imall

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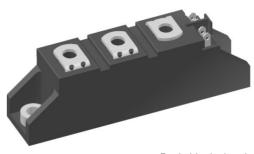
Thyristor Module

MCC44-08io1B

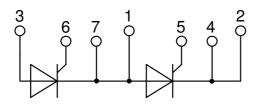
V_{RRM}	<i>=</i> 2x	800 V
I _{tav}	=	49 A
VT	=	1.34 V

Phase leg

Part number MCC44-08io1B



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.

IXYS reserves the right to change limits, conditions and dimensions.

Data according to IEC 60747and per semiconductor unless otherwise specified

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20161222b

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MCC44-08io1B

Thyristo					Ratings		
Symbol	Definition	Conditions		min.	typ.	max.	Uni
V _{RSM/DSM}	max. non-repetitive reverse/forwa	ard blocking voltage	$T_{VJ} = 25^{\circ}C$			900	١
V _{RRM/DRM}	max. repetitive reverse/forward bi	locking voltage	$T_{VJ} = 25^{\circ}C$			800	V
R/D	reverse current, drain current	V _{R/D} = 800 V	$T_{VJ} = 25^{\circ}C$			100	μA
		$V_{R/D} = 800 V$	$T_{vJ} = 125^{\circ}C$			5	mA
V _T	forward voltage drop	I _T = 100 A	$T_{VJ} = 25^{\circ}C$			1.34	V
		I _T = 200 A				1.75	V
		$I_{T} = 100 \text{ A}$	$T_{vJ} = 125 \degree C$			1.34	V
		I _T = 200 A				1.80	١
ITAV	average forward current	$T_c = 85^{\circ}C$	T _{vJ} = 125°C			49	A
I _{T(RMS)}	RMS forward current	180° sine				77	A
V _{T0}	threshold voltage		T _{vJ} = 125°C			0.85	V
r _T	slope resistance } for power le	oss calculation only				5.3	mΩ
R _{thJC}	thermal resistance junction to cas	6e				0.53	K/W
R _{thCH}	thermal resistance case to heatsi	nk			0.20		K/W
P _{tot}	total power dissipation		$T_c = 25^{\circ}C$			180	W
I _{TSM}	max. forward surge current	t = 10 ms; (50 Hz), sine	$T_{v,l} = 45^{\circ}C$			1.15	kA
		t = 8,3 ms; (60 Hz), sine	$V_{R} = 0 V$			1.24	kA
		t = 10 ms; (50 Hz), sine	T _{v.i} = 125°C			980	A
		t = 8,3 ms; (60 Hz), sine	$V_{R} = 0 V$			1.06	kA
l²t	value for fusing	t = 10 ms; (50 Hz), sine	$T_{VJ} = 45^{\circ}C$			6.62	
	-	t = 8,3 ms; (60 Hz), sine	$V_{\rm B} = 0 V$			6.40	kA ² s
		t = 10 ms; (50 Hz), sine	T _{v.l} = 125°C			4.80	kA ² s
		t = 8,3 ms; (60 Hz), sine	$V_{\rm R} = 0 V$			4.63	
C	junction capacitance	$V_{\rm B} = 400 V f = 1 \text{ MHz}$	$T_{VJ} = 25^{\circ}C$		54		pF
P _{GM}	max. gate power dissipation	$t_{\rm P} = 30\mu{\rm s}$	$T_{c} = 125^{\circ}C$			10	W
- GW	mani gato portor accipation	$t_{\rm P} = 300 \mu {\rm s}$	0			5	w
P _{GAV}	average gate power dissipation	(p 000 p0				0.5	W
(di/dt) _{cr}	critical rate of rise of current	T _{v.l} = 125°C; f = 50 Hz re	petitive I ₌ = 150 A				A/με
(an/at/cr		$t_{\rm P} = 200 \mu {\rm s}; di_{\rm G}/dt = 0.45 \text{A}/\mu {\rm s}; -$				100	7.0μς
			on-repet., $I_{\tau} = 49 \text{ A}$			500	A/µs
(dv/dt) _{cr}	critical rate of rise of voltage	$V = \frac{2}{3} V_{\text{DRM}}$	$T_{v_i} = 125^{\circ}C$			1000	i
(uv/ut/ _{cr}	childar rate of hise of voltage	$R_{GK} = \infty$; method 1 (linear voltage	••			1000	v/μα
V _{gt}	gate trigger voltage	$V_{\rm D} = 6 \text{ V}$	$T_{VJ} = 25^{\circ}C$			1.5	V
▼ GT	galo inggor rollago	v _D = 0 v	$T_{vJ} = -40^{\circ}C$			1.6	v v
	acto triagor current		-				
I _{GT}	gate trigger current	$V_{D} = 6 V$	$T_{vJ} = 25^{\circ}C$			100	mA m A
V	gate non-trigger voltage	V 2/ V	$T_{VJ} = -40^{\circ}C$			200	mA V
V _{gd}		$V_{D} = \frac{2}{3} V_{DRM}$	$T_{vJ} = 125^{\circ}C$			0.2	
I _{GD}	gate non-trigger current		T 0500			10	mA
I.	latching current	$t_p = 10 \ \mu s$ $I_G = 0.45 \ A; \ di_G / dt = 0.45 \ A / \mu s$	$T_{vJ} = 25 °C$			450	mA
I _H	holding current	$V_{D} = 6 V R_{GK} = \infty$	$T_{vJ} = 25 ^{\circ}C$			200	mA
t _{gd}	gate controlled delay time	$V_{D} = \frac{1}{2} V_{DRM}$	$T_{VJ} = 25 \degree C$			2	με
		$I_{G} = 0.45 \text{ A}; \ di_{G}/dt = 0.45 \text{ A}/\mu \text{s}$					
ta	turn-off time	$V_{\rm R} = 100 \text{ V}; \ I_{\rm T} = 120 \text{ A}; \ V = \frac{2}{3}$			150		με
-		$di/dt = 10 \text{ A}/\mu \text{s} dv/dt = 20 \text{ V}/\mu \text{s}$					

