

## HTB1A60/HTB1A80 4 Quadrants Sensitive TRIAC

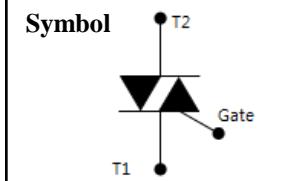
### FEATURES

- Repetitive Peak Off-State Voltage : 600V/800V
- R.M.S On-State Current ( $I_{T(RMS)} = 1\text{ A}$ )
- Sensitive Gate Trigger Current
  - 5[mA] of IGT at I, II and III Quadrants.
  - 12[mA] of IGT at IV Quadrant.

### Applications

AC power or phase control through low output current of MCU or IC such like Heater, Solenoid valve control, etc.

$V_{DRM} = 600\text{V}/800\text{V}$
$I_{T(RMS)} = 1\text{ A}$
$I_{TSM} = 13\text{ A}$
$I_{GT} = 5\text{mA}/12\text{mA}$



### General Description

Semihow's sensitive TRIAC product is a glass passivated device, has a low gate trigger current, high stability in gate trigger current to variation of operating temperature and high off state voltage. It is generally suitable for power and phase control in ac application.

### Absolute Maximum Ratings (T<sub>J</sub>=25°C unless otherwise specified)

Symbol	Parameter	Conditions	Ratings		Unit
			HTB1A60	HTB1A80	
$V_{DRM}$	Repetitive Peak Off-State Voltage	Sine wave, 50/60Hz, Gate open	600	800	V
$V_{RRM}$	Repetitive Peak Reverse Voltage		600	800	V
$I_{T(AV)}$	Average On-State Current	Full sine wave, $T_C = 72^\circ\text{C}$	0.9		A
$I_{T(RMS)}$	R.M.S. On-State Current		1		A
$I_{TSM}$	Surge On-State Current	$\frac{1}{2}$ cycle, 50Hz/60Hz, Sine wave, Non repetitive	12/13		A
$I^2t$	Fusing Current	$t = 10\text{ms}$	0.7		$\text{A}^2\text{S}$
$P_{GM}$	Forward Peak Gate Power Dissipation	$T_J = 125^\circ\text{C}$	2		W
$P_{G(AV)}$	Forward Average Gate Power Dissipation	$T_J = 125^\circ\text{C}$ , over any 20ms	0.2		W
$I_{FGM}$	Forward Peak Gate Current	$T_J = 125^\circ\text{C}$ , pulse width $\leq 20\mu\text{s}$	0.5		A
$V_{RGM}$	Reverse Peak Gate Voltage	$T_J = 125^\circ\text{C}$ , pulse width $\leq 20\mu\text{s}$	6		V
$T_J$	Operating Junction Temperature		-40~+125		$^\circ\text{C}$
$T_{STG}$	Storage Temperature		-40~+150		$^\circ\text{C}$

### Electrical Characteristics (T<sub>J</sub>=25°C unless otherwise specified )

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
I <sub>DRM</sub>	Repetitive Peak Off-State Current	V <sub>D</sub> = V <sub>DRM</sub>	T <sub>J</sub> =25°C	-	-	50 uA
			T <sub>J</sub> =125°C	-	-	5 mA
I <sub>RRM</sub>	Repetitive Peak Reverse Current	V <sub>D</sub> = V <sub>DRM</sub>	T <sub>J</sub> =25°C	-	-	50 uA
			T <sub>J</sub> =125°C	-	-	5 mA
I <sub>GT</sub>	Gate Trigger Current	V <sub>D</sub> = 12V, R <sub>L</sub> =330Ω	1+, 1-, 3-	-	-	5 mA
			3+	-	-	12 mA
V <sub>GT</sub>	Gate Trigger Voltage	V <sub>D</sub> = 12V, R <sub>L</sub> =330Ω	1+, 1-, 3-	-	-	1.5 V
			3+	-	-	2.0 V
V <sub>GD</sub>	Non-Trigger Gate Voltage <sup>1</sup>	V <sub>D</sub> = 12V, R <sub>L</sub> =330Ω, T <sub>J</sub> =125°C	0.2	-	-	V
V <sub>TM</sub>	Peak On-State Voltage	I <sub>T</sub> = 1.4A, I <sub>G</sub> = 20mA	-	1.2	1.6	V
dv/dt	Critical Rate of Rise of Off-State Voltage	V <sub>D</sub> = 2/3 V <sub>DRM</sub> , T <sub>J</sub> =125°C	10	-	-	V/us
I <sub>H</sub>	Holding current	I <sub>T</sub> = 0.2A	-	-	5	mA

