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

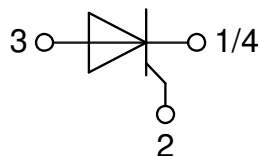|		
V_{RRM}	=	**1600** V
I_{TAV}	=	**158** A
V_T	=	**1,37** V

Single Thyristor

Part number

MCO150-16io1
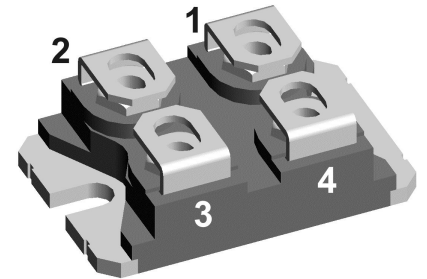
Backside: isolated

E72873

Features / Advantages:
- Thyristor for line frequency
- Planar passivated chip
- Long-term stability

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 60747and per semiconductor unless otherwise specified   20150827b

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			10	mA
V_T	forward voltage drop	I_T = 150 A	T_{VJ} = 25°C			1,37	V
		I_T = 300 A				1,78	V
		I_T = 150 A	T_{VJ} = 125°C			1,37	V
		I_T = 300 A				1,89	V
I_{TAV}	average forward current	T_C = 80°C	T_{VJ} = 150°C			158	A
$I_{T(RMS)}$	RMS forward current	180° sine				250	A
V_{T0}	threshold voltage		T_{VJ} = 150°C			0,84	V
r_T	slope resistance } for power loss calculation only					3,5	mΩ
R_{thJC}	thermal resistance junction to case					0,2	K/W
R_{thCH}	thermal resistance case to heatsink				0,10		K/W
P_{tot}	total power dissipation	T_C = 25°C				620	W
I_{TSM}	max. forward surge current	t = 10 ms; (50 Hz), sine	T_{VJ} = 45°C			2,00	kA
		t = 8,3 ms; (60 Hz), sine	V_R = 0 V			2,16	kA
		t = 10 ms; (50 Hz), sine	T_{VJ} = 150°C			1,70	kA
		t = 8,3 ms; (60 Hz), sine	V_R = 0 V			1,84	kA
I^2t	value for fusing	t = 10 ms; (50 Hz), sine	T_{VJ} = 45°C			20,0	kA²s
		t = 8,3 ms; (60 Hz), sine	V_R = 0 V			19,4	kA²s
		t = 10 ms; (50 Hz), sine	T_{VJ} = 150°C			14,5	kA²s
		t = 8,3 ms; (60 Hz), sine	V_R = 0 V			14,0	kA²s
C_J	junction capacitance	V_R = 400 V f = 1 MHz	T_{VJ} = 25°C		119		pF
P_{GM}	max. gate power dissipation	t_P = 30 μs	T_C = 150°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} = 150°C; f = 50 Hz repetitive, I_T = 450 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 = 150 A				500	A/μs
$(dv/dt)_{cr}$	critical rate of rise of voltage	V = ⅔ V_{DRM}	T_{VJ} = 150°C			1000	V/μs
		R_{GK} = ∞; method 1 (linear voltage rise)					
V_{GT}	gate trigger voltage	V_D = 6 V	T_{VJ} = 25°C			1,4	V
			T_{VJ} = -40°C			1,6	V
I_{GT}	gate trigger current	V_D = 6 V	T_{VJ} = 25°C			150	mA
			T_{VJ} = -40°C			200	mA
V_{GD}	gate non-trigger voltage	V_D = ⅔ V_{DRM}	T_{VJ} = 150°C			0,2	V
I_{GD}	gate non-trigger current					10	mA
I_L	latching current	t_p = 10 μs	T_{VJ} = 25°C			450	mA
		I_G = 0,45 A; di_G/dt = 0,45 A/μs					
I_H	holding current	V_D = 6 V R_{GK} = ∞	T_{VJ} = 25°C			200	mA
t_{gd}	gate controlled delay time	V_D = ½ V_{DRM}	T_{VJ} = 25°C			2	μs
		I_G = 0,45 A; di_G/dt = 0,45 A/μs					
t_q	turn-off time	V_R = 100 V; I_T = 150 A; V = ⅔ V_{DRM} T_{VJ} = 125 °C			150		μs
		di/dt = 10 A/μs dv/dt = 15 V/μs t_p = 200 μs					

