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 \ Diode Module

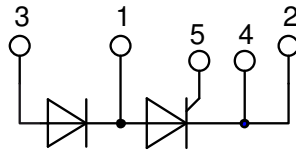|		
V_{RRM}	=	2 x 1800 V
I_{TAV}	=	216 A
V_T	=	1.1 V

Phase leg

Part number

MCD200-18io1
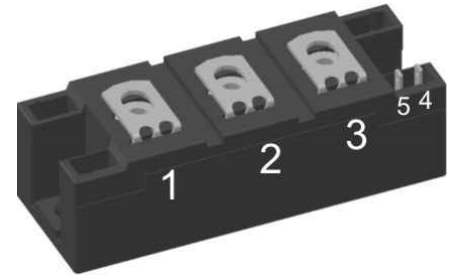
Backside: isolated

E72873

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: Y4

- 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
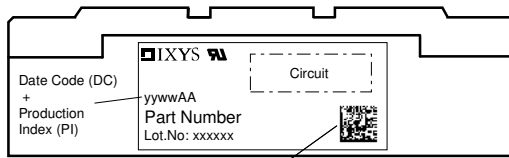- to perform joint risk and quality assessments;
- the conclusion of quality agreements;
- to establish joint measures of an ongoing product survey, and that we may make delivery dependent on the realization of any such measures.

IXYS reserves the right to change limits, conditions and dimensions.   Data according to IEC 60747and per semiconductor unless otherwise specified   20160408b

Rectifier						Ratings	
Symbol	**Definition**	**Conditions**		**min.**	**typ.**	**max.**	**Unit**
$V_{RSM/DSM}$	max. non-repetitive reverse/forward blocking voltage	T_{VJ} = 25°C				1900	V
$V_{RRM/DRM}$	max. repetitive reverse/forward blocking voltage	T_{VJ} = 25°C				1800	V
$I_{R/D}$	reverse current, drain current	$V_{R/D}$ = 1800 V	T_{VJ} = 25°C			400	μA
		$V_{R/D}$ = 1800 V	T_{VJ} = 125°C			15	mA
V_T	forward voltage drop	I_T = 200 A	T_{VJ} = 25°C			1.20	V
		I_T = 400 A				1.52	V
		I_T = 200 A	T_{VJ} = 125°C			1.10	V
		I_T = 400 A				1.50	V
I_{TAV}	average forward current	T_C = 85°C	T_{VJ} = 125°C			216	A
$I_{T(RMS)}$	RMS forward current	180° sine				340	A
V_{T0}	threshold voltage } for power loss calculation only	T_{VJ} = 125°C				0.80	V
r_T	slope resistance }					1.4	mΩ
R_{thJC}	thermal resistance junction to case					0.13	K/W
R_{thCH}	thermal resistance case to heatsink				0.050		K/W
P_{tot}	total power dissipation	T_C = 25°C				770	W
I_{TSM}	max. forward surge current	t = 10 ms; (50 Hz), sine	T_{VJ} = 45°C			8.00	kA
		t = 8,3 ms; (60 Hz), sine	V_R = 0 V			8.64	kA
		t = 10 ms; (50 Hz), sine	T_{VJ} = 125°C			6.80	kA
		t = 8,3 ms; (60 Hz), sine	V_R = 0 V			7.35	kA
I^2t	value for fusing	t = 10 ms; (50 Hz), sine	T_{VJ} = 45°C			320.0	kA²s
		t = 8,3 ms; (60 Hz), sine	V_R = 0 V			310.5	kA²s
		t = 10 ms; (50 Hz), sine	T_{VJ} = 125°C			231.2	kA²s
		t = 8,3 ms; (60 Hz), sine	V_R = 0 V			224.4	kA²s
C_J	junction capacitance	V_R = 400 V f = 1 MHz	T_{VJ} = 25°C		366		pF
P_{GM}	max. gate power dissipation	t_P = 30 μs	T_C = 125°C			120	W
		t_P = 500 μs				60	W
P_{GAV}	average gate power dissipation					20	W
$(di/dt)_{cr}$	critical rate of rise of current	T_{VJ} = 125°C; f = 50 Hz repetitive, I_T = 600 A t_P = 200 μs; di_G/dt = 0.5 A/μs;				100	A/μs
		I_G = 0.5 A; V = ⅔ V_{DRM} non-repet., I_T = 200 A				500	A/μs
$(dv/dt)_{cr}$	critical rate of rise of voltage	V = ⅔ V_{DRM} R_{GK} = ∞; method 1 (linear voltage rise)	T_{VJ} = 125°C			1000	V/μs
V_{GT}	gate trigger voltage	V_D = 6 V	T_{VJ} = 25°C			2	V
			T_{VJ} = -40°C			3	V
I_{GT}	gate trigger current	V_D = 6 V	T_{VJ} = 25°C			150	mA
			T_{VJ} = -40°C			220	mA
V_{GD}	gate non-trigger voltage	V_D = ⅔ V_{DRM}	T_{VJ} = 125°C			0.25	V
I_{GD}	gate non-trigger current					10	mA
I_L	latching current	t_p = 30 μs I_G = 0.5 A; di_G/dt = 0.5 A/μs	T_{VJ} = 25°C			200	mA
I_H	holding current	V_D = 6 V R_{GK} = ∞	T_{VJ} = 25°C			150	mA
t_{gd}	gate controlled delay time	V_D = ½ V_{DRM} I_G = 0.5 A; di_G/dt = 0.5 A/μs	T_{VJ} = 25°C			2	μs
t_q	turn-off time	V_R = 100 V; I_T = 300 A; V = ⅔ V_{DRM} T_{VJ} = 100 °C di/dt = 10 A/μs dv/dt = 50 V/μs t_p = 200 μs			200		μs

