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 Module

V_{RRM}	=	1400 V
I_{TAV}	=	27 A
V_T	=	1,28 V

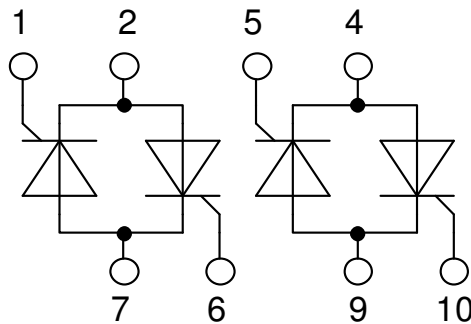## AC Controlling
2~ full-controlled

Part number

VW2x60-14io1
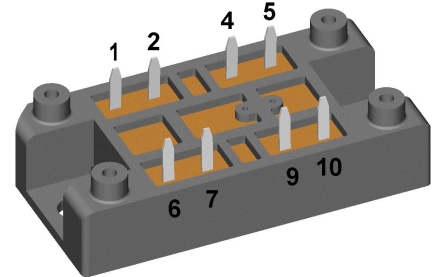
Backside: isolated

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: V1-A-Pack

● Isolation Voltage: 3600 V~
● Industry standard outline
● RoHS compliant
● Soldering pins for PCB mounting
● Height: 17 mm
● 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 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
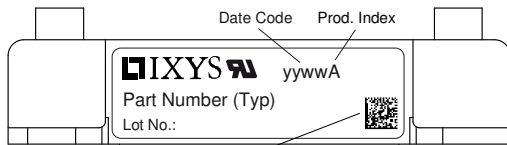- to perform joint risk and quality assessments;
- the conclusion of quality agreements;
- to establish joint measures of an ongoing product survey, and that we may make delivery dependent on the realization of any such measures.

IXYS reserves the right to change limits, conditions and dimensions.　　　　Data according to IEC 60747and per semiconductor unless otherwise specified　　　　20151102c

Rectifier | Ratings

Symbol	Definition	Conditions		min.	typ.	max.	Unit
$V_{RSM/DSM}$	max. non-repetitive reverse/forward blocking voltage	$T_{VJ} =$ 25°C				1500	V
$V_{RRM/DRM}$	max. repetitive reverse/forward blocking voltage	$T_{VJ} =$ 25°C				1400	V
$I_{R/D}$	reverse current, drain current	$V_{R/D} =$ 1400 V	$T_{VJ} =$ 25°C			100	µA
		$V_{R/D} =$ 1400 V	$T_{VJ} =$ 125°C			5	mA
V_T	forward voltage drop	$I_T =$ 40 A	$T_{VJ} =$ 25°C			1,25	V
		$I_T =$ 80 A				1,65	V
		$I_T =$ 40 A	$T_{VJ} =$ 125°C			1,28	V
		$I_T =$ 80 A				1,75	V
I_{TAV}	average forward current	$T_C =$ 85°C	$T_{VJ} =$ 125°C			27	A
I_{RMS}	RMS forward current per phase	180° sine				60	A
V_{T0}	threshold voltage } for power loss calculation only		$T_{VJ} =$ 125°C			0,85	V
r_T	slope resistance					11	mΩ
R_{thJC}	thermal resistance junction to case					0,92	K/W
R_{thCH}	thermal resistance case to heatsink				0,30		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			520	A
		t = 8,3 ms; (60 Hz), sine	$V_R =$ 0 V			560	A
		t = 10 ms; (50 Hz), sine	$T_{VJ} =$ 125°C			440	A
		t = 8,3 ms; (60 Hz), sine	$V_R =$ 0 V			475	A
I²t	value for fusing	t = 10 ms; (50 Hz), sine	$T_{VJ} =$ 45°C			1,35	kA²s
		t = 8,3 ms; (60 Hz), sine	$V_R =$ 0 V			1,31	kA²s
		t = 10 ms; (50 Hz), sine	$T_{VJ} =$ 125°C			970	A²s
		t = 8,3 ms; (60 Hz), sine	$V_R =$ 0 V			940	A²s
C_J	junction capacitance	$V_R =$ 400 V f = 1 MHz	$T_{VJ} =$ 25°C		64		pF
P_{GM}	max. gate power dissipation	$t_P =$ 30 µs	$T_C =$ 125°C			10	W
		$t_P =$ 300 µs				5	W
P_{GAV}	average gate power dissipation					0,5	W
$(di/dt)_{cr}$	critical rate of rise of current	$T_{VJ} =$ 125°C; f = 50 Hz repetitive, $I_T =$ 45 A				100	A/µs
		$t_P =$ 200 µs; $di_G/dt =$ 0,45 A/µs;					
		$I_G =$ 0,45 A; V = ⅔ V_{DRM} non-repet., $I_T =$ 27 A				500	A/µs
$(dv/dt)_{cr}$	critical rate of rise of voltage	V = ⅔ V_{DRM}	$T_{VJ} =$ 125°C			1000	V/µs
		$R_{GK} = \infty$; 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			100	mA
			$T_{VJ} =$ -40°C			200	mA
V_{GD}	gate non-trigger voltage	$V_D =$ ⅔ V_{DRM}	$T_{VJ} =$ 125°C			0,2	V
I_{GD}	gate non-trigger current					5	mA
I_L	latching current	$t_p =$ 10 µs	$T_{VJ} =$ 25°C			450	mA
		$I_G =$ 0,45 A; $di_G/dt =$ 0,45 A/µs					
I_H	holding current	$V_D =$ 6 V $R_{GK} = \infty$	$T_{VJ} =$ 25°C			200	mA
t_{gd}	gate controlled delay time	$V_D =$ ½ V_{DRM}	$T_{VJ} =$ 25°C			2	µs
		$I_G =$ 0,45 A; $di_G/dt =$ 0,45 A/µs					
t_q	turn-off time	$V_R =$ 100 V; $I_T =$ 20 A; V = ⅔ V_{DRM} $T_{VJ} =$ 100 °C			150		µs
		di/dt = 10 A/µs dv/dt = 15 V/µs $t_p =$ 200 µs					

