



Micro Commercial Components



Micro Commercial Components  
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**MT160CB08T2**  
**MT160CB12T2**  
**MT160CB16T2**  
**MT160CB18T2**

## Features

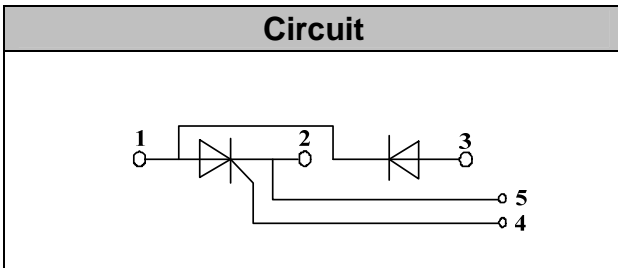
- Lead Free Finish/RoHS Compliant (NOTE 1) ("P" Suffix designates RoHS Compliant. See ordering information)
- International standard package
- Heat transfer through aluminum oxide DBC ceramic isolated metal baseplate
- Glass passivated chip
- Simple Mounting

## Applications

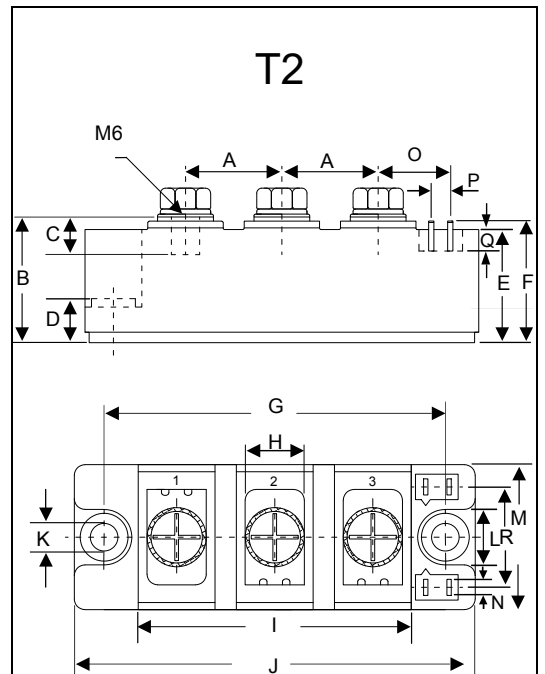
- Power Converters
- Lighting Control
- DC Motor Control and Drives
- Heat and temperature control



**Circuit**



**160 Amp**  
**THYRISTOR/DIODE**  
**MODULE**  
**800~1800 Volts**



DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	.894	.917	22.70	23.30	
B	1.169	1.193	29.70	30.30	
C	.343	.366	8.70	9.30	
D	.323	.343	8.20	8.70	
E	1.051	1.075	26.70	27.30	
F	1.130	1.154	28.70	29.30	
G	.120	.130	79.70	80.30	
H	.500	.524	12.70	13.30	
I	2.501	2.531	63.70	64.30	
J	3.689	3.713	93.70	94.30	
K	.256		6.50		∅
L	.500	.524	12.70	13.30	
M	1.327	1.350	33.70	34.30	
N	0.032X0.11		0.8X2.8		
O	.677	.700	17.20	17.80	
P	.185	.209	4.70	5.30	
Q	.185	.209	4.70	5.30	
R	.902	.925	22.90	23.50	

## Module Type

TYPE	VRRM/VDRM	VRSM
MT160CB08T2	800V	900V
MT160CB12T2	1200V	1300V
MT160CB16T2	1600V	1700V
MT160CB18T2	1800V	1900V

## ◆ Diode

### Maximum Ratings

Symbol	Item	Conditions	Values	Units
Id	Output Current(D.C.)	Tc=85°C	160	A
IFSM	Surge forward current	t=10mS Tvj =45°C	5400	A
i <sup>2</sup> t	Circuit Fusing Consideration		145000	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(M6)	3±15%	Nm
Ms		To heatsink(M6)	5±15%	Nm
Weight	Module (Approximately)		165	g

### Thermal Characteristics

Symbol	Item	Conditions	Values	Units
Rth(j-c)	Thermal Impedance, max.	Junction to Case	0.085	°C/W
Rth(c-s)	Thermal Impedance, max.	Case to Heatsink	0.05	°C/W

