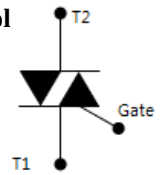
SemiHow
Know-How for Semiconductor

HTB1A60/HTB1A80
4 Quadrants Sensitive TRIAC

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

Symbol



TO-92

FEATURES

- Repetitive Peak Off-State Voltage : 600V/800V
- R.M.S On–State Current ($I_{T(RMS)}$ = 1A)
- 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 suck like Heater, Solenoid valve control, etc.

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_J=25℃ 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°C	0.9		A
$I_{T(RMS)}$	R.M.S. On-State Current		1		A
I_{TSM}	Surge On-State Current	½ cycle, 50Hz/60Hz, Sine wave, Non repetitive	12/13		A
I^2t	Fusing Current	t = 10ms	0.7		A^2S
P_{GM}	Forward Peak Gate Power Dissipation	T_J = 125 ˚C	2		W
$P_{G(AV)}$	Forward Average Gate Power Dissipation	T_J = 125 ˚C, over any 20ms	0.2		W
I_{FGM}	Forward Peak Gate Current	T_J = 125 ˚C, pulse width ≤ 20us	0.5		A
V_{RGM}	Reverse Peak Gate Voltage	T_J = 125 ˚C, pulse width ≤ 20us	6		V
T_J	Operating Junction Temperature		-40~+125		°C
T_{STG}	Storage Temperature		-40~+150		°C

Electrical Characteristics (T_J=25℃ unless otherwise specified)

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
I_{DRM}	Repetitive Peak Off-State Current	$V_D = V_{DRM}$	T_J=25°C	-	-	50	uA
			T_J=125°C	-	-	5	mA
I_{RRM}	Repetitive Peak Reverse Current	$V_D = V_{DRM}$	T_J=25°C	-	-	50	uA
			T_J=125°C	-	-	5	mA
I_{GT}	Gate Trigger Current	V_D = 12V, R_L=330Ω	1+, 1-, 3-	-	-	5	mA
			3+	-	-	12	mA
V_{GT}	Gate Trigger Voltage	V_D = 12V, R_L=330Ω	1+, 1-, 3-	-	-	1.5	V
			3+	-	-	2.0	V
V_{GD}	Non-Trigger Gate Voltage[1]	V_D = 12V, R_L=330Ω, T_J=125°C		0.2	-	-	V
V_{TM}	Peak On-State Voltage	I_T = 1.4A, I_G = 20mA		-	1.2	1.6	V
dv/dt	Critical Rate of Rise of Off-State Voltage	V_D = 2/3 V_{DRM}, T_J=125°C		10	-	-	V/us
I_H	Holding current	I_T= 0.2A		-	-	5	mA

Notes :

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

Thermal Characteristics

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$R_{\theta JC}$	Thermal Resistance	Junction to Case			48	°C/W
$R_{\theta JA}$	Thermal Resistance	Junction to Ambient			150	°C/W

