

# Thyristor/Diode Module

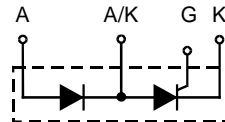
$$I_{TRMS} = 2 \times 60 \text{ A}$$

$$I_{TAVM} = 2 \times 38 \text{ A}$$

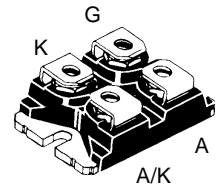
$$V_{RRM} = 1200-1600 \text{ V}$$

Preliminary data

$V_{RSM}$ $V_{DSM}$ <b>V</b>	$V_{RRM}$ $V_{DRM}$ <b>V</b>	Type
<b>1300</b>	<b>1200</b>	<b>MCD 40-12io6</b>
<b>1700</b>	<b>1600</b>	<b>MCD 40-16io6</b>



**SOT-227 B,  
miniBLOC**



K = Cathode, A = Anode, G = Gate,  
A/K = Common output

Symbol	Test Conditions	Maximum Ratings
$I_{TRMS}, I_{FRMS}$	$T_{VJ} = T_{VJM}; T_C = 85^\circ\text{C}$	60 A
$I_{TAVM}, I_{FAVM}$	$T_{VJ} = T_{VJM}; T_C = 85^\circ\text{C}; 180^\circ \text{ sine}$	38 A
$I_{TSM}, I_{FSM}$	$T_{VJ} = 45^\circ\text{C}; V_R = 0$	t = 10 ms (50 Hz), sine 500 A
		t = 8.3 ms (60 Hz), sine 440 A
	$T_{VJ} = T_{VJM}; V_R = 0$	t = 10 ms (50 Hz), sine 450 A
		t = 8.3 ms (60 Hz), sine 490 A
$ i^2dt $	$T_{VJ} = 45^\circ\text{C}; V_R = 0$	t = 10 ms (50 Hz), sine 1250 A <sup>2</sup> s
		t = 8.3 ms (60 Hz), sine 1220 A <sup>2</sup> s
	$T_{VJ} = T_{VJM}; V_R = 0$	t = 10 ms (50 Hz), sine 1010 A <sup>2</sup> s
		t = 8.3 ms (60 Hz), sine 1010 A <sup>2</sup> s
$(di/dt)_{cr}$	$T_{VJ} = T_{VJM}; f = 50 \text{ Hz}; t_p = 200 \mu\text{s}; V_D = 2/3 V_{DRM}; I_G = 0.45 \text{ A}$	repetitive, $I_T = 45 \text{ A}$ 100 A/ $\mu\text{s}$
	$di_G/dt = 0.45 \text{ A}/\mu\text{s}$	non repetitive, $I_T = I_{TAVM}$ 500 A/ $\mu\text{s}$
$(dv/dt)_{cr}$	$T_{VJ} = T_{VJM}; R_{GK} = \infty; \text{method 1 (linear voltage rise)}$	$V_{DR} = 2/3 V_{DRM}$ 1000 V/ $\mu\text{s}$
$P_{GM}$	$T_{VJ} = T_{VJM}; t_p = 30 \mu\text{s}$	10 W
	$I_T = I_{TAVM}; t_p = 300 \mu\text{s}$	5 W
$P_{GAV}$		0.5 W
$V_{RGM}$		10 V
$T_{VJ}$		-40...+125 °C
$T_{VJM}$		125 °C
$T_{stg}$		-40...+125 °C
$V_{ISOL}$	50/60 Hz, RMS $I_{ISOL} \leq 1 \text{ mA}$	2500 V~
$M_d$	Mounting torque (M4)	1.5/13 Nm/lb.in.
	Terminal connection torque (M4)	1.5/13 Nm/lb.in.
Weight	Typical including screws	30 g

## Features

- International standard package miniBLOC, SOT-227 B
- Planar passivated chips

## Applications

- DC motor control
- Softstart AC motor controller
- Light, heat and temperature control
- Half controlled rectifier bridge