Package   Y4

Ratings

Symbol	Definition	Conditions		min.	typ.	max.	Unit
I_{RMS}	RMS current	per terminal				300	A
T_{VJ}	virtual junction temperature			-40		125	°C
T_{op}	operation temperature			-40		100	°C
T_{stg}	storage temperature			-40		125	°C
Weight					150		g
M_D	mounting torque			2.25		2.75	Nm
M_T	terminal torque			4.5		5.5	Nm
$d_{Spp/App}$	creepage distance on surface | striking distance through air	terminal to terminal	14.0	10.0			mm
$d_{Spb/Apb}$		terminal to backside	16.0	16.0			mm
V_{ISOL}	isolation voltage	t = 1 second	50/60 Hz, RMS; $I_{ISOL} \le 1$ mA	3600			V
		t = 1 minute		3000			V

Date Code (DC)
+
Production
Index (PI)

yywwAA
Part Number
Lot.No: xxxxxx

Circuit

Data Matrix: *part no.* (1-19), DC + *PI* (20-25), *lot.no.#* (26-31),
blank (32), *serial no.#* (33-36)

Ordering	Ordering Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	MCD200-18io1	MCD200-18io1	Box	6	498297

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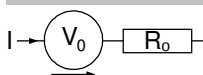
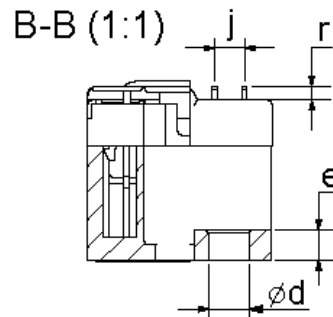**Thyristor**