Typical Characteristics

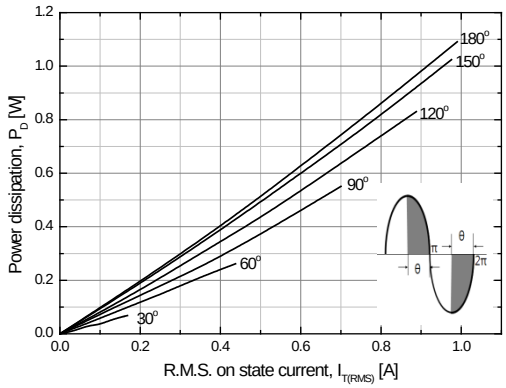


Fig 1. R.M.S. current vs. Power dissipation

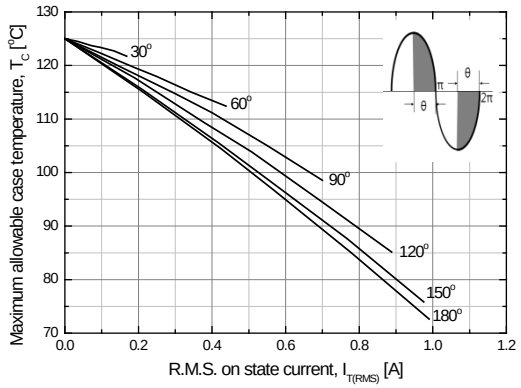


Fig 2. R.M.S. current vs. Case temperature

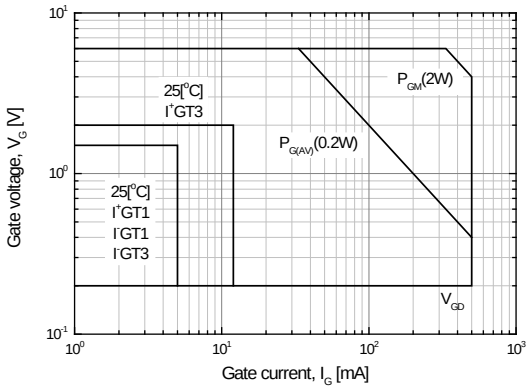


Fig 3. Gate power characteristics

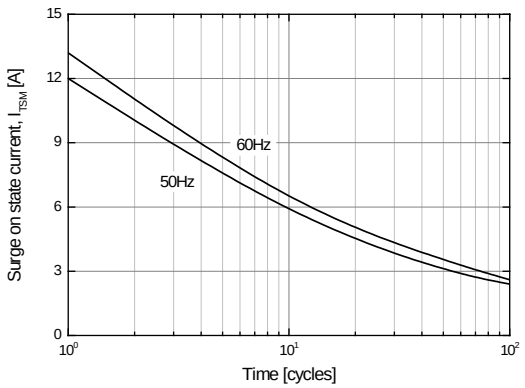


Fig 4. Surge on state current rating (Non-repetitive)

