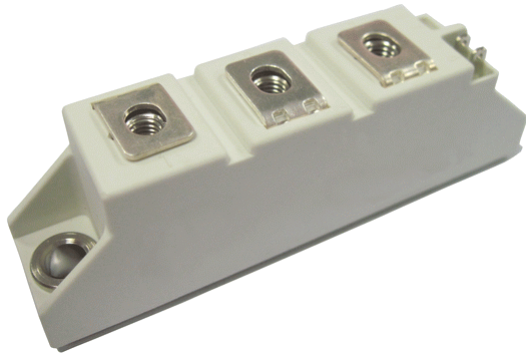




MT110CB08T1 THRU MT110CB18T1

THYRISTOR DIODE MODULE

Reverse Voltage - 800 to 1800 Volts Forward Current - 110 Ampere

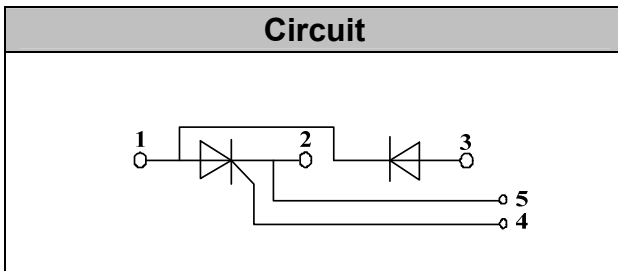


Thyristor/Diode Modules

VRRM / VDRM 800 to 1800V
IFAV / ITAV 110A

Applications

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



Features

- International standard package
- High Surge Capability
- Glass passivated chip
- Simple Mounting
- Heat transfer through aluminum oxide DBCceramic isolated metal baseplate
- UL recognized applied for file no. E360040

Module Type

TYPE	VRRM/VDRM	V _{RSM}
MT110CB08T1	800V	900V
MT110CB12T1	1200V	1300V
MT110CB16T1	1600V	1700V
MT110CB18T1	1800V	1900V

◆ Diode

Maximum Ratings

Symbol	Item	Conditions	Values	Units
I _D	Output Current(D.C.)	T _c =85°C	110	A
I _{FSM}	Surge forward current	t=10mS T _{vj} =45°C	2250	A
i ² t	Circuit Fusing Consideration		25000	A ² s
Visol	Isolation Breakdown Voltage(R.M.S)	a.c.50HZ;r.m.s.;1min	3000	V
T _{vj}	Operating Junction Temperature		-40 to +125	°C
T _{stg}	Storage Temperature		-40 to +125	°C
M _t	Mounting Torque	To terminals(M5)	3±15%	Nm
M _s		To heatsink(M6)	5±15%	Nm
Weight	Module (Approximately)		100	g



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Thermal Characteristics

Symbol	Item	Conditions	Values	Units
R _{th(j-c)}	Thermal Impedance, max.	Junction to Case	0.14	°C/W
R _{th(c-s)}	Thermal Impedance, max.	Case to Heatsink	0.10	°C/W

Electrical Characteristics

Symbol	Item	Conditions	Values			Units
			Min.	Typ.	Max.	
V _{FM}	Forward Voltage Drop, max.	T=25°C I _F =300A			1.65	V
I _{RRM}	Repetitive Peak Reverse Current, max.	T _{vj} =25°C V _{RD} =V _{RRM} T _{vj} =125°C V _{RD} =V _{RRM}		≤0.5 ≤6		mA mA

