Thyristor

V_{RRM}	=	1600 V
I_{TAV}	=	32 A
V_T	=	1.21 V

Single Thyristor

Part number

MCO25-16io1
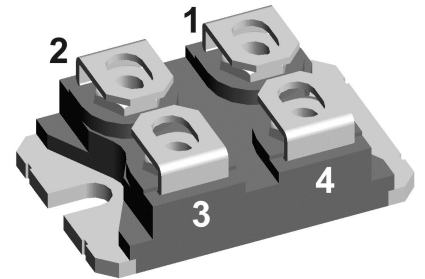
Backside: isolated

$\boxed{U_L}$ E72873

3 ○—▷|◁—○ 1/4

○
2
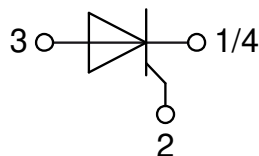
Features / Advantages:
● Thyristor for line frequency
● Planar passivated chip
● Long-term stability

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

Disclaimer Notice

Information furnished is believed to be accurate and reliable. However, users should independently evaluate the suitability of and test each product selected for their own applications. Littelfuse products are not designed for, and may not be used in, all applications. Read complete Disclaimer Notice at www.littelfuse.com/disclaimer-electronics.
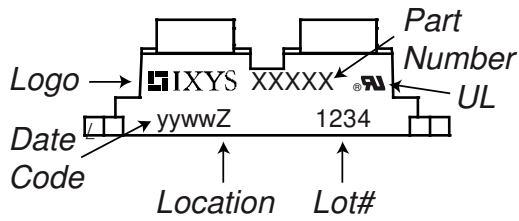
Thyristor

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	$T_{VJ} = 25°C$			50	μA
		$V_{R/D} = 1600$ V	$T_{VJ} = 125°C$			2	mA
V_T	*forward voltage drop*	$I_T = 25$ A	$T_{VJ} = 25°C$			1.23	V
		$I_T = 50$ A				1.50	V
		$I_T = 25$ A	$T_{VJ} = $ °C			1.21	V
		$I_T = 50$ A				1.55	V
I_{TAV}	*average forward current*	$T_C = 80°C$	$T_{VJ} = 150°C$			32	A
$I_{T(RMS)}$	*RMS forward current*	180° sine				50	A
V_{T0}	*threshold voltage* ⎱	*for power loss calculation only*	$T_{VJ} = 150°C$			0.86	V
r_T	*slope resistance* ⎰					13.9	mΩ
R_{thJC}	*thermal resistance junction to case*					1.1	K/W
R_{thCH}	*thermal resistance case to heatsink*				0.3		K/W
P_{tot}	*total power dissipation*	$T_C = 25°C$				110	W
I_{TSM}	*max. forward surge current*	t = 10 ms; (50 Hz), sine	$T_{VJ} = 45°C$			370	A
		t = 8,3 ms; (60 Hz), sine	$V_R = 0$ V			400	A
		t = 10 ms; (50 Hz), sine	$T_{VJ} = 150°C$			315	A
		t = 8,3 ms; (60 Hz), sine	$V_R = 0$ V			340	A
I^2t	*value for fusing*	t = 10 ms; (50 Hz), sine	$T_{VJ} = 45°C$			685	A²s
		t = 8,3 ms; (60 Hz), sine	$V_R = 0$ V			665	A²s
		t = 10 ms; (50 Hz), sine	$T_{VJ} = 150°C$			495	A²s
		t = 8,3 ms; (60 Hz), sine	$V_R = 0$ V			480	A²s
C_J	*junction capacitance*	$V_R = 400$ V f = 1 MHz	$T_{VJ} = 25°C$		16		pF
P_{GM}	*max. gate power dissipation*	$t_P = 30$ μs	$T_C = 150°C$			10	W
		$t_P = 300$ μs				1	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, $I_T = 90$ A				150	A/μs
		$t_P = 200$ μs; $di_G/dt = 0.2$ A/μs;					
		$I_G = 0.2$ A; V = ⅔ V_{DRM} non-repet., $I_T = 30$ 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	$T_{VJ} = 25°C$			1.5	V
			$T_{VJ} = -40°C$			1.6	V
I_{GT}	*gate trigger current*	$V_D = 6$ V	$T_{VJ} = 25°C$			55	mA
			$T_{VJ} = -40°C$			80	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*					5	mA
I_L	*latching current*	$t_p = 10$ μs	$T_{VJ} = 25°C$			150	mA
		$I_G = 0.2$ A; $di_G/dt = 0.2$ A/μs					
I_H	*holding current*	$V_D = 6$ V $R_{GK} = ∞$	$T_{VJ} = 25°C$			100	mA
t_{gd}	*gate controlled delay time*	$V_D = ½ V_{DRM}$	$T_{VJ} = 25°C$			2	μs
		$I_G = 0.2$ A; $di_G/dt = 0.2$ A/μs					
t_q	*turn-off time*	$V_R = 100$ V; $I_T = 30A$; 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	50/60 Hz, RMS; $I_{ISOL} \leq$ 1 mA	3000			V
		t = 1 minute		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

