

# H5N2801P

Silicon N Channel MOS FET  
High Speed Power Switching

REJ03G0118-0100Z

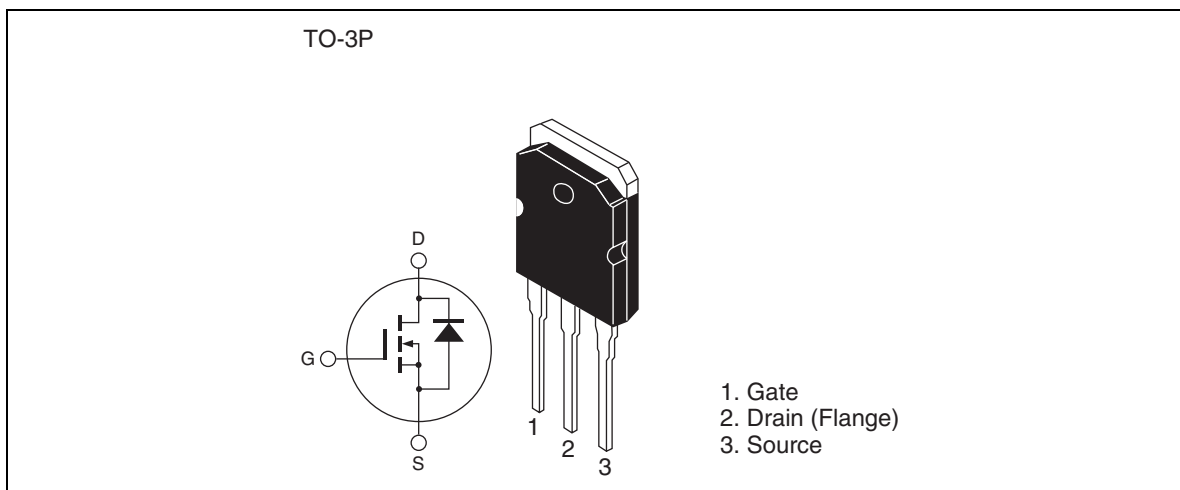
Rev.1.00

Oct.01.2003

## Features

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

## Outline



**Absolute Maximum Rating**

(Ta = 25°C)

Item	Symbol	Rating	Unit
Drain to source voltage	V <sub>DSS</sub>	280	V
Gate to source voltage	V <sub>GSS</sub>	±30	V
Drain current	I <sub>D</sub>	60	A
Drain peak current	I <sub>D (pulse)</sub> <sup>Note1</sup>	240	A
Body-drain diode reverse drain current	I <sub>DR</sub>	60	A
Avalanche current	I <sub>AP</sub> <sup>Note3</sup>	35	A
Avalanche energy	E <sub>AR</sub> <sup>Note3</sup>	74.5	mJ
Channel dissipation	P <sub>ch</sub> <sup>Note2</sup>	150	W
Channel to case thermal impedance	θ <sub>ch-c</sub>	0.833	°C /W
Channel temperature	T <sub>ch</sub>	150	°C
Storage temperature	T <sub>stg</sub>	–55 to +150	°C

