



Micro Commercial Components



Micro Commercial Components
 130 W Cochran St, Unit B
 Simi Valley, CA 93065
 USA
 Tel:818-701-4933

MT90CB08T1
MT90CB12T1
MT90CB16T1
MT90CB18T1

Features

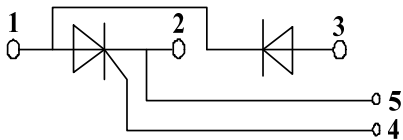
- Lead Free Finish/RoHS Compliant (NOTE 1)("P" Suffix designates RoHS Compliant. See ordering information)
- International standard package
- Heat transfer through aluminum oxide DBC ceramic isolated metal baseplate
- Glass passivated chip
- Simple Mounting

Applications

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

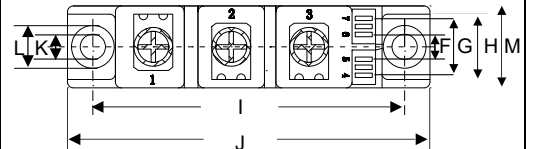
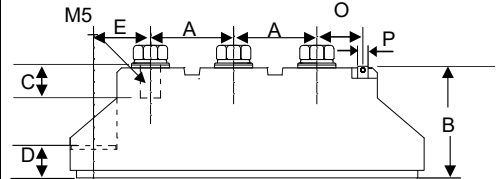


Circuit



90 Amp
THYRISTOR/DIODE
MODULE
800~1800 Volts

T1



DIMENSIONS

DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.776	0.799	19.50	20.50	
B	1.169	1.193	29.50	30.50	
C	0.343	0.366	8.50	9.50	
D	0.323	0.346	8.00	9.00	
E	0.602	0.622	15.10	16.00	
F	0.224	0.248	5.50	6.50	
G	0.539	0.563	13.50	14.50	
H	0.657	0.681	16.50	17.50	
I	3.138	3.161	79.50	80.50	
J	3.650	3.673	92.50	93.50	
K	0.256		6.50		∅
L	0.421	0.445	10.50	11.50	
M	0.815	0.839	20.50	21.50	
O	0.579	0.602	14.50	15.50	
P	0.11X0.032		2.8X0.8		

Module Type

TYPE	VRRM	VRSM
MT90CB08T1	800V	900V
MT90CB12T1	1200V	1300V
MT90CB16T1	1600V	1700V
MT90CB18T1	1800V	1900V

◆ Diode

Maximum Ratings

Symbol	Item	Conditions	Values	Units
I_D	Output Current(D.C.)	$T_c=85^\circ\text{C}$	90	A
I_{FSM}	Surge forward current	$t=10\text{mS } T_{vj}=45^\circ\text{C}$	2000	A
i^2t	Circuit Fusing Consideration		20000	A^2s
Visol	Isolation Breakdown Voltage(R.M.S)	a.c.50HZ;r.m.s.;1min	3000	V
T_{vj}	Operating Junction Temperature		-40 to +125	$^\circ\text{C}$
T_{stg}	Storage Temperature		-40 to +125	$^\circ\text{C}$
M_t	Mounting Torque	To terminals(M5)	3±15%	Nm
M_s		To heatsink(M6)	5±15%	Nm
Weight	Module (Approximately)		100	g

Thermal Characteristics

Symbol	Item	Conditions	Values	Units
$R_{th(j-c)}$	Thermal Impedance, max.	Junction to Case	0.14	$^\circ\text{C/W}$
$R_{th(c-s)}$	Thermal Impedance, max.	Case to Heatsink	0.10	$^\circ\text{C/W}$

Electrical Characteristics

Symbol	Item	Conditions	Values			Units
			Min.	Typ.	Max.	
V_{FM}	Forward Voltage Drop, max.	$T=25^\circ\text{C } I_F=300\text{A}$			1.65	V
I_{RRM}	Repetitive Peak Reverse Current, max.	$T_{vj}=25^\circ\text{C } V_{RD}=V_{RRM}$	≤0.5			mA
		$T_{vj}=125^\circ\text{C } V_{RD}=V_{RRM}$	≤6			mA