Package	SOT-227B (minibloc)				Ratings		
Symbol	Definition	Conditions		min.	typ.	max.	Unit
I_{RMS}	RMS current	per terminal [1]				150	A
T_{VJ}	virtual junction temperature			-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
M_T	terminal torque			1,1		1,5	Nm
$d_{Spp/App}$	creepage distance on surface | striking distance through air	terminal to terminal	10,5	3,2			mm
$d_{Spb/Apb}$		terminal to backside	8,6	6,8			mm
V_{ISOL}	isolation voltage	t = 1 second		3000			V
		t = 1 minute, 50/60 Hz, RMS; $I_{ISOL} \leq 1$ mA		2500			V

[1] I_{RMS} is typically limited by the pin-to-chip resistance (1); or by the current capability of the chip (2). In case of (1) and a product with multiple pins for one chip-potential, the current capability can be increased by connecting the pins as one contact.
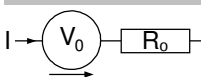
Product Marking

Logo →
Part No.
IXYS XXXXX ®**RU**
Zyyww   abcd
Assembly Line ↑
DateCode   ↑ Assembly Code
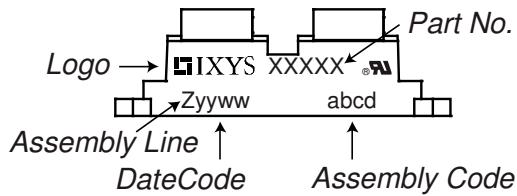
Ordering	Ordering Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	MCO150-16io1	MCO150-16io1	Tube	10	498629

Equivalent Circuits for Simulation	* on die level	$T_{VJ} = 150\,°C$

I → V₀ — R₀ —   **Thyristor**

$V_{0\,max}$	threshold voltage	0,84		V
$R_{0\,max}$	slope resistance *	1,6		mΩ

Outlines   SOT-227B (minibloc)
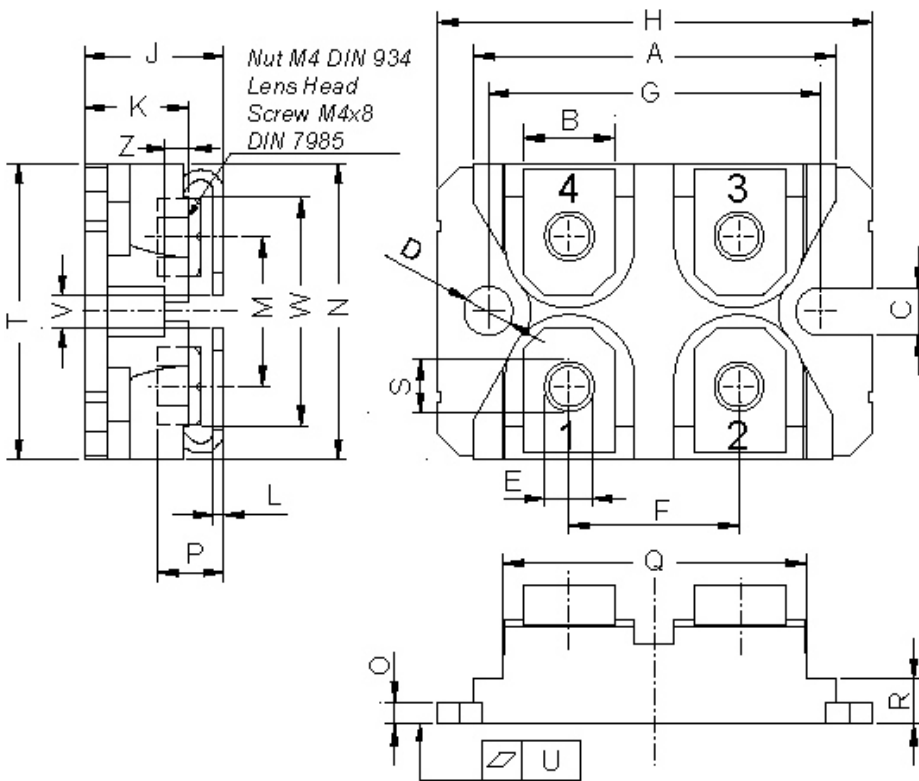
Dim.	Millimeter		Inches	
	min	max	min	max
A	31.50	31.88	1.240	1.255
B	7.80	8.20	0.307	0.323
C	4.09	4.29	0.161	0.169
D	4.09	4.29	0.161	0.169
E	4.09	4.29	0.161	0.169
F	14.91	15.11	0.587	0.595
G	30.12	30.30	1.186	1.193
H	37.80	38.23	1.488	1.505
J	11.68	12.22	0.460	0.481
K	8.92	9.60	0.351	0.378
L	0.74	0.84	0.029	0.033
M	12.50	13.10	0.492	0.516
N	25.15	25.42	0.990	1.001
O	1.95	2.13	0.077	0.084
P	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
T	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
Z	2.50	2.70	0.098	0.106