Notes: 1. PW ≤ 10 μs, duty cycle ≤ 1%

2. Value at T<sub>c</sub> = 25°C3. ST<sub>ch</sub> = 25°C, T<sub>ch</sub> ≤ 150°C

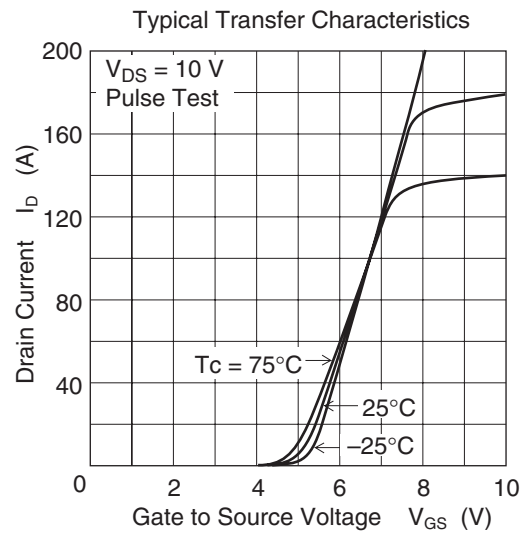
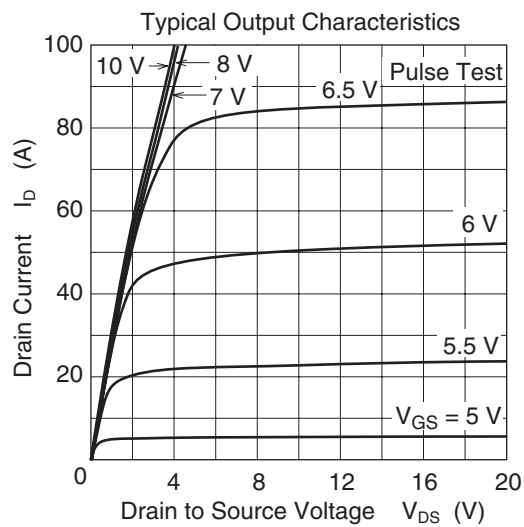
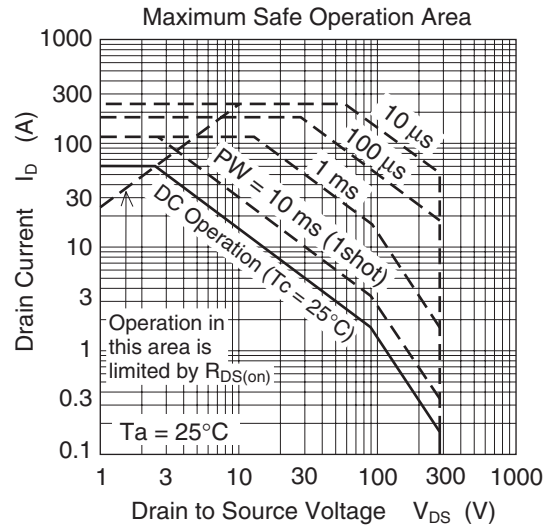
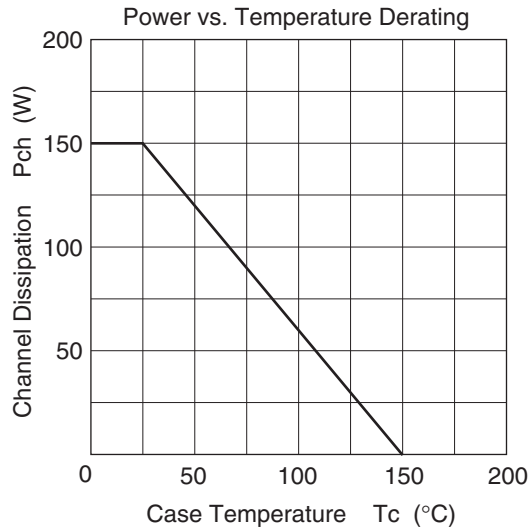
## Electrical Characteristics

