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Stocking Distributor

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[IXYS Corporation](#)

[MCMA25P1600TA](#)

For any questions, you can email us directly:

sales@integrated-circuit.com



MCMA25P1600TA

Thyristor Module

$$V_{RRM} = 2 \times 1600 \text{ V}$$

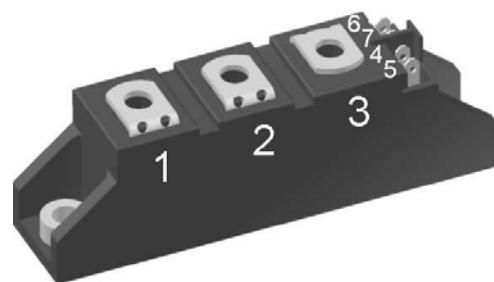
$$I_{TAV} = 25 \text{ A}$$

$$V_T = 1.2 \text{ V}$$

Phase leg

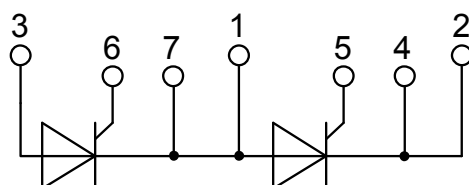
Part number

MCMA25P1600TA



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: TO-240AA

- Isolation Voltage: 4800 V~
- Industry standard outline
- RoHS compliant
- Soldering pins for PCB mounting
- Base plate: DCB ceramic
- Reduced weight
- Advanced power cycling

