Discrete & Integration SEMICONDUCTOR

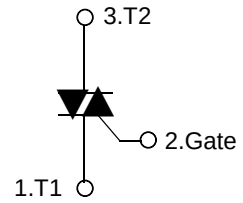
DTN1A60/80

Triacs / Sensitive Gate

Features

- ◆ Repetitive Peak Off-State Voltage : 600/800V
- ◆ R.M.S On-State Current ($I_{T(RMS)}$= 1 A)
- ◆ High Commutation dv/dt

Symbol

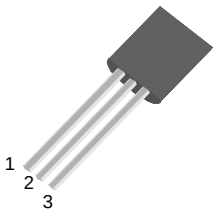


BV_{DRM} = 600V / 800V

$I_{T(RMS)}$ = 1 A

I_{TSM} = 9.1 A

TO-92



General Description

This device is suitable for low power AC switching application, phase control application such as fan speed and temperature modulation control, lighting control and static switching relay where high sensitivity is required in all four quadrants.

Absolute Maximum Ratings (T_J = 25°C unless otherwise specified)

Symbol	Parameter	Condition	Ratings		Units
V_{DRM}	Repetitive Peak Off-State Voltage	Sine wave, 50 to 60 Hz, Gate open	600	800	V
$I_{T(RMS)}$	R.M.S On-State Current	T_C = 58 °C, Full Sine wave	1.0		A
I_{TSM}	Surge On-State Current	One Cycle, 50Hz/60Hz, Peak, Non-Repetitive	9.1/10		A
I^2t	I^2t for Fusing	tp = 10ms	0.41		A2s
P_{GM}	Peak Gate Power Dissipation	T_C = 58 °C, Pulse width ≤ 1.0us	1.0		W
$P_{G(AV)}$	Average Gate Power Dissipation	Over any 20ms period	0.1		W
I_{GM}	Peak Gate Current	tp = 20us, T_J=125°C	0.5		A
V_{GM}	Peak Gate Voltage	tp = 20us, T_J=125°C	6.0		V
T_J	Operating Junction Temperature		- 40 ~ 125		°C
T_{STG}	Storage Temperature		- 40 ~ 150		°C
	Mass		0.2		g

Electrical Characteristics

Symbol	Items		Conditions	Ratings			Unit
				Min.	Typ.	Max.	
I_{DRM}	Repetitive Peak Off-State Current		$V_D = V_{DRM}$, Single Phase, Half Wave T_J = 125 °C	-	-	0.5	mA
V_{TM}	Peak On-State Voltage		I_T = 1.5 A, Inst. Measurement	-	-	1.6	V
I^+_{GT1}	I	Gate Trigger Current	V_D = 6 V, R_L=10 Ω	-	-	5	mA
I^-_{GT1}	II			-	-	5	
I^-_{GT3}	III			-	-	5	
I^+_{GT3}	IV			-	7	12	
V^+_{GT1}	I	Gate Trigger Voltage	V_D = 6 V, R_L=10 Ω	-	-	1.8	V
V^-_{GT1}	II			-	-	1.8	
V^-_{GT3}	III			-	-	1.8	
V^+_{GT3}	IV			-	-	2.0	
V_{GD}	Non-Trigger Gate Voltage		T_J = 125 °C, V_D = 1/2 V_{DRM}	0.2	-	-	V
(dv/dt)c	Critical Rate of Rise Off-State Voltage at Commutation		T_J = 125 °C, [di/dt]c = -0.5 A/ms, V_D=2/3 V_{DRM}	2.0	-	-	V/μs
I_H	Holding Current			-	4.0	-	mA
$R_{th(j-c)}$	Thermal Resistance		Junction to case	-	-	50	°C/W
$R_{th(j-a)}$	Thermal Resistance		Junction to Ambient	-	-	120	°C/W

※ Notes :