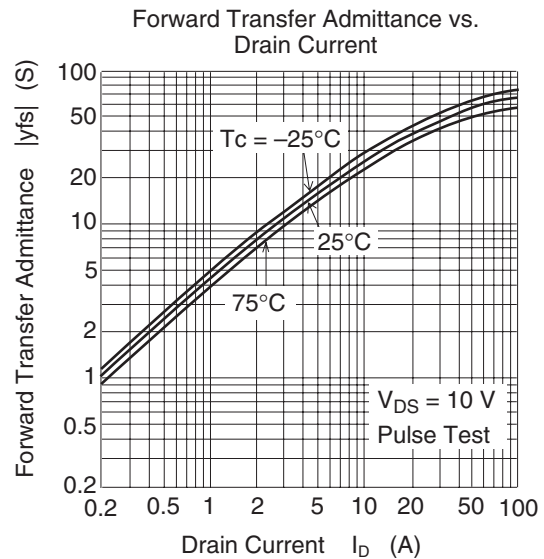
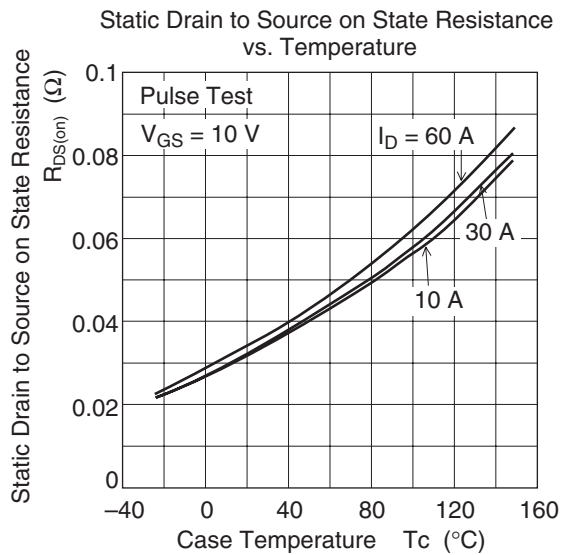
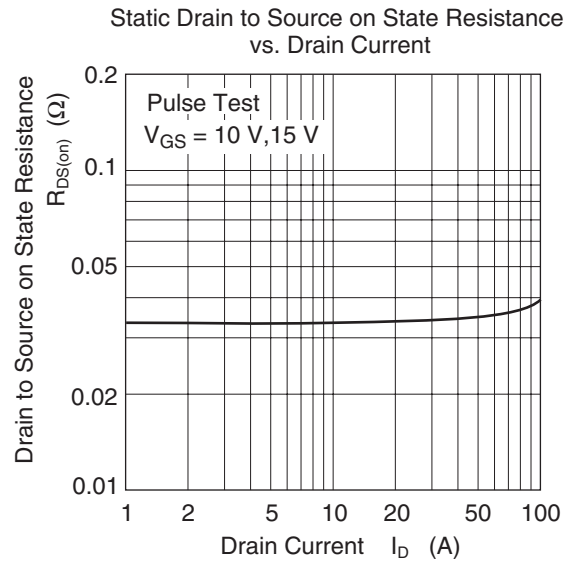
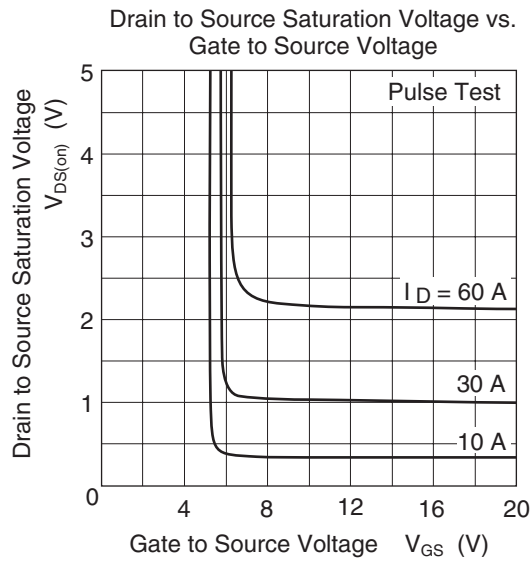
(Ta = 25°C)

