

XI'AN IR-PERI



PRELIMINARY

MTC55TA120/180

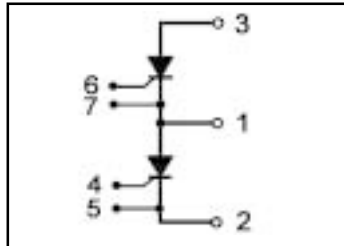
Thyristor Modules Add -A -PAK

Features

- International standard package
With DBC ceramic base plate
- Planar passivated chips
- High surge capability
- UL recognition pending

Benefits

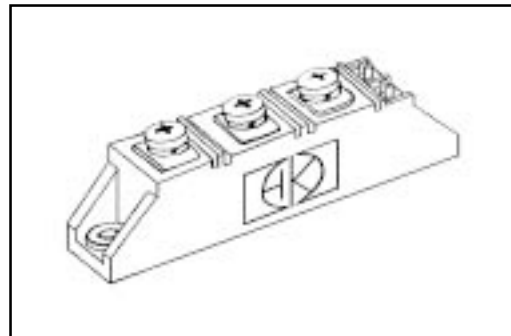
- DC motor control
- Simple AC motor controller
- Light, heat and temperature control



VRRM = 1200V- 1800V
IFAVM = 2x55A
IFRMS = 2x80A

Voltage Ratings

Voltage Code	VRRM(V)	VRSM(V)	IRRM T _J =25 °C(mA)
	VDRM(V)	VDSM(V)	IDRM T _J =25 °C(mA)
120	1200	1300	1.0
140	1400	1500	1.0
160	1600	1700	1.0
180	1800	1900	1.0



Absolute Maximum Ratings

Symbol	Test Conditions	Max.	Units	
IFRMS	T _{VJM} =125 °C	85	A	
IFAVM	T _c =83 °C; 180° sine	57	A	
	T _c =85 °C; 180° sine	55	A	
IFSM	T _{VJ} =45 °C; t=10ms (50 Hz),sine	1150	A	
	V _R =0 t=8.3ms (60 Hz),sine	1230	A	
	T _{VJ} =125 °C; t=10ms (50 Hz),sine	1000	A	
	V _R =0 t=8.3ms (60 Hz),sine	1070	A	
I ² t	T _{VJ} =45 °C; t=10ms (50 Hz),sine	6600	A ² s	
	V _R =0 t=8.3ms (60 Hz),sine	6280	A ² s	
	T _{VJ} =125 °C; t=10ms (50 Hz),sine	5000	A ² s	
	V _R =0 t=8.3ms (60 Hz),sine	4750	A ² s	
di/dt	f=50Hz, t _p =200μs, V _D =2/3V _{DRM}	repetitive, I _T =150A	150	A/μs
	I _G =0.45A, di _G /dt=0.45A/μs, T _{VJ} =T _{VJM}	non repetitive, I _T =55A	500	A/μs
dv/dt	T _{VJ} =T _{VJM} ; V _D =2/3V _{DRM} (linear voltage rise)	1000	V/μs	
V _{ISOL}	RMS Isolation Voltage, Any Terminal To Case, t=1 min	2500	V	
T _{VJ}		-40 to +125	°C	
T _{VJM}		125		
T _{STG}		-40 to +125		