◆Thyristor
Maximum Ratings

Symbol	Item	Conditions	Values	Units
I_{TAV}	Average On-State Current	Sine 180°; $T_C=85^{\circ}C$	90	A
I_{TSM}	Surge On-State Current	$T_{VJ}=45^{\circ}C$ t=10ms, sine $T_{VJ}=125^{\circ}C$ t=10ms, sine	2000 1750	A
i^2t	Circuit Fusing Consideration	$T_{VJ}=45^{\circ}C$ t=10ms, sine $T_{VJ}=125^{\circ}C$ t=10ms, sine	20000 15000	A2s
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	$T_{VJ}=T_{VJM}$, $2/3V_{DRM}$, $I_G=500mA$ $Tr<0.5\mu s, tp>6\mu s$	150	A/ μs
dv/dt	Critical Rate of Rise of Off-State Voltage, min.	$T_J=T_{VJM}$, $2/3V_{DRM}$ linear voltage rise	1000	V/ μs
a	Maximum allowable acceleration		50	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.	$T=25^{\circ}C$ $I_T=300A$			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 ($T_{VJ}=125^{\circ}C$)			0.9	V
r_T	Value of on-state slope resistance. max	$T_{VJ}=T_{VJM}$			2	m Ω
V_{GT}	Gate Trigger Voltage, max.	$T_{VJ}=25^{\circ}C$, $V_D=6V$			3	V
I_{GT}	Gate Trigger Current, max.	$T_{VJ}=25^{\circ}C$, $V_D=6V$			150	mA
V_{GD}	Non-triggering gate voltage, max.	$T_{VJ}=125^{\circ}C$, $V_D=2/3V_{DRM}$			0.25	V
I_{GD}	Non-triggering gate current, max.	$T_{VJ}=125^{\circ}C$, $V_D=2/3V_{DRM}$			6	mA
I_L	Latching current, max.	$T_{VJ}=25^{\circ}C$, $R_G=33\Omega$	300	600		mA
I_H	Holding current, max.	$T_{VJ}=25^{\circ}C$, $V_D=6V$	150	250		mA
tg _d	Gate controlled delay time	$T_{VJ}=25^{\circ}C$, $I_G=1A$, diG/dt=1A/ μs	1			μ
tq	Circuit commutated turn-off time	$T_{VJ}=T_{VJM}$	100			μs

