

# Diac

## HT and ST Series

### General Description

Teccor's HT and ST Series of bilateral trigger diacs offer a range of voltage characteristics from 27 V to 45 V.

A 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 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. Consult the factory for more information about custom design applications.

### Features



- Bilateral triggering device
- 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.		$V_{BO}$		$\Delta V_{BO}$	$V_{BB}$	$I_{BO}$	$I_{TRM}$
 DO-35	 DO-214	Breakover Voltage (Forward and Reverse)		Breakover Voltage Symmetry $\Delta V_{BO} = [   +V_{BO}   -   -V_{BO}   ]$	Dynamic Breakback Voltage (3) $  \Delta V_{\pm}  $	Peak Breakover Current at Breakover Voltage	Peak Pulse Current for 10 $\mu\text{s}$ 120 PPS $T_A \leq 40^\circ\text{C}$
		Volts		Volts	Volts	$\mu\text{Amps}$	Amps
		MIN	MAX	MAX	MIN	MAX	MAX
HT-32	ST-32	27	37	3 (1)	10 (2)	25	2
HT-32A / HT-5761		28	36	2 (1)	7 at 10 mA (4)	25	2
HT-32B / HT-5761A	ST-32B	30	34	2 (1)	7 at 10 mA (4)	25	2
HT-34B	ST-34B	32	36	2 (1)	10 (2)	25	2
HT-35	ST-35	30	40	3 (1)	10 (2)	25	2
HT-36A / HT-5762	ST-36A	32	40	2 (1)	7 at 10 mA (4)	25	2
HT-36B	ST-36B	34	38	2 (1)	10 (2)	25	2
HT-40	ST-40	35	45	3 (1)	10 (2)	25	2

## General Notes

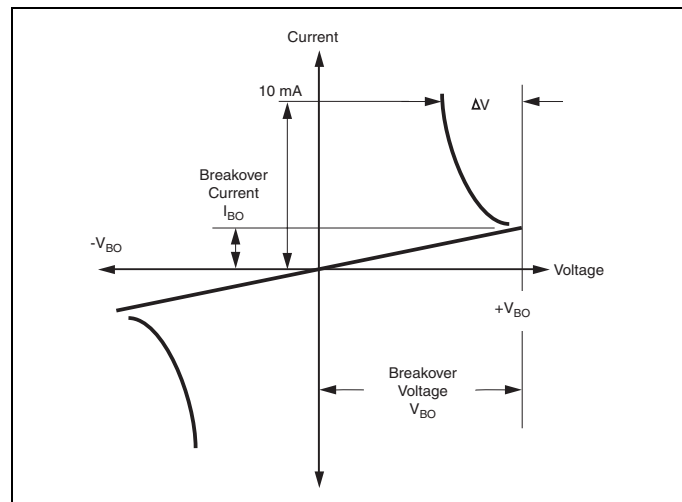
- Lead solder temperature is  $+230^\circ\text{C}$  for 10-second maximum;  $\geq 1/16"$  (1.59 mm) from case.
- See "Package Dimensions" section of this catalog.

## Electrical Specification Notes



- Breakover voltage symmetry as close as 1 V is available from the factory on these products.
- See Figure E8.4 and Figure E8.5 for test circuit and waveforms.
- Typical switching time is 900 nano-seconds measured at  $I_{PK}$  (Figure E8.4) across a  $20\ \Omega$  resistor (Figure E8.5). Switching time is defined as rise time of  $I_{PK}$  between the 10% to 90% points.
- See V-I Characteristics.

## Bilateral Trigger DIAC Specifications

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



V-I Characteristics

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

\* Mounted on 1  $\text{cm}^2$  copper foil surface; two-ounce copper foil

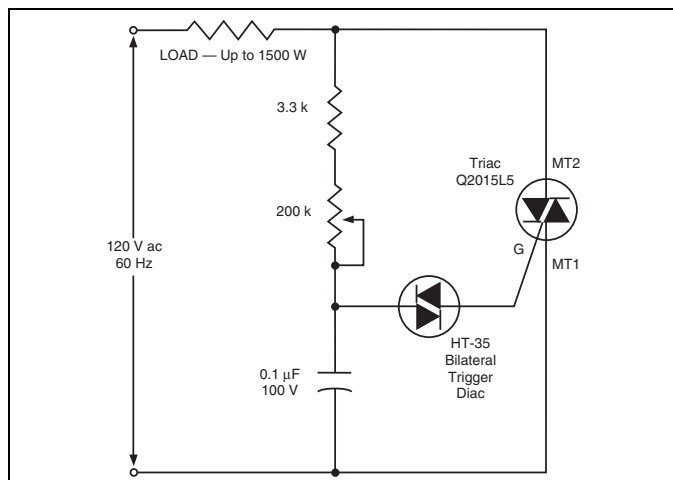


Figure E8.1 Typical Diac/Triac Full-wave Phase Control Circuit Using Lower Voltage Diacs.