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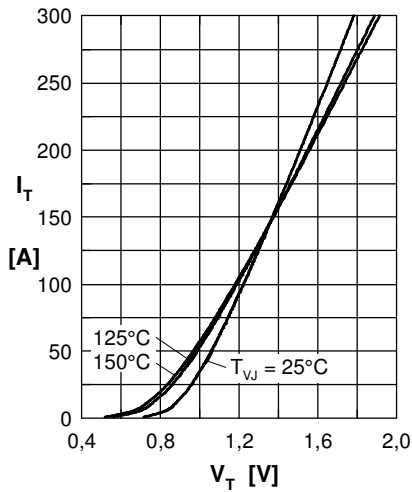© 2015 IXYS all rights reserved
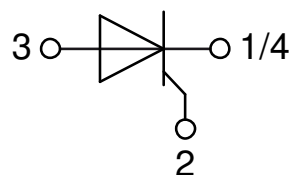
Thyristor
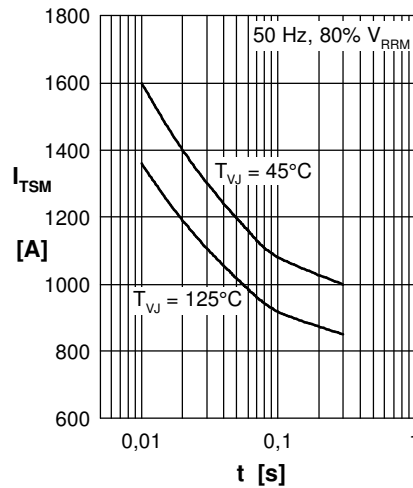

Fig. 1 Forward characteristics
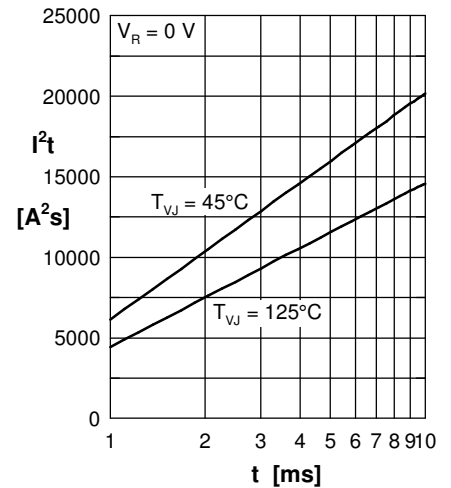

Fig. 2 Surge overload current

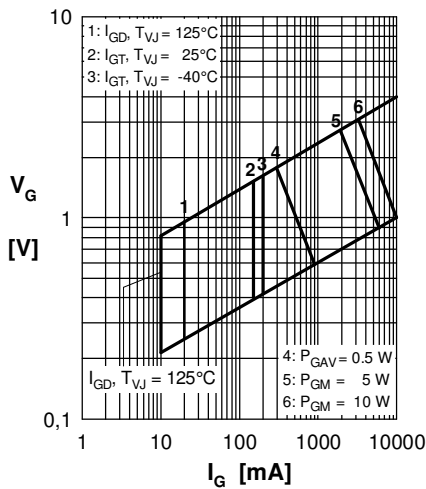Fig. 3 I^2t versus time (1-10 ms)