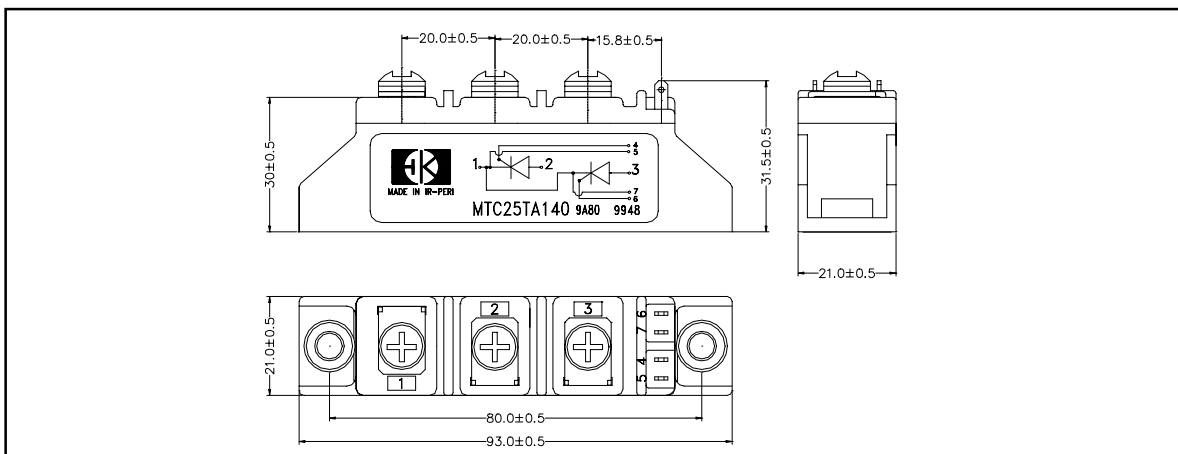
Thermal / Mechanical Characteristics

	Parameter	Typ.	Max.	Units
R _{θJS}	Thermal Resistance, Junction-to- Sink DC	-	0.73	
R _{θJC}	Thermal Resistance, Junction-to- Case DC	-	0.53	°C/W
	Mouting Torque, Case-to-Heatsink	-	4.0	N.m
	Mouting Torque, Case-to-Terminal 1,2 & 3	-	3.0	
	Weight of Module	100	-	g

Electrical Characteristics (unless otherwise specified)

	Test Conditions	Min.	Typ.	Max.	Units
I _{RRM} , I _{DRM}	T _{VJ} =T _{VJM} ; V _R =V _{RRM} ; V _D =V _{DRM}	-	-	5	mA
V _T	I _T =200A; T _{VJ} =25 °C	-	-	1.65	V
V _{TO}	For power-loss calculations only(T _{VJ} =125 °C)	-	-	0.85	V
r _T		-	-	4.0	mΩ
V _{GT}	V _D =6V; T _{VJ} =25 °C	-	-	1.5	V
I _{GT}	V _D =6V; T _{VJ} =25 °C	-	-	100	mA
V _{GD}	T _{VJ} =T _{VJM} ; V _D =2/3V _{DRM}	-	-	0.2	V
I _{GD}		-	-	10	mA
I _L	T _{VJ} =25 °C; t _p =10 μs; V _D =6V; I _G =0.45A; di _G /dt=0.45A/μs	-	-	450	mA
I _H	T _{VJ} =25 °C; V _D =6V	-	-	200	mA
t _{gd}	T _{VJ} =25 °C; V _D =1/2V _{DRM} ; I _G =0.45A; di _G /dt=0.45A/μs	-	-	2	μs
t _q	T _{VJ} =T _{VJM} ; I _T =120A, t _p =200 μs; -di/dt=10A/ μs V _R =100V; dv/dt=20V/ μs; V _D =2/3V _{DRM}	-	150	-	μs
Q _s	T _{VJ} =125 °C; I _T =50A, -di/dt=0.64A/ μs	-	-	90	μC
I _{RM}		-	-	11	A

Case Outline - a-a-pak



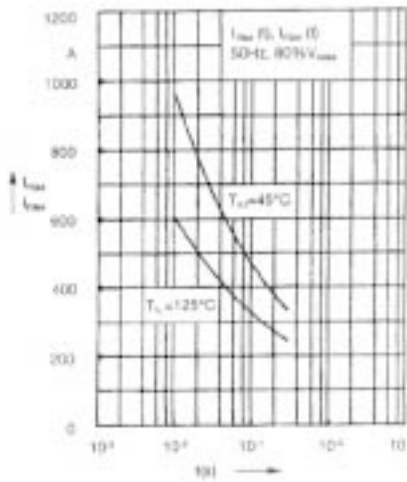


Fig. 3 Surge overload current
 I_{max} , I_{cjr} : Crest value, t : duration

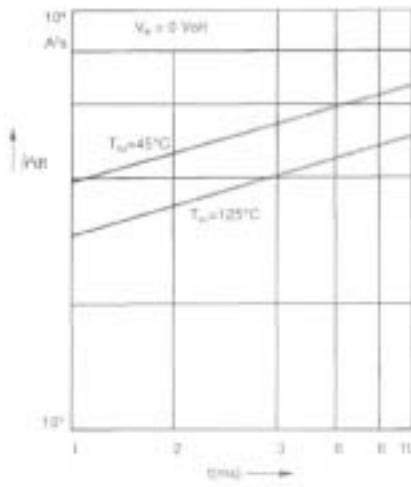


Fig. 4 j^2t/dl versus time ($t=1-10$ ms)