IXYS

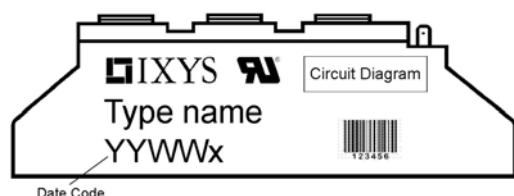
MCMA25P1600TA

Thyristor				Ratings			
Symbol	Definition	Conditions		min.	typ.	max.	Unit
$V_{RSM/DSM}$	max. non-repetitive reverse/forward blocking voltage	$T_{VJ} = 25^{\circ}\text{C}$				1700	V
$V_{RRM/DRM}$	max. repetitive reverse/forward blocking voltage	$T_{VJ} = 25^{\circ}\text{C}$				1600	V
I_{RD}	reverse current, drain current	$V_{R/D} = 1600\text{ V}$	$T_{VJ} = 25^{\circ}\text{C}$			100	μA
		$V_{R/D} = 1600\text{ V}$	$T_{VJ} = 140^{\circ}\text{C}$			4	mA
V_T	forward voltage drop	$I_T = 25\text{ A}$	$T_{VJ} = 25^{\circ}\text{C}$			1.22	V
		$I_T = 50\text{ A}$				1.47	V
		$I_T = 25\text{ A}$	$T_{VJ} = 125^{\circ}\text{C}$			1.20	V
		$I_T = 50\text{ A}$				1.52	V
I_{TAV}	average forward current	$T_C = 85^{\circ}\text{C}$	$T_{VJ} = 140^{\circ}\text{C}$			25	A
$I_{T(RMS)}$	RMS forward current	180° sine				40	A
V_{T0}	threshold voltage	} for power loss calculation only	$T_{VJ} = 140^{\circ}\text{C}$			0.87	V
r_T	slope resistance					13	m Ω
R_{thJC}	thermal resistance junction to case					1.2	K/W
R_{thCH}	thermal resistance case to heatsink				0.20		K/W
P_{tot}	total power dissipation	$T_C = 25^{\circ}\text{C}$				90	W
I_{TSM}	max. forward surge current	$t = 10\text{ ms}; (50\text{ Hz}), \text{ sine}$	$T_{VJ} = 45^{\circ}\text{C}$			400	A
		$t = 8,3\text{ ms}; (60\text{ Hz}), \text{ sine}$	$V_R = 0\text{ V}$			430	A
		$t = 10\text{ ms}; (50\text{ Hz}), \text{ sine}$	$T_{VJ} = 140^{\circ}\text{C}$			340	A
		$t = 8,3\text{ ms}; (60\text{ Hz}), \text{ sine}$	$V_R = 0\text{ V}$			365	A
I^2t	value for fusing	$t = 10\text{ ms}; (50\text{ Hz}), \text{ sine}$	$T_{VJ} = 45^{\circ}\text{C}$			800	A ² s
		$t = 8,3\text{ ms}; (60\text{ Hz}), \text{ sine}$	$V_R = 0\text{ V}$			770	A ² s
		$t = 10\text{ ms}; (50\text{ Hz}), \text{ sine}$	$T_{VJ} = 140^{\circ}\text{C}$			580	A ² s
		$t = 8,3\text{ ms}; (60\text{ Hz}), \text{ sine}$	$V_R = 0\text{ V}$			555	A ² s
C_J	junction capacitance	$V_R = 400\text{ V}$ $f = 1\text{ MHz}$	$T_{VJ} = 25^{\circ}\text{C}$		16		pF
P_{GM}	max. gate power dissipation	$t_p = 30\text{ }\mu\text{s}$	$T_C = 140^{\circ}\text{C}$			10	W
		$t_p = 300\text{ }\mu\text{s}$				5	W
P_{GAV}	average gate power dissipation					0.5	W
$(di/dt)_{cr}$	critical rate of rise of current	$T_{VJ} = 140^{\circ}\text{C}; f = 50\text{ Hz}$ repetitive, $I_T = 75\text{ A}$				150	A/ μs
		$t_p = 200\text{ }\mu\text{s}; di_G/dt = 0.45\text{ A}/\mu\text{s};$ — non-repet., $I_T = 25\text{ A}$				500	A/ μs
$(dv/dt)_{cr}$	critical rate of rise of voltage	$V_D = \frac{2}{3} V_{DRM}$ $T_{VJ} = 140^{\circ}\text{C}$				1000	V/ μs
		$R_{GK} = \infty$; method 1 (linear voltage rise)					
V_{GT}	gate trigger voltage	$V_D = 6\text{ V}$	$T_{VJ} = 25^{\circ}\text{C}$			1.5	V
			$T_{VJ} = -40^{\circ}\text{C}$			1.6	V
I_{GT}	gate trigger current	$V_D = 6\text{ V}$	$T_{VJ} = 25^{\circ}\text{C}$			55	mA
			$T_{VJ} = -40^{\circ}\text{C}$			80	mA
V_{GD}	gate non-trigger voltage	$V_D = \frac{2}{3} V_{DRM}$	$T_{VJ} = 140^{\circ}\text{C}$			0.2	V
I_{GD}	gate non-trigger current					5	mA
I_L	latching current	$t_p = 10\text{ }\mu\text{s}$	$T_{VJ} = 25^{\circ}\text{C}$			150	mA
		$I_G = 0.45\text{ A}; di_G/dt = 0.45\text{ A}/\mu\text{s}$					
I_H	holding current	$V_D = 6\text{ V}$ $R_{GK} = \infty$	$T_{VJ} = 25^{\circ}\text{C}$			100	mA
t_{gd}	gate controlled delay time	$V_D = \frac{1}{2} V_{DRM}$	$T_{VJ} = 25^{\circ}\text{C}$			2	μs
		$I_G = 0.45\text{ A}; di_G/dt = 0.45\text{ A}/\mu\text{s}$					
t_q	turn-off time	$V_R = 100\text{ V}; I_T = 25\text{ A}; V_D = \frac{2}{3} V_{DRM}$ $T_{VJ} = 140^{\circ}\text{C}$ $di/dt = 10\text{ A}/\mu\text{s}; dv/dt = 20\text{ V}/\mu\text{s}; t_p = 200\text{ }\mu\text{s}$			150		μs



MCMA25P1600TA

Package TO-240AA				Ratings			
Symbol	Definition	Conditions		min.	typ.	max.	Unit
I _{RMS}	RMS current	per terminal				60	A
T _{VJ}	virtual junction temperature			-40		140	°C
T _{op}	operation temperature			-40		125	°C
T _{stg}	storage temperature			-40		125	°C
Weight					90		g
M _D	mounting torque			2.5		4	Nm
M _T	terminal torque			2.5		4	Nm
d _{Spp/App}	creepage distance on surface striking distance through air	terminal to terminal	13.0	9.7			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} ≤ 1 mA	4800			V
		t = 1 minute		4000			V



Part number

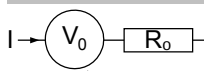
M = Module
 C = Thyristor (SCR)
 M = Thyristor
 A = (up to 1800V)
 25 = Current Rating [A]
 P = Phase leg
 1600 = Reverse Voltage [V]
 TA = TO-240AA-1B

