

## H7N0608AB

Silicon N Channel MOS FET  
High Speed Power Switching

REJ03G0143-0100Z

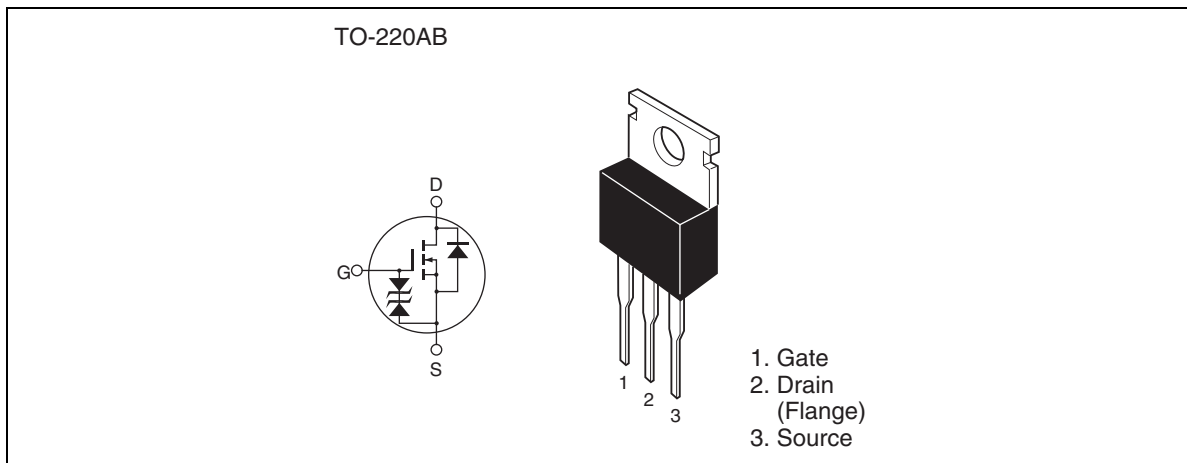
Rev.1.00

Oct.30.2003

### Features

- Low on-resistance  
 $R_{DS(on)} = 6.0 \text{ m}\Omega$  typ.
- Low drive current
- Available for 4.5 V gate drive

### 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>	60	V
Gate to source voltage	V <sub>GSS</sub>	±20	V
Drain current	I <sub>D</sub>	70	A
Drain peak current	I <sub>D</sub> (pulse) <sup>Note1</sup>	280	A
Body-drain diode reverse drain current	I <sub>DR</sub>	70	A
Avalanche current	I <sub>AP</sub> <sup>Note3</sup>	40	A
Avalanche energy	E <sub>AR</sub> <sup>Note3</sup>	137	mJ
Channel dissipation	P <sub>ch</sub> <sup>Note2</sup>	80	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. Value at Tch = 25°C, Rg ≥ 50 Ω