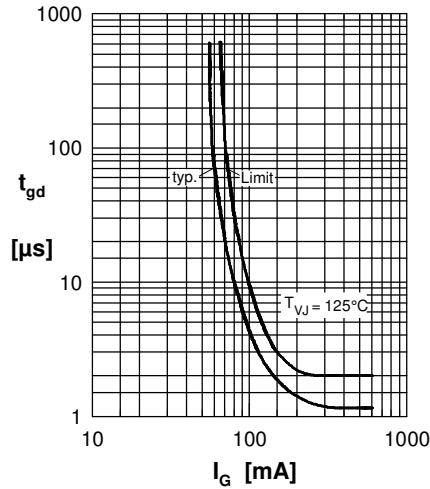Fig. 4 Gate trigger characteristics

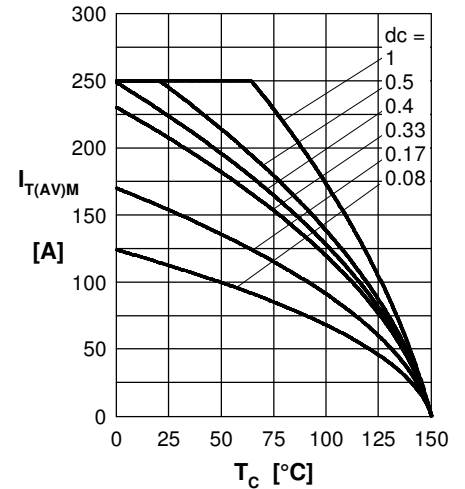Fig. 5 Gate controlled delay time

Fig. 6 Max. forward current
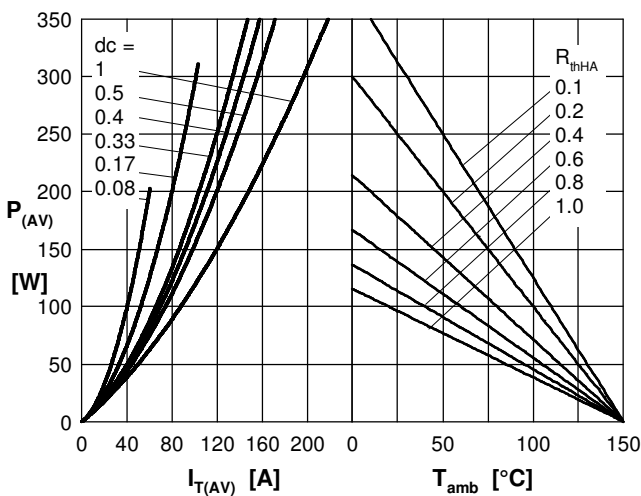   at case temperature

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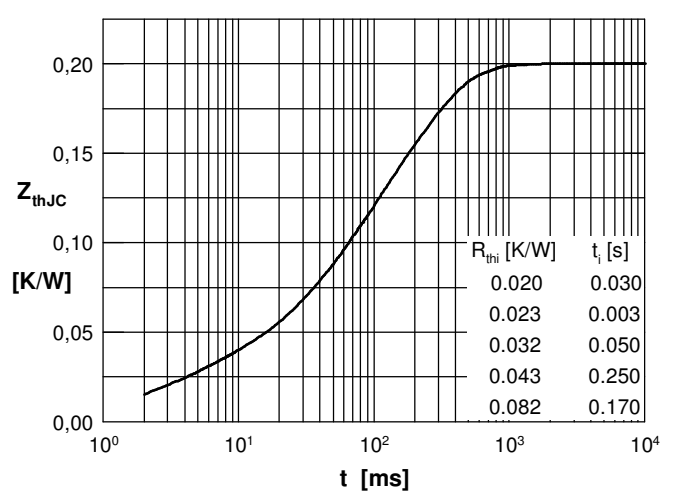Fig. 7b and ambient temperature

Fig. 8 Transient thermal impedance junction to case

R_{thi} [K/W]	t_i [s]
0.020	0.030
0.023	0.003
0.032	0.050
0.043	0.250
0.082	0.170

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