### Electrical Characteristics

Symbol	Item	Conditions	Values			Units
			Min.	Typ.	Max.	
VFM	Forward Voltage Drop, max.	T=25°C IF =500A			1.70	V
I <sub>RRM</sub>	Repetitive Peak Reverse Current, max.	Tvj =25°C VRD=VRRM Tvj =125°C VRD=VRRM		≤0.5 ≤9		mA mA

**◆ Thyristor**
**Maximum Ratings**

Symbol	Item	Conditions	Values	Units
$I_{TAV}$	Average On-State Current	Sine 180°; $T_c=85^\circ\text{C}$	160	A
$I_{TSM}$	Surge On-State Current	$T_{VJ}=45^\circ\text{C}$ t=10ms, sine $T_{VJ}=125^\circ\text{C}$ t=10ms, sine	5400 5000	A
$i^2t$	Circuit Fusing Consideration	$T_{VJ}=45^\circ\text{C}$ t=10ms, sine $T_{VJ}=125^\circ\text{C}$ t=10ms, sine	145000 125000	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(M6)	$3 \pm 15\%$	Nm
$M_s$		To heatsink(M6)	$5 \pm 15\%$	Nm
di/dt	Critical Rate of Rise of On-State Current	$T_{VJ}=T_{VJM}$ , $2/3V_{DRM}$ , $I_G=500\text{mA}$ $Tr<0.5\mu\text{s}$ , $tp>6\mu\text{s}$	200	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	$\text{m/s}^2$

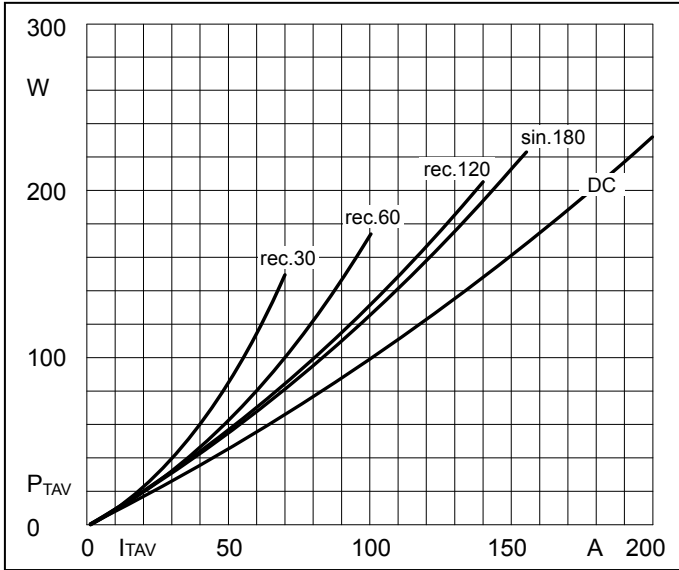
**Thermal Characteristics**

Symbol	Item	Conditions	Values	Units
$R_{th(j-c)}$	Thermal Impedance, max.	Junction to Case	0.17	°C/W
$R_{th(c-s)}$	Thermal Impedance, max.	Case to Heatsink	0.10	°C/W