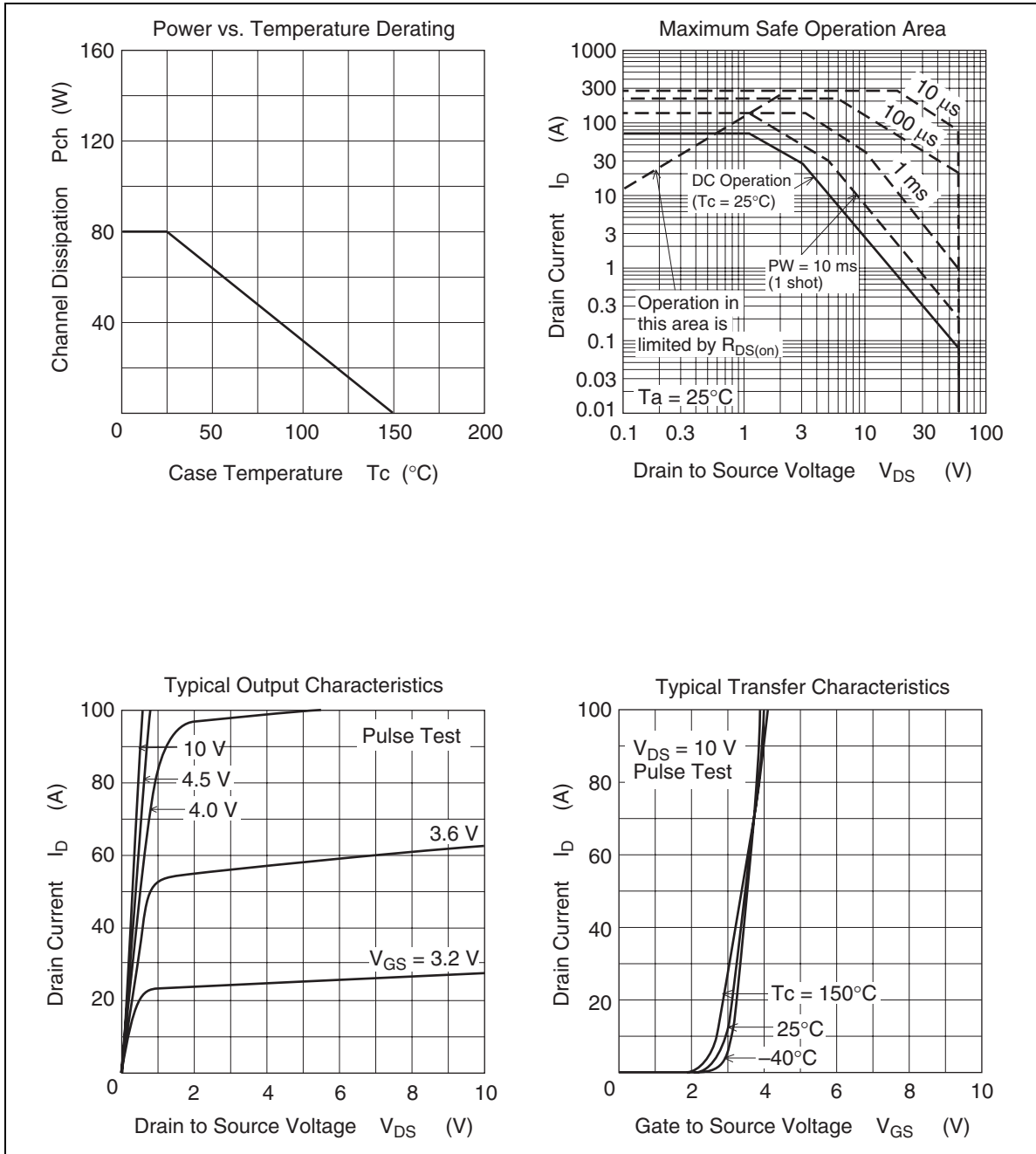
**Electrical Characteristics**

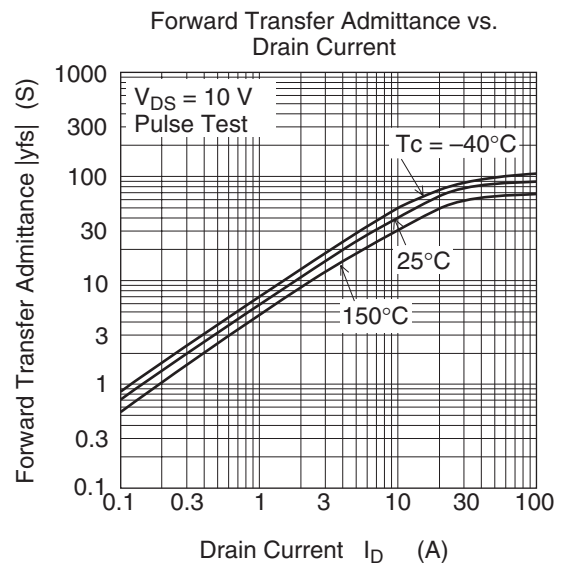
