Chipsmall

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.

With the principle of "Quality Parts,Customers Priority,Honest Operation,and Considerate Service",our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!

Contact us

Thyristor Module

V_{RRM}	=	2 x 1600 V
I_{TAV}	=	21 A
V_T	=	1.52 V

Phase leg

Part number

MCC21-16io8B
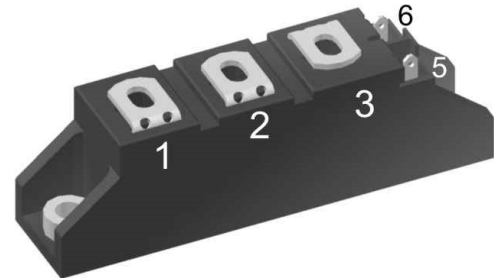
Backside: isolated

E72873

3   6   1   5   2
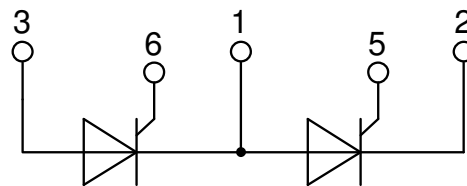
Features / Advantages:

● 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   20161222c

Thyristor | | | | | | | | **Ratings**

Symbol	Definition	Conditions		min.	typ.	max.	Unit
$V_{RSM/DSM}$	max. non-repetitive reverse/forward blocking voltage		$T_{VJ} = 25°C$			1700	V
$V_{RRM/DRM}$	max. repetitive reverse/forward blocking voltage		$T_{VJ} = 25°C$			1600	V
$I_{R/D}$	reverse current, drain current	$V_{R/D} = 1600$ V	$T_{VJ} = 25°C$			100	μA
		$V_{R/D} = 1600$ V	$T_{VJ} = 125°C$			5	mA
V_T	forward voltage drop	$I_T = 45$ A	$T_{VJ} = 25°C$			1.45	V
		$I_T = 90$ A				1.89	V
		$I_T = 45$ A	$T_{VJ} = 125°C$			1.52	V
		$I_T = 90$ A				2.20	V
I_{TAV}	average forward current	$T_C = 85°C$	$T_{VJ} = 125°C$			21	A
$I_{T(RMS)}$	RMS forward current	180° sine				33	A
V_{T0}	threshold voltage	} for power loss calculation only	$T_{VJ} = 125°C$			0.85	V
r_T	slope resistance					15	mΩ
R_{thJC}	thermal resistance junction to case					1.1	K/W
R_{thCH}	thermal resistance case to heatsink				0.20		K/W
P_{tot}	total power dissipation		$T_C = 25°C$			90	W
I_{TSM}	max. forward surge current	t = 10 ms; (50 Hz), sine	$T_{VJ} = 45°C$			320	A
		t = 8,3 ms; (60 Hz), sine	$V_R = 0$ V			345	A
		t = 10 ms; (50 Hz), sine	$T_{VJ} = 125°C$			270	A
		t = 8,3 ms; (60 Hz), sine	$V_R = 0$ V			295	A
I^2t	value for fusing	t = 10 ms; (50 Hz), sine	$T_{VJ} = 45°C$			510	A²s
		t = 8,3 ms; (60 Hz), sine	$V_R = 0$ V			495	A²s
		t = 10 ms; (50 Hz), sine	$T_{VJ} = 125°C$			365	A²s
		t = 8,3 ms; (60 Hz), sine	$V_R = 0$ V			360	A²s
C_J	junction capacitance	$V_R = 400$ V f = 1 MHz	$T_{VJ} = 25°C$		22		pF
P_{GM}	max. gate power dissipation	$t_P = 30$ μs	$T_C = 125°C$			10	W
		$t_P = 300$ μs				5	W
P_{GAV}	average gate power dissipation					0.5	W
$(di/dt)_{cr}$	critical rate of rise of current	$T_{VJ} = 125°C$; f = 50 Hz repetitive, $I_T = 45$ A				150	A/μs
		$t_P = 200$ μs; $di_G/dt = 0.45$ A/μs;					
		$I_G = 0.45$ A; V = ⅔ V_{DRM} non-repet., $I_T = 21$ A				500	A/μs
$(dv/dt)_{cr}$	critical rate of rise of voltage	V = ⅔ V_{DRM}	$T_{VJ} = 125°C$			1000	V/μs
		$R_{GK} = ∞$; method 1 (linear voltage rise)					
V_{GT}	gate trigger voltage	$V_D = 6$ V	$T_{VJ} = 25°C$			1	V
			$T_{VJ} = -40°C$			1.2	V
I_{GT}	gate trigger current	$V_D = 6$ V	$T_{VJ} = 25°C$			65	mA
			$T_{VJ} = -40°C$			80	mA
V_{GD}	gate non-trigger voltage	$V_D = ⅔ V_{DRM}$	$T_{VJ} = 125°C$			0.2	V
I_{GD}	gate non-trigger current					5	mA
I_L	latching current	$t_p = 10$ μs	$T_{VJ} = 25°C$			150	mA
		$I_G = 0.3$ A; $di_G/dt = 0.3$ A/μs					
I_H	holding current	$V_D = 6$ V $R_{GK} = ∞$	$T_{VJ} = 25°C$			100	mA
t_{gd}	gate controlled delay time	$V_D = ½ V_{DRM}$	$T_{VJ} = 25°C$			2	μs
		$I_G = 0.3$ A; $di_G/dt = 0.3$ A/μs					
t_q	turn-off time	$V_R = 100$ V; $I_T = 15$ A; V = ⅔ V_{DRM} $T_{VJ} = 100$ °C			150		μs
		di/dt = 10 A/μs dv/dt = 20 V/μs $t_p = 300$ μs					

