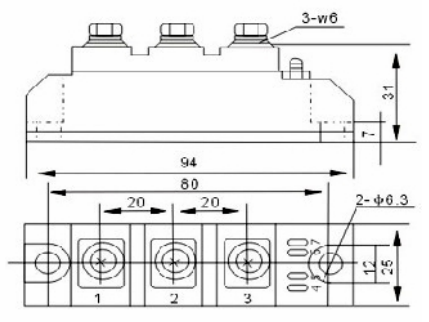
Thyristor/Thyristor Module MTC90A/110A
Thyristor/Diode Module MFC90A/110A

MECHANICAL DESCRIPTION

The MTC, MFC module, combines the excellent thermal performances obtained by the usage of exposed direct bonded copper substrate, with advanced compact simple package solution and simplified internal structure with minimized number of interfaces.

M01

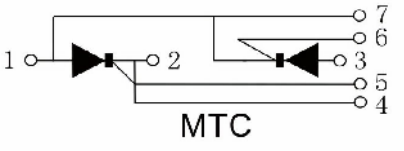


FEATURES

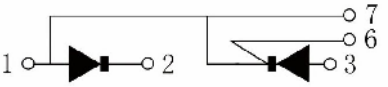
- High voltage
- Industrial standard package
- Low thermal resistance
- Designed and qualified for industrial level
- Excellent thermal performances obtained by the usage of exposed direct bonded copper substrate
- High surge capability
- Easy mounting on heatsink

APPLICATIONS

These modules are intended for general purpose high voltage applications such as high voltage regulated power supplies, lighting circuits, temperature and motor speed control circuits, UPS and battery charger.



MTC



MFC

MAJOR RATINGS AND CHARACTERISTICS				
SYMBOL	**CHARACTERISTICS**	**90A**	**110A**	**UNITS**
$I_{T(AV)}$ or $I_{F(AV)}$	Tc=85 °C	90	110	A
I_{TSM} ,I_{FSM}	50 Hz T_{Jm}=125°C	2,000	2,400	
	60 Hz T_{Jm}=125°C	2,132	2,558	
I^2t	50 Hz T_{Jm}=125°C	20.40	29.30	kA^2s
	60 Hz T_{Jm}=125°C	19.24	27.63	
V_{RRM}	Range	600 to 2000	600 to 2000	V
T_{Stg}		-40 to 125	-40 to 125	°C
T_J				

ON-STATE CONDUCTION

PARAMETER	SYMBOL	TEST CONDITIONS			90A	110A	UNITS
Maximum average on-state current (thyristors)	$I_{T(AV)}$	180?conduction, half sine wave, T_C = 85 °C			90	110	A
Maximum average forward current (diodes)	$I_{F(AV)}$						
Maximum peak, one-cycle non-repetitive on-state or forward current	I_{TSM} or I_{FSM}	t = 10 ms	80 % V_{RRM} reapplied	Sinusoidal half wave, initial T_J = T_J maximum	2,000	2,400	A
		t = 8.3 ms			2,132	2,558	
Maximum I^2t for fusing	I^2t	t = 10 ms	No voltage reapplied	Initial T_J = T_J maximum	20.40	29.30	kA^2s
		t = 8.3 ms			19.24	27.63	
Maximum value or threshold voltage	$V_{T(TO)}$	T_J = T_J maximum			0.97		V
Maximum value of on-state slope resistance	r_t	T_J = T_J maximum			1.26	1.18	mΩ
Maximum peak on-state or forward voltage	V_{TM}	I_{TM} = π x $I_{T(AV)}$	T_J = 25 °C		1.30	1.40	V
	V_{FM}	I_{FM} = π x $I_{F(AV)}$					
Maximum non-repetitive rate of rise of turned on current	dI/dt	T_J = 25 °C, from 0.67 V_{DRM}, I_{TM} = π x $I_{T(AV)}$, I_g = 500 mA, t_r < 0.5 µs, t_p > 6 µs			100		A/µs
Maximum holding current	I_H	T_J = 25 °C, anode supply = 6 V, resistive load, gate open circuit			250		mA
Maximum latching current	I_L	T_J = 25 °C, anode supply = 6 V, resistive load			600		

Notes:

Average power = VT(TO) x IT(AV) +2.56 rt x $(IT(AV))^2$

TRIGGERING

PARAMETER	SYMBOL	TEST CONDITIONS		90A	110A	UNITS
Maximum peak gate power	P_{GM}	T_J = 25 °C, 50Hz, 3s		8	10	W
Maximum average gate power	$P_{G(AV)}$	T_J = 25 °C, 50Hz, 3s		2	3	
Maximum peak gate current	I_{GM}			2	3	A
Maximum peak negative gate voltage	- VGM			10		V
Maximum gate voltage required to trigger	V_{GT}	T_J = 25 °C	Anode supply = 6 V resistive load	3	3.5	
Maximum gate current required to trigger	I_{GT}	T_J = 25 °C	Anode supply = 6 V resistive load	100		mA
Maximum gate voltage that will not trigger	V_{GD}	T_J = 125 °C, rated V_{DRM} applied		0.20		V
Maximum gate current that will not trigger	I_{GD}	T_J = 125 °C, rated V_{DRM} applied		6		mA

BLOCKING

PARAMETER	SYMBOL	TEST CONDITIONS	90A	110A	UNITS
Maximum peak reverse and off-state leakage current at V_{RRM}, V_{DRM}	I_{RRM}, I_{DRM}	T_J = 125 °C, gate open circuit	10	12	mA
Maximum RMS insulation voltage	V_{ISO}	50 Hz	2500 (1 min)		V
Maximum critical rate of rise of off-state voltage	dV/dt	T_J = 125 °C, linear to 0.67 V_{DRM}	500		V/µs

THERMAL AND MECHANICAL SPECIFICATIONS

PARAMETER		SYMBOL	TEST CONDITIONS	90A	110A	UNITS
Junction operating and storage temperature range		T_J, T_{Stg}		- 40 to 125		°C
Maximum internal thermal resistance, junction to case per leg		R_{thJC}	DC operation	0.28	0.25	°C/W
Typical thermal resistance, case to heatsink per module		R_{thCS}	Mounting surface flat, smooth and greased	0.1		°C/W
Mounting torque ?10 %	to heatsink		A mounting compound is recommended and the torque should be rechecked after a period of 3 h to allow for the spread of the compound.	3		Nm
	busbar			2		Nm
Approximate weight				150		g
Case style				M01		