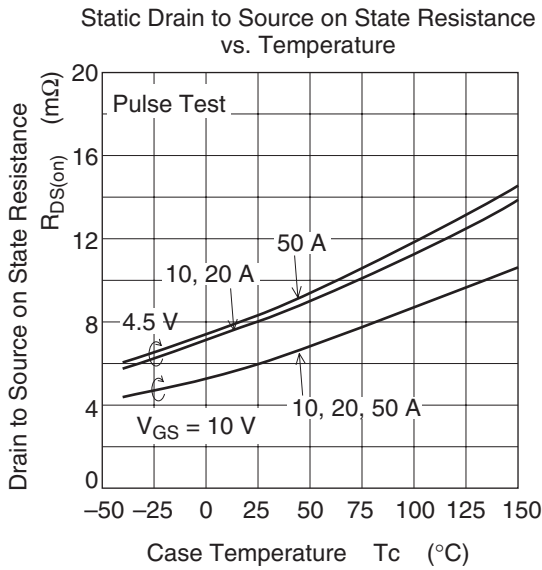
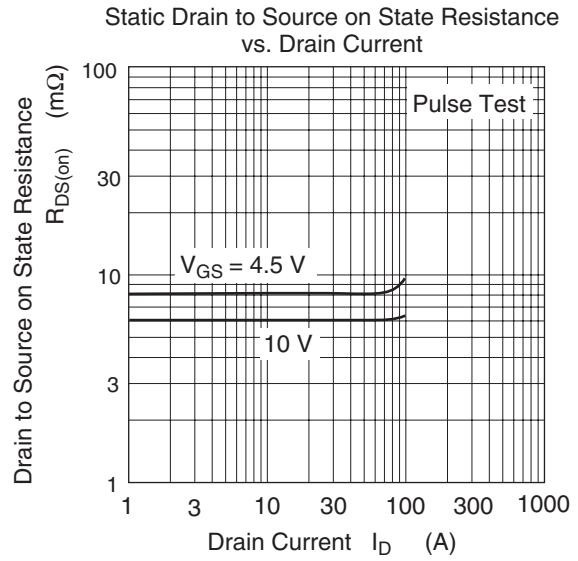
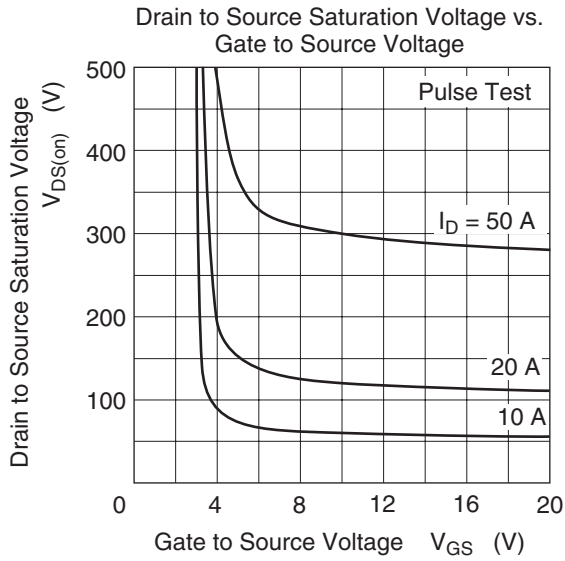
(Ta = 25°C)

