

## H5N3003P

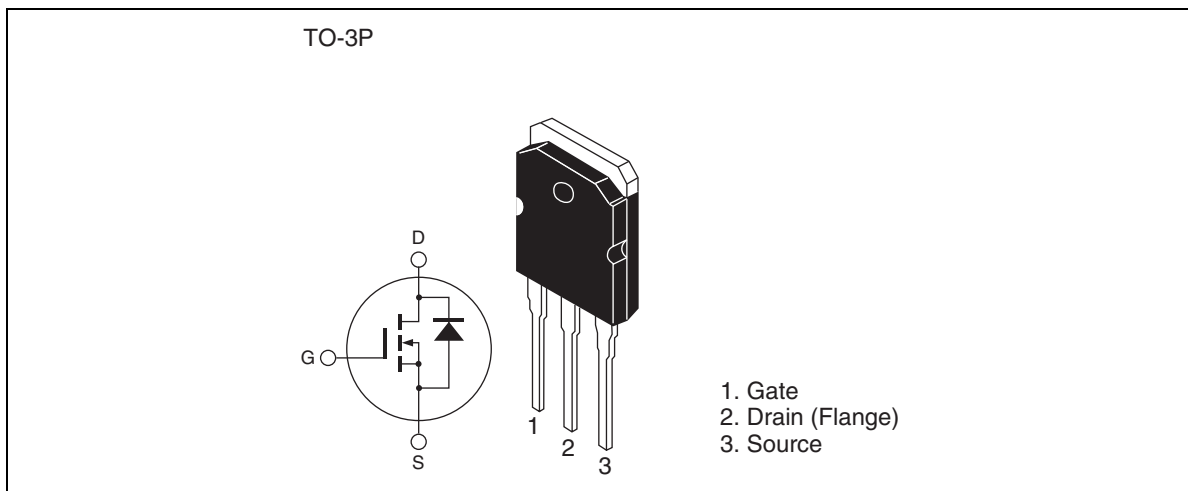
Silicon N Channel MOS FET  
High Speed Power Switching

REJ03G0007-0200Z  
(Previous ADE-208-1547A(Z))  
Rev.2.00  
Aug.01.2003

### Features

- Low on-resistance
- Low leakage current
- High Speed Switching

### Outline



**Absolute Maximum Ratings**

(Ta = 25°C)

<b>Item</b>	<b>Symbol</b>	<b>Ratings</b>	<b>Unit</b>
Drain to source voltage	V <sub>DSS</sub>	300	V
Gate to source voltage	V <sub>GSS</sub>	±30	V
Drain current	I <sub>D</sub>	40	A
Drain peak current	I <sub>D</sub> (pulse) <sup>Note1</sup>	160	A
Body-drain diode reverse drain current	I <sub>DR</sub>	40	A
Body-drain diode reverse drain peak current	I <sub>DR</sub> (pulse) <sup>Note1</sup>	160	A
Avalanche current	I <sub>AP</sub> <sup>Note3</sup>	30	A
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 Tc = 25°C  
3. T<sub>ch</sub> ≤ 150°C