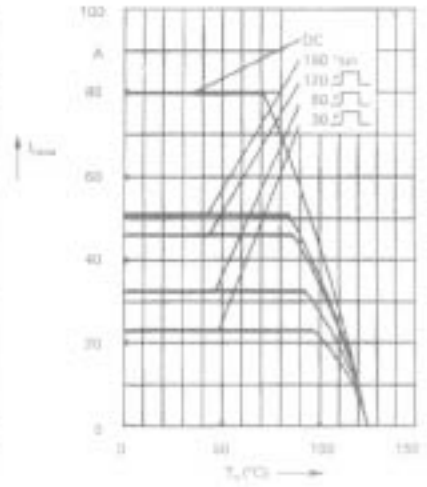


Fig. 4a Maximum forward current at case temperature

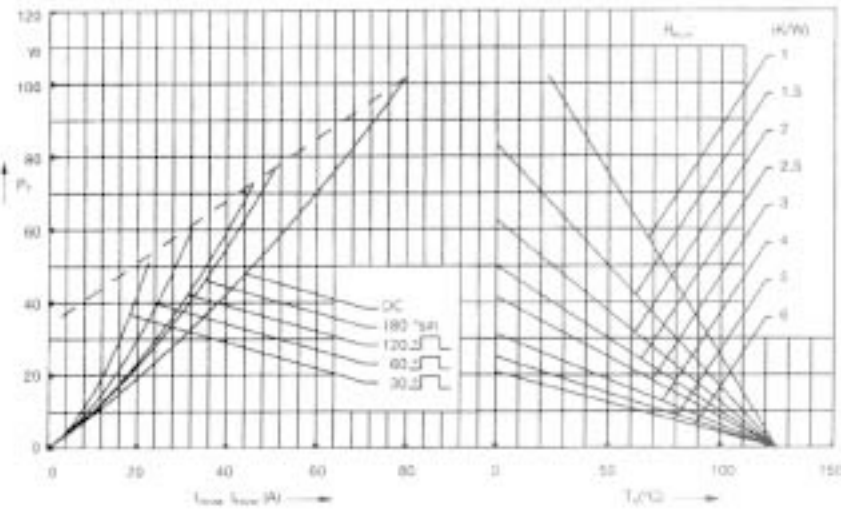


Fig.5 Power dissipation & onstate current and temperature

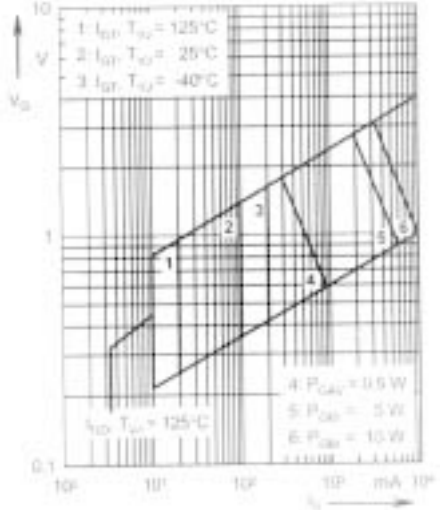


Fig.1 Gate trigger characteristics

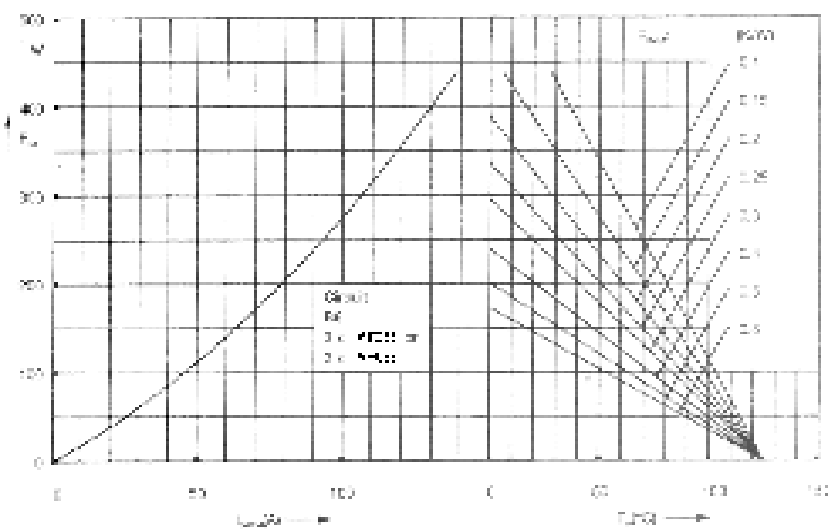
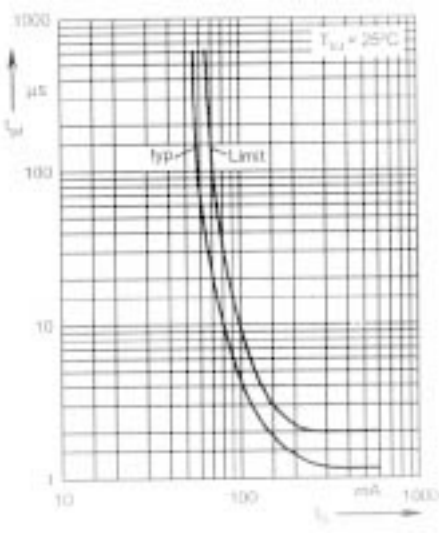