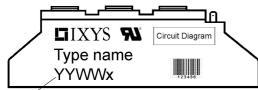
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MCC44-08io1B

Package	TO-240AA				F	Rating	S	
Symbol	Definition	Conditions			min.	typ.	max.	Unit
	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}	croopago distanco on surfac	o Letriking dictance through air	terminal to terminal	13.0	9.7			mm
d _{Spb/Apb}	creepage distance on surface striking distance thr		terminal to backside	16.0	16.0			mm
V	isolation voltage	t = 1 second			3600			V
		t = 1 minute	50/60 Hz, RMS; liso∟ ≤ 1 mA		3000			v



Date Code

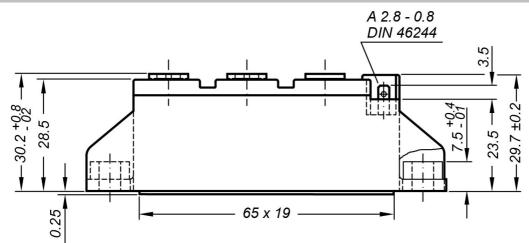
Ordering	Ordering Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	MCC44-08io1B	MCC44-08io1B	Box	36	452890

Similar Part	Package	Voltage class
MCMA50P1200TA	TO-240AA-1B	1200
MCMA65P1200TA	TO-240AA-1B	1200

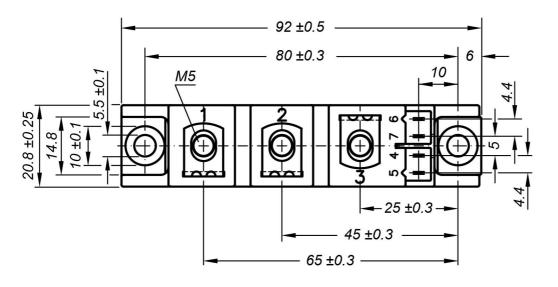
Equivalent Circuits for Simulation			* on die level	T _{vj} = 125 °C
	⊢R₀−	Thyristor		
V _{0 max}	threshold voltage	0.85		V
$\mathbf{R}_{0 \max}$	slope resistance *	4.1		mΩ

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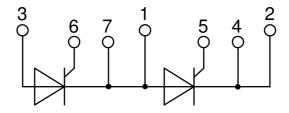
Outlines TO-240AA



General tolerance: DIN ISO 2768 class "c"