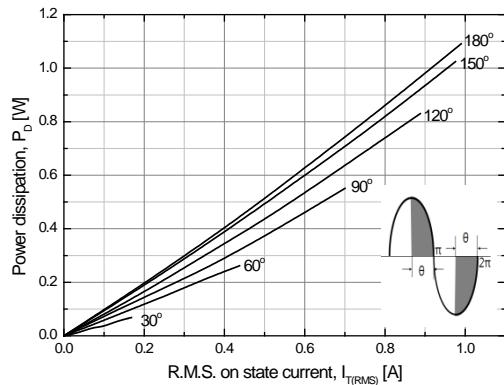
**Notes :**

1. Pulse Width ≤ 1.0ms, Duty Cycle ≤ 1%

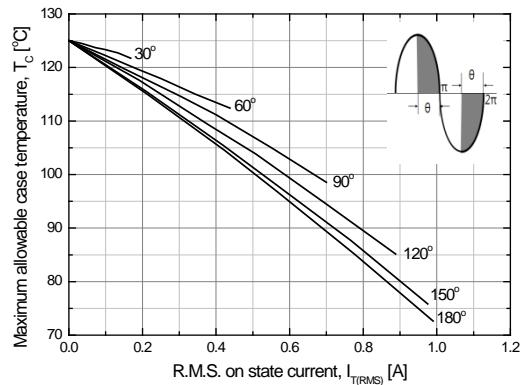
### Thermal Characteristics

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
R <sub>θJC</sub>	Thermal Resistance	Junction to Case			48	°C/W
R <sub>θJA</sub>	Thermal Resistance	Junction to Ambient			150	°C/W

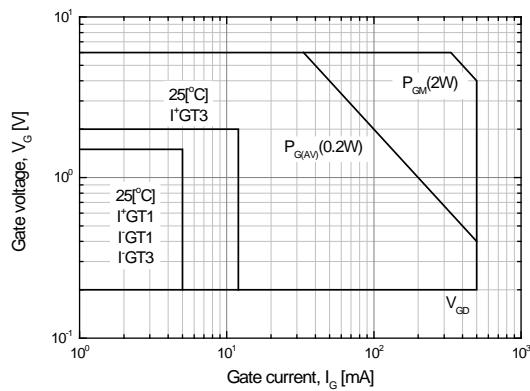
## Typical Characteristics



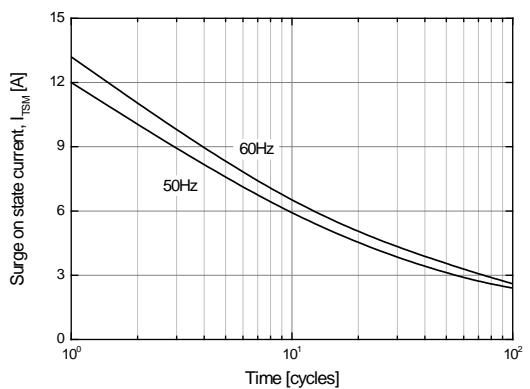
**Fig 1. R.M.S. current vs. Power dissipation**



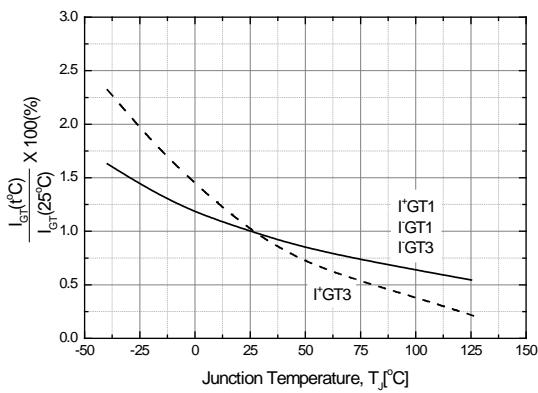
**Fig 2. R.M.S. current vs. Case temperature**



