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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!



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High Efficiency Thyristor

1200 V

50 A

1,04 V

AC Controlling 1~ full-controlled

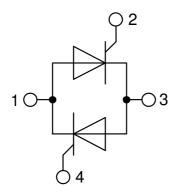
Part number

CLA110MB1200NA



Backside: Isolated





Features / Advantages:

- AC controller for line frequency
- Planar passivated chip
- Long-term stability of blocking currents and voltages

Applications:

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

Package: SOT-227B (minibloc)

- Isolation Voltage: 3000 V~ • Industry standard outline
- RoHS compliant
- Epoxy meets UL 94V-0
- Base plate: Copper
- internally DCB isolated 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 the sales office, which is responsible for you.

Due to technical requirements our product may contain dangerous substances. For information on the types in question please contact the sales office, which is responsible for you.

Should you intend to use the product in aviation, in health or live 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 60747 and per semiconductor unless otherwise specified

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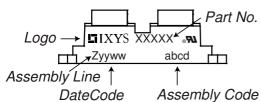
Thyristo					Ratings		1 .
Symbol	Definition	Conditions		min.	typ.	max.	Un
V _{RSM/DSM}	max. non-repetitive reverse/forwa	rd blocking voltage	$T_{VJ} = 25^{\circ}C$			1300	
V _{RRM/DRM}	max. repetitive reverse/forward blo	<u> </u>	$T_{VJ} = 25^{\circ}C$			1200	!
R/D	reverse current, drain current	$V_{R/D} = 1200 \text{ V}$	$T_{VJ} = 25^{\circ}C$			50	μ
		$V_{R/D} = 1200 \text{ V}$	$T_{VJ} = 125^{\circ}C$			5	m
V _T	forward voltage drop	$I_T = 50 \text{ A}$	$T_{VJ} = 25^{\circ}C$			1,12	
		$I_{T} = 100 \text{ A}$				1,32	,
		$I_T = 50 \text{ A}$	T _{VJ} = 125°C			1,04	
		$I_{T} = 100 \text{ A}$				1,28	
I _{TAV}	average forward current	T _C = 110°C	T _{vJ} = 150°C			50	
I _{RMS}	RMS forward current per phase	180° sine				110	
V _{T0}	threshold voltage		T _{v.i} = 150°C			0,78	
r _T	slope resistance } for power lo	ss calculation only				4,9	m
R _{thJC}	thermal resistance junction to case	9				0,55	K/V
R _{thCH}	thermal resistance case to heatsir				0,10	,	K/V
P _{tot}	total power dissipation		$T_{c} = 25^{\circ}C$		0,.0	220	٧
I _{TSM}	max. forward surge current	t = 10 ms; (50 Hz), sine	<u> </u>			1,10	<u> </u>
•ISM		t = 8.3 ms; (60 Hz), sine	••			1,19	ŀ
		t = 0.0 ms; (50 Hz), sine				935	10
		t = 8,3 ms; (60 Hz), sine				1,01	k
l²t	value for fusing	t = 0,3 ms, (60 Hz), sine t = 10 ms; (50 Hz), sine					kA ²
I-L	value for fusing	, ,		$T_{C} = 25^{\circ}\text{C}$ $T_{VJ} = 45^{\circ}\text{C}$ $V_{R} = 0 \text{ V}$ $T_{VJ} = 150^{\circ}\text{C}$ $V_{R} = 0 \text{ V}$ $T_{VJ} = 45^{\circ}\text{C}$ $V_{R} = 0 \text{ V}$ $T_{VJ} = 150^{\circ}\text{C}$ $V_{R} = 0 \text{ V}$ $T_{VJ} = 150^{\circ}\text{C}$ $T_{VJ} = 25^{\circ}\text{C}$ $T_{C} = 150^{\circ}\text{C}$		6,05 5,89	1
		t = 8,3 ms; (60 Hz), sine					
		t = 10 ms; (50 Hz), sine				4,37	ĺ
	i mating a grant to a g	t = 8,3 ms; (60 Hz), sine			0.0	4,25	
C,	junction capacitance	V _R = 400 V f = 1 MHz			86	4.0	р
P_{GM}	max. gate power dissipation	$t_P = 30 \mu s$	$I_{\rm C} = 150^{\circ}\rm C$			10	٧
		$t_{P} = 300 \mu s$				1	۷
P _{GAV}	average gate power dissipation					0,5	٧
(di/dt) _{cr}	critical rate of rise of current	**	epetitive, $I_T = 150 A$			150	A/μ
		$t_P = 200 \mu s; di_G/dt = 0,45 A/\mu s; -$					
		$I_G = 0.45 \text{ A}; V = \frac{2}{3} V_{DRM}$ no	on-repet., $I_T = 50 \text{ A}$			500	A/μ
$(dv/dt)_{cr}$	critical rate of rise of voltage	$V = \frac{2}{3} V_{DRM}$	$T_{VJ} = 150$ °C			1000	V/µ
		R _{GK} = ∞; method 1 (linear volta	ge rise)				
V _{GT}	gate trigger voltage	$V_D = 6 V$	$T_{VJ} = 25^{\circ}C$			1,5	١
			$T_{VJ} = -40$ °C			1,6	١
I _{GT}	gate trigger current	$V_D = 6 V$	$T_{VJ} = 25^{\circ}C$			40	m
			$T_{VJ} = -40$ °C			80	m
V _{GD}	gate non-trigger voltage	$V_D = \frac{2}{3} V_{DBM}$	T _{vJ} = 150°C			0,2	,
I _{GD}	gate non-trigger current	5 51				5	m
-ub 	latching current	t _n = 10 μs	T _{vJ} = 25°C			150	m
•L	3	$I_{\rm G} = 0.45 \text{A}; \text{di}_{\rm G}/\text{dt} = 0.45 \text{A}/\mu \text{s}$					
I _H	holding current	$V_D = 6 \text{ V } R_{GK} = \infty$	T _{vJ} = 25°C			100	m
	gate controlled delay time	$V_{D} = 0 V V_{GK} = 0$ $V_{D} = \frac{1}{2} V_{DRM}$	$T_{VJ} = 25 ^{\circ}\text{C}$			2	<u> </u>
t _{gd}	gate controlled delay tillle						μ
	turn off time	$I_{\rm G} = 0.5 \text{A}; \text{di}_{\rm G}/\text{dt} = 0.5 \text{A}/\mu \text{s}$			150		-
tq	turn-off time	$V_R = 100 \text{ V}; I_T = 50 \text{ A}; V = \frac{2}{3}$			150		μ
		$di/dt = 10 A/\mu s dv/dt = 20 V$	/μs t _p = 200 μs				! !