1. Pulse Width ≤ 300us , Duty cycle ≤ 2%

Fig 1. Gate Characteristics

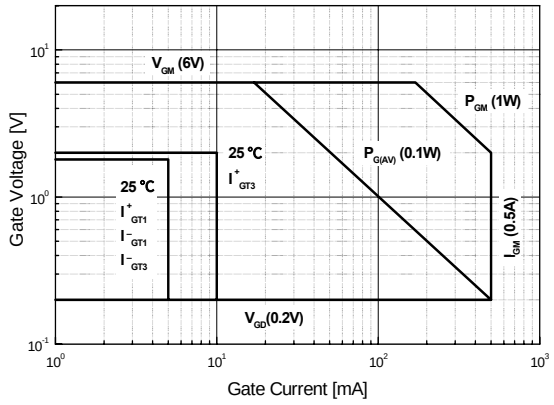


Fig 2. On-State Voltage

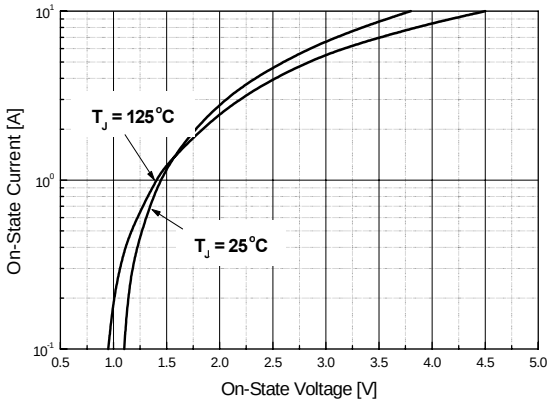


Fig 3. On State Current vs. Maximum Power Dissipation

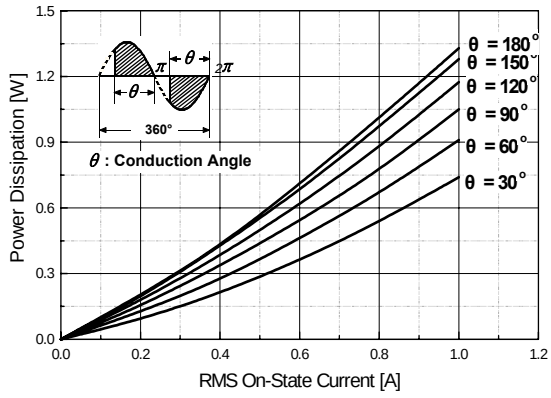


Fig 4. On State Current vs. Allowable Case Temperature

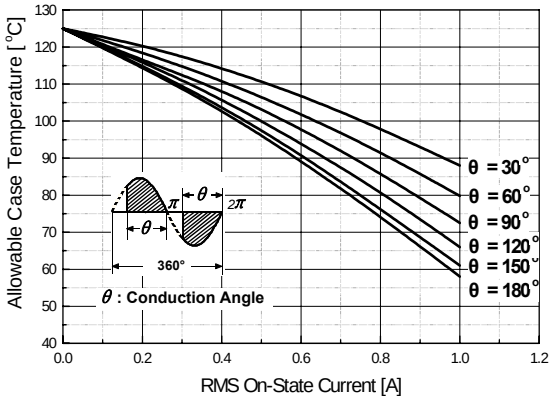


Fig 5. Surge On-State Current Rating (Non-Repetitive)