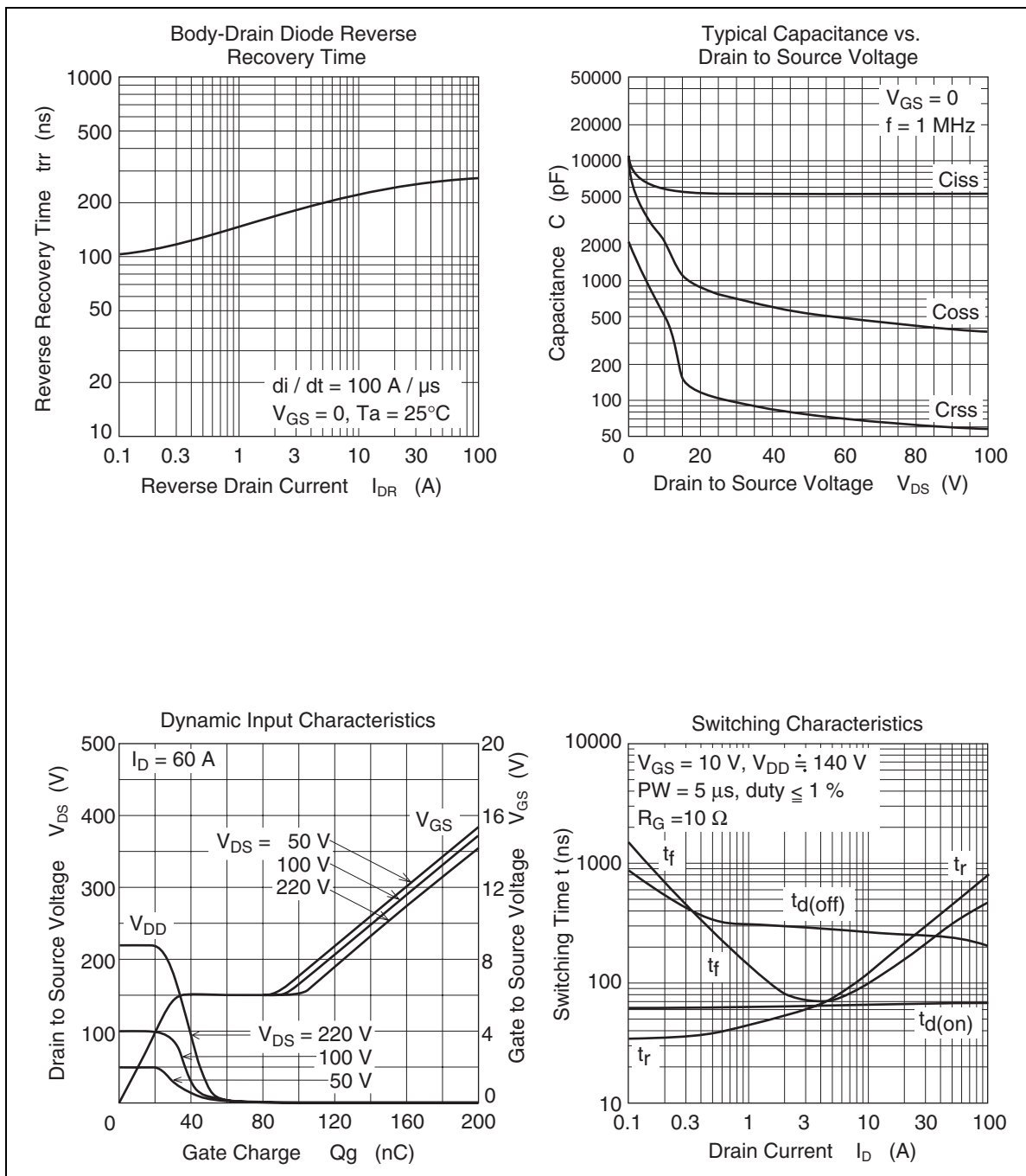
Item	Symbol	Min	Typ	Max	Unit	Test condition
Drain to Source breakdown voltage	$V_{(BR)DSS}$	280	—	—	V	$I_D = 10 \text{ mA}$ , $V_{GS} = 0$
Zero gate voltage drain current	$I_{DSS}$	—	—	1	$\mu\text{A}$	$V_{DS} = 280 \text{ V}$ , $V_{GS} = 0$
Gate to source leak current	$I_{GSS}$	—	—	$\pm 0.1$	$\mu\text{A}$	$V_{GS} = \pm 30 \text{ V}$ , $V_{DS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	3.0	—	4.5	V	$V_{DS} = 10 \text{ V}$ , $I_D = 1 \text{ mA}$
Forward transfer admittance	$ y_{fs} $	27	45	—	S	$I_D = 30 \text{ A}$ , $V_{DS} = 10 \text{ V}$ <sup>Note4</sup>
Static drain to source on state resistance	$R_{DS(on)}$	—	0.034	0.043	$\Omega$	$I_D = 30 \text{ A}$ , $V_{GS} = 10 \text{ V}$ <sup>Note4</sup>
Input capacitance	$C_{iss}$	—	5400	—	pF	$V_{DS} = 25 \text{ V}$ $V_{GS} = 0$ $f = 1 \text{ MHz}$
Output capacitance	$C_{oss}$	—	770	—	pF	
Reverse transfer capacitance	$C_{rss}$	—	100	—	pF	
Turn-on delay time	$t_{d(on)}$	—	70	—	ns	$I_D = 30 \text{ A}$ $R_L = 4.7 \Omega$ $V_{GS} = 10 \text{ V}$ $R_g = 10 \Omega$
Rise time	$t_r$	—	300	—	ns	
Turn-off delay time	$t_{d(off)}$	—	250	—	ns	
Fall time	$t_f$	—	210	—	ns	
Total gate charge	$Q_g$	—	148	—	nC	$V_{DD} = 220 \text{ V}$ $V_{GS} = 10 \text{ V}$ $I_D = 60 \text{ A}$
Gate to source charge	$Q_{gs}$	—	30	—	nC	
Gate to drain charge	$Q_{gd}$	—	73	—	nC	
Body-drain diode forward voltage	$V_{DF}$	—	1.10	1.65	V	$I_F = 60 \text{ A}$ , $V_{GS} = 0$ <sup>Note4</sup>
Body-drain diode reverse recovery time	$t_{rr}$	—	270	—	ns	$I_F = 60 \text{ A}$ , $V_{GS} = 0$ $diF/dt = 100 \text{ A}/\mu\text{s}$
Body-drain diode reverse recovery charge	$Q_{rr}$	—	2.8	—	$\mu\text{C}$	