CLA110MB1200NA

Package SOT-227B (minibloc)			Ratings					
Symbol	Definition	Conditions			min.	typ.	max.	Unit
I _{RMS}	RMS current	per terminal					150	Α
T _{VJ}	virtual junction temperatu	re			-40		150	°C
T _{op}	operation temperature				-40		125	°C
T _{stg}	storage temperature				-40		150	°C
Weight						30		g
M _D	mounting torque				1,1		1,5	Nm
$\mathbf{M}_{_{T}}$	terminal torque				1,1		1,5	Nm
d _{Spp/App}	oroonaga diatanaa an aur	face striking distance through air	terminal to terminal	10,5	3,2			mm
d _{Spb/Apb}	creepage distance on sur	race striking distance through an	terminal to backside	8,6	6,8			mm
V _{ISOL}	isolation voltage t = 1 second				3000			V
		t = 1 minute	50/60 Hz, RMS; lisoL ≤ 1 mA		2500			٧





Part description

C = Thyristor (SCR) L = High Efficiency Thyristor

A = (up to 1200V)

110 = Current Rating [A]

MB = 1~ full-controlled

1200 = Reverse Voltage [V] NA = SOT-227B (minibloc)

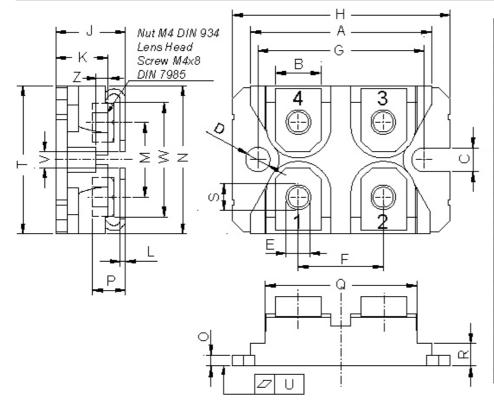
Ordering	Ordering Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	CLA110MB1200NA	CLA110MB1200NA	Tube	10	513128

