imall

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

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Thyristor

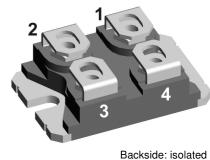
MCD40-16io6

V_{RRM}	= 2x 1600 V		
I _{tav}	=	40 A	
VT	=	1,29 V	

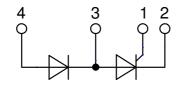
Phase leg

Part number

MCD40-16io6



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

LIXYS

MCD40-16io6

Rectifier				1	Ratings	5	1
Symbol	Definition	Conditions		min.	typ.	max.	Unit
V _{RSM/DSM}	max. non-repetitive reverse/forwa	ard blocking voltage	$T_{VJ} = 25^{\circ}C$			1500	V
V _{RRM/DRM}	max. repetitive reverse/forward b	locking voltage	$T_{VJ} = 25^{\circ}C$			1600	V
I _{R/D}	reverse current, drain current	$V_{R/D} = 1600 V$	$T_{VJ} = 25^{\circ}C$			100	μA
		$V_{R/D} = 1600 V$	$T_{VJ} = 125^{\circ}C$			6	mA
V _T	forward voltage drop	$I_{T} = 40 \text{ A}$	$T_{vJ} = 25^{\circ}C$			1,29	V
		Ι _τ = 80 A				1,61	V
		$I_{T} = 40 \text{ A}$	T _{vJ} = 125°C			1,29	V
		Ι _τ = 80 A				1,70	V
ITAV	average forward current	$T_c = 95^{\circ}C$	T _{vJ} = 150°C			40	A
I _{T(RMS)}	RMS forward current	180° sine				63	A
V _{T0}	threshold voltage		T _{v.i} = 150°C			0,87	V
r _T	slope resistance } for power l	oss calculation only				10,5	mΩ
R _{thJC}	thermal resistance junction to cas	Se				0,7	K/W
R _{thCH}	thermal resistance case to heats				0,10		K/W
P _{tot}	total power dissipation		$T_c = 25^{\circ}C$			180	W
	max. forward surge current	t = 10 ms; (50 Hz), sine	$T_{v,l} = 45^{\circ}C$			500	A
1.01	-	t = 8,3 ms; (60 Hz), sine	$V_{\rm R} = 0 V$			540	A
		t = 10 ms; (50 Hz), sine	T _{v.l} = 150°C			425	A
		t = 8,3 ms; (60 Hz), sine	$V_{B} = 0 V$			460	A
I ² t value for fusing	value for fusing	t = 10 ms; (50 Hz), sine	$T_{\rm VJ} = 45^{\circ}{\rm C}$			1,25	kA²s
	t = 8,3 ms; (60 Hz), sine	$V_{\rm NB} = 0 V$			1,22	1	
		$\frac{t = 0.0 \text{ ms}; (00 \text{ Hz}), \text{ sine}}{t = 10 \text{ ms}; (50 \text{ Hz}), \text{ sine}}$	$T_{\rm VJ} = 150^{\circ}{\rm C}$			905	A ² s
		t = 8,3 ms; (60 Hz), sine	$V_{\rm B} = 0 V$			880	A ² s
C	junction capacitance	$V_{\rm B} = 400 \text{V}$ f = 1 MHz	$T_{VJ} = 25^{\circ}C$		25	000	pF
P _{GM}	· · · · ·	$t_{\rm P} = 30 \mu {\rm s}$	$T_{v_{\rm J}} = 23.0$ $T_{\rm c} = 150^{\circ}{\rm C}$		23	10	W
ГGM	max. gate power dissipation	$t_{\rm P} = 300 \mu {\rm s}$	$T_{\rm C} = 150$ C			5	w
Р		$t_{\rm P} = 300 \mu s$				0,5	W
	average gate power dissipation critical rate of rise of current						1
(di/dt) _{cr}		$T_{VJ} = 150 ^{\circ}C; f = 50 \text{Hz}$ re	•			100	A/μs
		$t_{\rm P} = 200 \mu {\rm s}; di_{\rm G}/dt = 0.3 {\rm A}/\mu {\rm s}; -$				500	A /
(1. (1))			ion-repet., $I_{T} = 40 \text{ A}$				A/μs
(dv/dt) _{cr}	critical rate of rise of voltage	$V = \frac{2}{3} V_{DRM}$	T _{vJ} = 150°C			1000	v/µs
		$R_{GK} = \infty$; method 1 (linear volta					
V _{gt}	gate trigger voltage	$V_{D} = 6 V$	$T_{VJ} = 25^{\circ}C$			1,5	V
_			$T_{VJ} = -40^{\circ}C$			1,6	V
I _{GT}	gate trigger current	$V_{D} = 6 V$	$T_{VJ} = 25^{\circ}C$			100	mA
			$T_{vJ} = -40^{\circ}C$			150	mA
V _{gd}	gate non-trigger voltage	$V_{D} = \frac{2}{3} V_{DRM}$	$T_{VJ} = 150^{\circ}C$			0,2	V
	gate non-trigger current					5	mA
I.	latching current	t _p = 10 μs	$T_{VJ} = 25 °C$			450	mA
		$I_{G} = 0.3 \text{ A}; \ di_{G}/dt = 0.3 \text{ A}/\mu$					
I _H	holding current	$V_{D} = 6 V R_{GK} = \infty$	$T_{VJ} = 25 \degree C$			100	mA
t _{gd}	gate controlled delay time	$V_{\text{D}} = \frac{1}{2} V_{\text{DRM}}$	$T_{VJ} = 25 \degree C$			2	μs
		$I_{G} = 0,3A; di_{G}/dt = 0,3A/\mu$	S				
t _q	turn-off time	$V_{R} = 100 \text{ V}; I_{T} = 40 \text{ A}; \text{ V} = 2000 \text{ A}; \text{ V} = 20000 \text{ A}; \text{ V} = 200000 \text{ A}; \text{ V} = 200000000000000000000000000000000000$	⅔ V _{DRM} T _{VJ} =125 °C		150		μs
		$di/dt = 10 \text{ A}/\mu \text{s} dv/dt = 20 \text{ V}$	//μs t _n = 200 μs				