◆ Thyristor

Maximum Ratings

Symbol	Item	Conditions	Values	Units
I _{TAV}	Average On-State Current	Sine 180°; T _c =85°C	110	A
I _{TSM}	Surge On-State Current	T _{vj} =45°C t=10ms, sine T _{vj} =125°C t=10ms, sine	2250 1900	A
i ² t	Circuit Fusing Consideration	T _{vj} =45°C t=10ms, sine T _{vj} =125°C t=10ms, sine	25000 18000	A2s
V _{isol}	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 ± 15%	Nm
M _s		To heatsink(M6)	5 ± 15%	Nm
di/dt	Critical Rate of Rise of On-State Current	T _{vj} = T _{vJM} , 2/3V _{DRM} , I _G =500mA Tr<0.5us, tp>6us	150	A/us
dv/dt	Critical Rate of Rise of Off-State Voltage, min.	T _J =T _{vJM} , 2/3V _{DRM} linear voltage rise	1000	V/us
a	Maximum allowable acceleration		50	m/s ²



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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
			Min.	Typ.	Max.	
V _{TM}	Peak On-State Voltage, max.	T=25°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°C)			0.9	V
r _T	Value of on-state slope resistance. max	T _{VJ} =T _{VJM}			2	mΩ
V _{GT}	Gate Trigger Voltage, max.	T _{VJ} =25°C, V _D =6V			3	V
I _{GT}	Gate Trigger Current, max.	T _{VJ} =25°C, V _D =6V			150	mA
V _{GD}	Non-triggering gate voltage, max.	T _{VJ} =125°C, V _D =2/3V _{DRM}			0.25	V
I _{GD}	Non-triggering gate current, max.	T _{VJ} =125°C, V _D =2/3V _{DRM}			6	mA
I _L	Latching current, max.	T _{VJ} =25°C, R _G =33 Ω		300	600	mA
I _H	Holding current, max.	T _{VJ} =25°C, V _D =6V		150	250	mA
t _{gd}	Gate controlled delay time	T _{VJ} =25°C, I _G =1A, diG/dt=1A/us		1		us
t _q	Circuit commutated turn-off time	T _{VJ} =T _{VJM}		100		us



