



### Module Type

| TYPE        | VRRM  | VRSM  |
|-------------|-------|-------|
| MT110CB08T1 | 800V  | 900V  |
| MT110CB12T1 | 1200V | 1300V |
| MT110CB16T1 | 1600V | 1700V |
| MT110CB18T1 | 1800V | 1900V |

### ◆ Diode

#### Maximum Ratings

| Symbol           | Item                               | Conditions           | Values      | Units            |
|------------------|------------------------------------|----------------------|-------------|------------------|
| ID               | Output Current(D.C.)               | Tc=85°C              | 110         | A                |
| IFSM             | Surge forward current              | t=10mS Tvj =45°C     | 2250        | A                |
| i <sup>2</sup> t | Circuit Fusing Consideration       |                      | 25000       | A <sup>2</sup> s |
| Visol            | Isolation Breakdown Voltage(R.M.S) | a.c.50HZ;r.m.s.;1min | 3000        | V                |
| Tvj              | Operating Junction Temperature     |                      | -40 to +125 | °C               |
| Tstg             | Storage Temperature                |                      | -40 to +125 | °C               |
| Mt               | Mounting Torque                    | To terminals(M5)     | 3±15%       | Nm               |
| Ms               |                                    | To heatsink(M6)      | 5±15%       | Nm               |
| Weight           | Module (Approximately)             |                      | 100         | g                |

#### Thermal Characteristics

| Symbol   | Item                    | Conditions       | Values | Units |
|----------|-------------------------|------------------|--------|-------|
| Rth(j-c) | Thermal Impedance, max. | Junction to Case | 0.14   | °C/W  |
| Rth(c-s) | Thermal Impedance, max. | Case to Heatsink | 0.10   | °C/W  |

#### Electrical Characteristics

| Symbol           | Item                                  | Conditions                                | Values |      |      | Units    |
|------------------|---------------------------------------|---|--------|------|------|----------|
|                  |                                       |   | Min.   | Typ. | Max. |          |
| VFM              | Forward Voltage Drop, max.            | T=25°C IF =300A                           |        |      | 1.65 | V        |
| I <sub>RRM</sub> | Repetitive Peak Reverse Current, max. | Tvj =25°C VRD=VRRM<br>Tvj =125°C VRD=VRRM |        | ≤0.5 | ≤6   | mA<br>mA |

## ◆ Thyristor

### Maximum Ratings

| Symbol    | Item   | Conditions  | Values         | Units            |
|-----------|--|---|----------------|------------------|
| $I_{TAV}$ | Average On-State Current                         | Sine 180°; $T_c=85^\circ\text{C}$   | 110            | A                |
| $I_{TSM}$ | Surge On-State Current                           | $T_{VJ}=45^\circ\text{C}$ $t=10\text{ms}$ , sine<br>$T_{VJ}=125^\circ\text{C}$ $t=10\text{ms}$ , sine | 2250<br>1900   | A                |
| $i^2t$    | Circuit Fusing Consideration                     | $T_{VJ}=45^\circ\text{C}$ $t=10\text{ms}$ , sine<br>$T_{VJ}=125^\circ\text{C}$ $t=10\text{ms}$ , sine | 25000<br>18000 | A <sup>2</sup> s |
| Visol     | Isolation Breakdown Voltage(R.M.S)               | a.c.50HZ;r.m.s.;1min  | 3000           | V                |
| $T_{vj}$  | Operating Junction Temperature                   |   | -40 to +130    | °C               |
| $T_{stg}$ | Storage Temperature                              |   | -40 to +125    | °C               |
| $M_t$     | Mounting Torque                                  | To terminals(M5)  | $3 \pm 15\%$   | Nm               |
| $M_s$     |  | To heatsink(M6)   | $5 \pm 15\%$   | Nm               |
| $di/dt$   | Critical Rate of Rise of On-State Current        | $T_{VJ}=T_{VJM}$ , $2/3V_{DRM}$ , $I_G=500\text{mA}$<br>$T_r < 0.5\mu\text{s}$ , $t_p > 6\mu\text{s}$ | 150            | A/ $\mu\text{s}$ |
| $dv/dt$   | Critical Rate of Rise of Off-State Voltage, min. | $T_J=T_{VJM}$ , $2/3V_{DRM}$ linear voltage rise  | 1000           | V/ $\mu\text{s}$ |
| a         | Maximum allowable acceleration                   |   | 50             | $\text{m/s}^2$   |