Ordering	Part Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	MCMA25P1600TA	MCMA25P1600TA	Box	6	514474

Equivalent Circuits for Simulation

* on die level

$T_{VJ} = 140^\circ\text{C}$



Thyristor

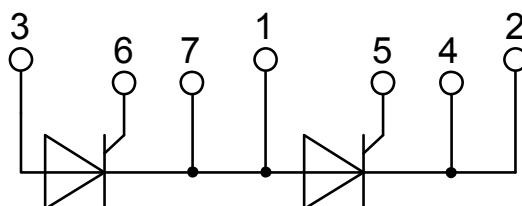
$V_{0\max}$	threshold voltage	0.87	V
$R_{0\max}$	slope resistance *	11.8	mΩ

Technical drawing of a mechanical part, likely a bracket or support, showing dimensions and tolerances. The drawing includes a side view and a top view. Key dimensions include:

- Overall height: $30.2^{+0.8}_{-0.2}$
- Overall width: 65×19
- Internal feature height: $2.8 - 0.8$ (DIN 46244)
- Internal feature width: $7.5^{+0.4}_{-0.1}$
- Other dimensions: 28.5 , 3.5 , 23.5 , $29.7^{+0.2}_{-0.1}$, and 0.25 .

Technical drawing of a 6-pin D-sub connector housing, side view. The drawing shows a long, rectangular housing with six pins. Dimensions are given in millimeters with tolerances. Key dimensions include: overall length 92 ± 0.5 , distance from first pin to last pin 80 ± 0.3 , overall width 20.8 ± 0.25 , pin pitch 2.54 (implied), and individual pin dimensions. The drawing is labeled with 'M5' for the mounting hole and '6' for the pin number.

Type **ZY 200R** (R = Right for pin pair 6/7)



Thyristor

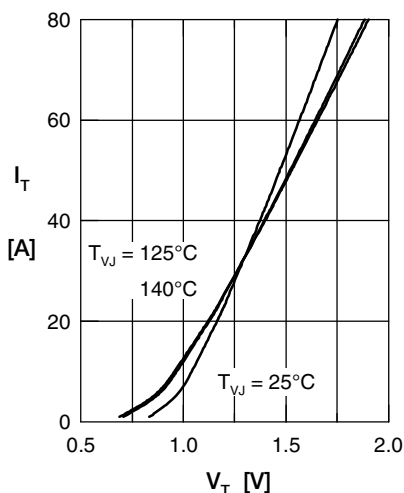


Fig. 1 Forward characteristics

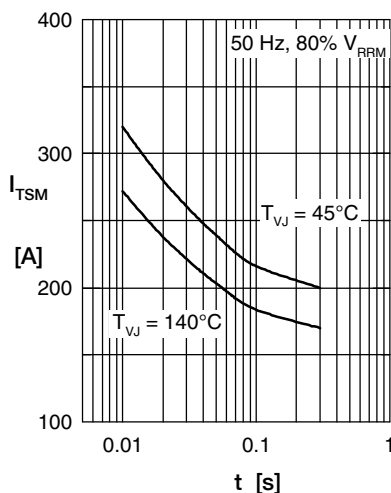


Fig. 2 Surge overload current
 I_{TSM} : crest value, t : duration

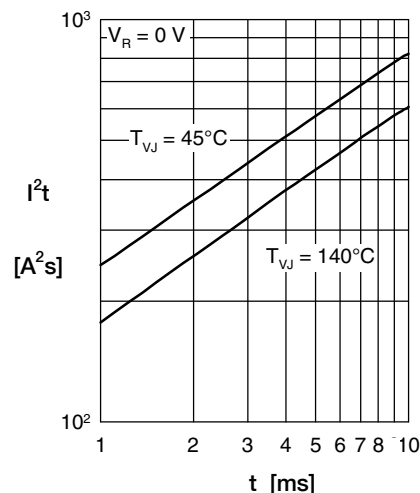


Fig. 3 I^2t versus time (1-10 s)

