

THYRISTORS

BTY79 SERIES

Glass-passivated silicon thyristors in metal envelopes, intended for use in power control circuits (e.g. light and motor control) and power switching systems. The series consists of reverse polarity types (anode to stud) identified by a suffix R: BTY79-400R to 1000R.

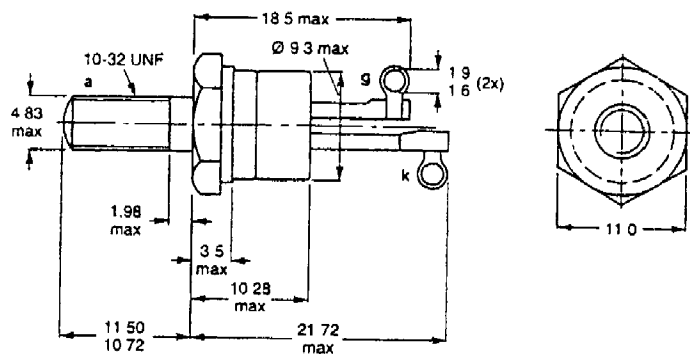
QUICK REFERENCE DATA

	BTY79-400R	500R	600R	800R	1000R
Repetitive peak voltages $V_{DRM}/V_{RRM}$ max.	400	500	600	800	1000 V
Average on-state current			$I_T(AV)$ max.	10 A	
R.M.S. on-state current			$I_T(RMS)$ max.	16 A	
Non-repetitive peak on-state current			$I_{TSM}$ max.	150 A	

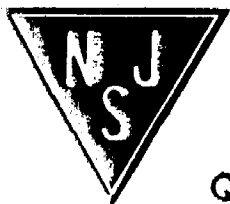
MECHANICAL DATA

Dimensions in mm

Fig. 1 TO-64: with 10-32 UNF stud ( $\phi$  4,83 mm).



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## BTY79 SERIES

### RATINGS

Limiting values in accordance with the Absolute Maximum System (IEC 134)

#### Anode to cathode

		BTY79-400R	500R	600R	800R	1000R
Non-repetitive peak off-state voltage ( $t \leq 10$ ms)	$V_{DSM}^{**}$ max.	500	1100	1100	1100	1100 V
Non-repetitive peak reverse voltage ( $t \leq 5$ ms)	$V_{RSM}$ max.	500	600	720	960	1100 V
Repetitive peak voltages	$V_{DRM}/V_{RRM}$ max.	400	500	600	800	1000 V
Crest working voltages	$V_{DWM}/V_{RWM}$ max.	400	500	600	800	1000 V*
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Average on-state current (averaged over any 20 ms period) up to $T_{mb} = 85$ °C	$I_T(AV)$				max.	10 A
R.M.S. on-state current	$I_T(RMS)$				max.	16 A
Repetitive peak on-state current	$I_{TRM}$				max.	75 A
Non-repetitive peak on-state current; $t = 10$ ms; half sine-wave; $T_j = 125$ °C prior to surge; with reapplied $V_{RWMmax}$	$I_{TSM}$				max.	150 A
$I^2 t$ for fusing ( $t = 10$ ms)	$I^2 t$				max.	112 A <sup>2</sup> s
Rate of rise of on-state current after triggering with $I_G = 150$ mA to $I_T = 30$ A; $dI_G/dt = 0,25$ A/ $\mu$ s	$dI_T/dt$				max.	50 A/ $\mu$ s
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<b>Gate to cathode</b>						
Average power dissipation (averaged over any 20 ms period)	$P_G(AV)$				max.	0,5 W
Peak power dissipation	$P_{GM}$				max.	5 W
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<b>Temperatures</b>						
Storage temperature	$T_{stg}$					-55 to +125 °C
Junction temperature	$T_j$				max.	125 °C
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<b>THERMAL RESISTANCE</b>						
From junction to mounting base	$R_{th j-mb}$	=				1,8 °C/W
From mounting base to heatsink with heatsink compound	$R_{th mb-h}$	=				0,5 °C/W
From junction to ambient in free air	$R_{th j-a}$	=				45 °C/W
Transient thermal impedance ( $t = 1$ ms)	$Z_{th j-mb}$	=				0,1 °C/W