Ordering	Ordering Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	MCO25-16io1	MCO25-16io1	Tube	10	500548

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

Thyristor

$V_{0\ max}$	*threshold voltage*	0.86	V
$R_{0\ max}$	*slope resistance **	12	mΩ

IXYS reserves the right to change limits, conditions and dimensions.   Data according to IEC 60747and per semiconductor unless otherwise specified   20191210c

Outlines   SOT-227B (minibloc)
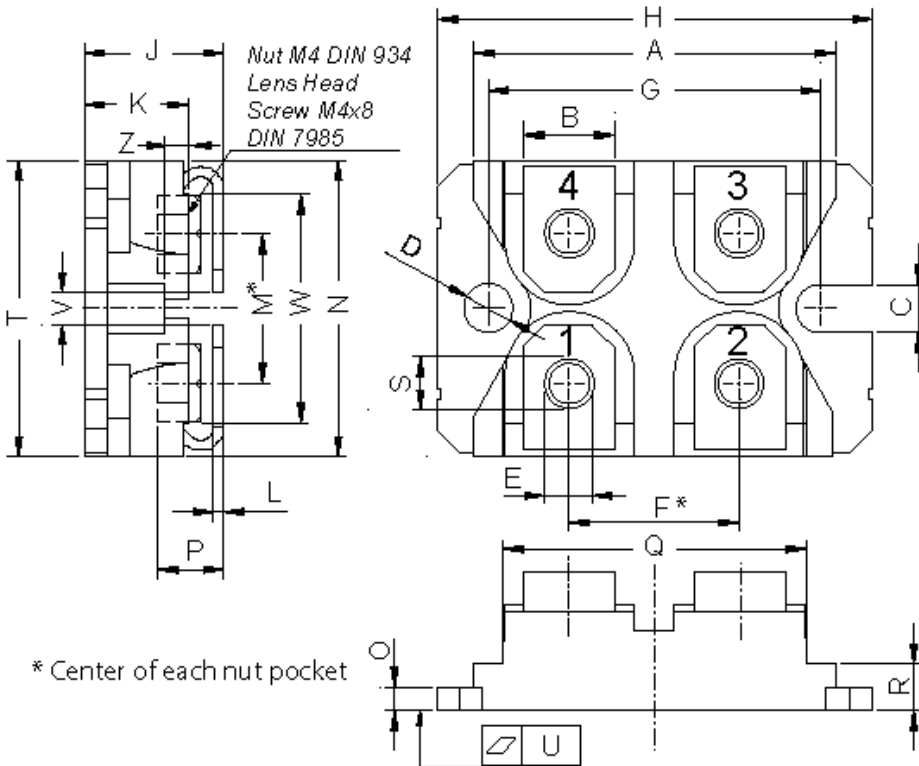
Dim.	Millimeter		Inches	
	min	max	min	max
A	31.50	31.88	1.240	1.255
B	7.80	8.20	0.307	0.323
C	4.09	4.29	0.161	0.169
D	4.09	4.29	0.161	0.169
E	4.09	4.29	0.161	0.169
F	14.91	15.11	0.587	0.595
G	30.12	30.30	1.186	1.193
H	37.80	38.23	1.488	1.505
J	11.68	12.22	0.460	0.481
K	8.92	9.60	0.351	0.378
L	0.74	0.84	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