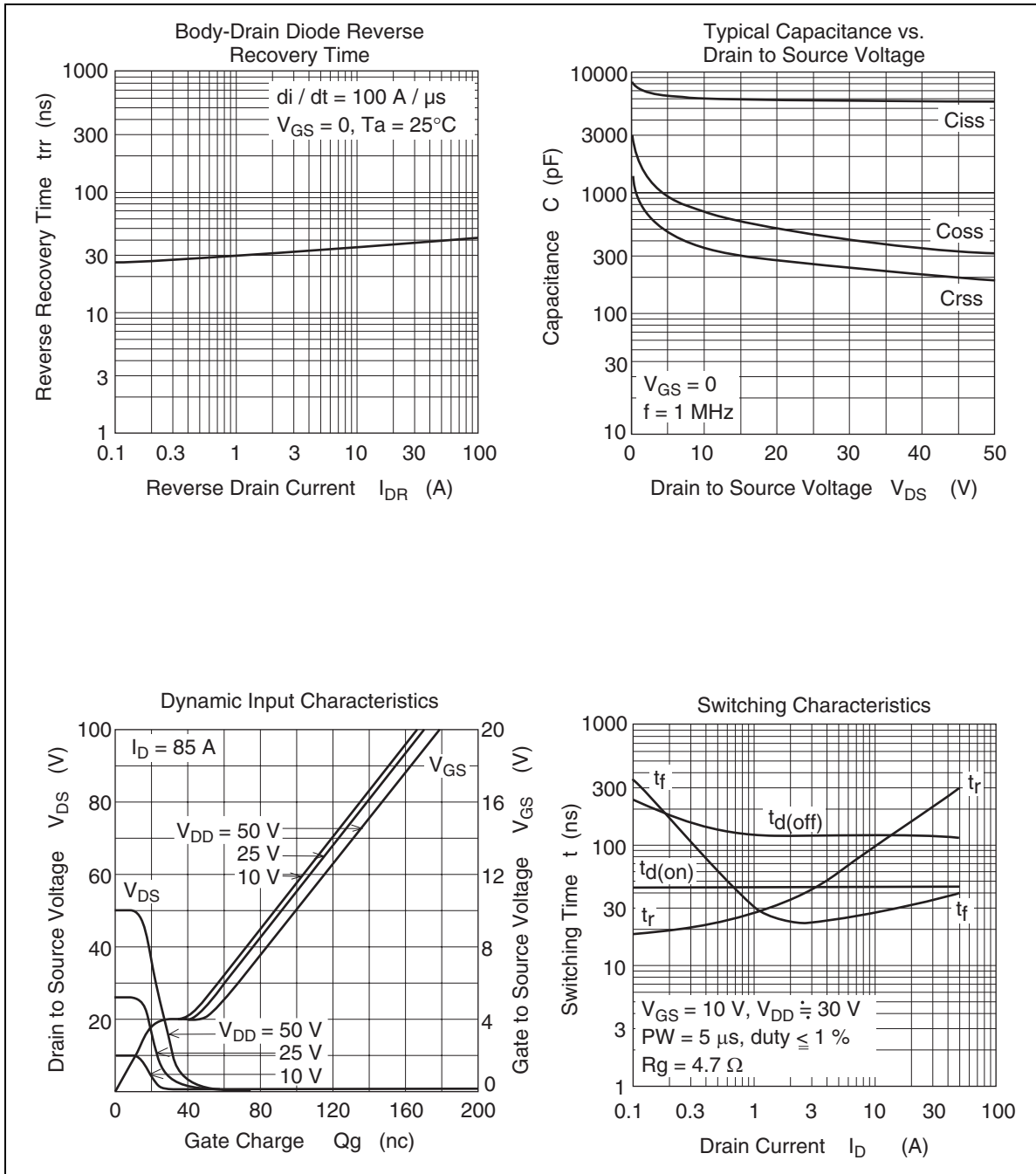
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	60	—	—	V	$I_D = 10 \text{ mA}, V_{GS} = 0$
Gate to source breakdown Voltage	$V_{(BR)GSS}$	$\pm 20$	—	—	V	$I_G = \pm 100 \mu\text{A}, V_{DS} = 0$
Gate to source leak current	$I_{GSS}$	—	—	$\pm 10$	$\mu\text{A}$	$V_{GS} = \pm 16 \text{ V}, V_{DS} = 0$
Zero gate voltage drain current	$I_{DSS}$	—	—	10	$\mu\text{A}$	$V_{DS} = 60 \text{ V}, V_{GS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	1.5	—	2.5	V	$I_D = 1 \text{ mA}, V_{DS} = 10 \text{ V}^{\text{Note1}}$
Static drain to source on state resistance	$R_{DS(on)}$	—	6.0	8.0	$\text{m}\Omega$	$I_D = 35 \text{ A}, V_{GS} = 10 \text{ V}^{\text{Note1}}$
		—	8.0	12	$\text{m}\Omega$	$I_D = 35 \text{ A}, V_{GS} = 4.5 \text{ V}^{\text{Note1}}$
Forward transfer admittance	$ y_{fs} $	45	75	—	S	$I_D = 35 \text{ A}, V_{GS} = 10 \text{ V}^{\text{Note1}}$
Input capacitance	$C_{iss}$	—	6200	—	pF	$V_{DS} = 10 \text{ V}$
Output capacitance	$C_{oss}$	—	680	—	pF	$V_{GS} = 0$
Reverse transfer capacitance	$C_{rss}$	—	350	—	pF	$f = 1 \text{ MHz}$
Total gate charge	$Q_g$	—	100	—	nC	$V_{DD} = 25 \text{ V}$
Gate to source charge	$Q_{gs}$	—	20	—	nC	$V_{GS} = 10 \text{ V}$
Gate to drain charge	$Q_{gd}$	—	20	—	nC	$I_D = 70 \text{ A}$
Turn-on delay time	$t_{d(on)}$	—	45	—	ns	$V_{GS} = 10 \text{ V}, I_D = 35 \text{ A}$
Rise time	$t_r$	—	220	—	ns	$R_L = 0.86 \Omega$
Turn-off delay time	$t_{d(off)}$	—	125	—	ns	$R_g = 4.7 \Omega$
Fall time	$t_f$	—	35	—	ns	
Body–drain diode forward voltage	$V_{DF}$	—	0.94	—	V	$I_F = 70 \text{ A}, V_{GS} = 0$
Body–drain diode reverse recovery time	$t_{rr}$	—	40	—	ns	$I_F = 70 \text{ A}, V_{GS} = 0$ $di_F/dt = 100 \text{ A}/\mu\text{s}$