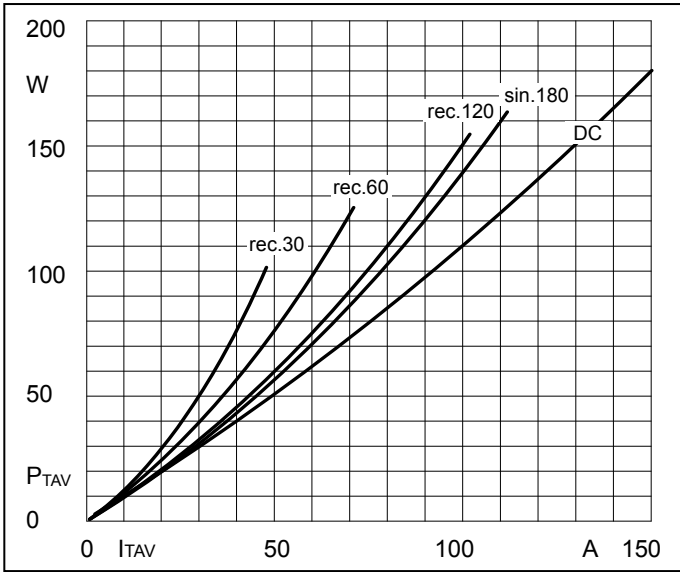
### Thermal Characteristics

| Symbol        | Item                    | Conditions       | Values | Units |
|---------------|-------------------------|------------------|--------|-------|
| $R_{th(j-c)}$ | Thermal Impedance, max. | Junction to Case | 0.28   | °C/W  |
| $R_{th(c-s)}$ | Thermal Impedance, max. | Case to Heatsink | 0.20   | °C/W  |

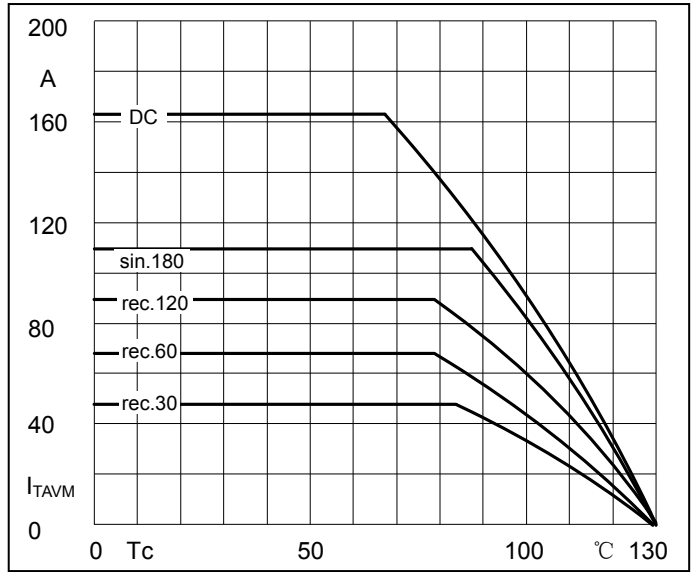
### Electrical Characteristics

| Symbol            | Item  | Conditions  | Values |      | Units         |
|-------------------|---|---|--------|------|---------------|
|                   |   |   |        |      |               |
| $V_{TM}$          | Peak On-State Voltage, max.   | $T=25^\circ\text{C}$ $I_T=300\text{A}$  |        | 1.65 | V             |
| $I_{RRM}/I_{DRM}$ | Repetitive Peak Reverse Current, max. / Repetitive Peak Off-State Current, max. | $T_{VJ}=T_{VJM}$ , $V_R=V_{RRM}$ , $V_D=V_{DRM}$                                |        | 20   | mA            |
| $V_{TO}$          | On state threshold voltage  | For power-loss calculations only<br>( $T_{VJ}=125^\circ\text{C}$ )              |        | 0.9  | V             |
| $r_T$             | Value of on-state slope resistance. max   | $T_{VJ}=T_{VJM}$  |        | 2    | m $\Omega$    |
| $V_{GT}$          | Gate Trigger Voltage, max.  | $T_{VJ}=25^\circ\text{C}$ , $V_D=6\text{V}$                                     |        | 3    | V             |
| $I_{GT}$          | Gate Trigger Current, max.  | $T_{VJ}=25^\circ\text{C}$ , $V_D=6\text{V}$                                     |        | 150  | mA            |
| $V_{GD}$          | Non-triggering gate voltage, max.   | $T_{VJ}=125^\circ\text{C}$ , $V_D=2/3V_{DRM}$                                   |        | 0.25 | V             |
| $I_{GD}$          | Non-triggering gate current, max.   | $T_{VJ}=125^\circ\text{C}$ , $V_D=2/3V_{DRM}$                                   |        | 6    | mA            |
| $I_L$             | Latching current, max.  | $T_{VJ}=25^\circ\text{C}$ , $R_G=33\Omega$                                      | 300    | 600  | mA            |
| $I_H$             | Holding current, max.   | $T_{VJ}=25^\circ\text{C}$ , $V_D=6\text{V}$                                     | 150    | 250  | mA            |
| tgd               | Gate controlled delay time  | $T_{VJ}=25^\circ\text{C}$ ,<br>$I_G=1\text{A}$ , $diG/dt=1\text{A}/\mu\text{s}$ | 1      |      | $\mu\text{s}$ |
| tq                | Circuit commutated turn-off time  | $T_{VJ}=T_{VJM}$  | 100    |      | $\mu\text{s}$ |