Nut M4 DIN 934
Lens Head
Screw M4x8
DIN 7985

* Center of each nut pocket

IXYS reserves the right to change limits, conditions and dimensions.   Data according to IEC 60747and per semiconductor unless otherwise specified   20191210c
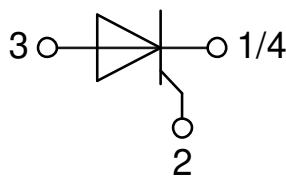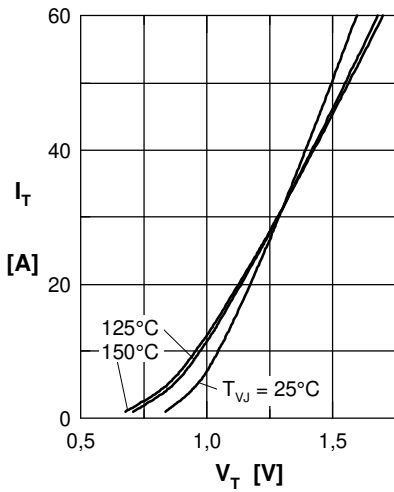
Thyristor

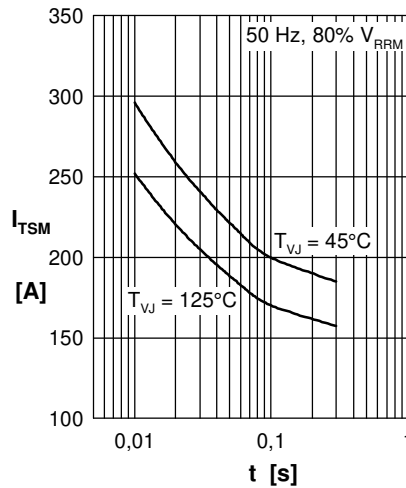Fig. 1 Forward characteristics

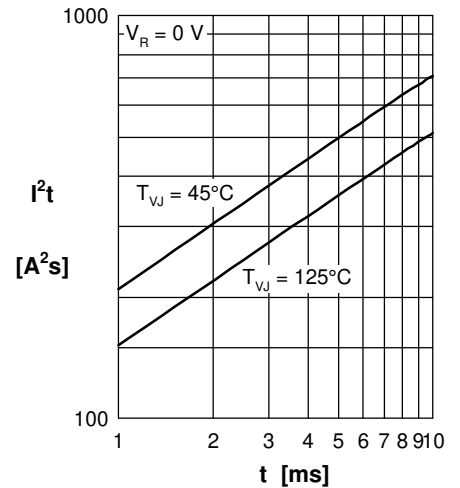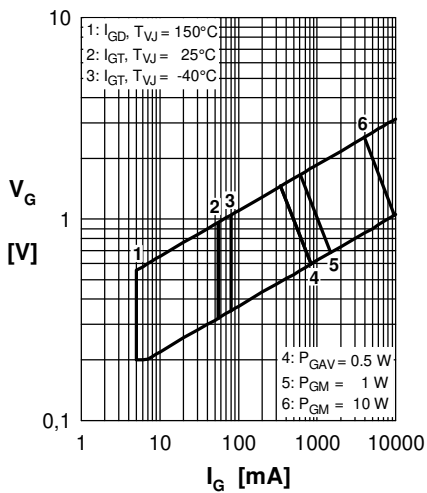Fig. 2 Surge overload current

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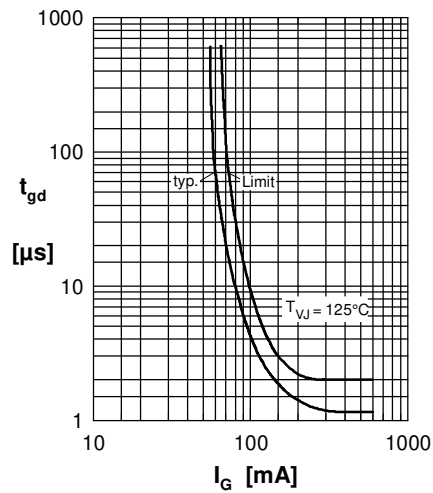