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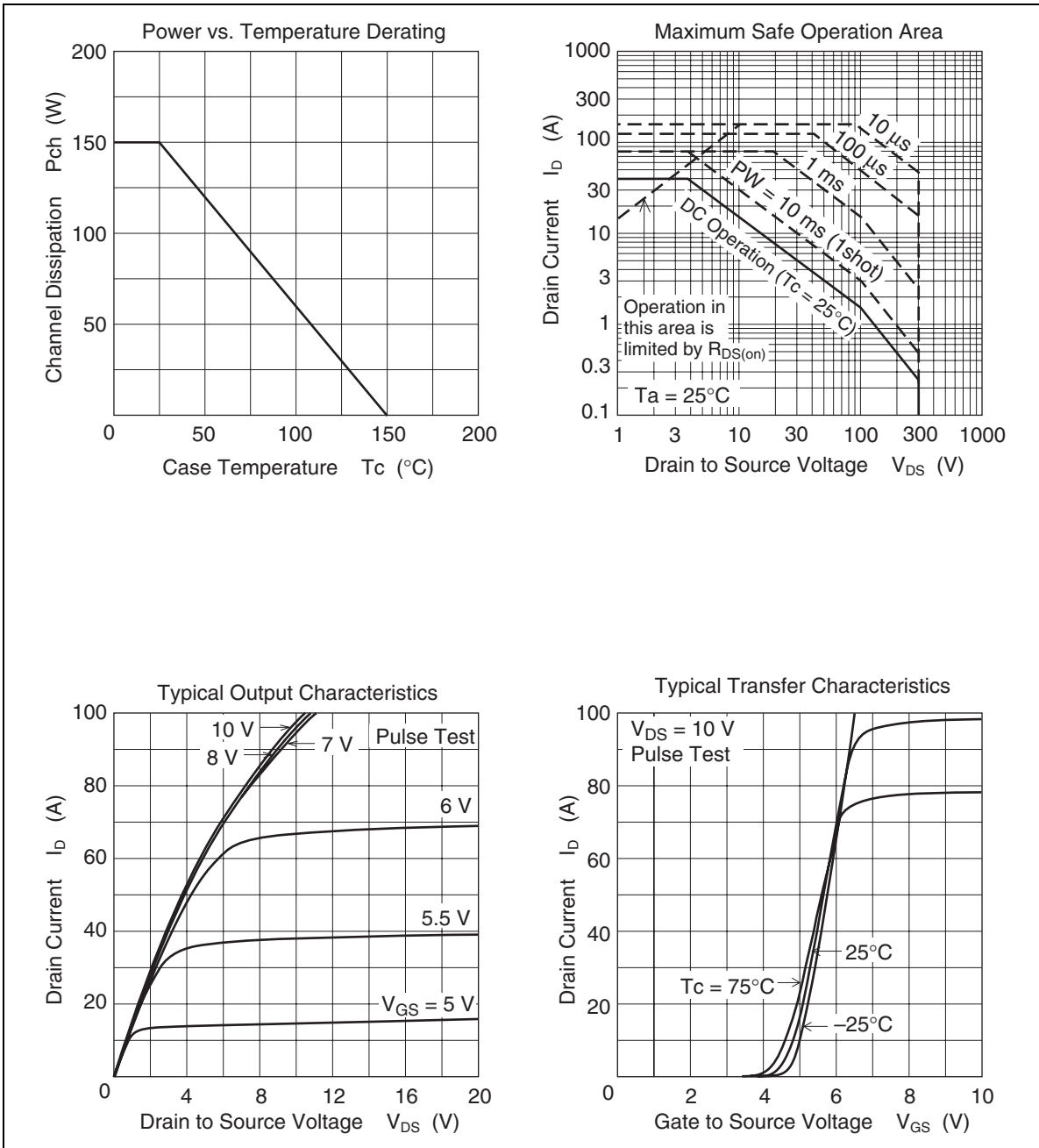
### Electrical Characteristics