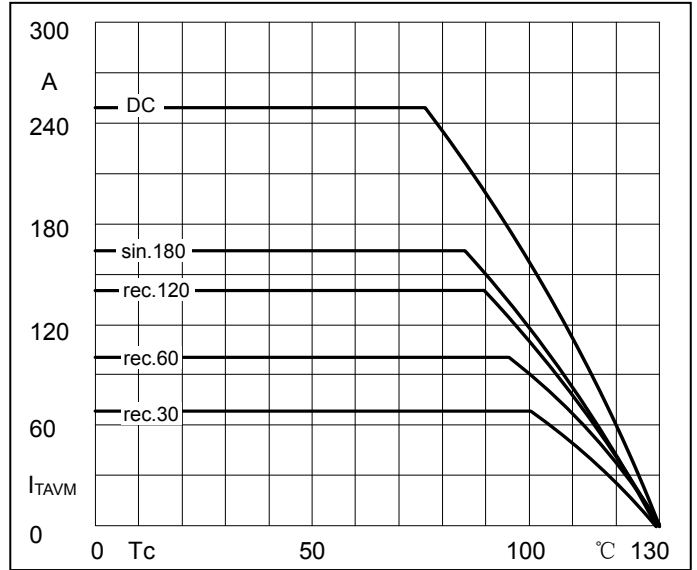
**Electrical Characteristics**

Symbol	Item	Conditions	Values		Units
$V_{TM}$	Peak On-State Voltage, max.	$T=25^\circ\text{C}$ $I_T=500\text{A}$		1.70	V
$I_{RRM}/I_{DRM}$	Repetitive Peak Reverse Current, max. / Repetitive Peak Off-State Current, max.	$T_{VJ}=T_{VJM}$ , $V_R=V_{RRM}$ , $V_D=V_{DRM}$		40	mA
$V_{TO}$	On state threshold voltage	For power-loss calculations only ( $T_{VJ}=125^\circ\text{C}$ )		0.85	V
$r_T$	Value of on-state slope resistance. max	$T_{VJ}=T_{VJM}$		1.5	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.	$T_{VJ}=125^\circ\text{C}$ , $V_D=2/3V_{DRM}$		10	mA
$I_L$	Latching current, max.	$T_{VJ}=25^\circ\text{C}$ , $R_G=33\Omega$	300	1000	mA
$I_H$	Holding current, max.	$T_{VJ}=25^\circ\text{C}$ , $V_D=6\text{V}$	150	400	mA
tgd	Gate controlled delay time	$T_{VJ}=25^\circ\text{C}$ , $I_G=1\text{A}$ , $di/dt=1\text{A}/\mu\text{s}$	1		$\mu\text{s}$
tq	Circuit commutated turn-off time	$T_{VJ}=T_{VJM}$	100		$\mu\text{s}$