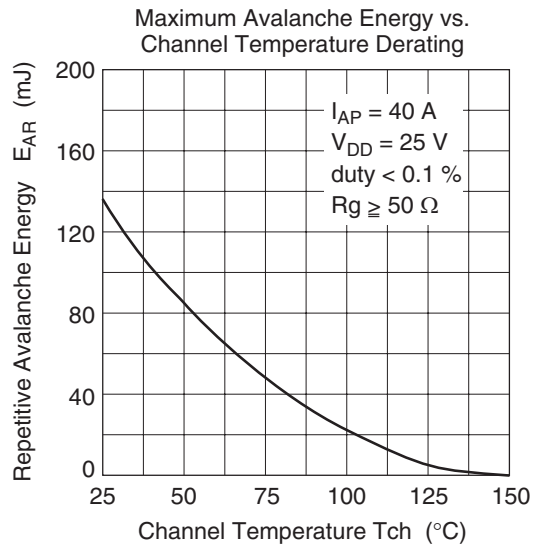
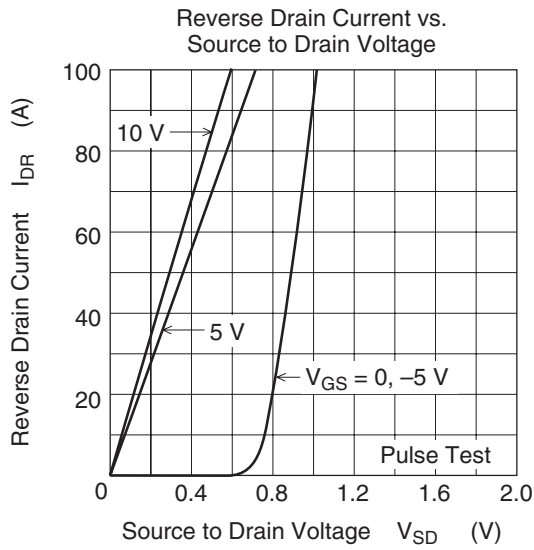
Notes: 1. Pulse test

