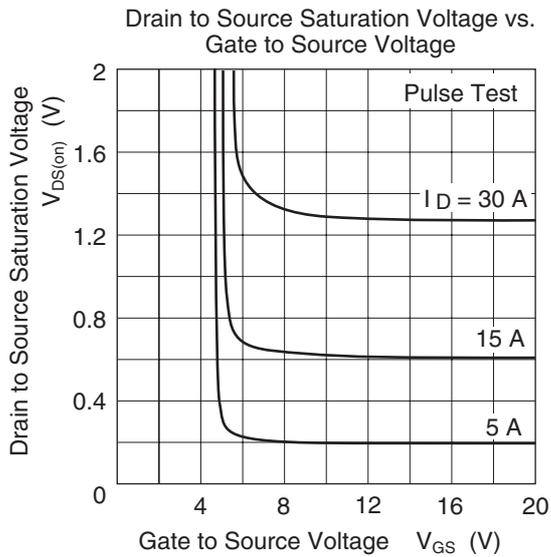
(Ta = 25°C)

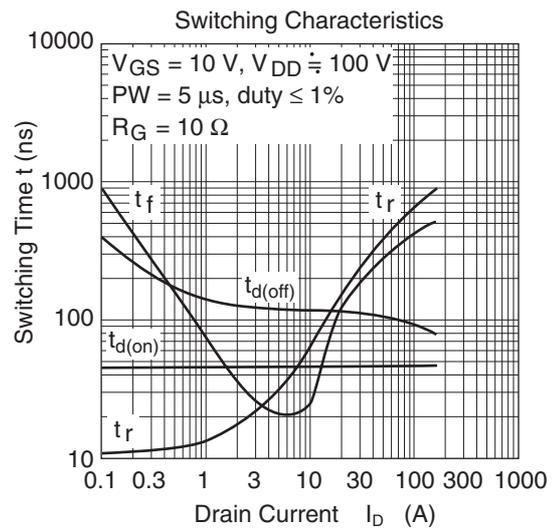
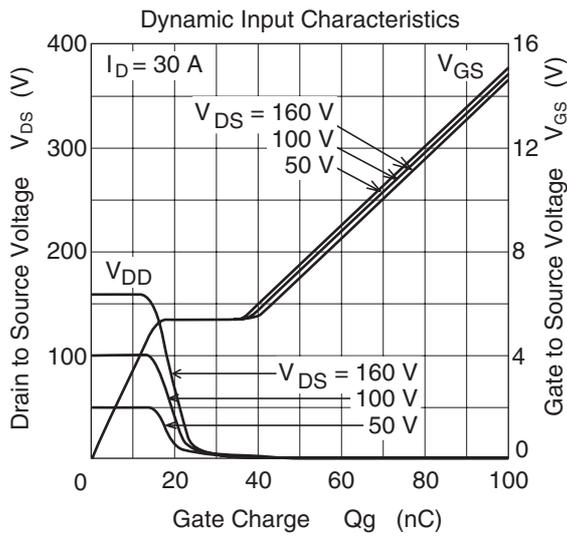
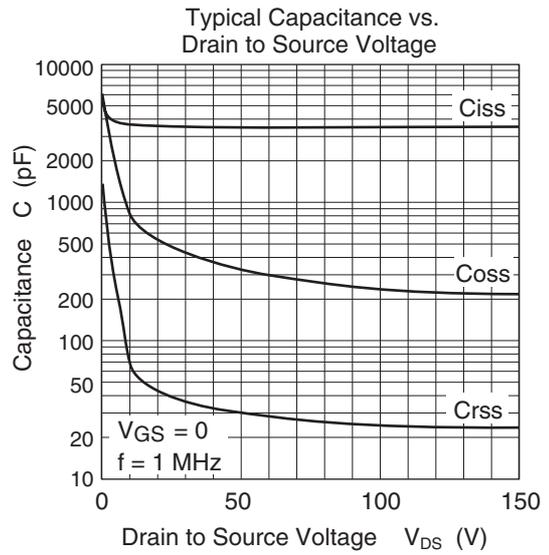
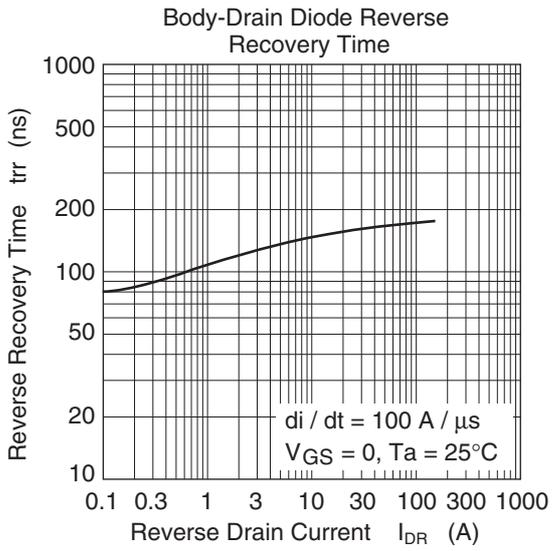
Item	Symbol	Min	Typ	Max	Unit	Test condition
Drain to Source breakdown voltage	$V_{(BR)DSS}$	230	—	—	V	$I_D = 10 \text{ mA}$, $V_{GS} = 0$
Zero gate voltage drain current	I_{DSS}	—	—	1	μA	$V_{DS} = 230 \text{ V}$, $V_{GS} = 0$
Gate to source leak current	I_{GSS}	—	—	± 0.1	μA	$V_{GS} = \pm 30 \text{ V}$, $V_{DS} = 0$
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} $	19	32	—	S	$I_D = 15 \text{ A}$, $V_{DS} = 10 \text{ V}$ ^{Note4}
Static drain to source on state resistance	$R_{DS(on)}$	—	0.041	0.052	Ω	$I_D = 15 \text{ A}$, $V_{GS} = 10 \text{ V}$ ^{Note4}
Input capacitance	C_{iss}	—	3500	—	pF	$V_{DS} = 25 \text{ V}$