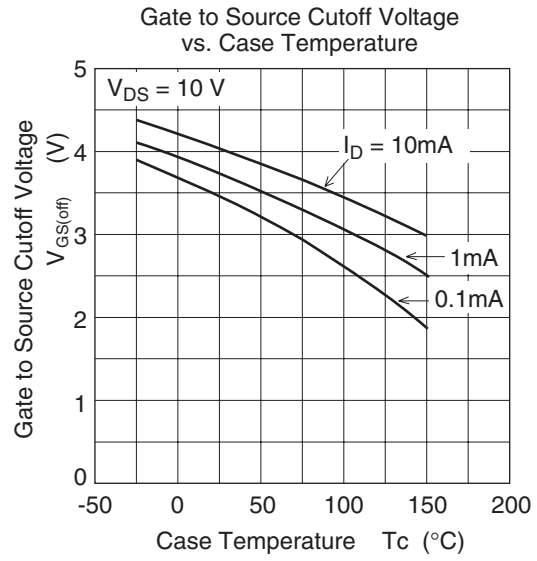
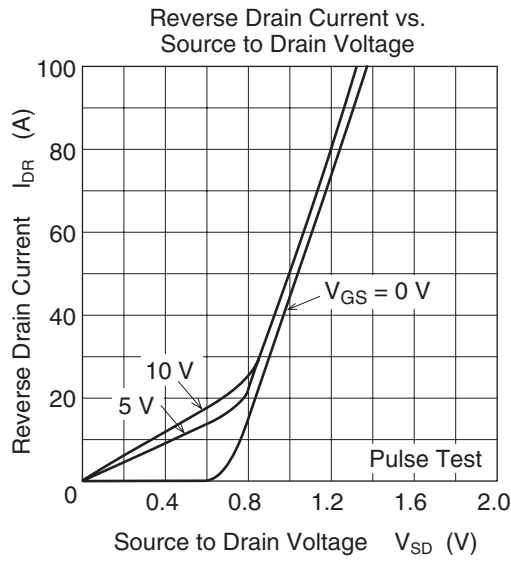
Notes: 4. Pulse test