## BTY79 SERIES

### CHARACTERISTICS

#### Anode to cathode

On-state voltage (measured under pulse conditions)  
 $I_T = 20 \text{ A}; T_j = 25 \text{ }^\circ\text{C}$

$$V_T < 2 \text{ V}$$

Rate of rise of off-state voltage that will not trigger any device; exponential method;  
 $V_D = 2/3 V_{DRMmax}; T_j = 125 \text{ }^\circ\text{C}$

$$dV_D/dt < 200 \text{ V}/\mu\text{s}$$

#### Reverse current

$$V_R = V_{RWMmax}; T_j = 125 \text{ }^\circ\text{C}$$

$$I_R < 3 \text{ mA}$$

#### Off-state current

$$V_D = V_{DWMmax}; T_j = 125 \text{ }^\circ\text{C}$$

$$I_D < 3 \text{ mA}$$

Latching current;  $T_j = 25 \text{ }^\circ\text{C}$

$$I_L < 150 \text{ mA}$$

Holding current;  $T_j = 25 \text{ }^\circ\text{C}$

$$I_H < 75 \text{ mA}$$

#### Gate to cathode

Voltage that will trigger all devices  
 $V_D = 6 \text{ V}; T_j = 25 \text{ }^\circ\text{C}$

$$V_{GT} > 1.5 \text{ V}$$

Voltage that will not trigger any device  
 $V_D = V_{DRMmax}; T_j = 125 \text{ }^\circ\text{C}$

$$V_{GD} < 200 \text{ mV}$$

Current that will trigger all devices  
 $V_D = 6 \text{ V}; T_j = 25 \text{ }^\circ\text{C}$

$$I_{GT} > 30 \text{ mA}$$

On request (see Ordering Note)

$$I_{GT} > 20 \text{ mA}$$

#### Switching characteristics

Gate-controlled turn-on time ( $t_{gt} = t_d + t_r$ ) when switched from  $V_D = V_{DRMmax}$  to  $I_T = 40 \text{ A}$ ;  
 $I_{GT} = 100 \text{ mA}; dI_G/dt = 5 \text{ A}/\mu\text{s}; T_j = 25 \text{ }^\circ\text{C}$

$$t_{gt} \text{ typ. } 2 \mu\text{s}$$

Circuit-commutated turn-off time when switched from  $I_T = 40 \text{ A}$  to  $V_R > 50 \text{ V}$  with  
 $-dI_T/dt = 10 \text{ A}/\mu\text{s}; dV_D/dt = 50 \text{ V}/\mu\text{s}; T_j = 115 \text{ }^\circ\text{C}$

$$t_q \text{ typ. } 35 \mu\text{s}$$

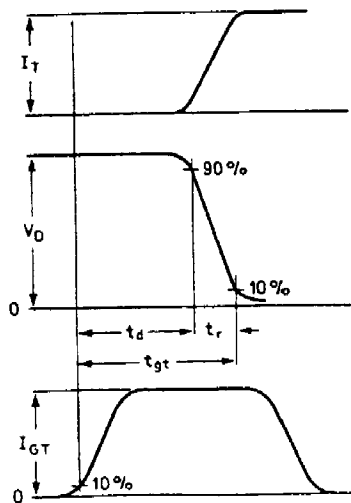


Fig. 2a Gate-controlled turn-on time definition.

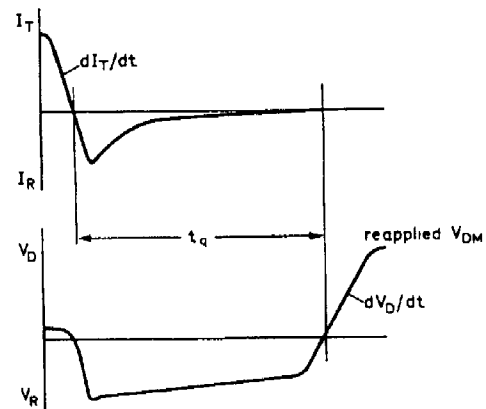


Fig. 2b Circuit-commutated turn-off time definition.