Output capacitance	C_{oss}	—	480	—	pF	$V_{GS} = 0$
Reverse transfer capacitance	C_{rss}	—	40	—	pF	$f = 1 \text{ MHz}$
Turn-on delay time	$t_{d(on)}$	—	45	—	ns	$I_D = 15 \text{ A}$
Rise time	t_r	—	110	—	ns	$V_{GS} = 10 \text{ V}$
Turn-off delay time	$t_{d(off)}$	—	125	—	ns	$R_L = 6.7 \Omega$
Fall time	t_f	—	80	—	ns	$R_g = 10 \Omega$
Total gate charge	Q_g	—	70	—	nC	$V_{DD} = 160 \text{ V}$
Gate to source charge	Q_{gs}	—	17	—	nC	$V_{GS} = 10 \text{ V}$
Gate to drain charge	Q_{gd}	—	24	—	nC	$I_D = 30 \text{ A}$
Body-drain diode forward voltage	V_{DF}	—	0.9	1.4	V	$I_F = 30 \text{ A}$, $V_{GS} = 0$ ^{Note4}
Body-drain diode reverse recovery time	t_{rr}	—	170	—	ns	$I_F = 30 \text{ A}$, $V_{GS} = 0$ $diF/dt = 100 \text{ A}/\mu\text{s}$
Body-drain diode reverse recovery charge	Q_{rr}	—	1.0	—	μC	

