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Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from, Europe, America and south Asia, supplying obsolete and hard-to-find components to meet their specific needs.

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Thyristor Module

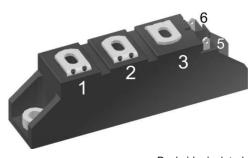
MCC44-18io8B

V_{RRM}	= 2 2	x 1800 V
I _{tav}	=	49 A
Vτ	=	1.34 V

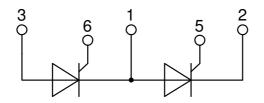
Phase leg

Part number

MCC44-18io8B



Backside: isolated **E**72873



Features / Advantages:

- Thyristor for line frequency
- Planar passivated chip
- Long-term stability
- Direct Copper Bonded Al2O3-ceramic

Applications:

- Line rectifying 50/60 Hz
- Softstart AC motor control
- DC Motor control
- Power converter
- AC power control
- Lighting and temperature control

Package: TO-240AA

- Isolation Voltage: 3600 V~
- Industry standard outline
- RoHS compliant
- Soldering pins for PCB mounting
- Base plate: DCB ceramic
- Reduced weight
- Advanced power cycling

Terms Conditions of usage:

The data contained in this product data sheet is exclusively intended for technically trained staff. The user will have to evaluate the suitability of the product for the intended application and the completeness of the product data with respect to his application. The specifications of our components may not be considered as an assurance of component characteristics. The information in the valid application- and assembly notes must be considered. Should you require product information in excess of the data given in this product data sheet or which concerns the specific application of your product, please contact your local sales office. Due to technical requirements our product may contain dangerous substances. For information on the types in question please contact your local sales office. Should you intend to use the product in aviation, in health or life endangering or life support applications, please notify. For any such application we urgently recommend

to perform joint risk and quality assessments;
the conclusion of quality agreements;

- to establish joint measures of an ongoing product survey, and that we may make delivery dependent on the realization of any such measures.

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Data according to IEC 60747and per semiconductor unless otherwise specified

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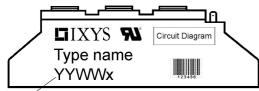
MCC44-18io8B

Thyristo		1	Ratings				
Symbol	Definition	Conditions		min.	typ.	max.	Uni
V _{RSM/DSM}	max. non-repetitive reverse/forwa	5 0	$T_{VJ} = 25^{\circ}C$			1900	١
V _{RRM/DRM}	max. repetitive reverse/forward bl		$T_{VJ} = 25^{\circ}C$			1800	١
R/D	reverse current, drain current	$V_{R/D} = 1800 V$	$T_{vJ} = 25^{\circ}C$			100	μ/
		V _{R/D} = 1800 V	$T_{VJ} = 125^{\circ}C$			5	m/
V _T	forward voltage drop	$I_{T} = 100 \text{ A}$	$T_{VJ} = 25^{\circ}C$			1.34	١
		I _T = 200 A				1.75	١
		$I_{T} = 100 \text{ A}$	$T_{vJ} = 125^{\circ}C$			1.34	١
		I _T = 200 A				1.80	١
I _{tav}	average forward current	T _c = 85°C	T _{vJ} = 125°C			49	1
I _{T(RMS)}	RMS forward current	180° sine				77	1
V _{T0}	threshold voltage		T _{v.i} = 125°C			0.85	١
r _T	slope resistance } for power lo	oss calculation only	vo			3.7	m۵
R _{thJC}	thermal resistance junction to cas	e .				0.53	K/W
R _{thCH}	thermal resistance case to heatsi				0.20	0.00	K/W
	total power dissipation		$T_c = 25^{\circ}C$		0.20	180	N
-	max. forward surge current	t = 10 ms; (50 Hz), sine	$T_{c} = 25 \text{ C}$ $T_{v,i} = 45^{\circ}\text{C}$			1.15	k/
TSM	max. Iorward burge burrent	t = 8,3 ms; (60 Hz), sine	$V_{\rm R} = 0 V$			1.24	k/
							1
		t = 10 ms; (50 Hz), sine	$T_{vJ} = 125 ^{\circ}C$			980	/
		t = 8,3 ms; (60 Hz), sine	$V_{\rm R} = 0 V$			1.06	k/
I ² t value for fu	value for fusing	t = 10 ms; (50 Hz), sine	$T_{VJ} = 45^{\circ}C$			6.62	
		t = 8,3 ms; (60 Hz), sine	$V_R = 0 V$			6.40	
		t = 10 ms; (50 Hz), sine	$T_{vJ} = 125^{\circ}C$			4.80	kA ²
		t = 8,3 ms; (60 Hz), sine	$V_{R} = 0 V$			4.63	kA ²
C	junction capacitance	$V_{R} = 400 V f = 1 MHz$	$T_{vJ} = 25^{\circ}C$		54		pl
P _{GM}	max. gate power dissipation	$t_P = 30 \ \mu s$	$T_c = 125^{\circ}C$			10	٧
		t _P = 300 μs				5	V
PGAV	average gate power dissipation					0.5	٧
(di/dt) _{cr}	critical rate of rise of current	T _{vJ} = 125 °C; f = 50 Hz re	epetitive, $I_{T} = 150 \text{ A}$			150	A/μ
		$t_{P} = 200 \mu s; di_{G}/dt = 0.45 A/\mu s; -$					-
			on-repet., $I_{\tau} = 49 \text{ A}$			500	A/u
(dv/dt) _{cr}	critical rate of rise of voltage	$V = \frac{2}{3} V_{\text{DRM}}$	T _{vi} = 125°C			1000	i
()) cr		$R_{GK} = \infty$; method 1 (linear volta					
V _{gT}	gate trigger voltage	$V_{\rm D} = 6 \text{ V}$	$\frac{g_{VJ}}{T_{VJ}} = 25^{\circ}C$			1.5	۱
▪ GT	gale ligger reliage	•B = O •	$T_{vJ} = -40^{\circ}C$			1.6	١
	acto trigger current						
I _{GT}	gate trigger current	$V_D = 6 V$	$T_{VJ} = 25^{\circ}C$			100	m/
		24.24	$T_{\rm VJ} = -40^{\circ}\rm C$			200	m/
V _{GD}	gate non-trigger voltage	$V_{D} = \frac{2}{3} V_{DRM}$	$T_{vJ} = 125^{\circ}C$			0.2	١
	gate non-trigger current					10	m/
I.	latching current	$t_p = 10 \ \mu s$	$T_{vJ} = 25 °C$			450	m/
		$I_{\rm G} = 0.45 \text{A}; \text{di}_{\rm G}/\text{dt} = 0.45 \text{A}/\mu\text{s}$					
I _H	holding current	$V_{D} = 6 V R_{GK} = \infty$	$T_{vJ} = 25 °C$			200	m/
t _{gd}	gate controlled delay time	$V_{D} = \frac{1}{2} V_{DRM}$	$T_{vJ} = 25 ^{\circ}C$			2	μ
		$I_{G} = 0.45 \text{ A}; \ di_{G}/dt = 0.45 \text{ A}/\mu s$	3				
t _q	turn-off time	$V_{\rm R} = 100 \text{ V}; \ \text{I}_{\rm T} = 150 \text{ A}; \text{ V} = \frac{2}{3}$	⅓ V _{DRM} T _{VJ} =100 °C		150		μ
•		$di/dt = 10 \text{ A}/\mu \text{s} dv/dt = 20 \text{ V}$					