Package   V1-A-Pack

			Ratings			
Symbol	**Definition**	**Conditions**	**min.**	**typ.**	**max.**	**Unit**
I_{RMS}	*RMS current*	per terminal			100	A
T_{VJ}	*virtual junction temperature*		-40		125	°C
T_{op}	*operation temperature*		-40		100	°C
T_{stg}	*storage temperature*		-40		125	°C
Weight				37		g
M_D	*mounting torque*		2		2,5	Nm
$d_{Spp/App}$	*creepage distance on surface	striking distance through air*	terminal to terminal	6,0			mm
$d_{Spb/Apb}$		terminal to backside	12,0			mm
V_{ISOL}	*isolation voltage*	t = 1 second	3600			V
		t = 1 minute	3000			V

(condition: 50/60 Hz, RMS; $I_{ISOL} \leq 1$ mA)

Date Code   Prod. Index

IXYS ℝ❯ yywwA
Part Number (Typ)
Lot No.:

Data Matrix: *Typ* (1-19), DC+*Prod.Index* (20-25), *FKT#* (26-31)
leer (33), *lfd.#* (33-36)

Ordering	Ordering Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	VW2x60-14io1	VW2x60-14io1	Blister	24	468339

Equivalent Circuits for Simulation   ** on die level* $T_{VJ} = 125\,°C$
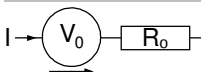
I → (V₀) → [R₀]   **Thyristor**