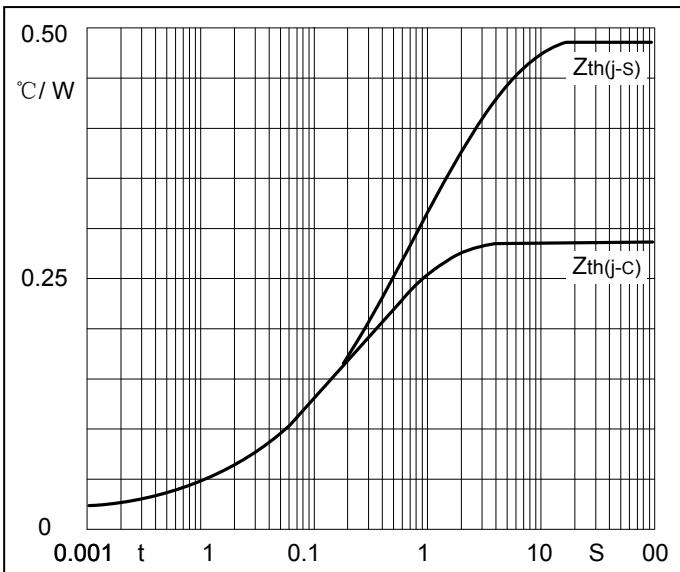
**Performance Curves**



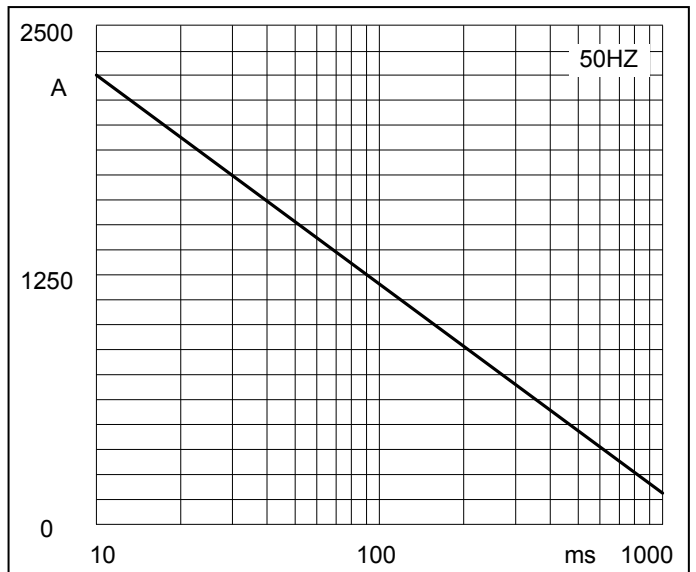
**Fig1. Power dissipation**



**Fig2. Forward Current Derating Curve**

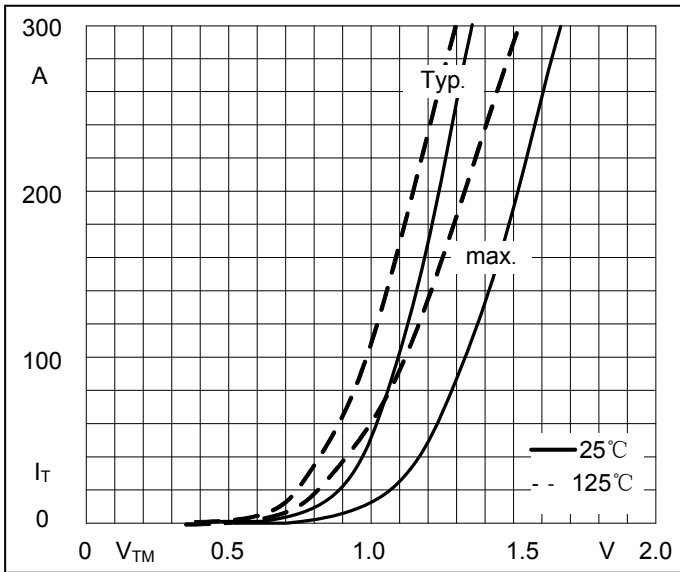


**Fig3. Transient thermal impedance**

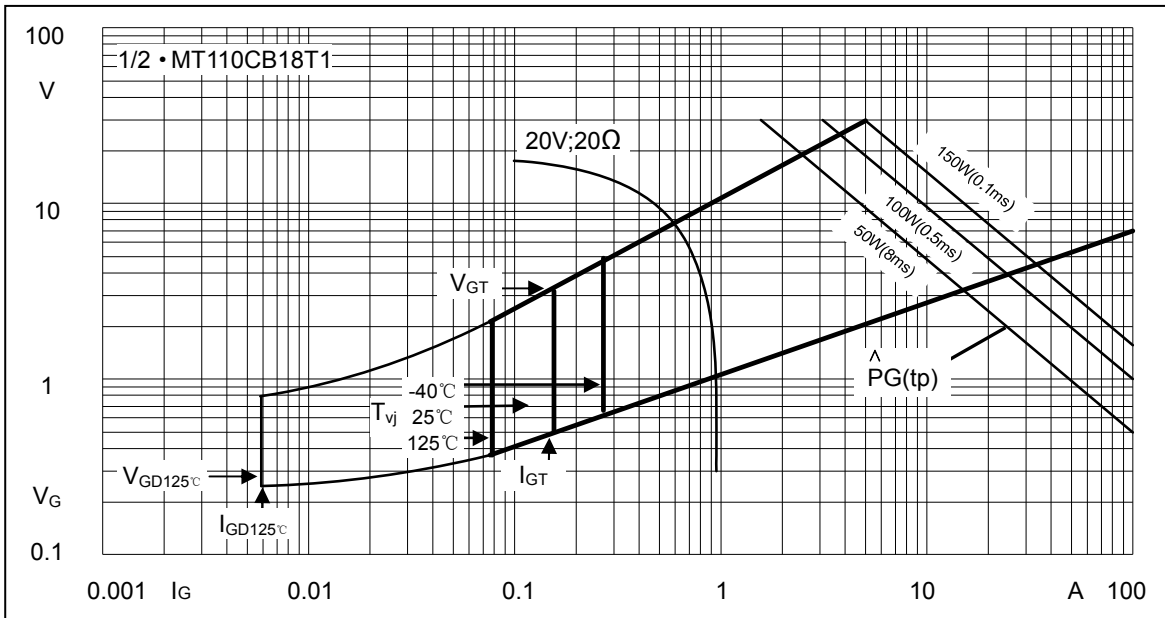


**Fig4. Max Non-Repetitive Forward Surge Current**

**Performance Curves**



**Fig5. Forward Characteristics**



**Fig6. Gate trigger Characteristics**



Micro Commercial Components

## Ordering Information :

| Device         | Packing                     |
|----------------|-----------------------------|
| Part Number-BP | Bulk: 10PCS/BOX ;100PCS/CTN |

### \*\*\*IMPORTANT NOTICE\*\*\*

**Micro Commercial Components Corp.** reserves the right to make changes without further notice to any product herein to make corrections, modifications , enhancements , improvements , or other changes . **Micro Commercial Components Corp .** does not assume any liability arising out of the application or use of any product described herein; neither does it convey any license under its patent rights ,nor the rights of others . The user of products in such applications shall assume all risks of such use and will agree to hold **Micro Commercial Components Corp .** and all the companies whose products are represented on our website, harmless against all damages. **Micro Commercial Components Corp.** products are sold subject to the general terms and conditions of commercial sale, as published at <https://www.mccsemi.com/Home/TermsAndConditions>.

### \*\*\*LIFE SUPPORT\*\*\*

MCC's products are not authorized for use as critical components in life support devices or systems without the express written approval of Micro Commercial Components Corporation.

### \*\*\*CUSTOMER AWARENESS\*\*\*

Counterfeiting of semiconductor parts is a growing problem in the industry. Micro Commercial Components (MCC) is taking strong measures to protect ourselves and our customers from the proliferation of counterfeit parts. MCC strongly encourages customers to purchase MCC parts either directly from MCC or from Authorized MCC Distributors who are listed by country on our web page cited below. Products customers buy either from MCC directly or from Authorized MCC Distributors are genuine parts, have full traceability, meet MCC's quality standards for handling and storage. **MCC will not provide any warranty coverage or other assistance for parts bought from Unauthorized Sources.** MCC is committed to combat this global problem and encourage our customers to do their part in stopping this practice by buying direct or from authorized distributors.

[www.mccsemi.com](http://www.mccsemi.com)