Fig. 4 Gate trigger characteristics

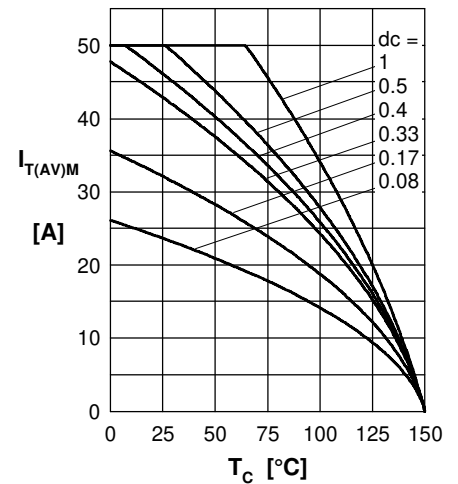Fig. 5 Gate controlled delay time
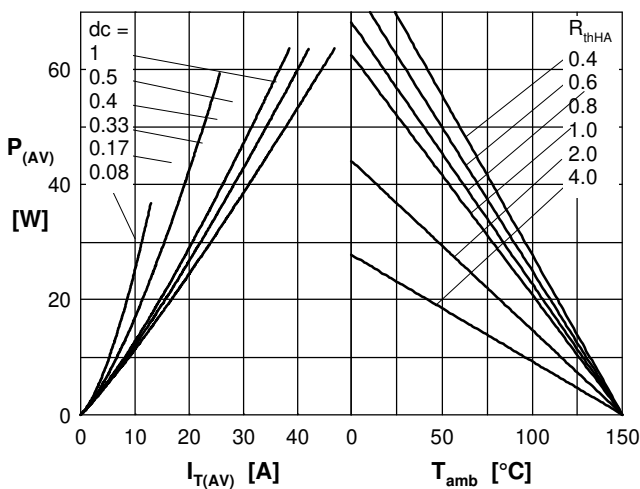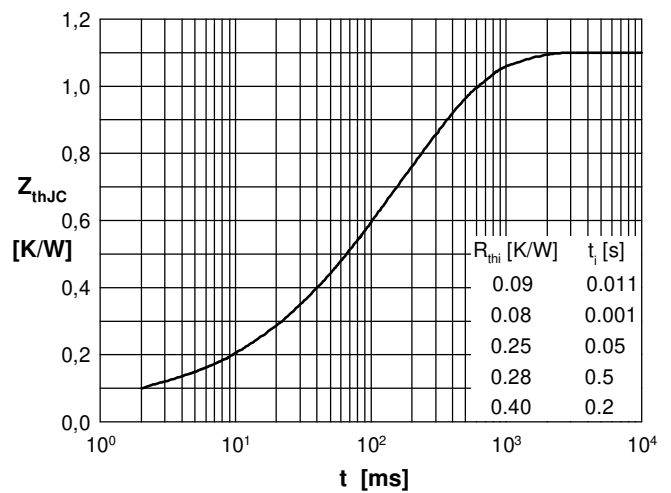

Fig. 6 Max. forward current
at case temperature

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

Fig. 8 Transient thermal impedance junction to case

IXYS reserves the right to change limits, conditions and dimensions.   Data according to IEC 60747and per semiconductor unless otherwise specified   20191210c

X-ON Electronics

Largest Supplier of Electrical and Electronic Components

Click to view similar products for Discrete Semiconductor Modules *category:*

Click to view products by IXYS *manufacturer:*

Other Similar products are found below :

M252511FV DD260N12K-A DD380N16A DD89N1600K-A APT2X21DC60J APT58M80J B522F-2-YEC MSTC90-16 25.163.0653.1 25.163.2453.0 25.163.4253.0 25.190.2053.0 25.194.3453.0 25.320.4853.1 25.320.5253.1 25.326.3253.1 25.326.3553.1 25.330.1653.1 25.330.4753.1 25.330.5253.1 25.334.3253.1 25.334.3353.1 25.350.2053.0 25.352.4753.1 25.522.3253.0 T483C T484C T485F T485H T512F-YEB T513F T514F T554 T612FSE 25.161.3453.0 25.179.2253.0 25.194.3253.0 25.325.1253.1 25.326.4253.1 25.330.0953.1 25.332.4353.1 25.350.1653.0 25.350.2453.0 25.352.1453.0 25.352.1653.0 25.352.2453.0 25.352.5453.1 25.522.3353.0 25.602.4053.0 25.640.5053.0