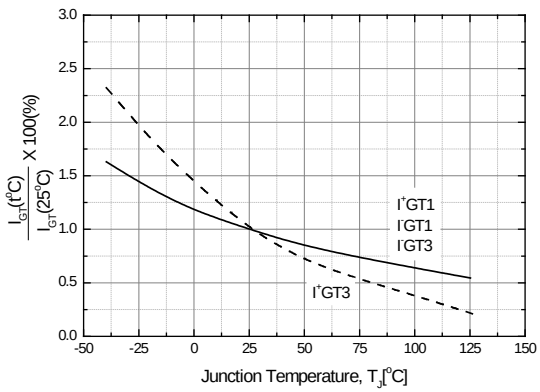


Fig 5. Gate trigger current vs. junction temperature

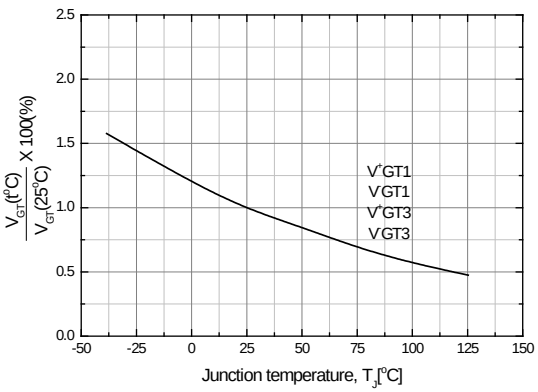


Fig 6. Gate trigger voltage vs. junction temperature

Typical Characteristics

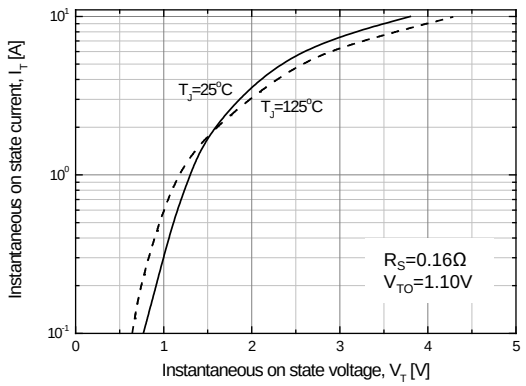


Fig 7. Instantaneous on state current vs. Instantaneous on state voltage

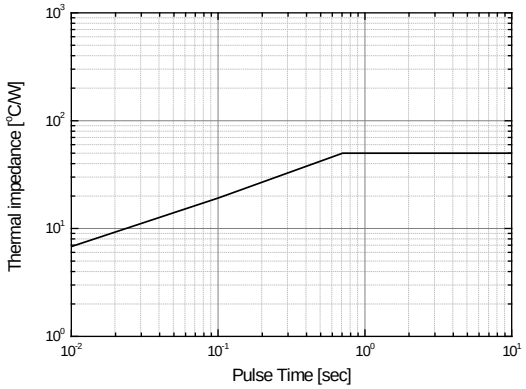
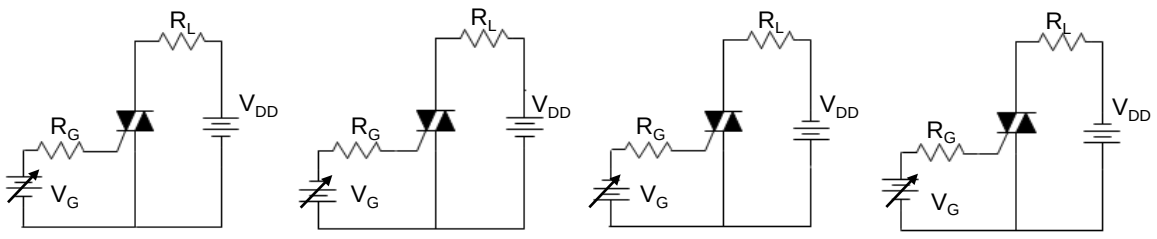