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Performance Curves

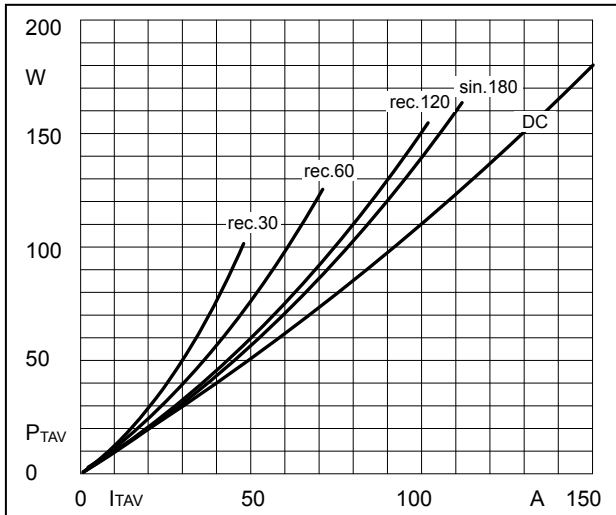


Fig1. Power dissipation

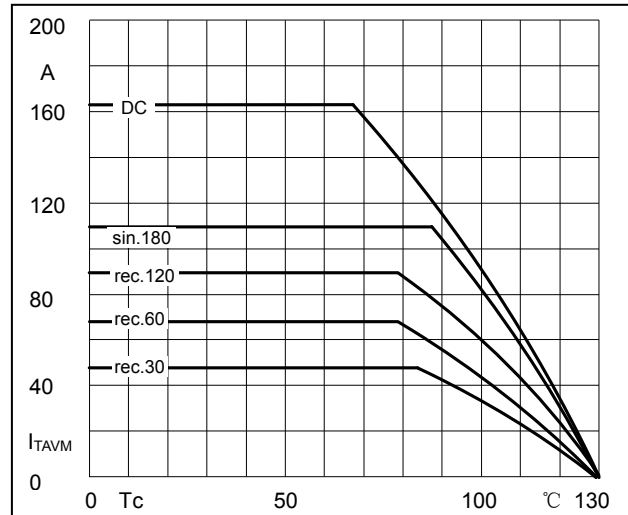


Fig2. Forward Current Derating Curve

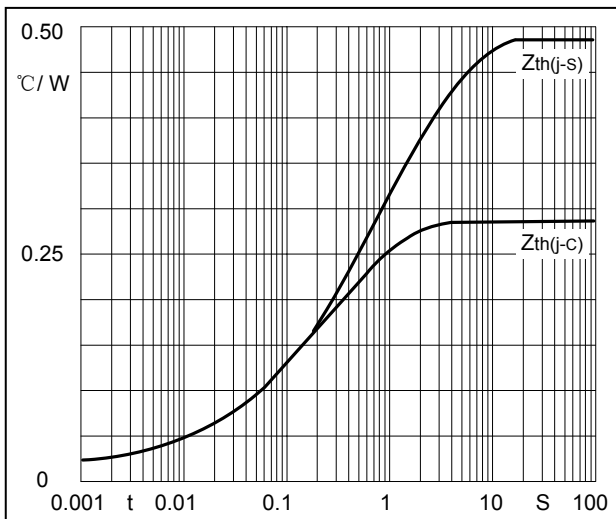


Fig3. Transient thermal impedance

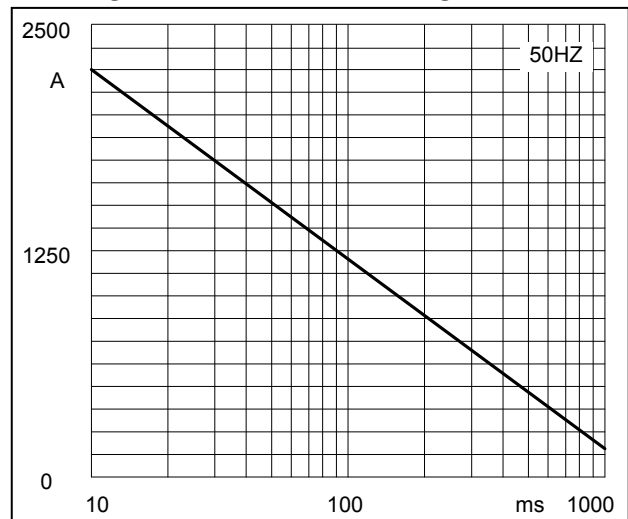


Fig4. Max Non-Repetitive Forward Surge Current