## Advantages

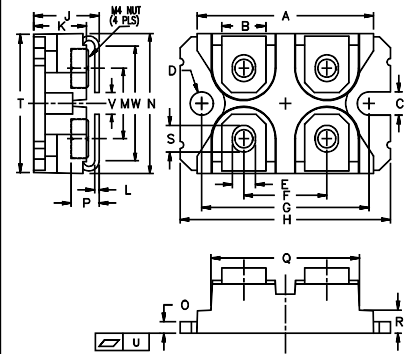
- Space and weight savings
- Simple mounting with two screws
- Improved temperature and power cycling
- Reduced protection circuits

Data according to IEC 60747 refer to a single thyristor/diode unless otherwise stated.  
IXYS reserves the right to change limits, test conditions and dimensions

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Symbol	Test Conditions	Characteristic Values
$I_{RRM}, I_{DRM}$	$T_{VJ} = T_{VJM}; V_R = V_{RRM}; V_D = V_{DRM}$	5 mA
$V_T, V_F$	$I_T, I_F = 80 \text{ A}; T_{VJ} = 25^\circ\text{C}$	1.68 V
$V_{T0}$	For power-loss calculations only ( $T_{VJ} = 125^\circ\text{C}$ )	0.85 V
$r_T$		9.5 mΩ
$V_{GT}$	$V_D = 6 \text{ V}; T_{VJ} = 25^\circ\text{C}$	1.5 V
	$T_{VJ} = -40^\circ\text{C}$	1.6 V
$I_{GT}$	$V_D = 6 \text{ V}; T_{VJ} = 25^\circ\text{C}$	100 mA
	$T_{VJ} = -40^\circ\text{C}$	200 mA
$V_{GD}$	$T_{VJ} = T_{VJM}; V_D = 2/3 V_{DRM}$	0.2 V
$I_{GD}$		5 mA
$I_L$	$T_{VJ} = 25^\circ\text{C}; t_p = 10 \mu\text{s}; V_D = 6 \text{ V}$ $I_G = 0.45 \text{ A}; di_G/dt = 0.45 \text{ A}/\mu\text{s}$	450 mA
$I_H$	$T_{VJ} = 25^\circ\text{C}; V_D = 6 \text{ V}; R_{GK} = \infty$	200 mA
$t_{gd}$	$T_{VJ} = 25^\circ\text{C}; V_D = 1/2 V_{DRM}$ $I_G = 0.45 \text{ A}; di_G/dt = 0.45 \text{ A}/\mu\text{s}$	2 μs
$t_q$	$T_{VJ} = T_{VJM}; I_T = 120 \text{ A}, t_p = 200 \mu\text{s}; -di/dt = 10 \text{ A}/\mu\text{s}$ $V_R = 100 \text{ V}; dv/dt = 20 \text{ V}/\mu\text{s}; V_D = 2/3 V_{DRM}$	typ.150 μs
$R_{thJC}$	per thyristor/diode; DC current	0.6 K/W
$R_{thCH}$		0.1 K/W
$d_s$	Creepage distance on surface	8 mm
$d_A$	Strike distance through air	4 mm
$a$	Maximum allowable acceleration	50 m/s <sup>2</sup>

## miniBLOC, SOT-227 B



M4 screws (4x) supplied

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	38.20	1.489	1.505
J	11.68	12.22	0.460	0.481
K	8.92	9.60	0.351	0.378
L	0.76	0.84	0.030	0.033
M	12.60	12.85	0.496	0.506
N	25.15	25.42	0.990	1.001
O	1.98	2.13	0.078	0.084
P	4.95	5.97	0.195	0.235
Q	26.54	26.90	1.045	1.059
R	3.94	4.42	0.155	0.174
S	4.72	4.85	0.186	0.191
T	24.59	25.07	0.968	0.987
U	-0.05	0.1	-0.002	0.004
V	3.30	4.57	0.130	0.180
W	0.780	0.830	0.031	0.033