Fig 8. Thermal Impedance vs. pulse time

Measurement of gate trigger current

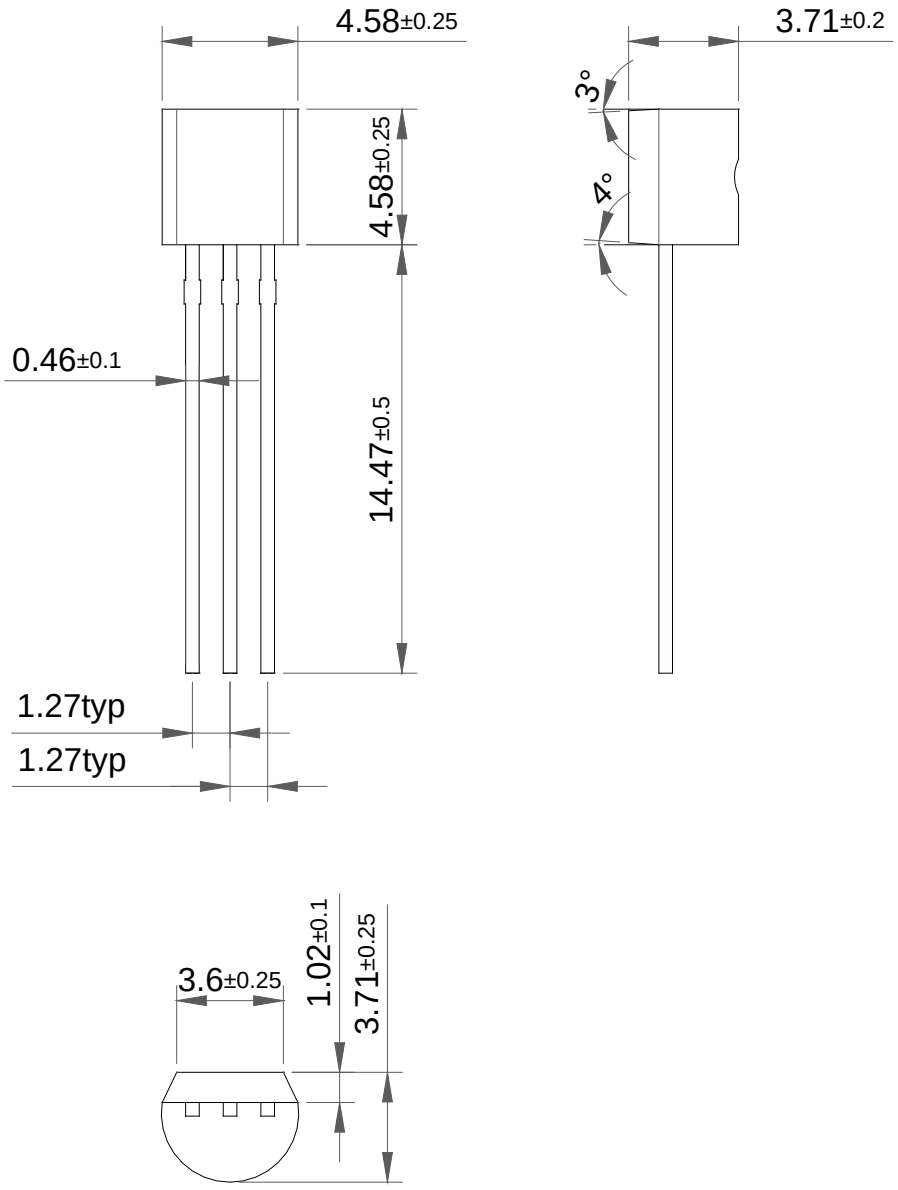


(1) Quadrant I (2) Quadrant II (3) Quadrant III (4) Quadrant IV

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

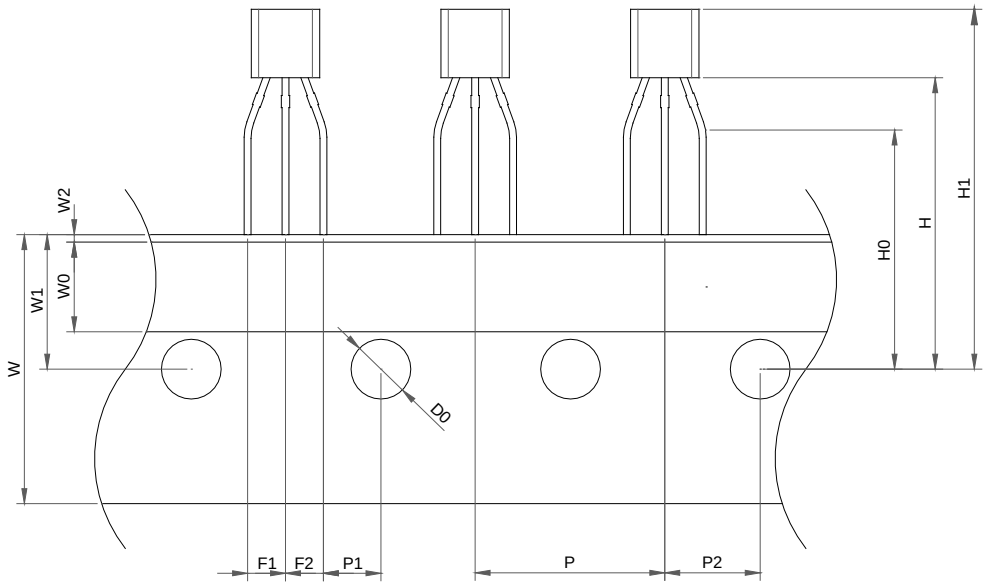
Package Dimension

TO-92 BULK



Package Dimension

TO-92 TAPING



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