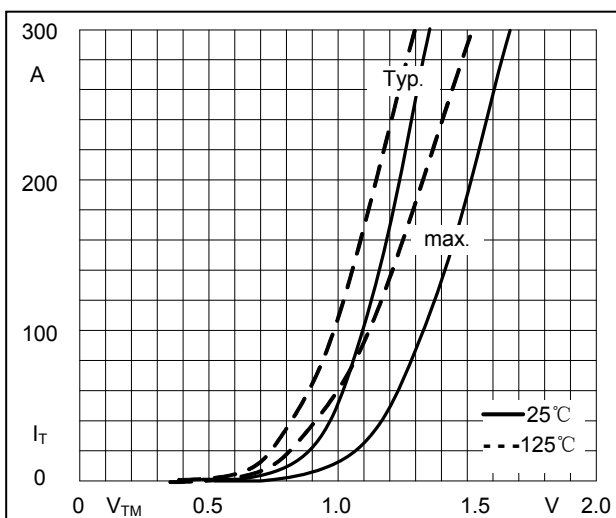


Fig5. Forward Characteristics



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THYRISTOR DIODE MODULE

Reverse Voltage - 800 to 1800 Volts Forward Current - 110 Ampere

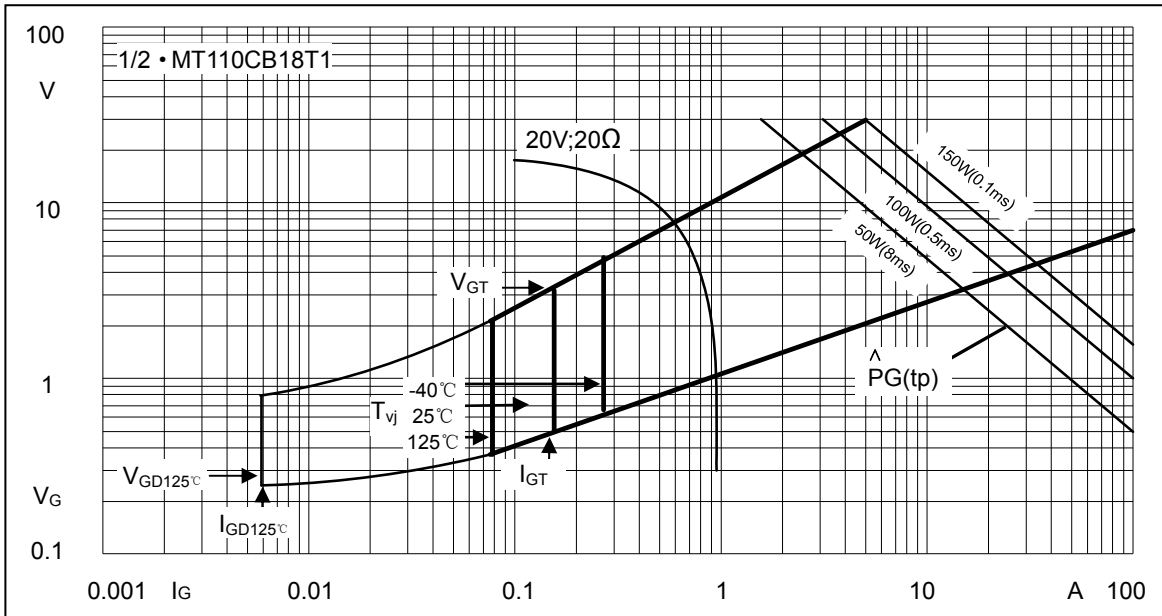
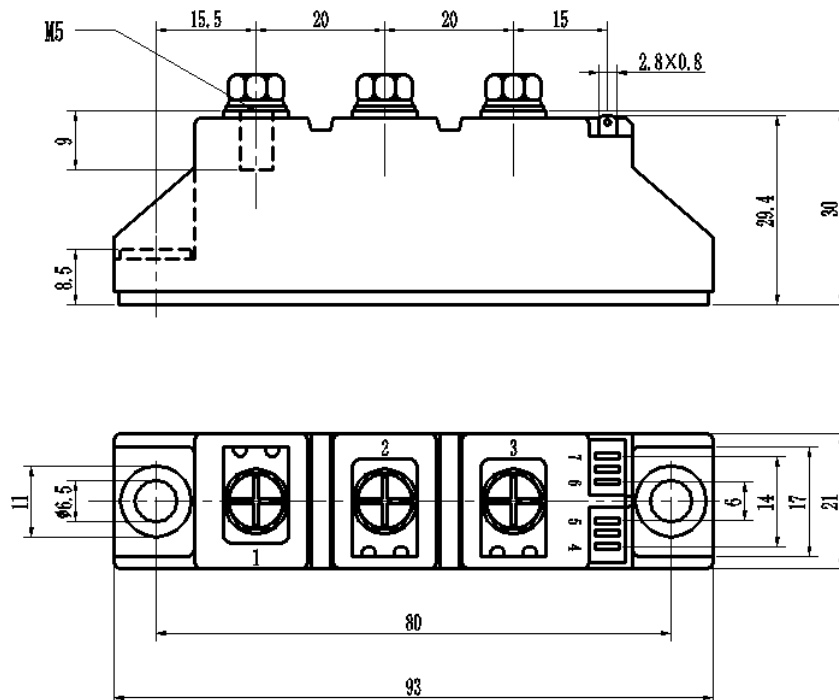


Fig6. Gate trigger Characteristics

Package Outline Information

CASE: T1



Dimensions in mm