$V_{0\ max}$	threshold voltage	0.8	V
$R_{0\ max}$	slope resistance *	0.7	mΩ

Outlines   Y4
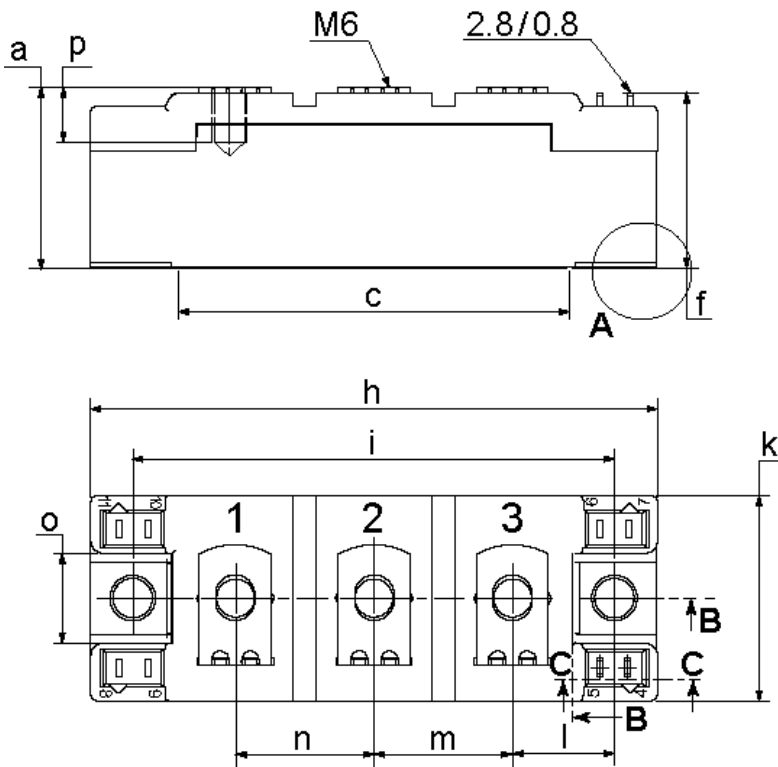
Dim.	MIN [mm]	MAX [mm]	MIN [inch]	MAX [inch]
a	30.0	30.6	1.181	1.205
b	typ. 0.25		typ. 0.010	
c	64.0	65.0	2.520	2.559
d	6.5	7.0	0.256	0.275
e	4.9	5.1	0.193	0.201
f	28.6	29.2	1.126	1.150
g	7.3	7.7	0.287	0.303
h	93.5	94.5	3.681	3.720
i	79.5	80.5	3.130	3.169
j	4.8	5.2	0.189	0.205
k	33.4	34.0	1.315	1.339
l	16.7	17.3	0.657	0.681
m	22.7	23.3	0.894	0.917
n	22.7	23.3	0.894	0.917
o	14.0	15.0	0.551	0.591
p	typ. 10.5		typ. 0.413	
r	1.8	2.4	0.071	0.041

IXYS reserves the right to change limits, conditions and dimensions.   Data according to IEC 60747and per semiconductor unless otherwise specified   20160408b

© 2016 IXYS all rights reserved
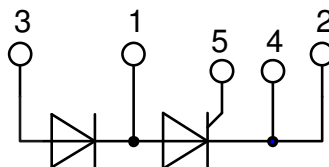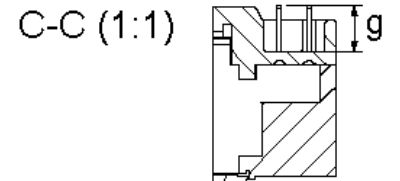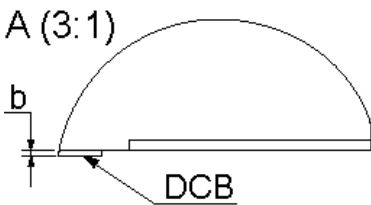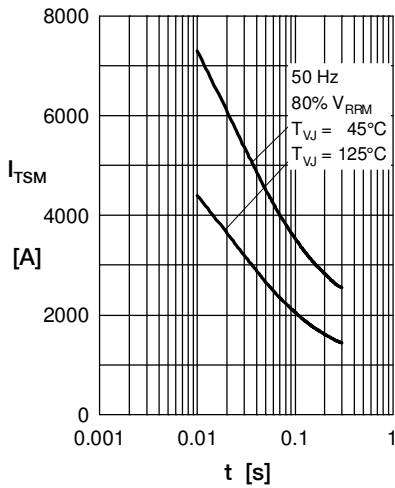
Thyristor

Fig. 1 Surge overload current I_{TSM}, I_{FSM}: Crest value, t: duration

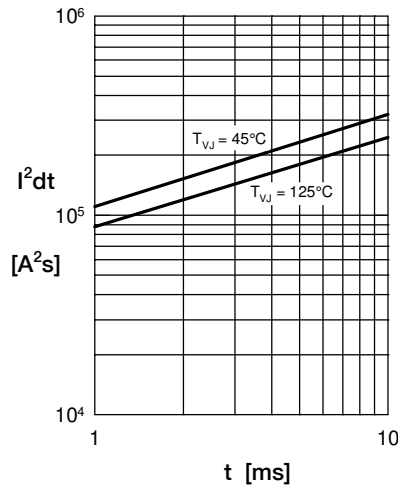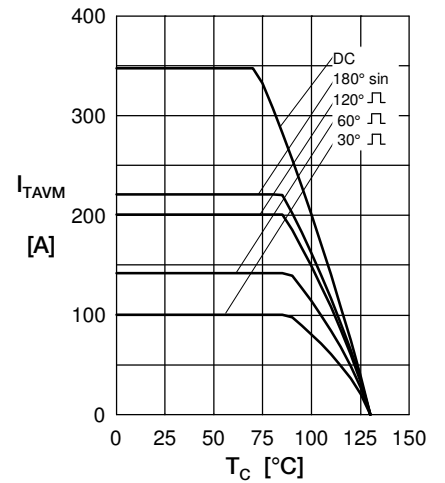Fig. 2 I²t versus time (1-10 ms)