Performance Curves

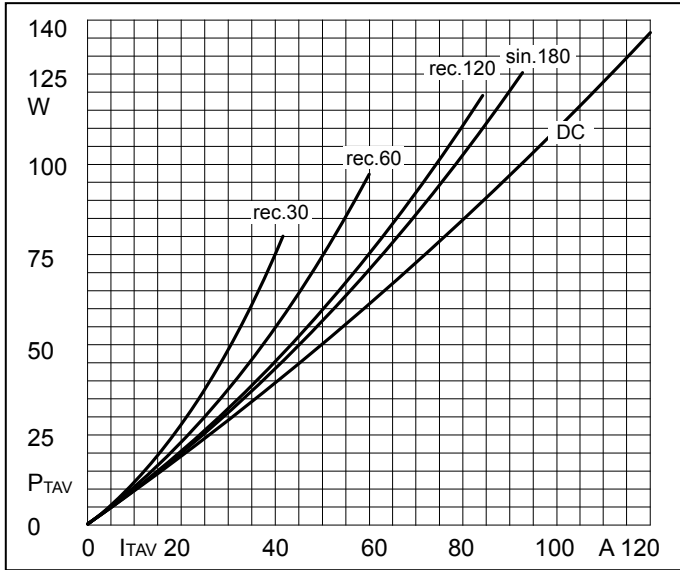


Fig1. Power dissipation

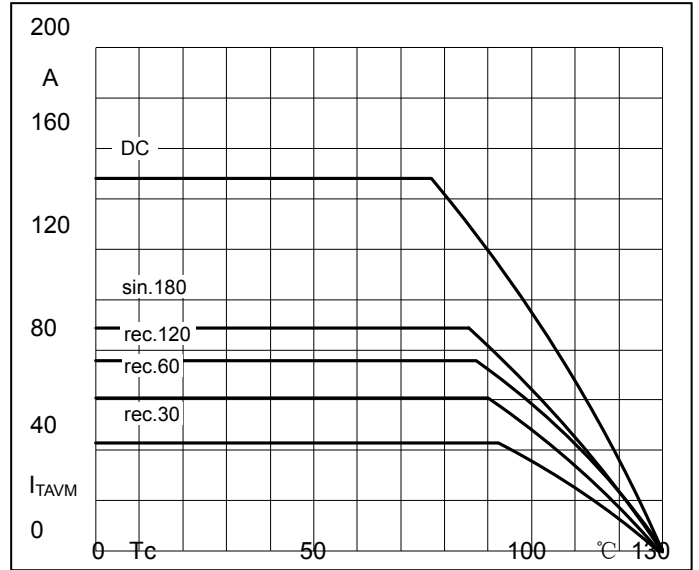


Fig2. Forward Current Derating Curve

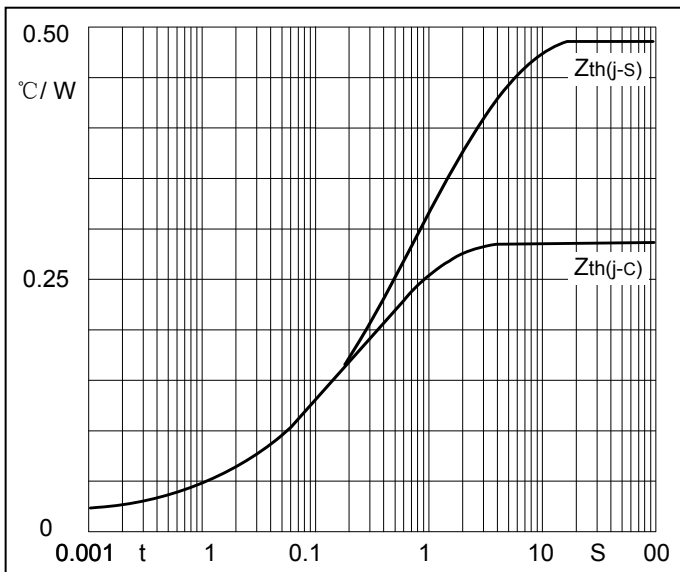


Fig3. Transient thermal impedance

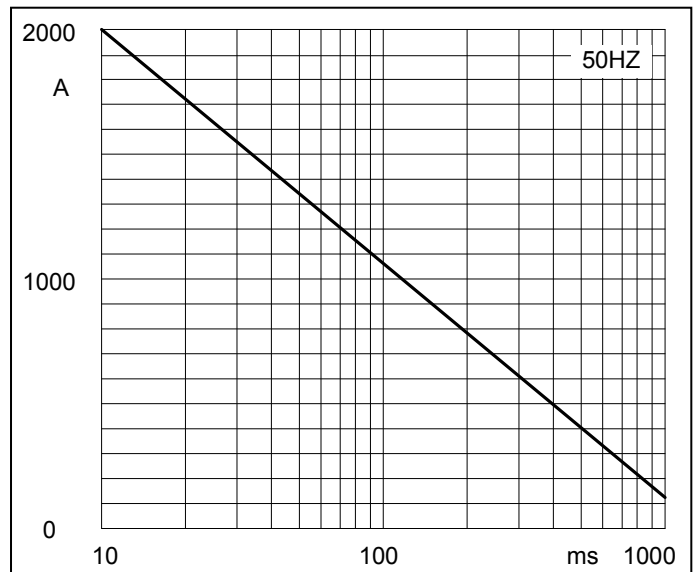


Fig4. Max Non-Repetitive Forward Surge Current

Performance Curves