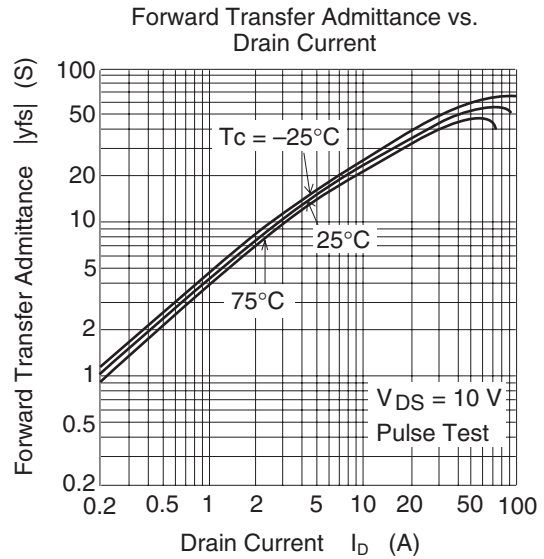
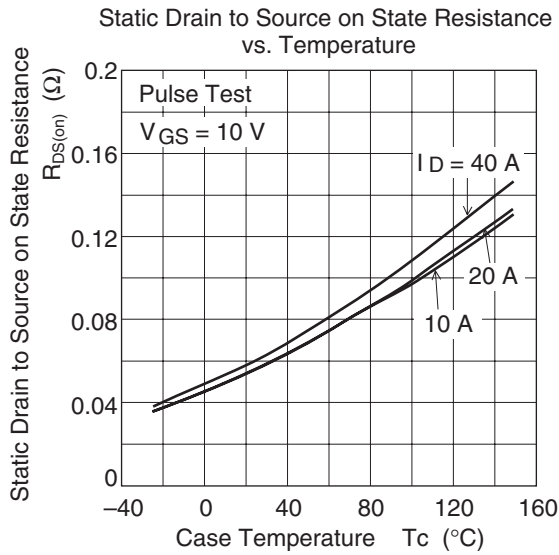
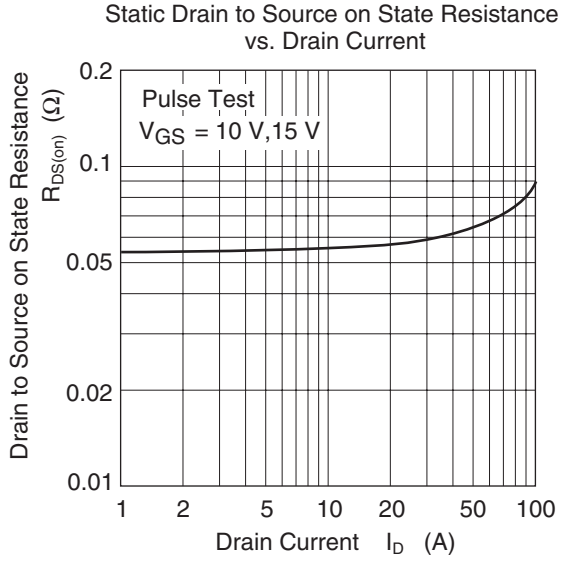
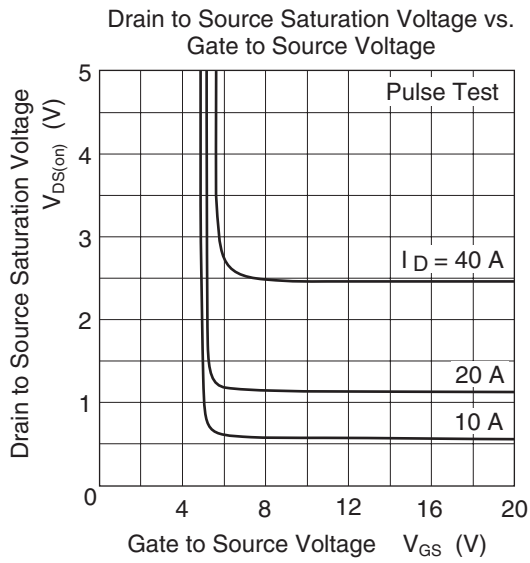
(Ta = 25°C)

