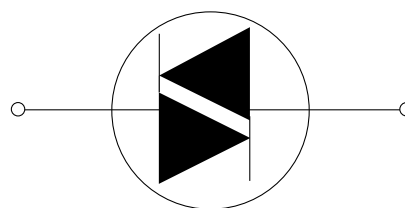


DO-35



DO-214AA



# Bilateral Trigger Diacs

## HT and ST Series

### General Description

Teccor's "HT" and "ST" Series of bilateral trigger diacs offers a range of voltage characteristics from 27 to 70 volts.

The diac semiconductor is a full-wave or bidirectional thyristor. It is triggered from a blocking-to-conduction state for either polarity of applied voltage whenever the amplitude of applied voltage exceeds the breakover voltage rating of the diac.

The Teccor line of diacs features glass-passivated junctions to ensure long term device reliability and parameter stability. Teccor's glass offers a rugged, reliable barrier against junction contamination.

The diac specifications listed in this data sheet are for standard products. Special parameter selections such as close tolerance voltage symmetry are available. Please consult the factory for more information for custom design applications. Suffix RP signifies tape-and-reel packing. Example: HT32RP.

### Features

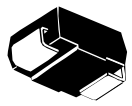
- Glass passivated junctions
- Wide voltage range selections

### "ST" Series

- Epoxy SMT package
- High temperature solder bonded die attachment

### "HT" Series

- DO-35 trigger package
- Pre-tinned leads

| ELECTRICAL CHARACTERISTICS $T_C = 25^\circ\text{C}$                                        |                                                                                               |                                            |     |                                                                         |                                                     |                                                                 |                                                                                        |
|--------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|--------------------------------------------|-----|-------------------------------------------------------------------------|-----------------------------------------------------|-----------------------------------------------------------------|----------------------------------------------------------------------------------------|
| Part No.                                                                                   |                                                                                               | $V_{BO}$                                   |     | $\Delta V_{BO}$                                                         | $V_{BB}$                                            | $I_{BO}$                                                        | $I_{TRM}$                                                                              |
| <br>DO-35 | <br>DO-214AA | Breakover Voltage<br>(Forward and Reverse) |     | Breakover Voltage Symmetry<br>$\Delta V_{BO} = [ +V_{BO}  -  -V_{BO} ]$ | Dynamic Breakback Voltage (3)<br>$ \Delta V_{\pm} $ | Peak Breakover Current at Breakover Voltage<br>$\mu\text{Amps}$ | Peak Pulse Current for 10 $\mu\text{s}$ 120 PPS<br>$T_A \leq 40^\circ\text{C}$<br>Amps |
|                                                                                            |                                                                                               | Volts                                      |     | Volts                                                                   | Volts                                               |                                                                 |                                                                                        |
|                                                                                            |                                                                                               | MIN                                        | MAX | MAX                                                                     | MIN                                                 | MAX                                                             | MAX                                                                                    |
| HT-32                                                                                      |                                                                                               | 27                                         | 37  | 3 (1)                                                                   | 10 (2)                                              | 25                                                              | 2.0                                                                                    |
| HT-32A / HT-5761                                                                           |                                                                                               | 28                                         | 36  | 2 (1)                                                                   | 7 at 10mA (4)                                       | 25                                                              | 2.0                                                                                    |
| HT-32B / HT-5761A                                                                          |                                                                                               | 30                                         | 34  | 2 (1)                                                                   | 7 at 10mA (4)                                       | 25                                                              | 2.0                                                                                    |
| HT-34B                                                                                     | ST-34B                                                                                        | 32                                         | 36  | 2 (1)                                                                   | 10 (2)                                              | 25                                                              | 2.0                                                                                    |
| HT-35                                                                                      | ST-35                                                                                         | 30                                         | 40  | 3 (1)                                                                   | 10 (2)                                              | 25                                                              | 2.0                                                                                    |
| HT-36A / HT-5762                                                                           | ST-36A                                                                                        | 32                                         | 40  | 2 (1)                                                                   | 7 at 10mA (4)                                       | 25                                                              | 2.0                                                                                    |
| HT-36B                                                                                     | ST-36B                                                                                        | 34                                         | 38  | 2 (1)                                                                   | 10 (2)                                              | 25                                                              | 2.0                                                                                    |
| HT-40                                                                                      | ST-40                                                                                         | 35                                         | 45  | 3 (1)                                                                   | 10 (2)                                              | 25                                                              | 2.0                                                                                    |
| HT-60                                                                                      |                                                                                               | 56                                         | 70  | 4                                                                       | 20 (2)                                              | 25                                                              | 1.5                                                                                    |

## General Notes

- Lead solder temperature is  $+230^\circ\text{C}$  max. for 10 seconds max.;  $\geq 1/16"$  (1.59mm) from case.
- See "Package Dimensions" section of this catalog.