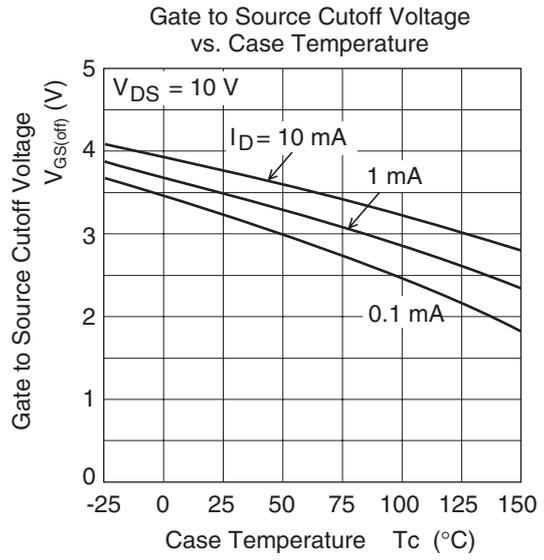
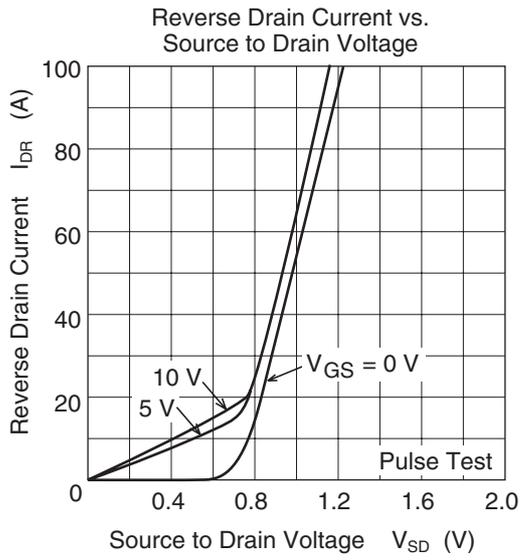
Notes: 4. Pulse test