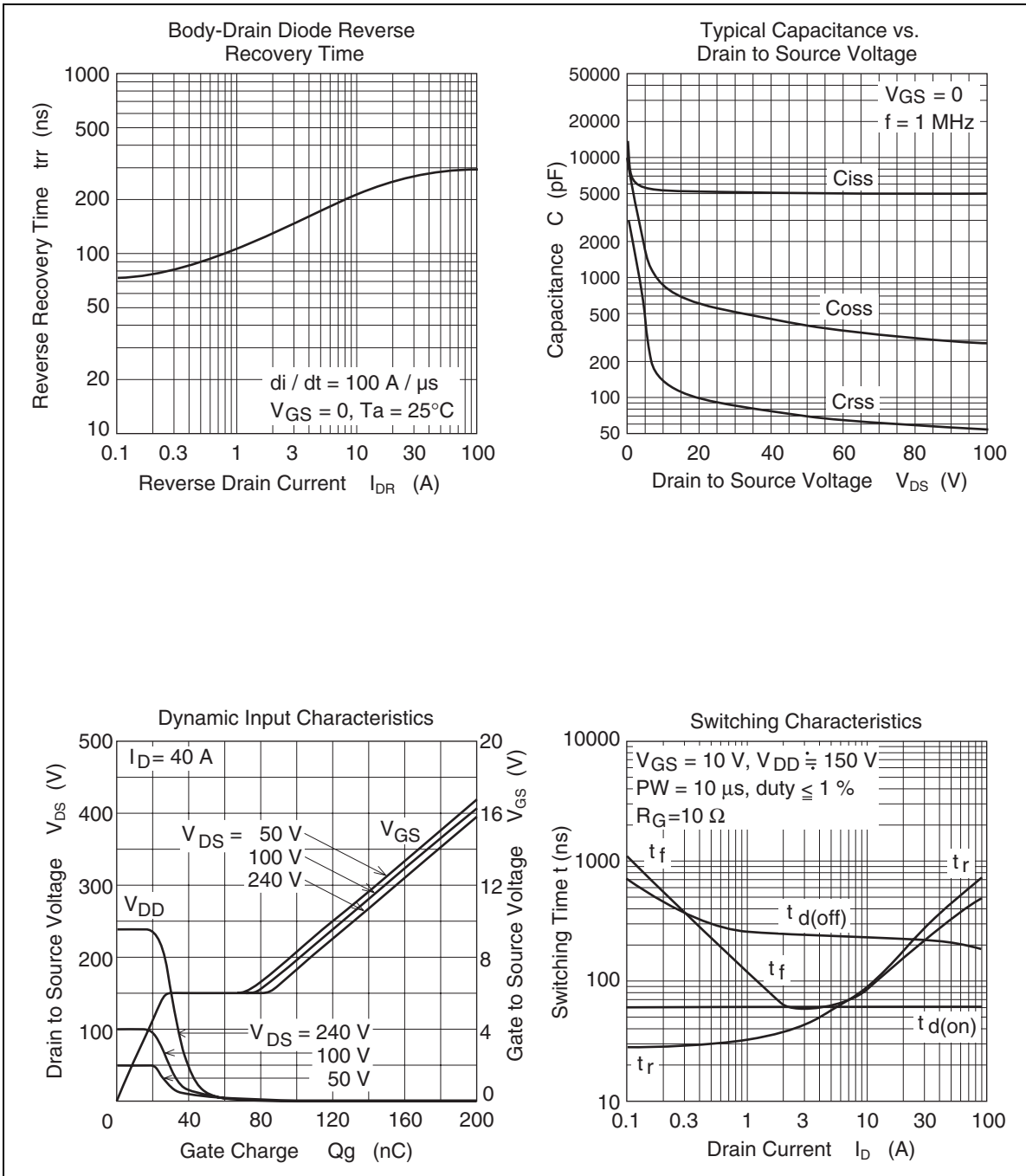
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	300	—	—	V	$I_D = 10\text{mA}$ , $V_{GS} = 0$
Zero gate voltage drain current	$I_{DSS}$	—	—	1	$\mu\text{A}$	$V_{DS} = 300\text{V}$ , $V_{GS} = 0$
Gate to source leak current	$I_{GSS}$	—	—	$\pm 0.1$	$\mu\text{A}$	$V_{GS} = \pm 30\text{V}$ , $V_{DS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	3.0	—	4.0	V	$V_{DS} = 10\text{V}$ , $I_D = 1\text{mA}$
Forward transfer admittance	$ y_{fs} $	20	35	—	S	$I_D = 20\text{A}$ , $V_{DS} = 10\text{V}$ <sup>Note4</sup>
Static drain to source on state resistance	$R_{DS(on)}$	—	0.058	0.069	$\Omega$	$I_D = 20\text{A}$ , $V_{GS} = 10\text{V}$ <sup>Note4</sup>
Input capacitance	$C_{iss}$	—	5150	—	pF	$V_{DS} = 25\text{V}$
Output capacitance	$C_{oss}$	—	560	—	pF	$V_{GS} = 0$
Reverse transfer capacitance	$C_{rss}$	—	90	—	pF	$f = 1\text{MHz}$
Turn-on delay time	$t_d(on)$	—	60	—	ns	$I_D = 20\text{A}$
Rise time	$t_r$	—	185	—	ns	$R_L = 7.5\Omega$
Turn-off delay time	$t_d(off)$	—	220	—	ns	$V_{GS} = 10\text{V}$
Fall time	$t_f$	—	150	—	ns	$R_g = 10\Omega$
Total gate charge	$Q_g$	—	130	—	nC	$V_{DD} = 240\text{V}$
Gate to source charge	$Q_{gs}$	—	25	—	nC	$V_{GS} = 10\text{V}$
Gate to drain charge	$Q_{gd}$	—	60	—	nC	$I_D = 40\text{A}$
Body-drain diode forward voltage	$V_{DF}$	—	1.0	1.5	V	$I_F = 40\text{A}$ , $V_{GS} = 0$
Body-drain diode reverse recovery time	$t_{rr}$	—	280	—	ns	$I_F = 40\text{A}$ , $V_{GS} = 0$ $di_F/dt = 100\text{A}/\mu\text{s}$
Body-drain diode reverse recovery charge	$Q_{rr}$	—	2.5	—	$\mu\text{C}$	