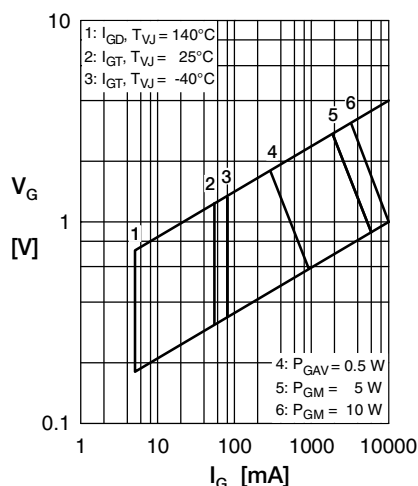


Fig. 4 Gate voltage & gate current

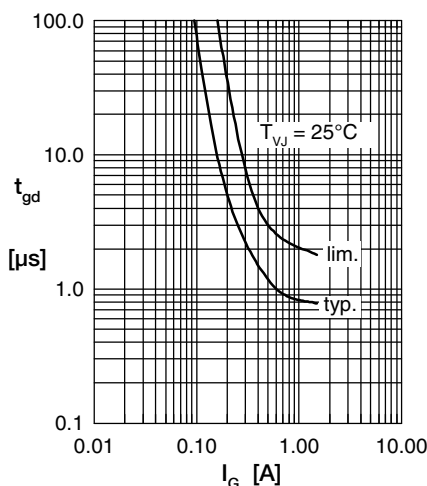


Fig. 5 Gate controlled delay time t_{gd}

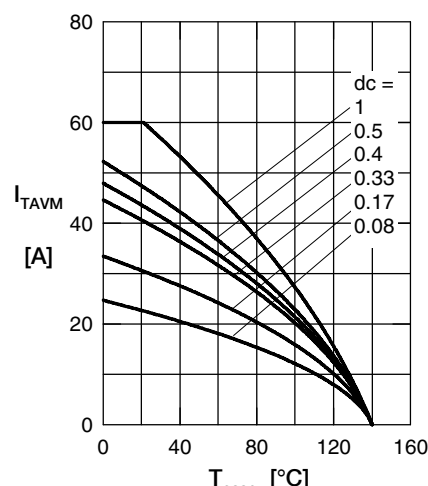


Fig. 6 Max. forward current at case temperature

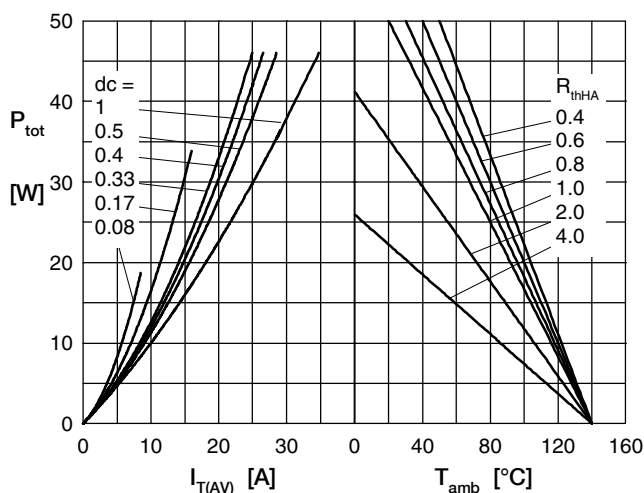


Fig. 7a Power dissipation versus direct output current
Fig. 7b and ambient temperature

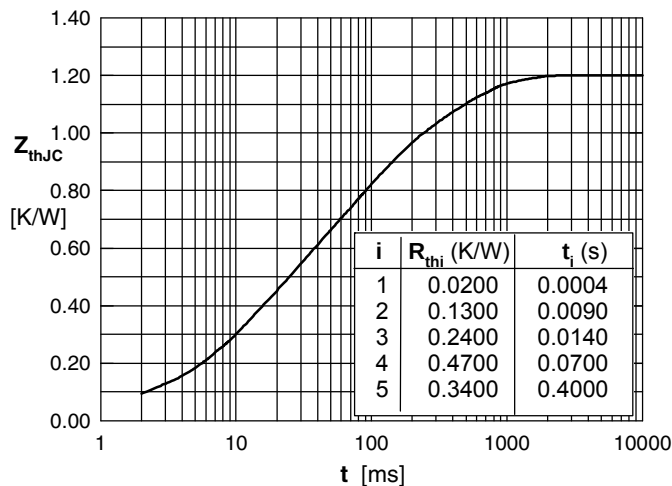


Fig. 8 Transient thermal impedance junction to case