## Main Characteristics

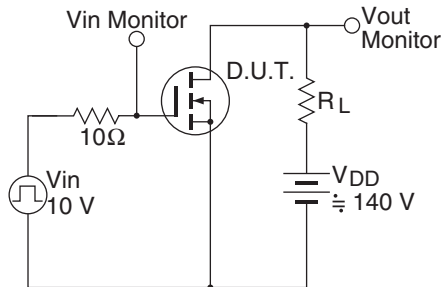




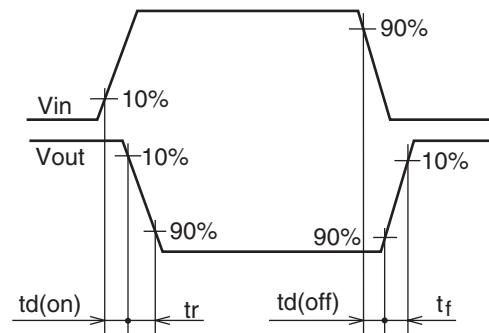


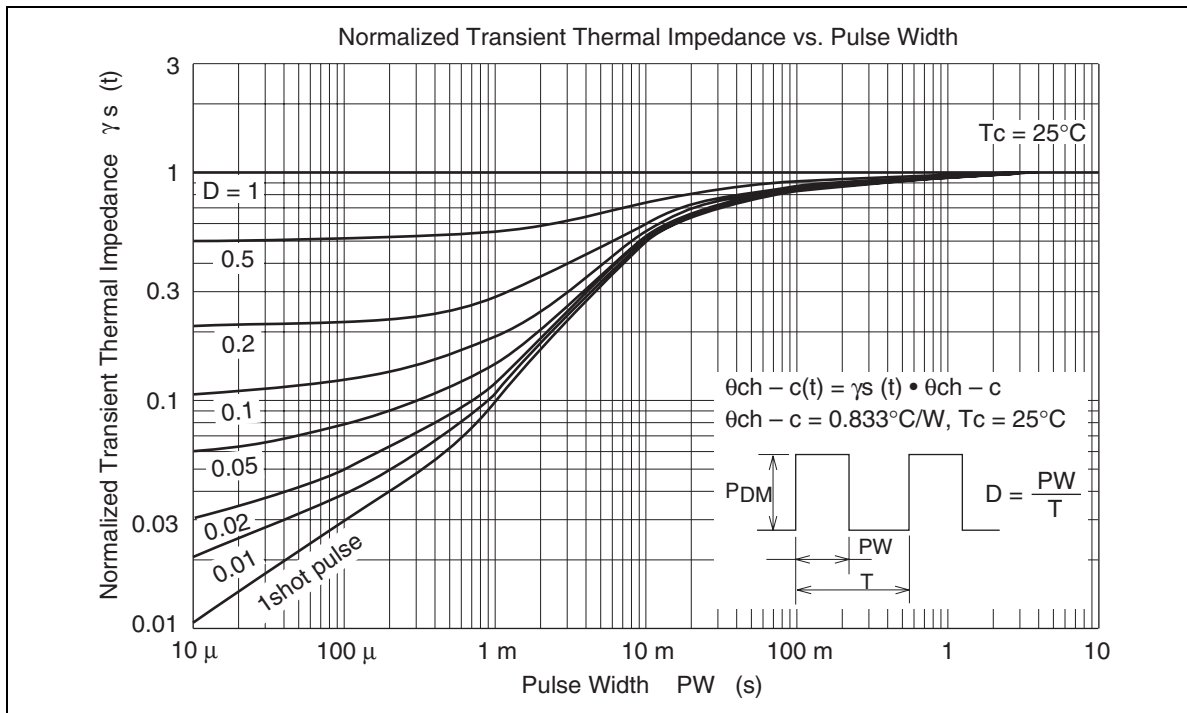