## Electrical Specification Notes

- Breakover Voltage symmetry as close as 1.0V is available from factory on these products.
- See Figures 8.4 and 8.5 for Test Circuit and waveforms.
- Typical switching time is 900 nano-seconds measured at  $I_{PK}$  (see Figure 8.4) across a  $20\Omega$  resistor (see Figure 8.5). Switching time defined as rise time of  $I_{PK}$  between the 10% to 90% points.
- See Figure 8.7.

## Bilateral Trigger DIAC Specifications

- Maximum Ratings, Absolute-Maximum Values  
Maximum Trigger Firing Capacitance: 0.1 $\mu\text{F}$   
Device Dissipation (at  $T_A = -40^\circ$  to  $+40^\circ\text{C}$ ): 250mW for DO-35 and 300mW for DO-214AA  
Derate Above  $+40^\circ\text{C}$ : 3.6mW/ $^\circ\text{C}$  for DO-35 and 3mW/ $^\circ\text{C}$  for DO-214AA
- Temperature Ranges  
Storage:  $-40^\circ\text{C}$  to  $+125^\circ\text{C}$   
Operating (Junction):  $-40^\circ\text{C}$  to  $+125^\circ\text{C}$

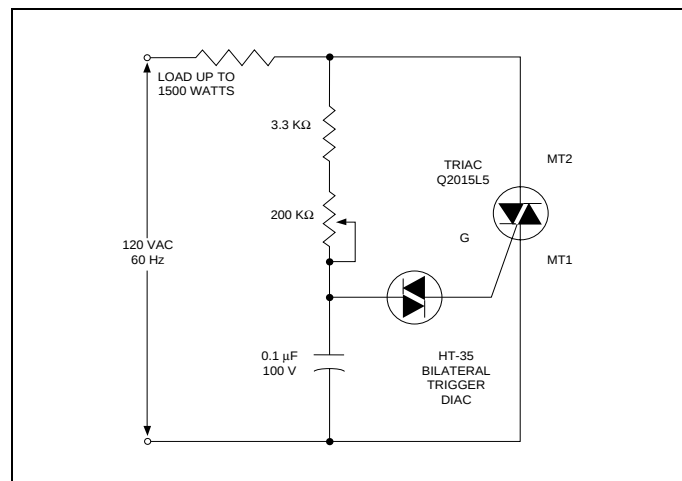
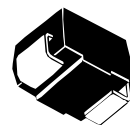


Figure 8.1 Typical Diac-Triac Full-Wave Phase Control Circuit using Lower Voltage Diacs

| HT and ST Series Thermal Resistance<br>Junction to Lead - $R_{\theta JL}$ : $^\circ\text{C/W}$<br>Junction to Ambient [ $R_{\theta JA}$ ]: $^\circ\text{C/W}$<br>(based on maximum lead temperature of $90^\circ\text{C}$ for DO-214AA and $85^\circ\text{C}$ for DO-35 devices) |                                                                                                        |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|
| Y<br><br>DO-35                                                                                                                                                                               | S<br><br>DO-214AA |
| 100 [278] $^\circ\text{C/W}$                                                                                                                                                                                                                                                     | 65 [200] $^\circ\text{C/W}$                                                                            |