Similar Part	Package	Voltage class
MMO90-12io6	SOT-227B (minibloc)	1200

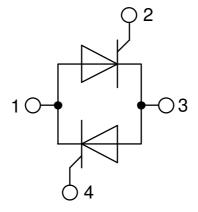
Equivalent Circuits for Simulation			* on die level	$T_{VJ} = 150 ^{\circ}\text{C}$
$I \rightarrow V_0$)—[R_o]-	Thyristor		
V _{0 max}	threshold voltage	0,78		V
$R_{0\;max}$	slope resistance *	3		$m\Omega$



Outlines SOT-227B (minibloc)



Dim	Millir	Millimeter		hes
Dim.	min	max	min	max
Α	31.50	31.88	1.240	1.255
В	7.80	8.20	0.307	0.323
С	4.09	4.29	0.161	0.169
D	4.09	4.29	0.161	0.169
Е	4.09	4.29	0.161	0.169
F	14.91	15.11	0.587	0.595
G	30.12	30.30	1.186	1.193
Н	37.80	38.23	1.488	1.505
J	11.68	12.22	0.460	0.481
K	8.92	9.60	0.351	0.378
L	0.74	0.84	0.029	0.033
M	12.50	13.10	0.492	0.516
N	25.15	25.42	0.990	1.001
0	1.95	2.13	0.077	0.084
Р	4.95	6.20	0.195	0.244
Q	26.54	26.90	1.045	1.059
R	3.94	4.42	0.155	0.167
S	4.55	4.85	0.179	0.191
Т	24.59	25.25	0.968	0.994
U	-0.05	0.10	-0.002	0.004
V	3.20	5.50	0.126	0.217
W	19.81	21.08	0.780	0.830
Ζ	2.50	2.70	0.098	0.106





Thyristor

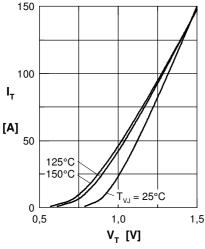


Fig. 1 Forward characteristics

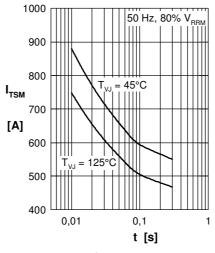


Fig. 2 Surge overload current

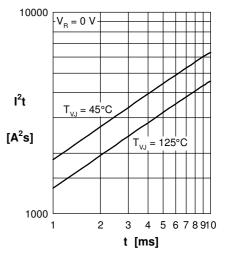


Fig. 3 I²t versus time (1-10 ms)

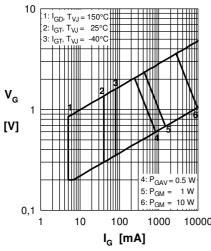


Fig. 4 Gate trigger characteristics

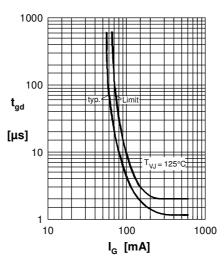


Fig. 5 Gate controlled delay time

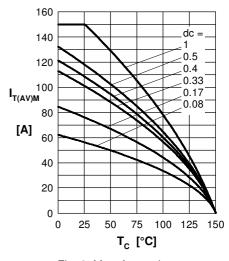


Fig. 6 Max. forward current at case temperature

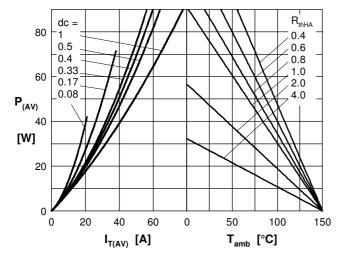


Fig. 7a Power dissipation versus direct output current Fig. 7b and ambient temperature

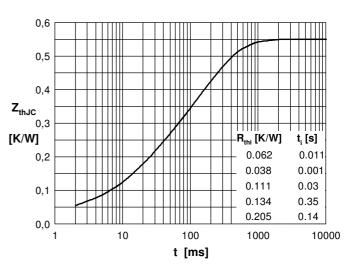


Fig. 8 Transient thermal impedance junction to case