Optional accessories: Keyed gate/cathode twin plugs Wire length: 350 mm, gate = white, cathode = red UL 758, style 3751 Type **ZY 200L** (L = Left for pin pair 4/5) Type **ZY 200R** (R = Right for pin pair 6/7)



sin

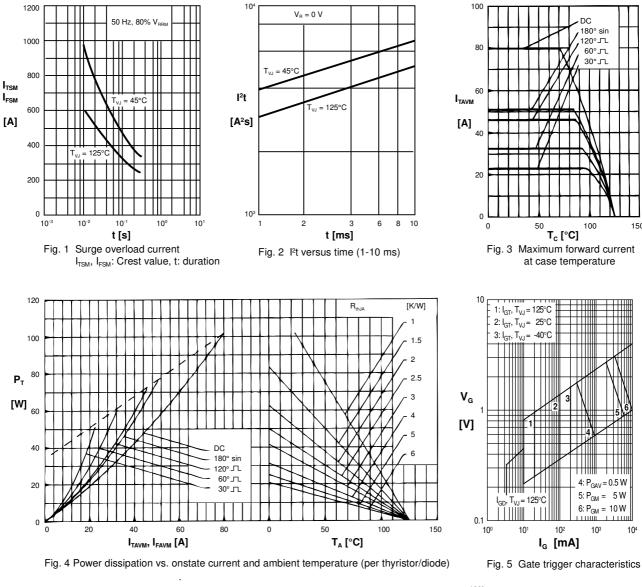
150

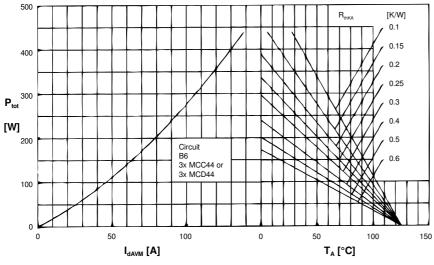
= 0.5 W

1.1.111

10

Thyristor





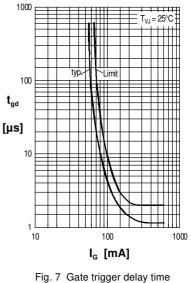
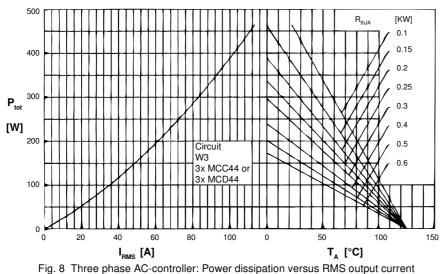


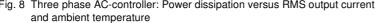
Fig. 6 Three phase rectifier bridge: Power dissipation versus direct output current and ambient temperature

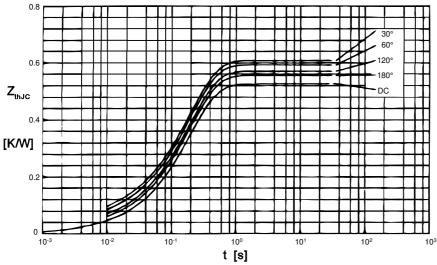
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MCC44-08io1B

Thyristor







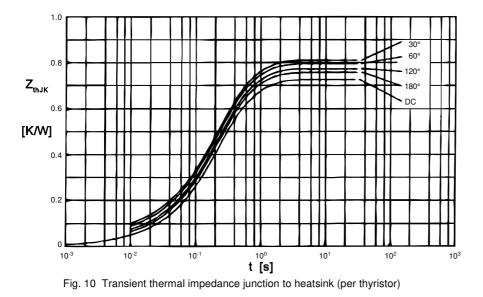
R_{thJC} for various conduction angles d:					
	dR	_{այշ} [K/W]			
	DC	0.53			
	180°	0.55			
	120°	0.58			
	60°	0.60			
	30°	0.62			
Constants for Z_{thJC} calculation:					
i F	R _{thi} [K/M	V] t _i [s]			
1	0.015	0.0035			
2	0.026	0.0200			

0.1950

3

0.489





R_{th}	_{JK} for vario	ous conduction angles d:				
	d R _{tt}	_{JK} [K/W]				
	DC	0.73				
	180°	0.75				
	120°	0.78				
	60°	0.80				
	30°	0.82				
Co	Constants for 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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