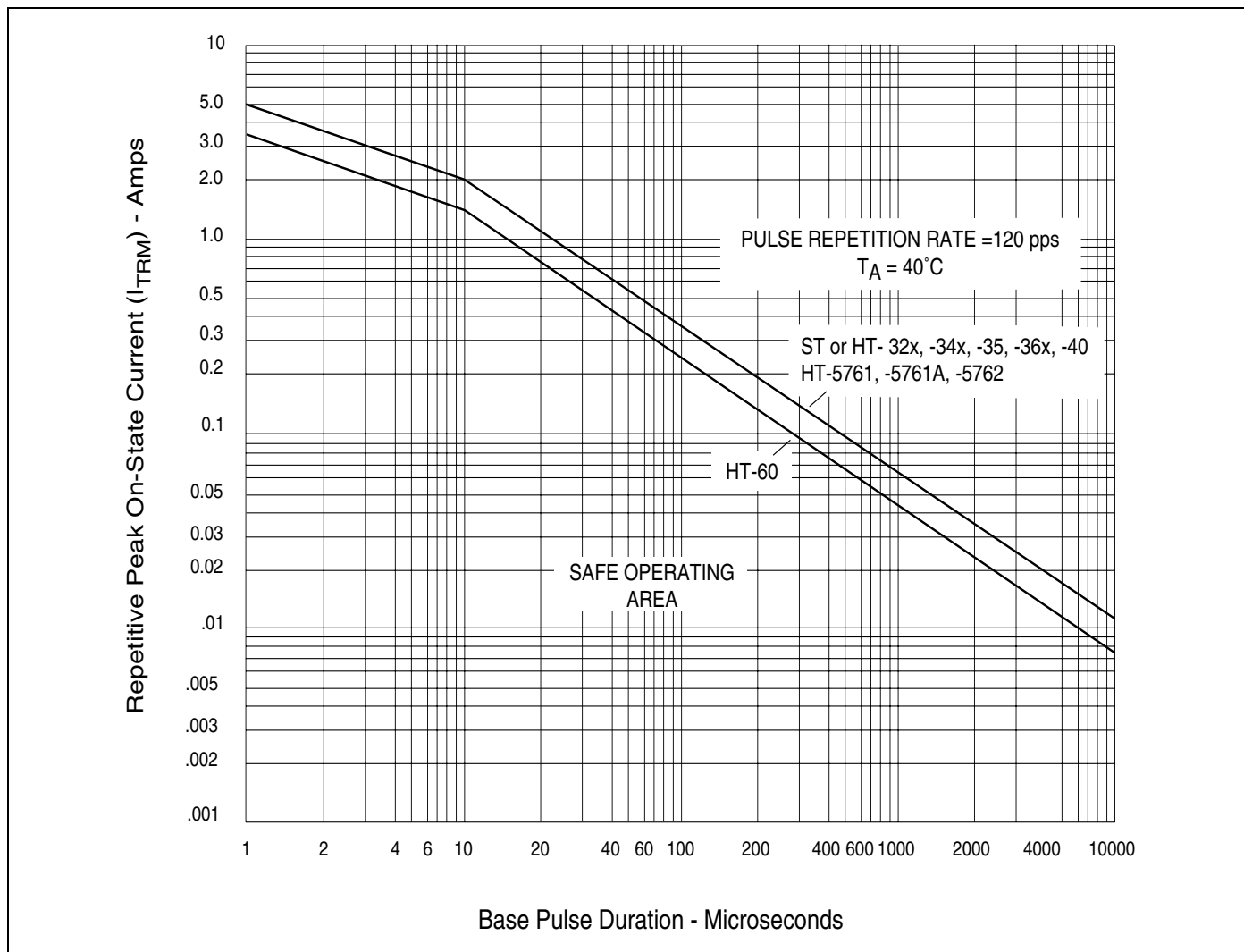


Figure 8.2 Repetitive Peak On-State Current vs Pulse Duration

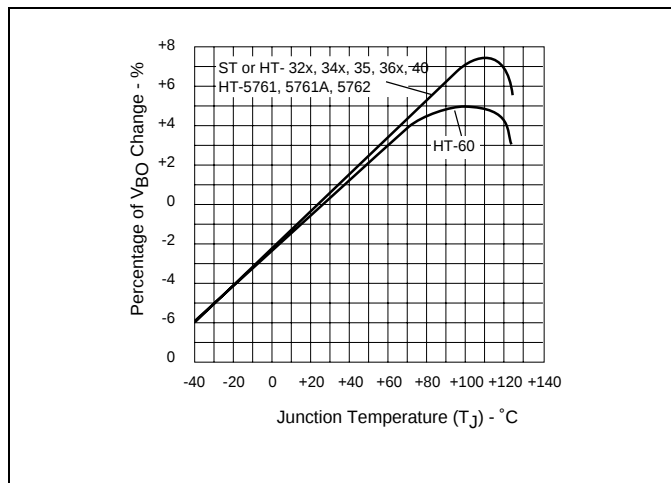
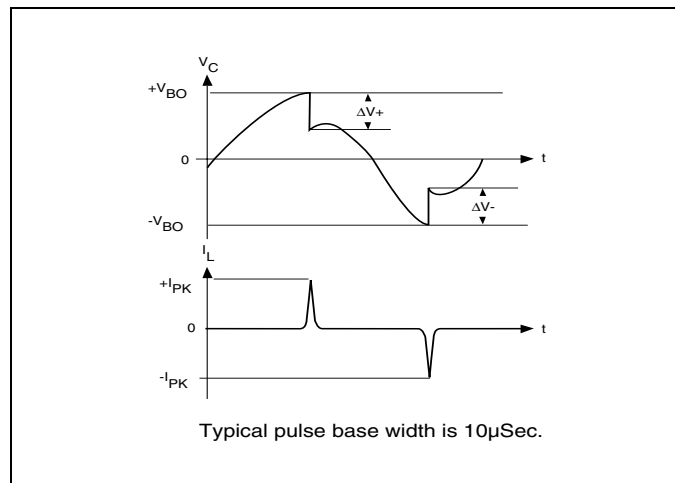
Figure 8.3 Normalized  $V_{BO}$  Change vs Junction Temperature