$V_{0\ max}$	*threshold voltage*	0,85	V
$R_{0\ max}$	*slope resistance **	8,5	mΩ

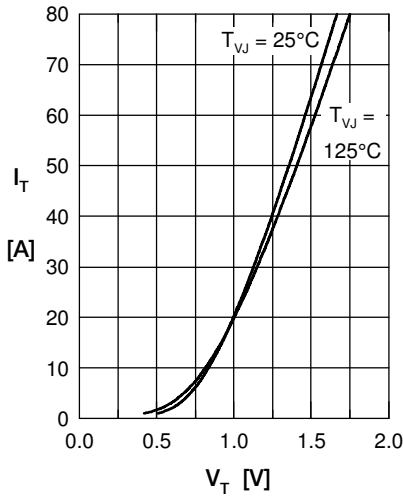
IXYS
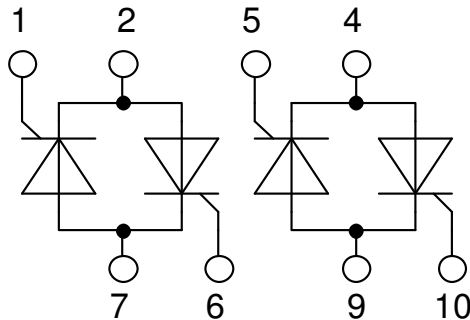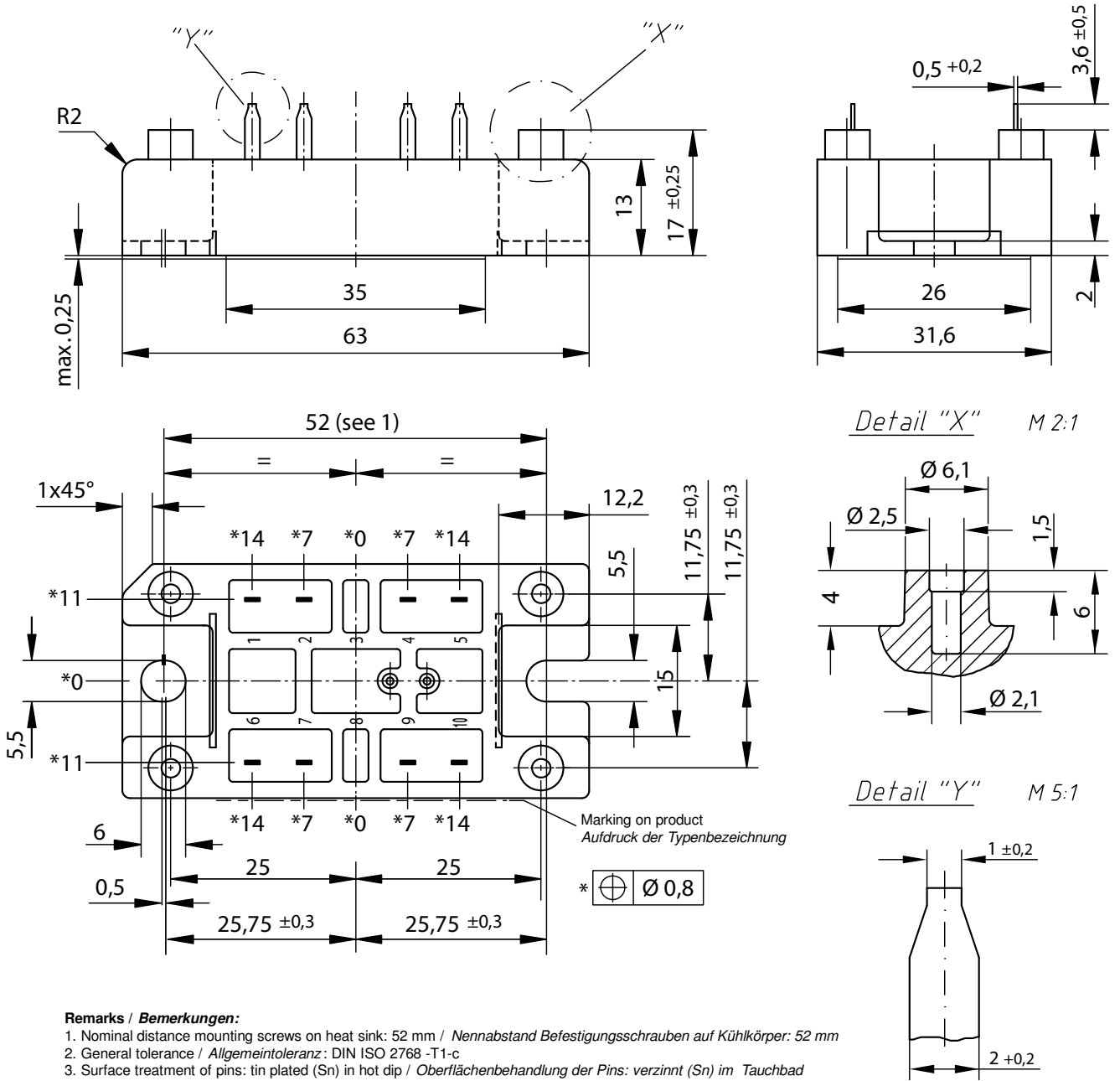
Thyristor