Fig. 3 Max. forward current at case temperature
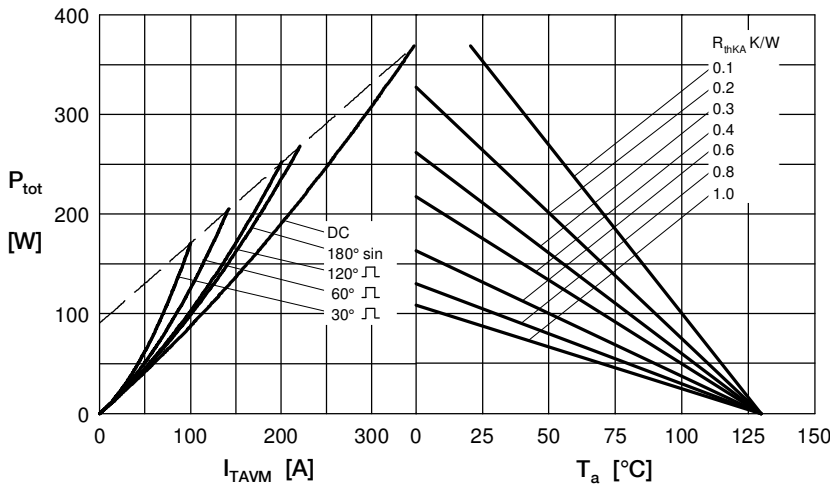

Fig. 4 Power dissipation vs. on-state current & ambient temperature (per thyristor or diode)
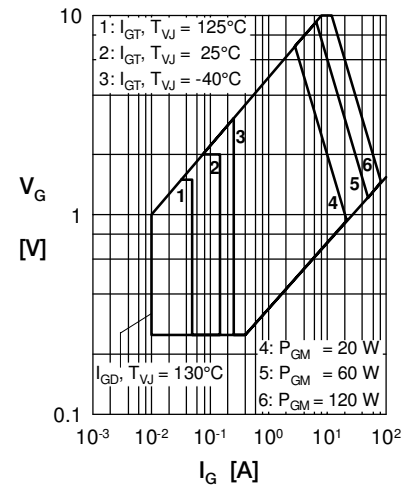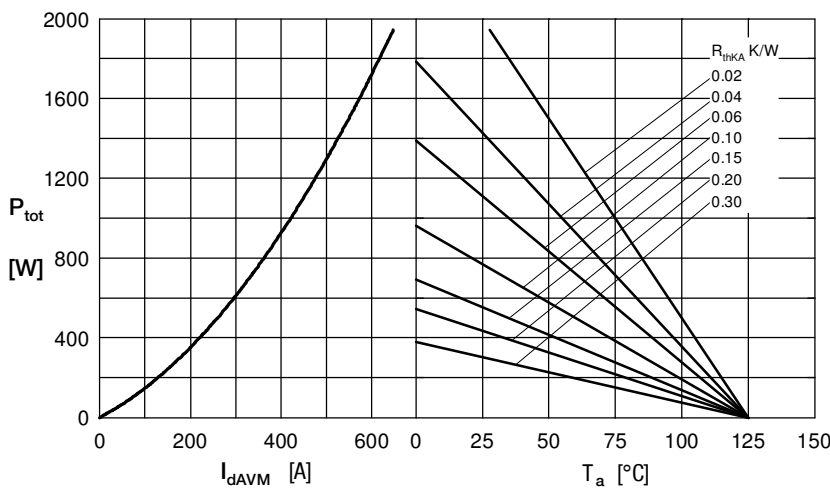