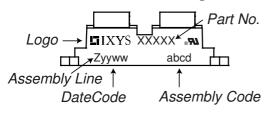
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LIXYS

MCD40-16io6

Package SOT-227B (minibloc)				Ratings				
Symbol	Definition	Conditions			min.	typ.	max.	Unit
I _{RMS}	RMS current	per terminal					150	Α
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				3,2			mm
d _{Spb/Apb}	creepage ustance on suna	ice suiking distance unough an	terminal to backside	8,6	6,8			mm
V	isolation voltage	t = 1 second	50/60 Hz, RMS; IIso∟ ≤ 1 mA		3000			V
		t = 1 minute			2500			V

Product Marking



Ordering	Ordering Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	MCD40-16io6	MCD40-16io6	Tube	10	469750

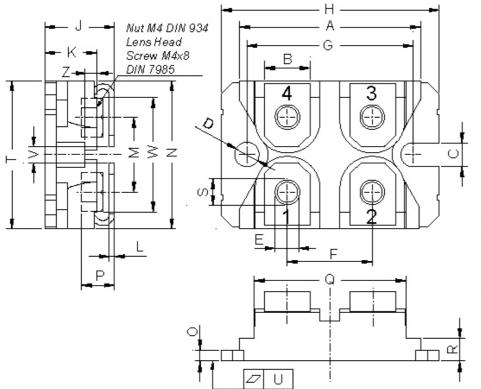
Similar Part	Package	Voltage class
MCD40-12io6	SOT-227B (minibloc)	1200
CMA80PD1600NA	SOT-227B (minibloc)	1600

Equiva	lent Circuits for	Simulation	* on die level	T _{vj} = 150 °C
	R₀	Thyristor		
V _{0 max}	threshold voltage	0,87		V
$\mathbf{R}_{0 \max}$	slope resistance *	9,7		mΩ

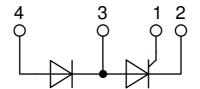
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Outlines SOT-227B (minibloc)



	hdillig	neter	Inc	hes
Dim.				
	min	max	min	max
A	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
К	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
Ρ	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



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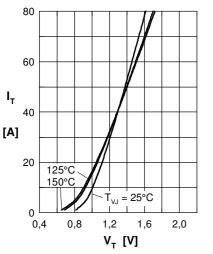
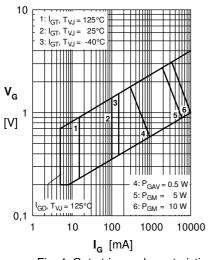
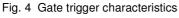


Fig. 1 Forward characteristics





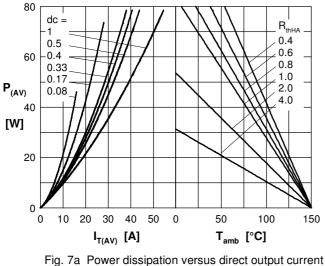
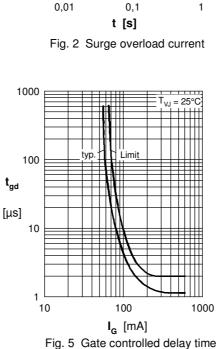


Fig. 7a Power dissipation versus direct output cur Fig. 7b and ambient temperature

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450

400

350

300

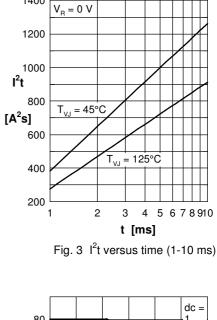
250

200

150

I_{TSM}

[A]



1400

50 Hz, 80% V_{BB}

45°C

 $T_{VJ} = 125^{\circ}C$

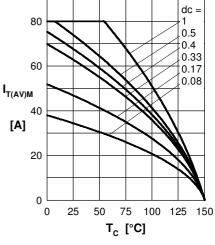


Fig. 6 Max. forward current at case temperature

