

**MECHANICAL DESCRIPTION**

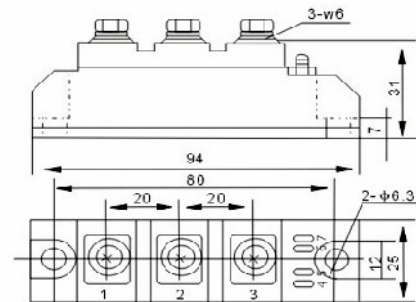
The MTC, MFC module, combines the excellent thermal performances obtained by the usage of exposed direct bonded copper substrate, with advanced compact simple package solution and simplified internal structure with minimized number of interfaces.

**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

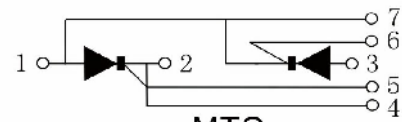


M01

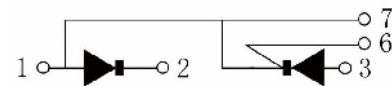


**APPLICATIONS**

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 $I_{F(AV)}$	$T_c=85^\circ\text{C}$	90	110	A
$I_{TSM}$ $I_{FSM}$	50 Hz $T_{Jm}=125^\circ\text{C}$	2,000	2,400	
	60 Hz $T_{Jm}=125^\circ\text{C}$	2,132	2,558	
$I^2t$	50 Hz $T_{Jm}=125^\circ\text{C}$	20.40	29.30	kA <sup>2</sup> s
	60 Hz $T_{Jm}=125^\circ\text{C}$	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, $T_c = 85^\circ\text{C}$		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 $I_{FSM}$	$t = 10\text{ ms}$	80 % $V_{RRM}$	Sinusoidal half wave, initial $T_J = T_J$ maximum	2,000	2,400
		$t = 8.3\text{ ms}$	reapplied		2,132	2,558
Maximum $I^2t$ for fusing	$I^2t$	$t = 10\text{ ms}$	No voltage reapplied	Initial $T_J = T_J$ maximum	20.40	29.30
		$t = 8.3\text{ ms}$			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	m
Maximum peak on-state or forward voltage	$V_{TM}$	$I_{TM} = \quad \times I_{T(AV)}$	$T_J = 25^\circ\text{C}$	1.30	1.40	V
	$V_{FM}$	$I_{FM} = \quad \times I_{F(AV)}$				
Maximum non-repetitive rate of rise of turned on current	$di/dt$	$T_J = 25^\circ\text{C}$ , from 0.67 $V_{DRM}$ , $I_{TM} = \quad \times I_{T(AV)}$ , $I_g = 500\text{ mA}$ , $t_r < 0.5\text{ }\mu\text{s}$ , $t_f > 6\text{ }\mu\text{s}$		100		A/ $\mu\text{s}$
Maximum holding current	$I_H$	$T_J = 25^\circ\text{C}$ , anode supply = 6 V, resistive load, gate open circuit		250		mA
Maximum latching current	$I_L$	$T_J = 25^\circ\text{C}$ , anode supply = 6 V, resistive load		600		

Notes:

$$\text{Average power} = V_{T(TO)} \times I_{T(AV)} + 2.56 r_t \times (I_{T(AV)})^2$$

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

**BLOCKING**

PARAMETER	SYMBOL	TEST CONDITIONS	90A	110A	UNITS
Maximum peak reverse and off-state leakage current at $V_{RRM}$ , $V_{DRM}$	$I_{RRM}$ , $I_{DRM}$	$T_J = 125\text{ }^\circ\text{C}$ , 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	$dV/dt$	$T_J = 125\text{ }^\circ\text{C}$ , linear to $0.67 V_{DRM}$	500		V/ $\mu\text{s}$

**THERMAL AND MECHANICAL SPECIFICATIONS**

PARAMETER	SYMBOL	TEST CONDITIONS	90A	110A	UNITS
Junction operating and storage temperature range	$T_J$ , $T_{Stg}$		- 40 to 125		$^\circ\text{C}$
Maximum internal thermal resistance, junction to case per leg	$R_{thJC}$	DC operation	0.28	0.25	$^\circ\text{C/W}$
Typical thermal resistance, case to heatsink per module	$R_{thCS}$	Mounting surface flat, smooth and greased	0.1		
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		
Approximate weight			150		g
Case style			M01		