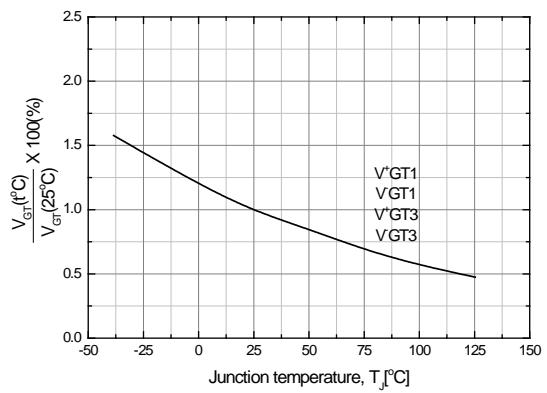
**Fig 3. Gate power characteristics**



**Fig 4. Surge on state current rating  
(Non-repetitive)**

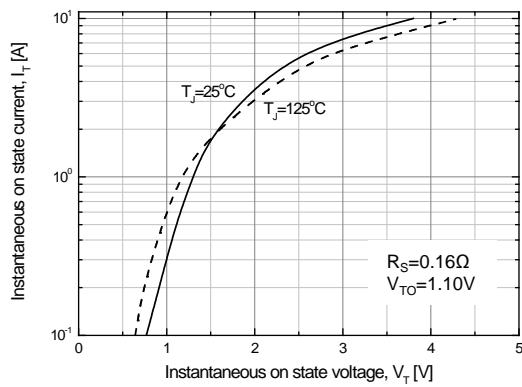


**Fig 5. Gate trigger current vs.  
junction temperature**

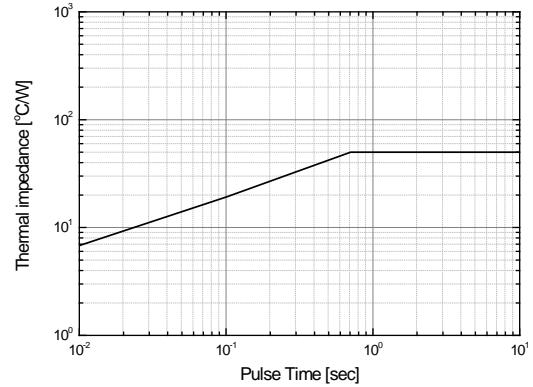


**Fig 6. Gate trigger voltage vs.  
junction temperature**

## Typical Characteristics

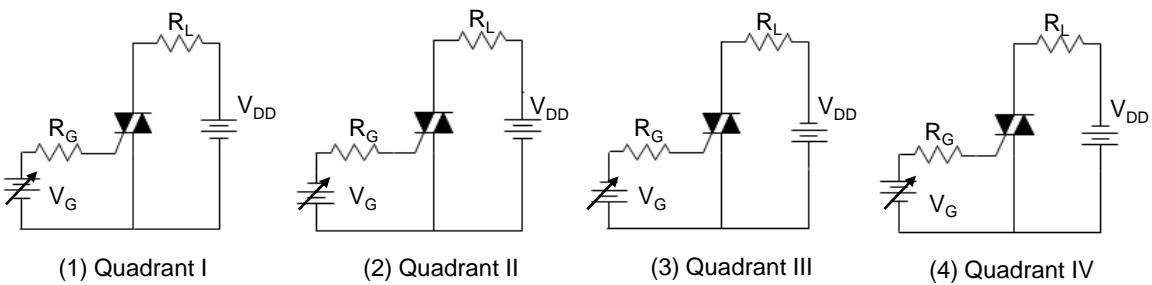


**Fig 7. Instantaneous on state current vs.  
Instantaneous on state voltage**

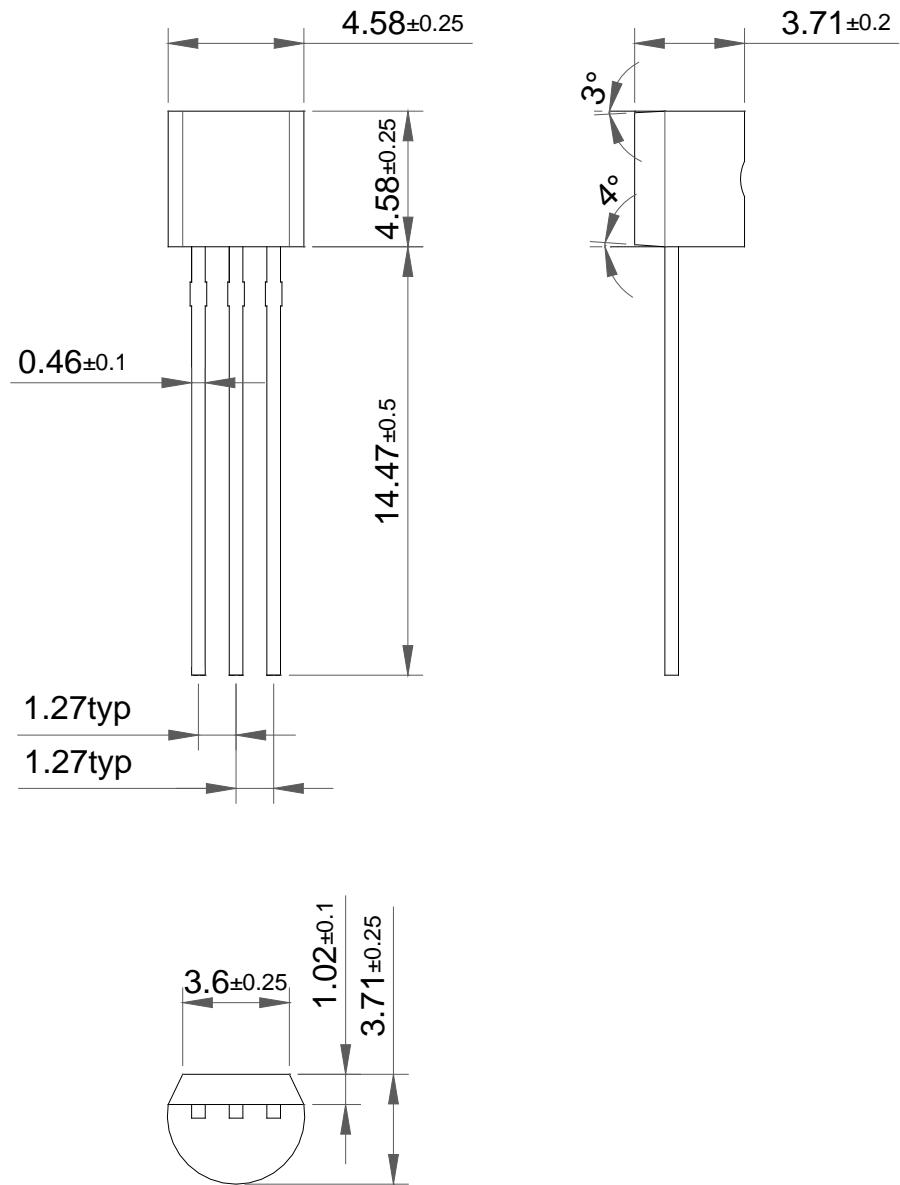


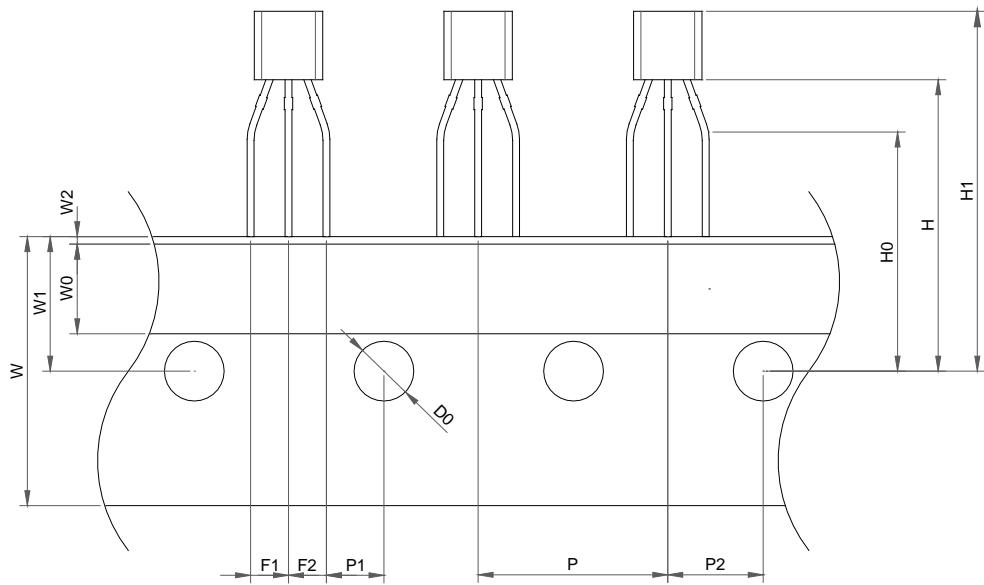
**Fig 8. Thermal Impedance vs. pulse time**

### Measurement of gate trigger current



Note. Whole parameter and test condition can not be over absolute maximum ratings in this datasheet.

**Package Dimension****TO-92 BULK**

**Package Dimension****TO-92 TAPING**

Item	Symbol	Dimension [mm]	
		Reference	Tolerance
Component pitch	P	12.7	$\pm 0.5$
Side lead to center of feed hole	P1	3.85	$\pm 0.5$
Center lead to center of feed hole	P2	6.35	$\pm 0.5$
Lead pitch	F1,F2	2.5	+0.2/-0.1
Carrier Tape width	W	18.0	+1.0/-0.5
Adhesive tape width	W0	6.0	$\pm 0.5$
Tape feed hole location	W1	9.0	$\pm 0.5$
Adhesive tape position	W2	1.0 MAX	
Center of feed hole to bottom of component	H	19.5	$\pm 1$
Center of feed hole to lead form	H0	16.0	$\pm 0.5$
Component height	H1	27.0 max	
Tape feed hole diameter	D0	4.0	$\pm 0.2$