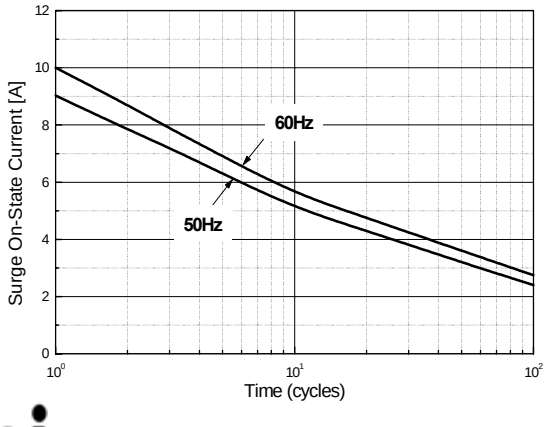


Fig 6. Gate Trigger Voltage vs. Junction Temperature

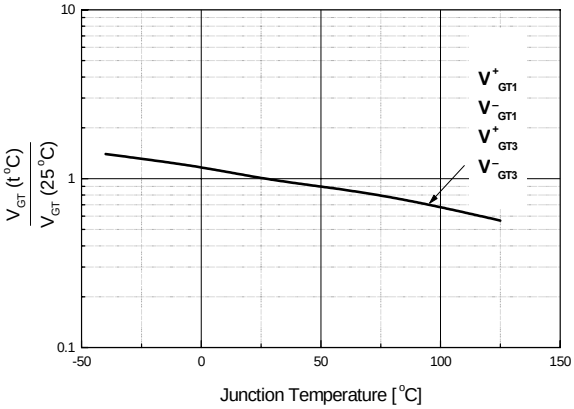


Fig 7. Gate Trigger Current vs. Junction Temperature

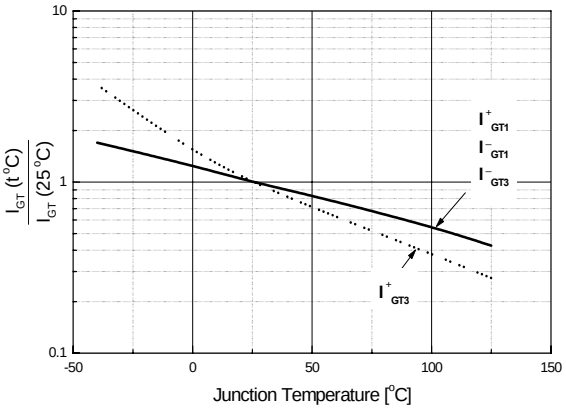


Fig 8. Transient Thermal Impedance

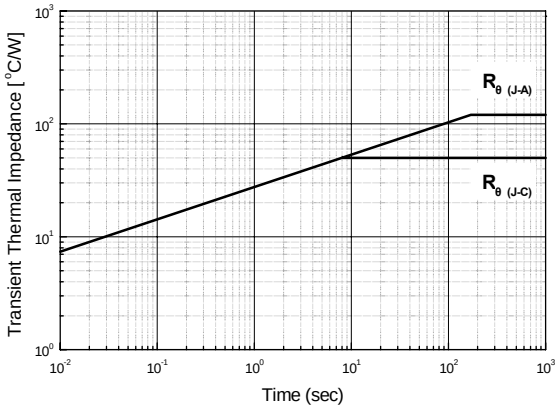
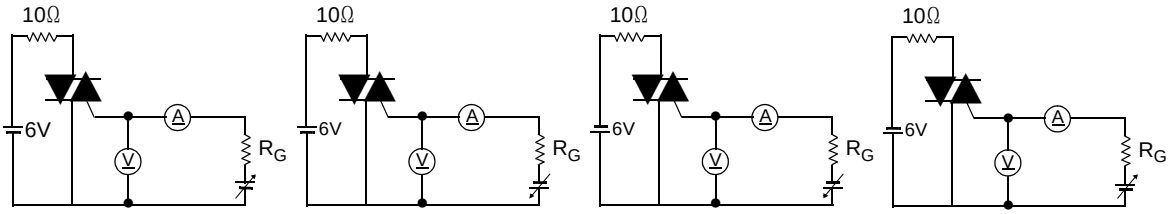


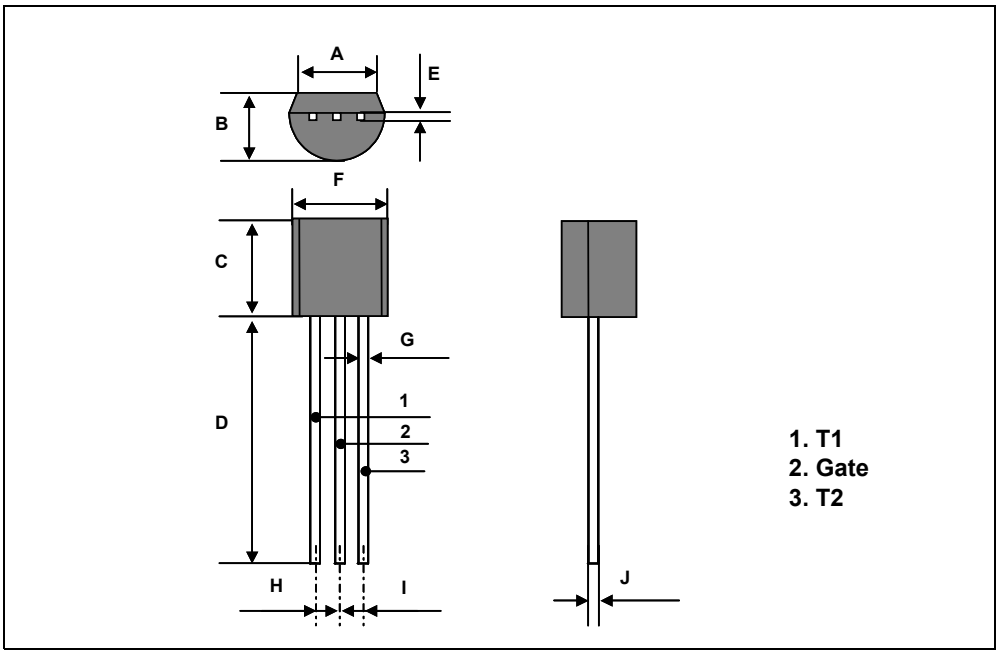
Fig 9. Gate Trigger Characteristics Test Circuit



Test Procedure Ⅰ Test Procedure Ⅱ Test Procedure Ⅲ Test Procedure Ⅳ

TO-92 Package Dimension

Dim.	mm			Inch		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A		4.2			0.165	
B			3.7			0.146
C	4.43		4.83	0.174		0.190
D	14.07		14.87	0.554		0.585
E			0.4			0.016
F	4.43		4.83	0.174		0.190
G			0.45			0.017
H		2.54			0.100	
I		2.54			0.100	
J	0.33		0.48	0.013		0.019



TO-92 Package Dimension, Forming

Dim.	mm			Inch		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A		4.2			0.165	
B			3.7			0.146
C	4.43		4.83	0.174		0.190
D	14.07		14.87	0.554		0.585
E			0.4			0.016
F	4.43		4.83	0.174		0.190
G			0.45			0.017
H		2.54			0.100	
I		2.54			0.100	
J	0.33		0.48	0.013		0.019
K	4.5		5.5	0.177		0.216
L	7.8		8.2	0.295		0.323
M	1.8		2.2	0.070		0.086
N	1.3		1.7	0.051		0.067