Fig. 5 Gate trigger characteristics

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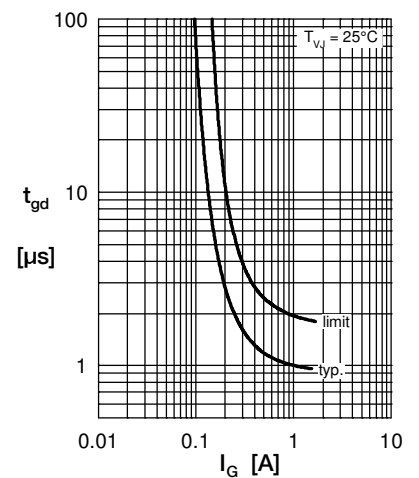

Fig. 7 Gate trigger delay time

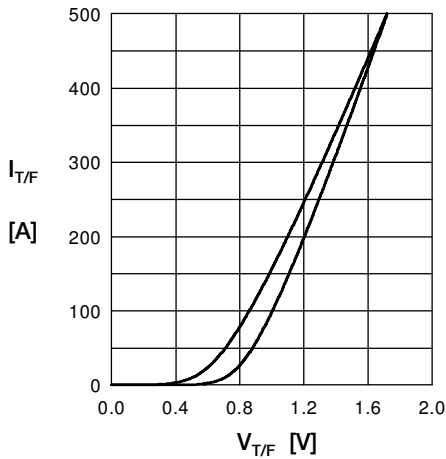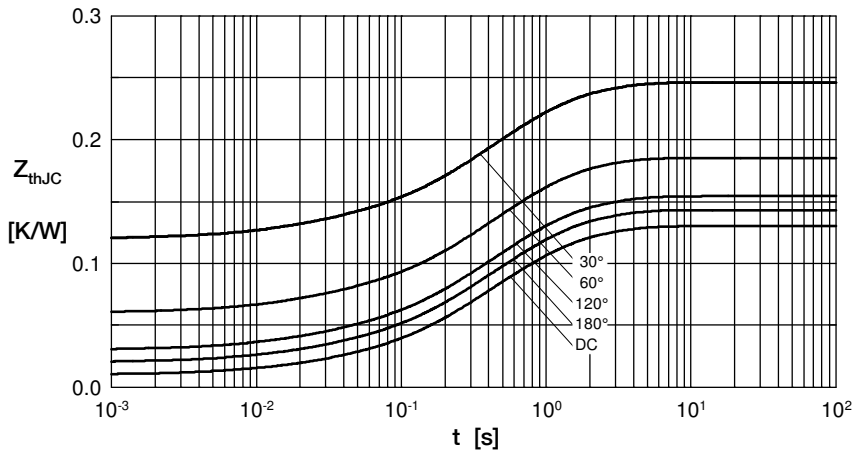
IXYS reserves the right to change limits, conditions and dimensions.   Data according to IEC 60747and per semiconductor unless otherwise specified   20160408b

Rectifier

Fig. 8 Forward current versus voltage drop

Constants for Z_{thJC} calculation:

i	R_{thi} [K/W]	t_i [s]
1	0.0100	0.00014
2	0.0065	0.019
3	0.0250	0.180
4	0.0615	0.520
5	0.0270	1.600

Fig. 9 Transient thermal impedance junction to case at various conduction angles
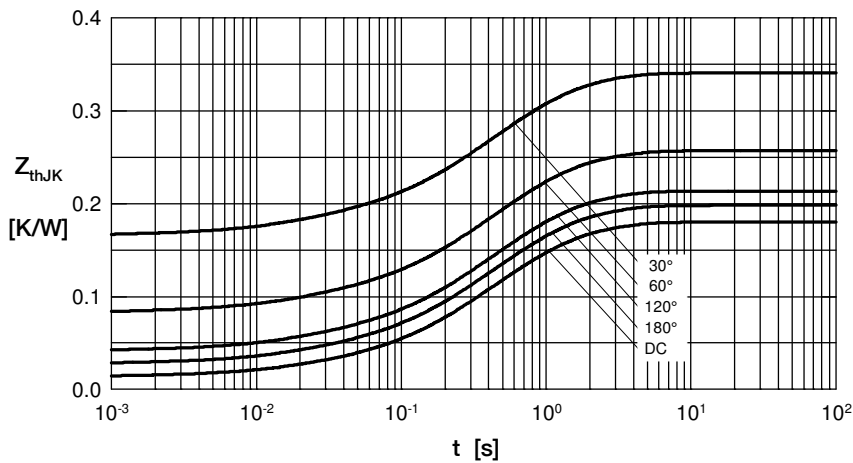

Fig. 10 Transient thermal impedance junction to heatsink (per thyristor/diode)