Package	TO-240AA				Ratings		
Symbol	Definition	Conditions		min.	typ.	max.	Unit
I_{RMS}	RMS current	per terminal				200	A
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
$d_{Spp/App}$	creepage distance on surface | striking distance through air	terminal to terminal	13.0	9.7			mm
$d_{Spb/Apb}$		terminal to backside	16.0	16.0			mm
V_{ISOL}	isolation voltage	t = 1 second	50/60 Hz, RMS; $I_{ISOL} \leq 1$ mA	3600			V
		t = 1 minute		3000			V
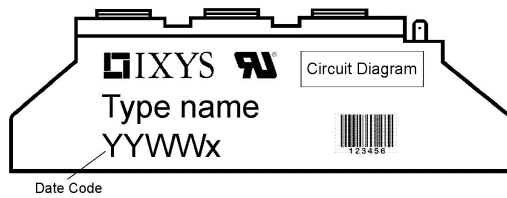
Ordering	Ordering Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	MCC21-16io8B	MCC21-16io8B	Box	36	477338

Similar Part	Package	Voltage class
MCMA25P1600TA	TO-240AA-1B	1600
MCMA35P1600TA	TO-240AA-1B	1600

Equivalent Circuits for Simulation   *on die level* $T_{VJ} = 125$ °C

Thyristor

$V_{0 max}$	threshold voltage	0.85	V
$R_{0 max}$	slope resistance *	13.8	mΩ

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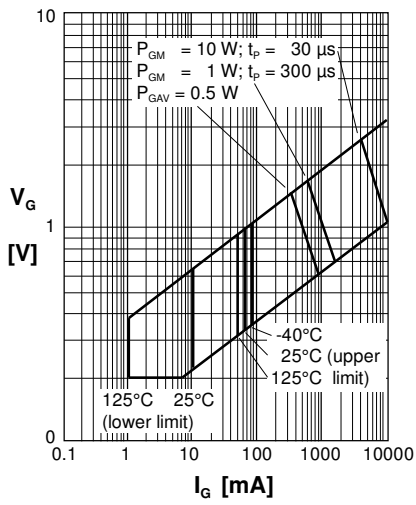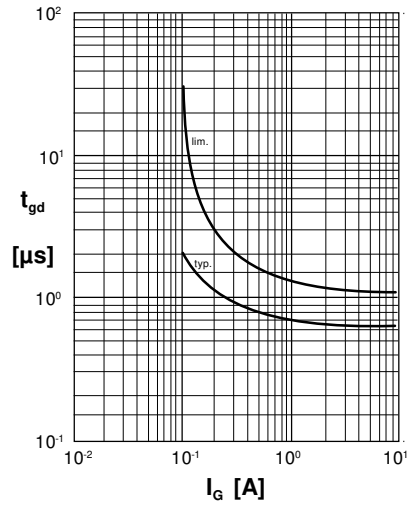
Outlines   TO-240AA
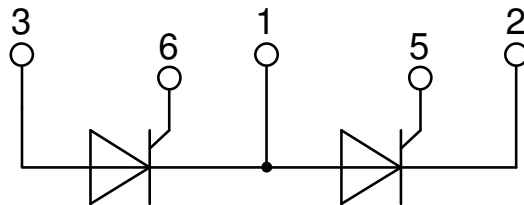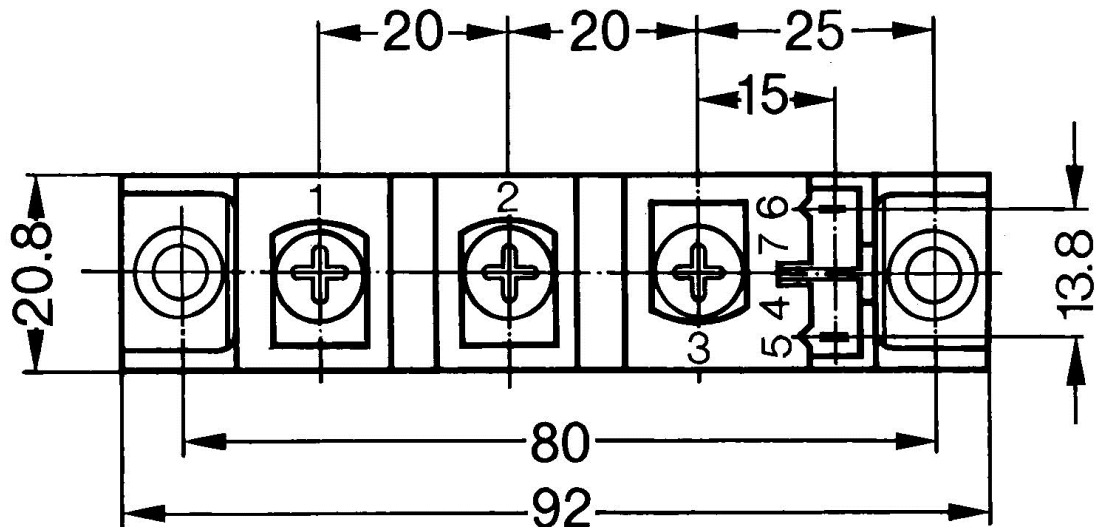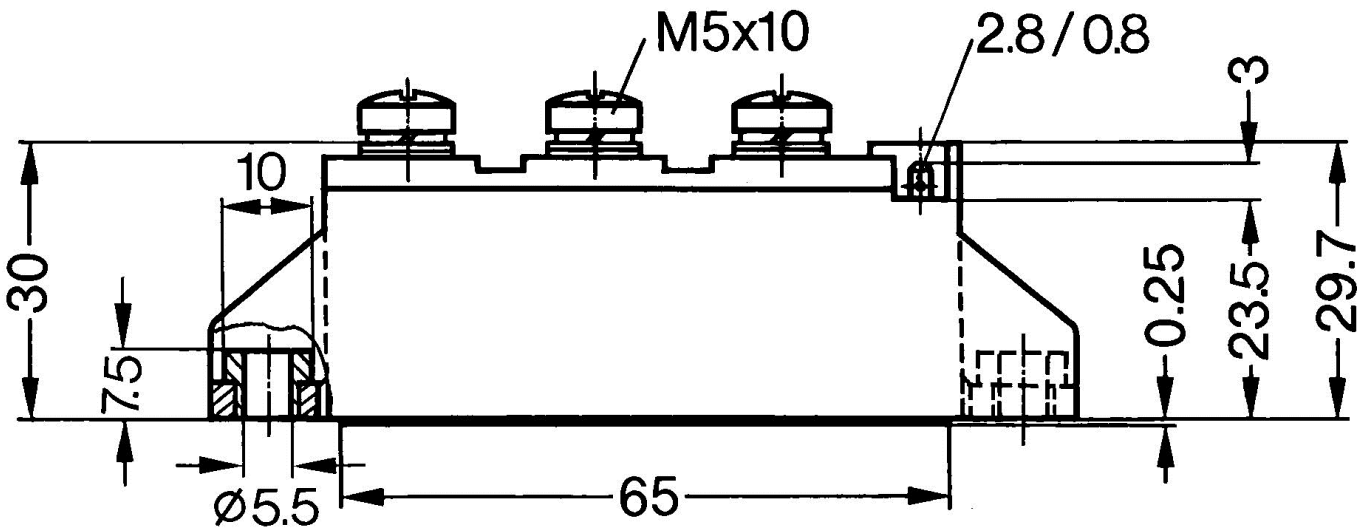
Thyristor

Fig. 1 Gate trigger characteristics

Fig. 2 Gate trigger delay time