Switching Time Test Circuit



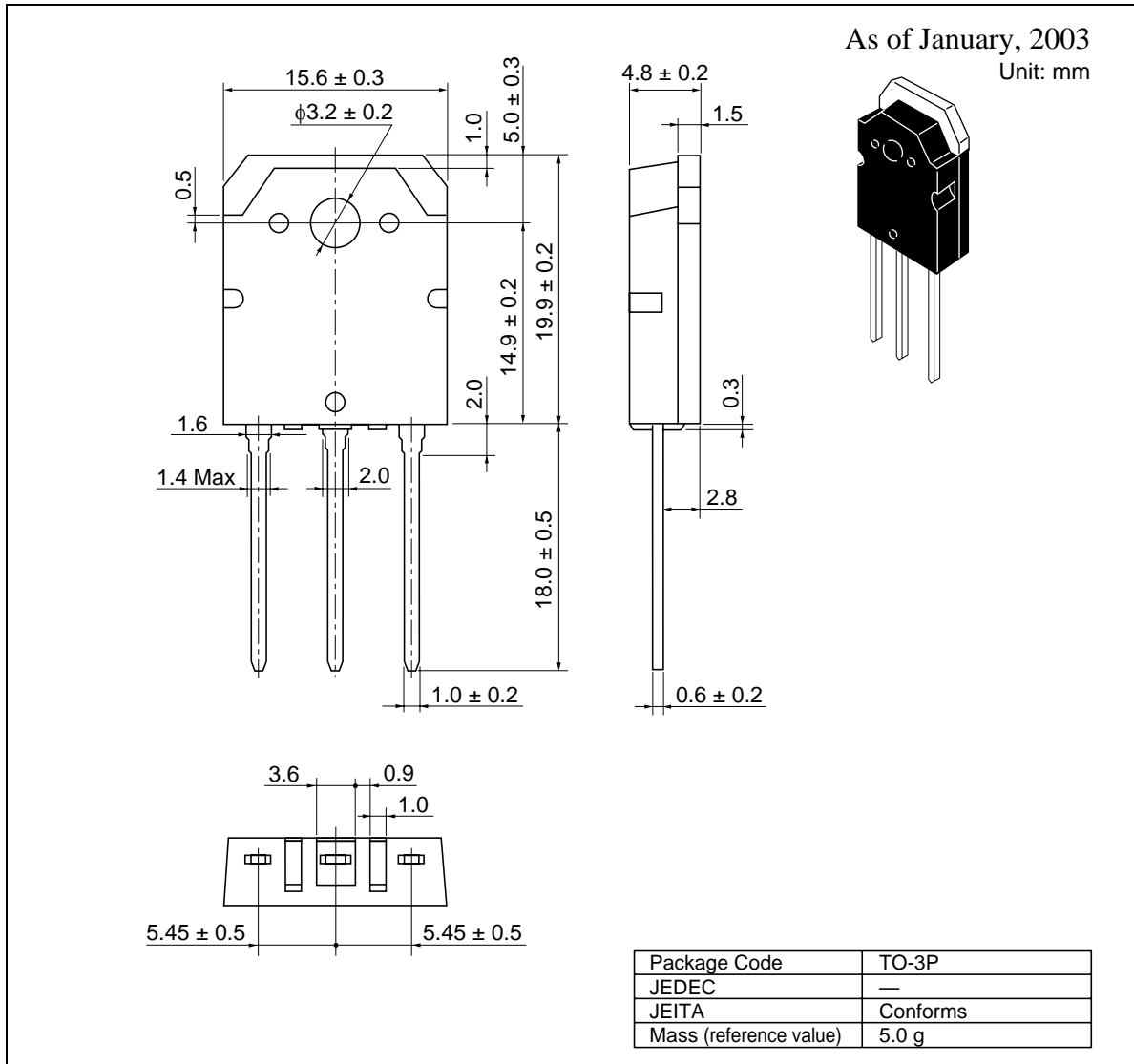
Waveform







Package Dimensions



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