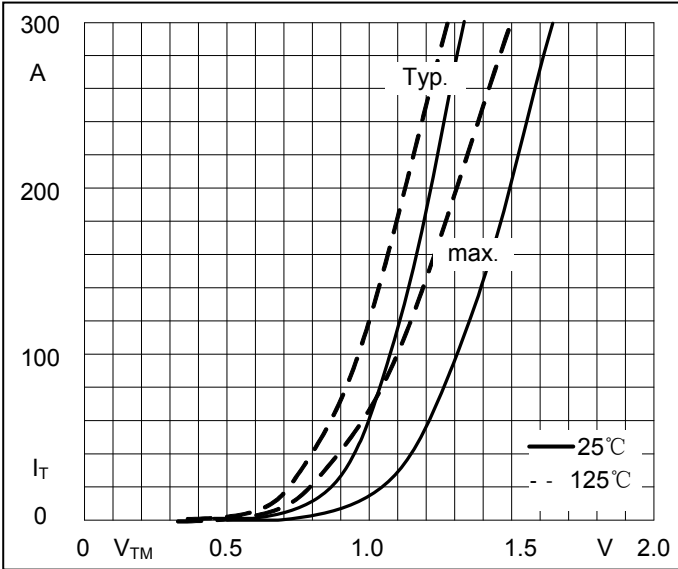


Fig5. Forward Characteristics

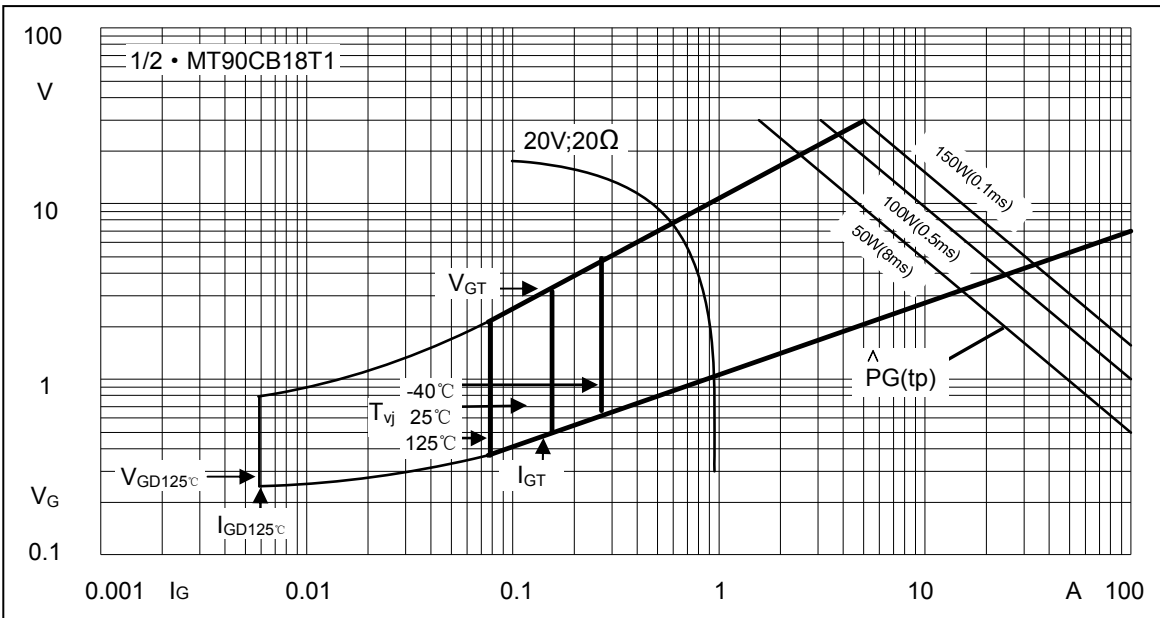


Fig6. Gate trigger Characteristics



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Ordering Information :

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

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