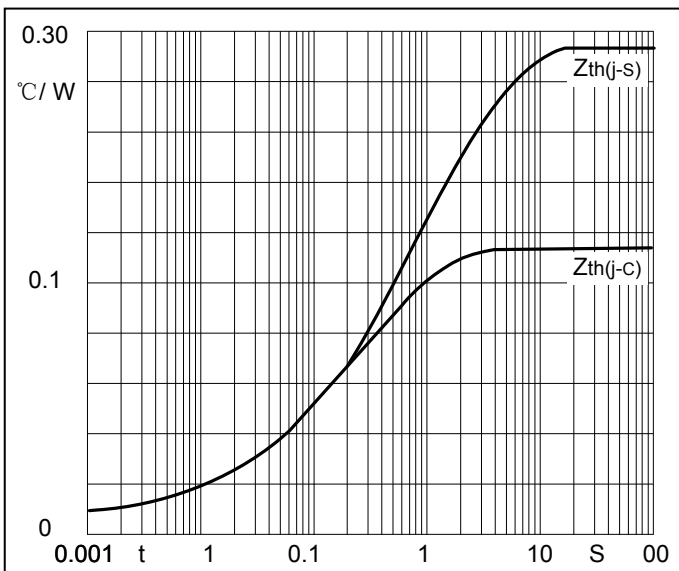
**Performance Curves**



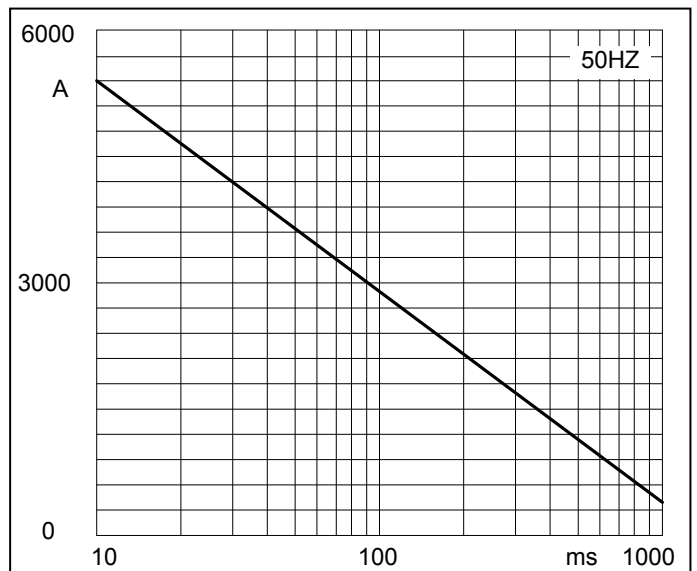
**Fig1. Power dissipation**



**Fig2. Forward Current Derating Curve**

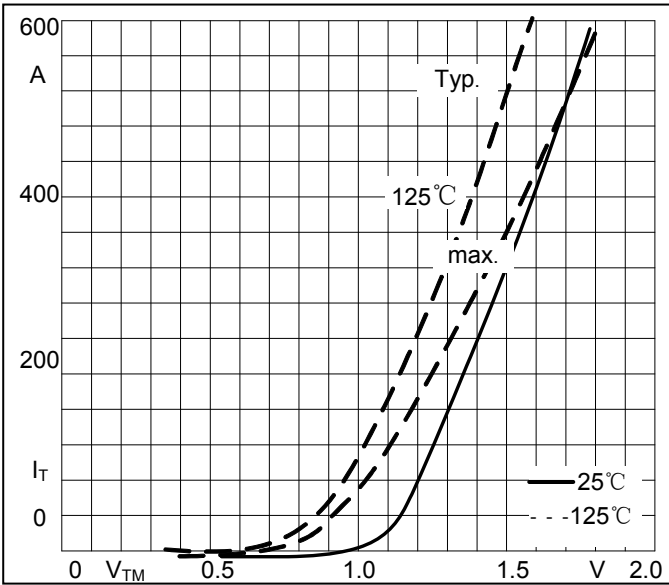


**Fig3. Transient thermal impedance**

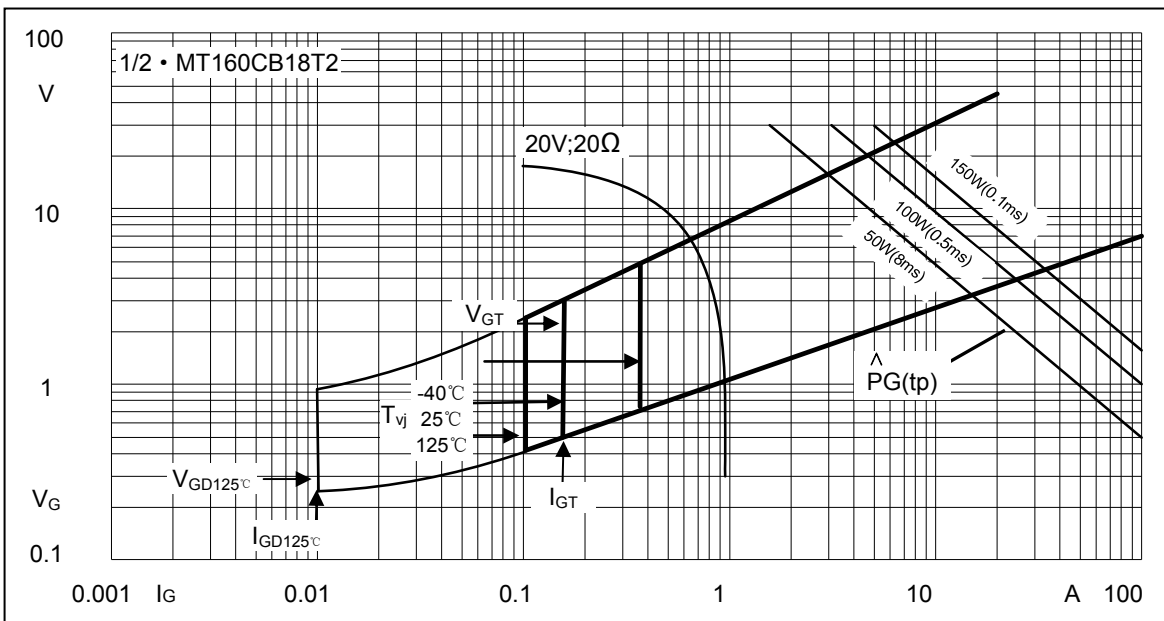


**Fig4. Max Non-Repetitive Forward Surge Current**

**Performance Curves**



**Fig5. Forward Characteristics**



**Fig6. Gate trigger Characteristics**



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Ordering Information :

Device	Packing
Part Number-BP	Bulk: 8PCS/BOX ;80PCS/CTN

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