Main Characteristics

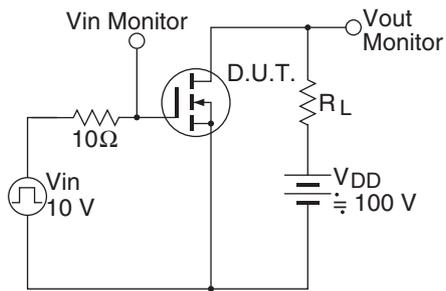




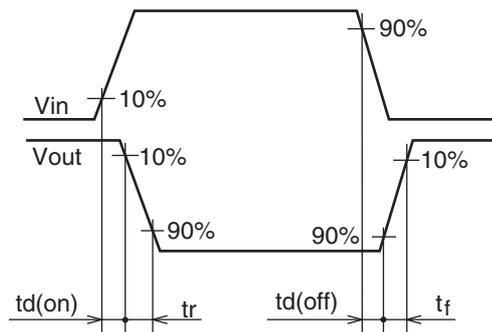


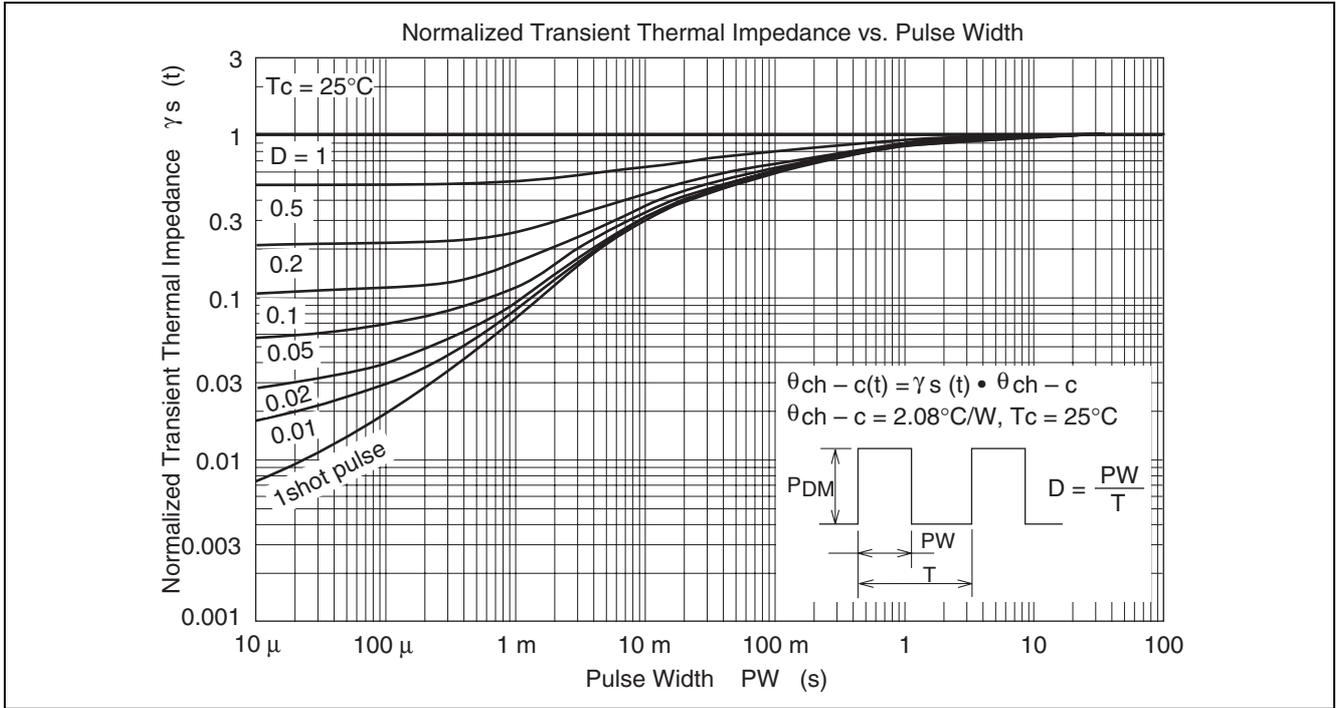


Switching Time Test Circuit



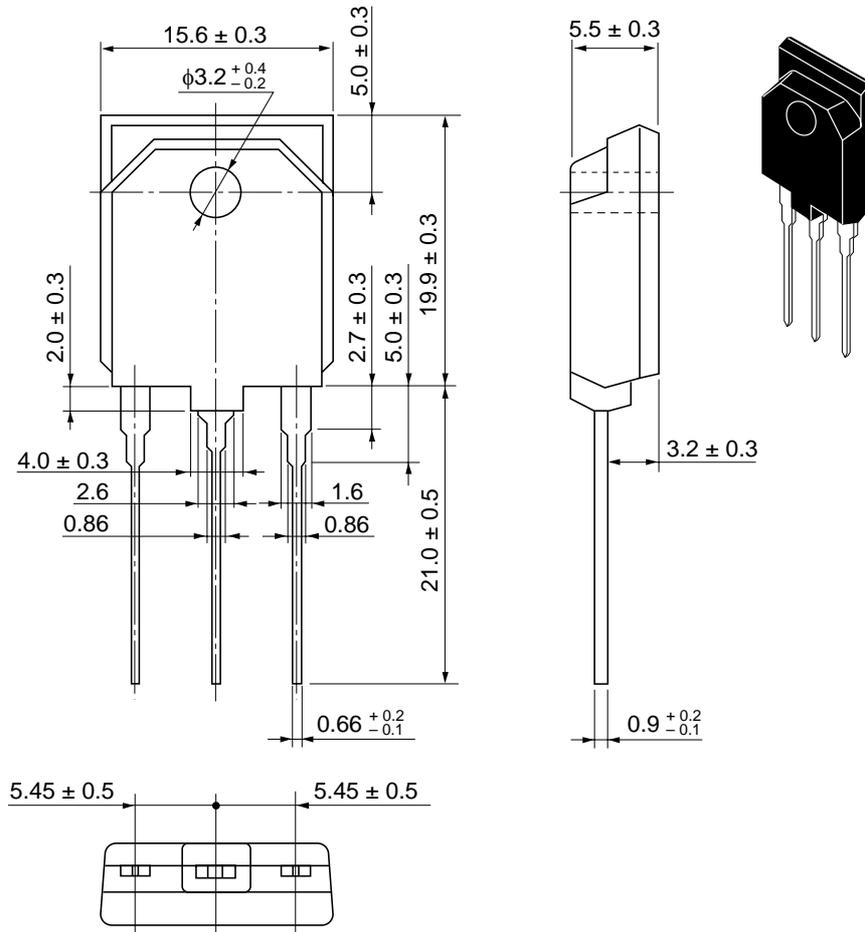
Waveform





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
H5N2306PF-E	30 pcs	Plastic magazine

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