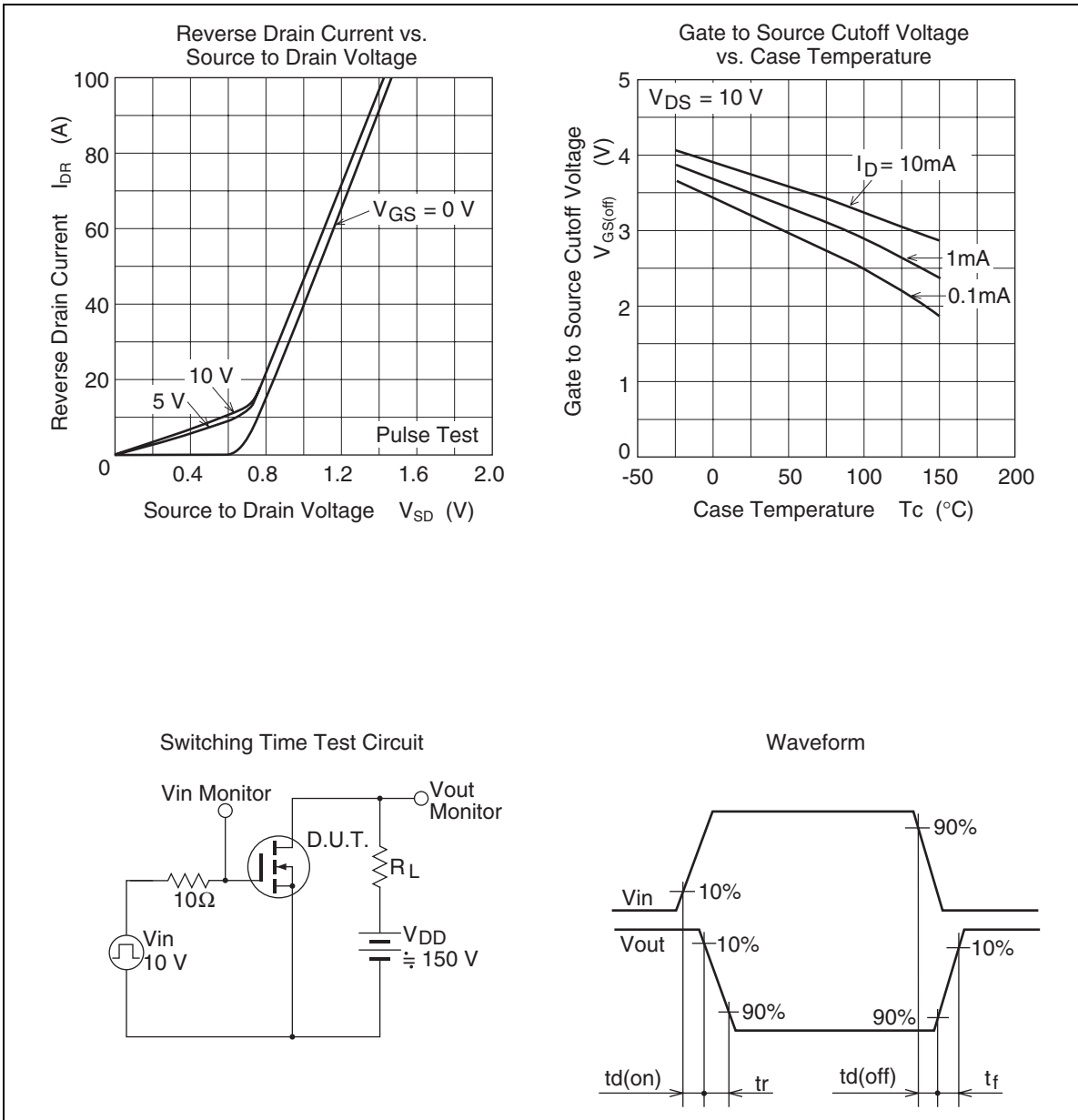
Notes: 4. Pulse test

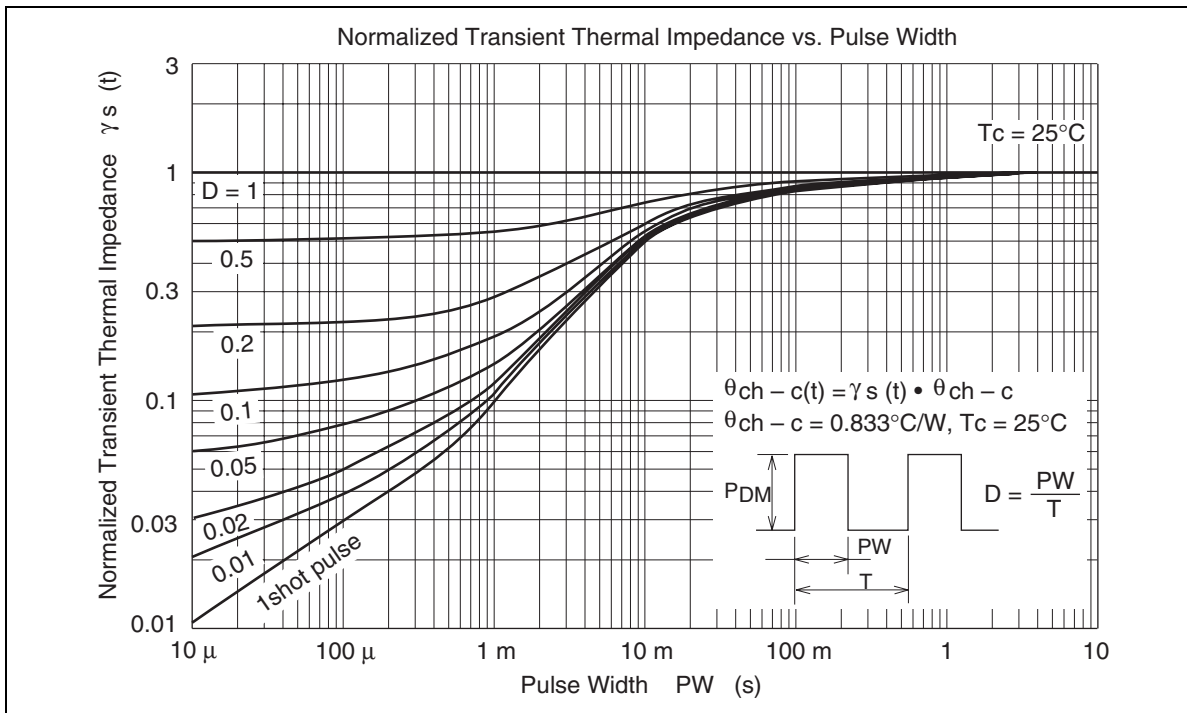
Main Characteristics