Main Characteristics

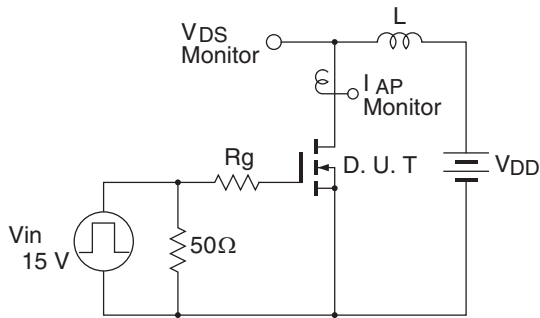






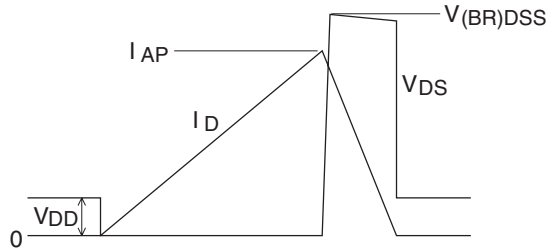


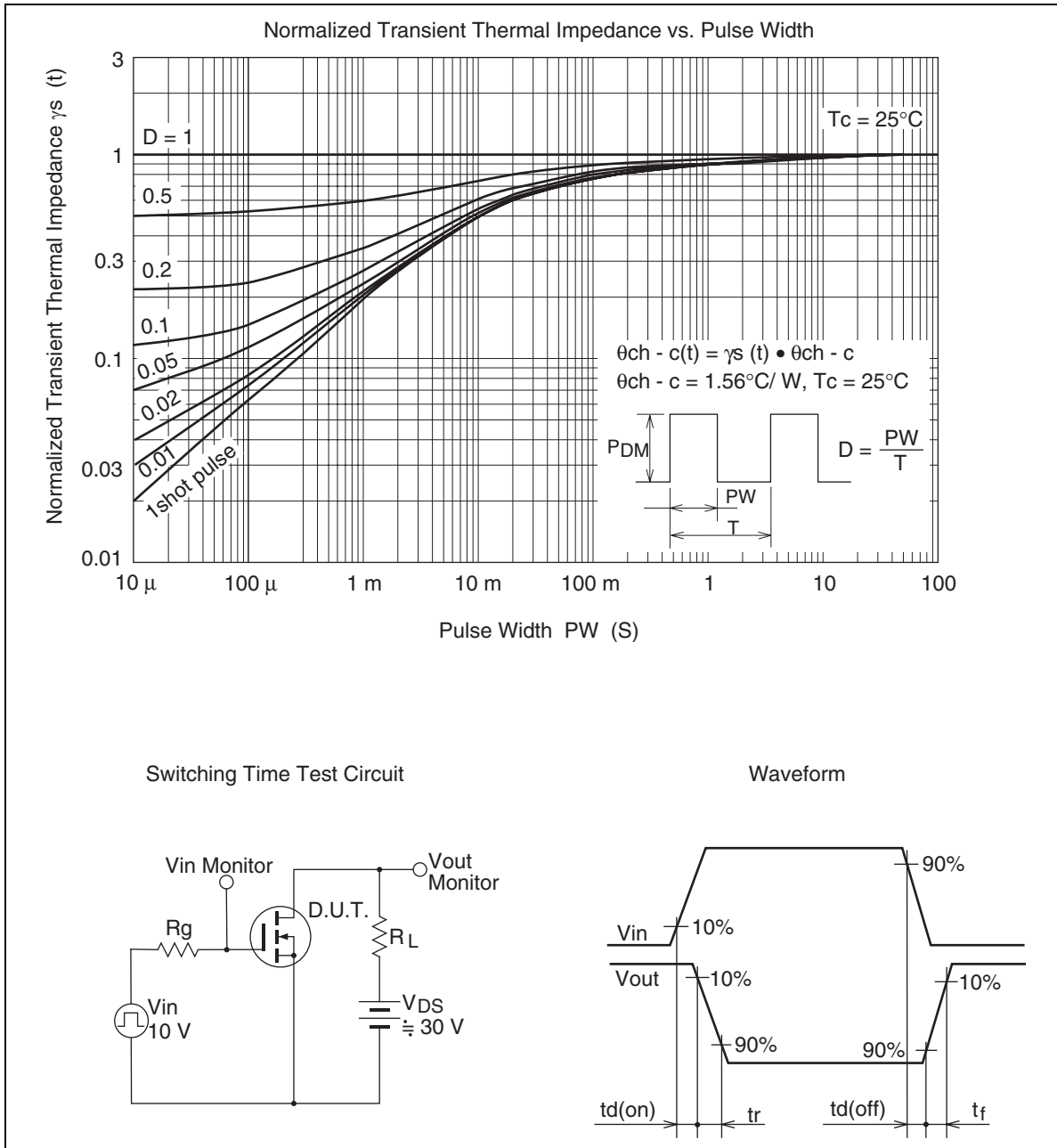
Avalanche Test Circuit



Avalanche Waveform

$$E_{AR} = \frac{1}{2} \cdot L \cdot I_{AP}^2 \cdot \frac{V_{DSS}}{V_{DSS} - V_{DD}}$$



