

Quality Semi-Conductors

BTW63 SERIES

RATINGS

Limiting values in accordance with the Absolute Maximum System (IEC134)

→ Anode to cathode		BTW63-600R	800R	1000R	
Transient off-state voltage	V_{DSM}	max. 800	1000	1000	V
Repetitive peak off-state voltage	V_{DRM}	max. 600	800	1000	V
Continuous off-state voltage	V_D	max. 500	650	700	V
Transient reverse voltage ($t_p \leq 5 \mu s$)	V_{RSM}	max.	15		V
Average on-state current (averaged over any 20 ms period)					
up to $T_{mb} = 75^\circ C$	$I_{T(AV)}$	max.	25		A
at $T_{mb} = 85^\circ C$	$I_{T(AV)}$	max.	22		A
R.M.S. on-state current	$I_{T(RMS)}$	max.	40		A
Repetitive peak on-state current; $t_p = 50 \mu s$; $\delta = 0.05$	I_{TRM}	max.	250		A
Non-repetitive peak on-state current					
$T_j = 125^\circ C$ prior to surge;					
$t = 10$ ms; half sine-wave	I_{TSM}	max.	370		A
$I^2 t$ for fusing; $t = 10$ ms	$I^2 t$	max.	700		$A^2 s$
→ Rate of rise of on-state current after triggering					
with $I_G = 1.25$ A; $I_T = 80$ A	di_T/dt	max.	1000		A/ μs
Gate to cathode					
Average power dissipation (averaged over any 20 ms period)	$P_{G(AV)}$	max.	1		W
Peak power dissipation; $t = 10 \mu s$	P_{GM}	max.	10		W
Temperatures					
Storage temperature	T_{stg}	-40 to +125			$^\circ C$
Operating junction temperature	T_j	max.	125		$^\circ C$
THERMAL RESISTANCE					
From junction to mounting base	$R_{th j-mb}$	=	0.9		K/W
From mounting base to heatsink					
with heatsink compound	$R_{th mb-h}$	=	0.2		K/W

OPERATING NOTE

The terminals should be neither bent nor twisted; they should be soldered into the circuit so that there is no strain on them.

During soldering the heat conduction to the junction should be kept to a minimum.

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CHARACTERISTICS

Anode to cathode

On-state voltage

$$I_T = 50 \text{ A}; T_j = 25^\circ\text{C}$$

$$V_T < 2.6 \text{ V}^*$$

Off-state current

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

$$I_D < 6.0 \text{ mA}$$

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

$$I_H < 400 \text{ mA}$$

Gate to cathode

Voltage that will trigger all devices

$$V_D = 12 \text{ V}; T_j = 25^\circ\text{C}$$

$$V_{GT} > 2.0 \text{ V}$$

Current that will trigger all devices

$$V_D = 12 \text{ V}; T_j = 25^\circ\text{C}$$

$$I_{GT} > 250 \text{ mA}$$

Switching characteristics (see Fig.5)

Circuit commutated turn-off time

$$dV_D/dt = 500 \text{ V}/\mu\text{s} \text{ (linear to } V_{DRM\text{max}});$$

$$R_{GK} = 10 \Omega; V_G = 0; T_j = 125^\circ\text{C};$$

$$\text{when switched from } I_T = 100 \text{ A}; t_p = 150 \mu\text{s}$$

$$-dI_T/dt = 50 \text{ A}/\mu\text{s}$$

suffix K

$$t_q < 6 \mu\text{s}$$

suffix N

$$t_q < 9 \mu\text{s}$$

suffix P

$$t_q < 12 \mu\text{s}$$

$$-dI_T/dt = 10 \text{ A}/\mu\text{s}$$

suffix K

$$t_q < 4 \mu\text{s}$$

suffix N

$$t_q < 6 \mu\text{s}$$

suffix P

$$t_q < 8 \mu\text{s}$$

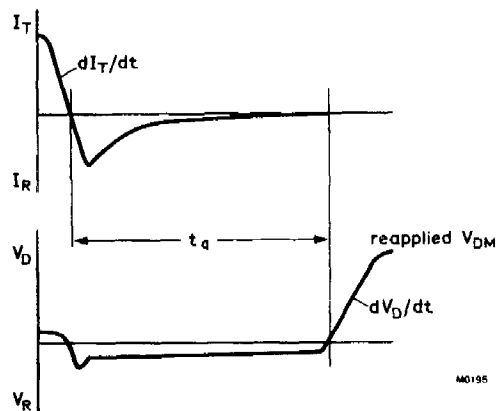


Fig.2 Circuit-commutated turn-off time definition.

*Measured under pulse conditions to avoid excessive dissipation.

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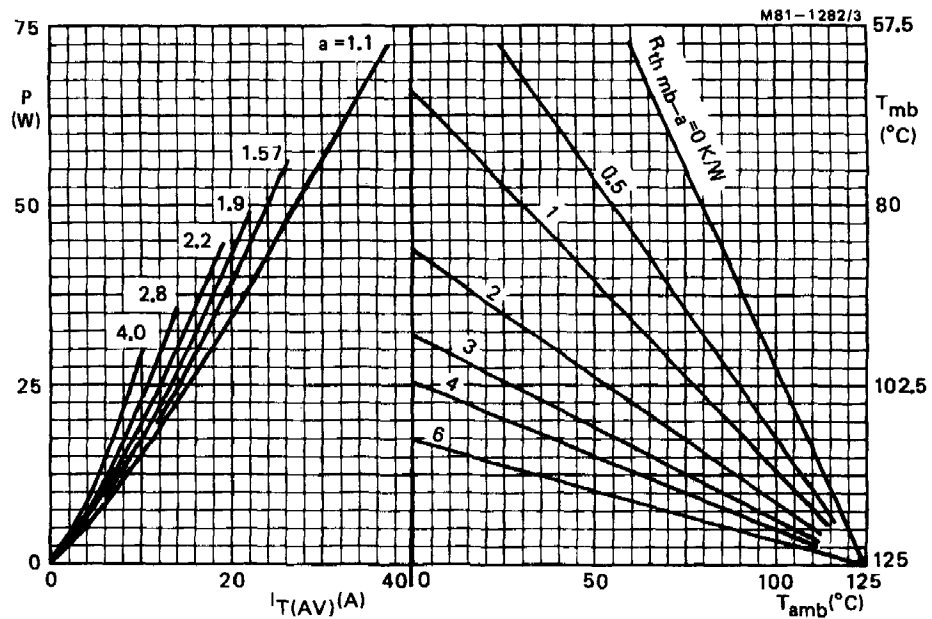


Fig.3 The right-hand part shows the interrelationship between the power (derived from the left-hand part) and the maximum permissible temperatures.

$$a = \text{form factor} = \frac{I_T(RMS)}{I_T(AV)}$$