Fig.6 Three phase rectifier bridge: Power dissipation & output current and T Fig.2 Gate trigger delay time



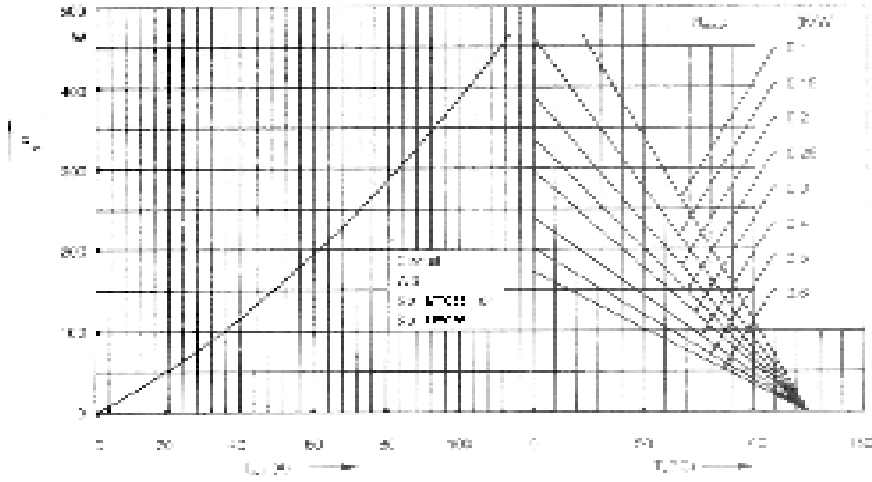


Fig.7 Three phase AC-controller:Power dissipation versus RMS output current and ambient temperature

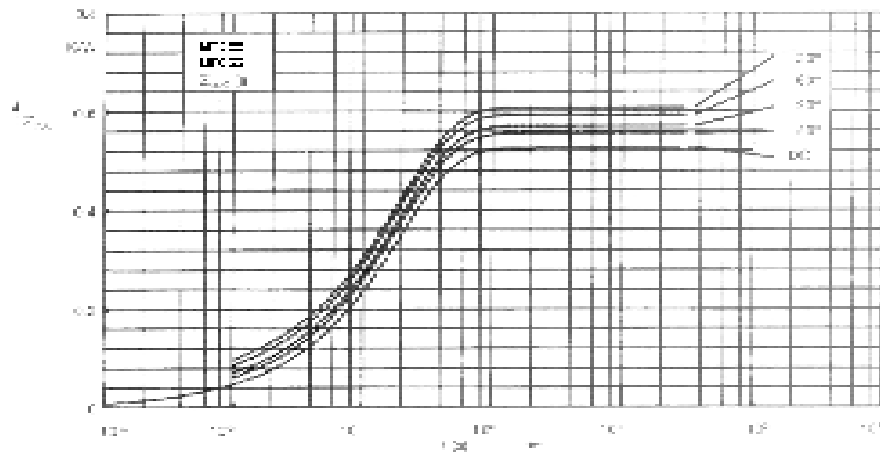


Fig.8 Transient thermal impedance junction to case (per thyristor or diode)

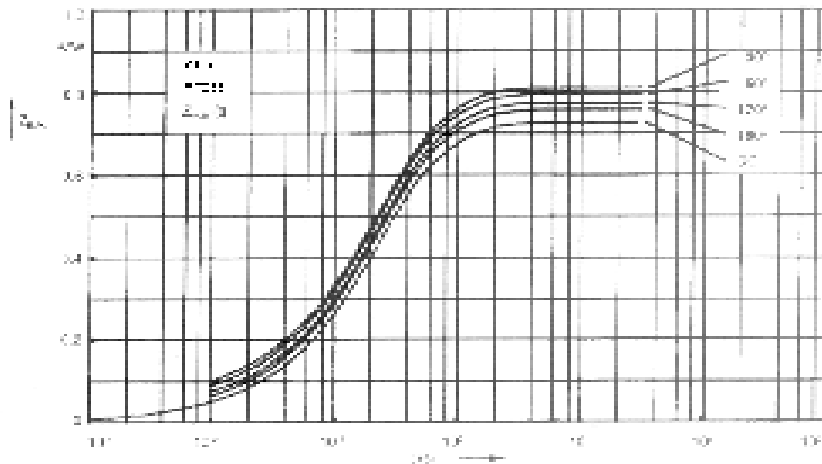


Fig.9 Transient thermal impedance junction to heatsink (per thyristor or diode)