Figure 8.4 Test Circuit Waveforms (See Figure 8.5.)

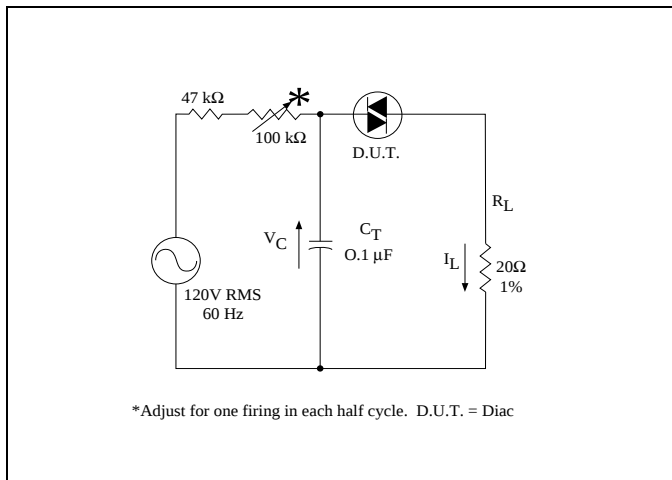


Figure 8.5 Circuit Used to Measure Diac Characteristics (See Figure 8.4.)

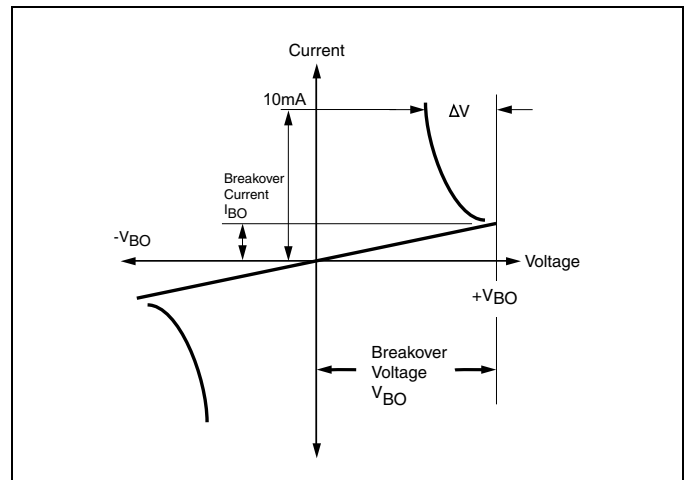


Figure 8.7 V-I Characteristics

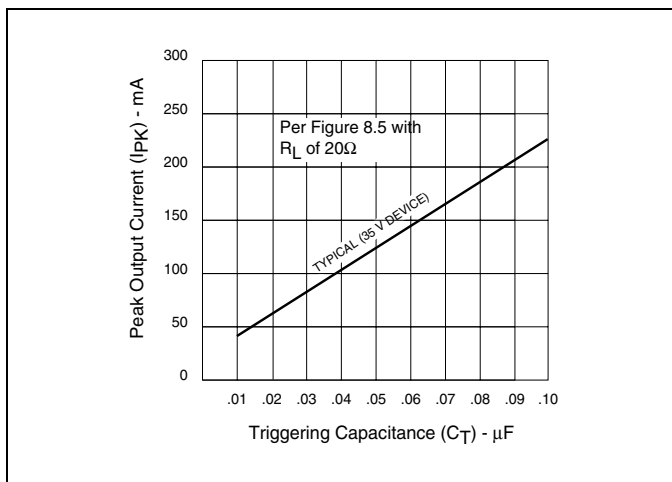


Figure 8.6 Peak Output Current vs Triggering Capacitance



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