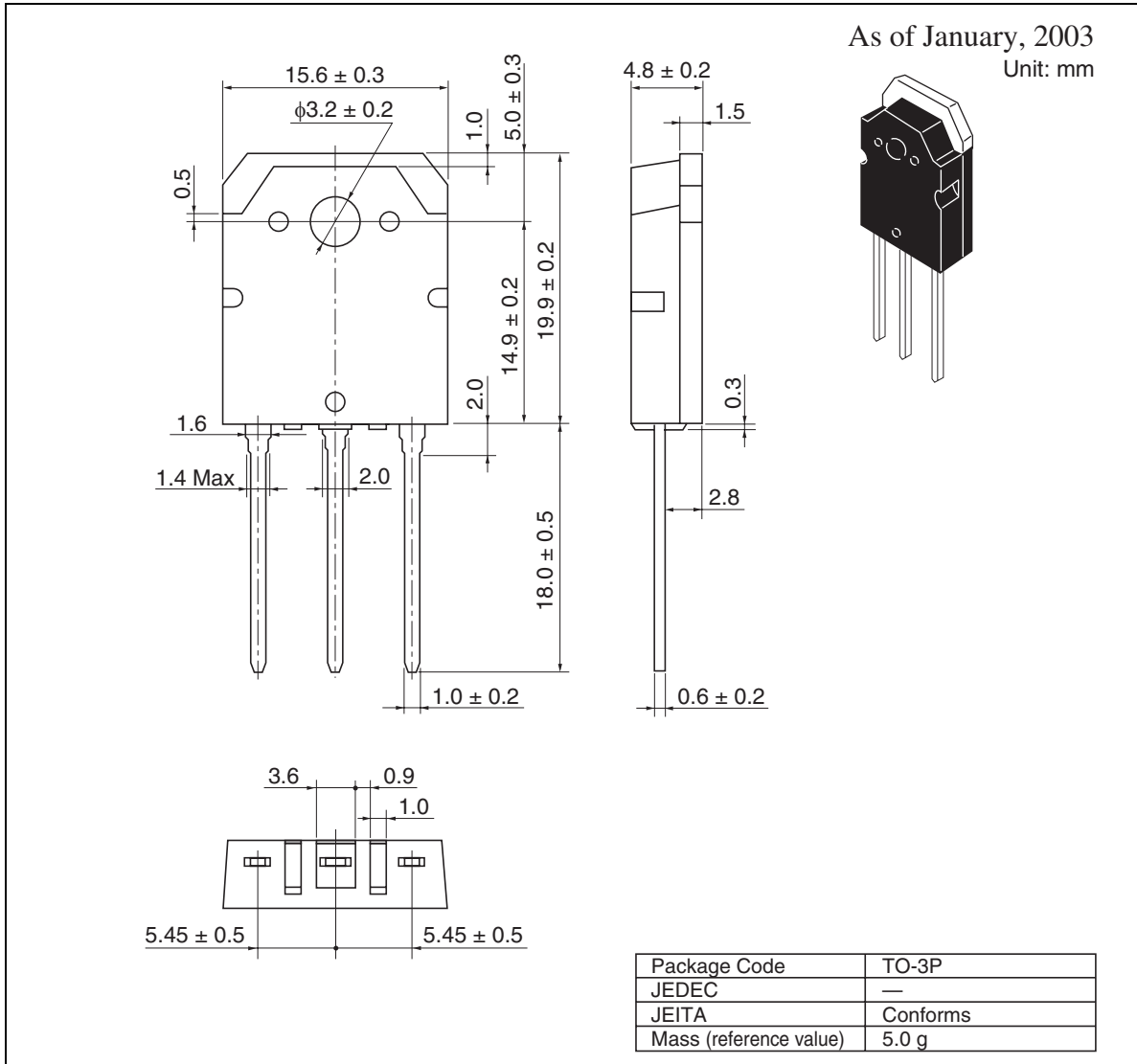








Package Dimensions



**Renesas Technology Corp.** Sales Strategic Planning Div. Nippon Bldg., 2-6-2, Ohte-machi, Chiyoda-ku, Tokyo 100-0004, Japan

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