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Package	Package TO-240AA							
Symbol	Definition	Conditions			min.	typ.	max.	Unit
I _{RMS}	RMS current	per terminal					200	Α
T _{vj}	virtual junction temperature				-40		125	°C
T _{op}	operation temperature		-40		100	°C		
T _{stg}	storage temperature		-40		125	°C		
Weight						81		g
M _D	mounting torque				2.5		4	Nm
M _T	terminal torque				2.5		4	Nm
d _{Spp/App}	creenade distance on surfa	ce striking distance through air	terminal to terminal	13.0	9.7			mm
d _{Spb/Apb}	creepage distance on suna	ce striking distance through an	terminal to backside	16.0	16.0			mm
	isolation voltage	t = 1 second			3600			V
		t = 1 minute	50/60 Hz, RMS; liso∟ ≤ 1 mA	3000			V	



Date Code

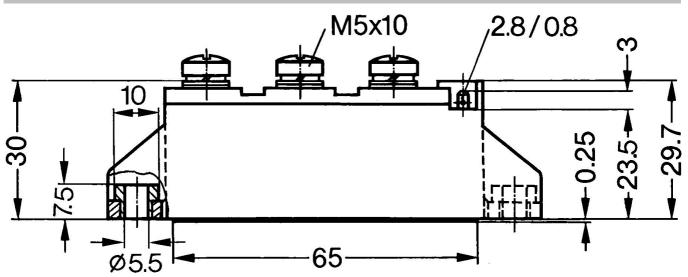
Ordering	Ordering Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	MCC44-18io8B	MCC44-18io8B	Box	36	454532

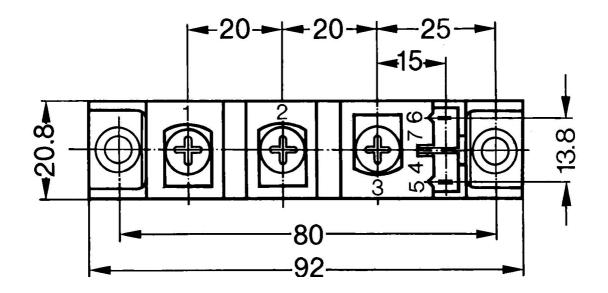
Equiv	alent Circuits for	Simulation	* on die level	T _{vj} = 125 °C
$I \rightarrow V_0$	$-R_{o}-$	Thyristor		
V _{0 max}	threshold voltage	0.85		V
$\mathbf{R}_{0 \max}$	slope resistance *	4.1		mΩ