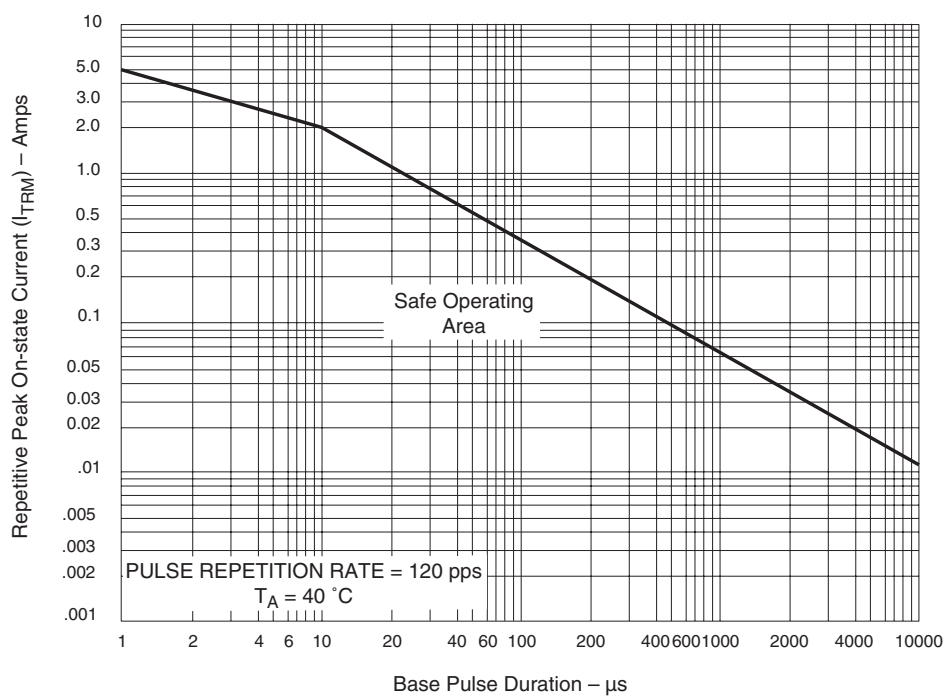
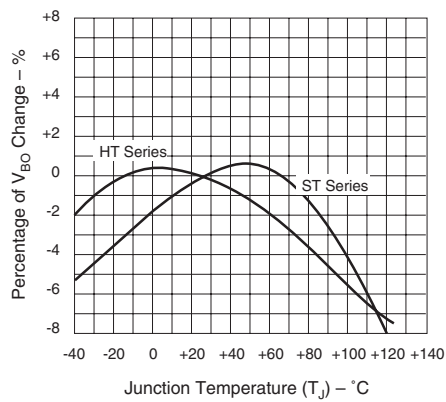
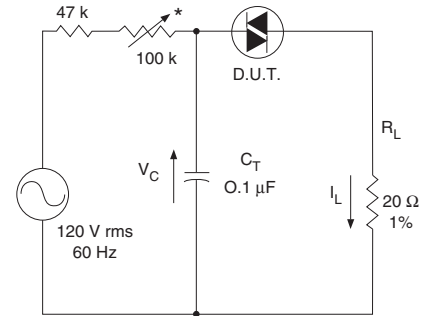


Figure E8.2 Repetitive Peak On-state Current versus Pulse Duration

Figure E8.3 Normalized  $V_{BO}$  Change versus Junction Temperature

\* Adjust for one firing in each half cycle. D.U.T. = Diac

Figure E8.5 Circuit Used to Measure Diac Characteristics (Refer to Figure E8.4.)

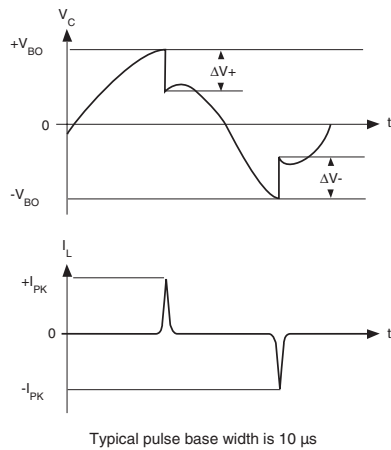
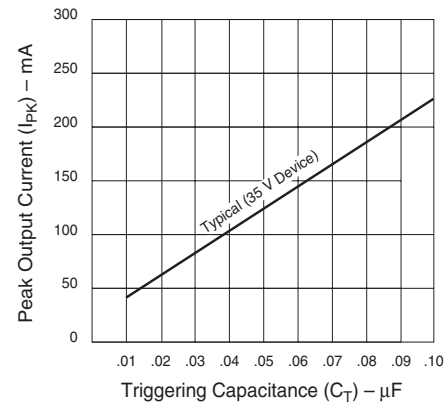


Figure E8.4 Test Circuit Waveforms (Refer to Figure E8.5.)

Figure E8.6 Peak Output Current versus Triggering Capacitance (Per Figure E8.5 with  $R_L$  of 20 Ω)