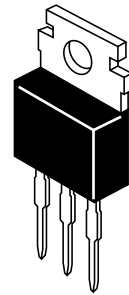
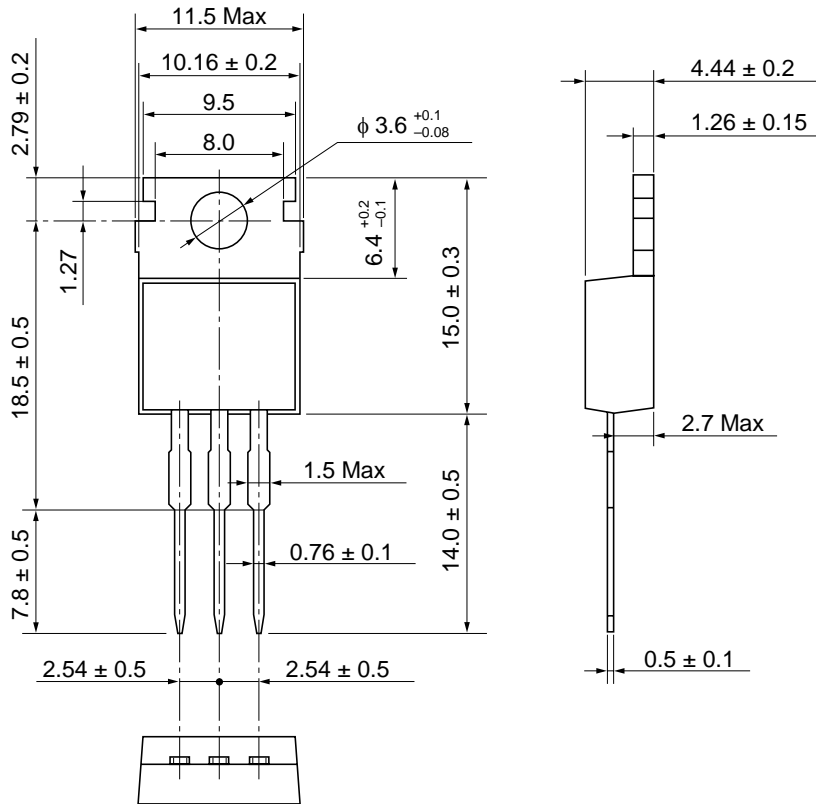




Package Dimensions

As of January, 2003

Unit: mm



Package Code	TO-220AB
JEDEC	Conforms
JEITA	Conforms
Mass (reference value)	1.8 g

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