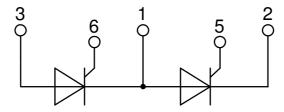
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MCC44-18io8B

Outlines TO-240AA







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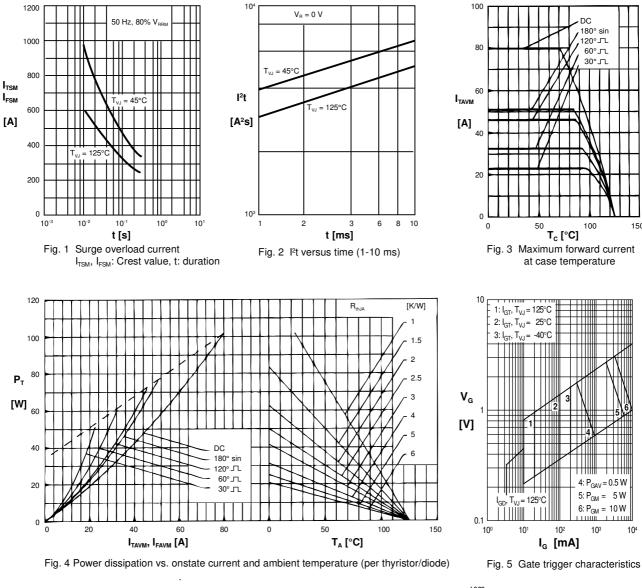
150

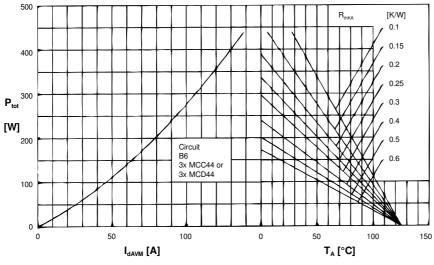
= 0.5 W

1.1.111

10

Thyristor





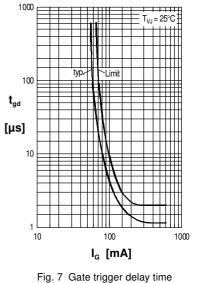
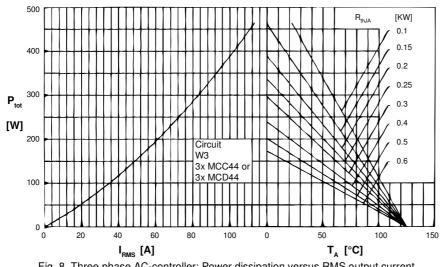


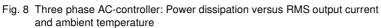
Fig. 6 Three phase rectifier bridge: Power dissipation versus direct output current and ambient temperature

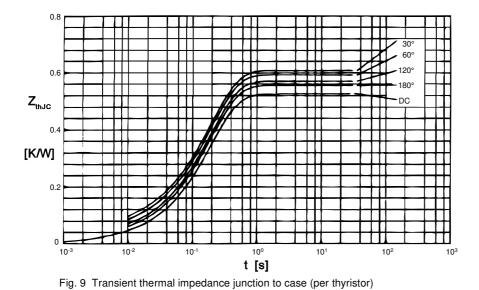
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MCC44-18io8B

Thyristor







lingo		•							
	d R _{th}	_{JC} [K/W]							
I	C	0.53							
1	80°	0.55							
1	20°	0.58							
	60°	0.60							
	30°	0.62							
Constants for Z_{thJC} calculation:									
i R	_{hi} [K/W]	t _i [s]							
1	0.015	0.0035							
2	0.026	0.0200							

0.1950

 $\mathbf{R}_{_{thJC}}$ for various conduction angles d:

3

0.489



0.8	\vdash	+			\square											ł	1	-	30° 60° 20°		_	
, "thJK 0.6	\vdash	╉			H	╈			Ø		F	+			-		₹		80°			
/W]	\square		\prod		П	+			Π													
0.4	\vdash				$\left \right $			+	$\left \right $										-	$\left \right $	+	
0.2																						
					Ĥ	-				-		+	+			$\left \right $	+			H	╢	
0 1	0 ⁻³	-1	10	-2	ш	10)-1			0º [S]			10	1			1() ²			10	3

$R_{_{thJ}}$	$_{\kappa}$ for vario	ous conduction angles d:
	d R _u	_{льк} [K/W]
	DC	0.73
	180°	0.75
	120°	0.78
	60°	0.80
	30°	0.82
Coi	nstants fo	r Z _{thJK} calculation:
i	R _{thi} [K/W] t _i [s]
1	0.015	0.0035
2	0.026	0.0200
3	0.489	0.0195
4	0.200	0.6800

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