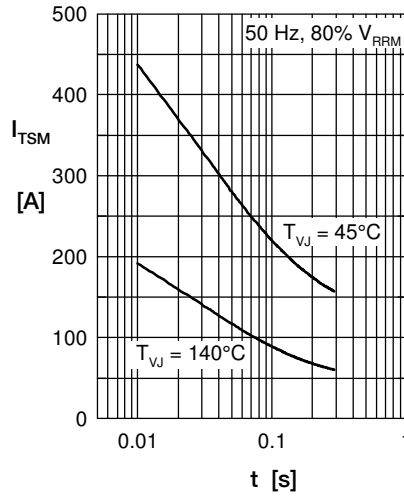Fig. 1 Forward characteristics

Fig. 2 Surge overload current
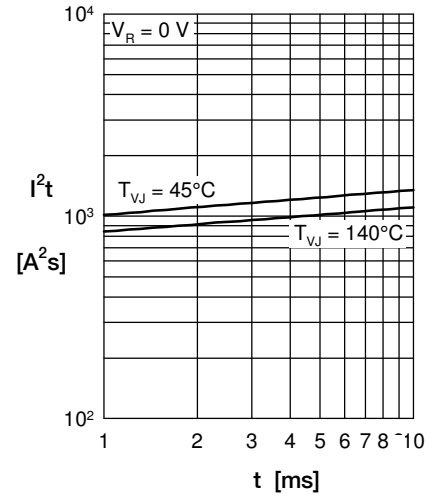I_{TSM}: crest value, t: duration
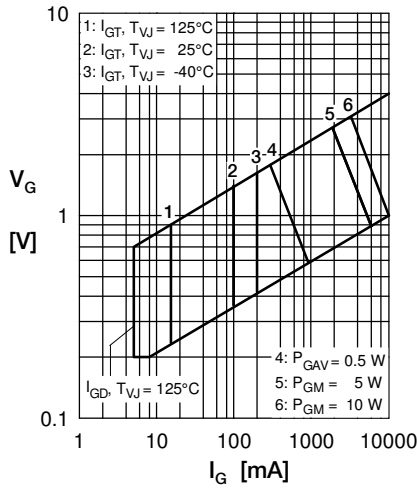
Fig. 3 I^2t versus time (1-10 s)

Fig. 4 Gate voltage & gate current

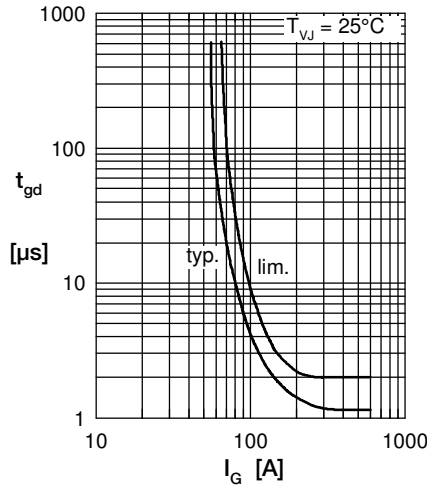Fig. 5 Gate controlled delay time t_{gd}
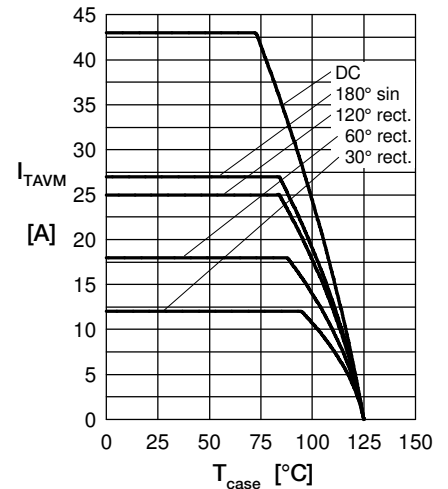
Fig. 6 Max. forward current at case temperature

Z_{thJK} [K/W]	t_i [s]
0.021	0.003
0.003	0.022
0.940	0.191
0.226	0.450

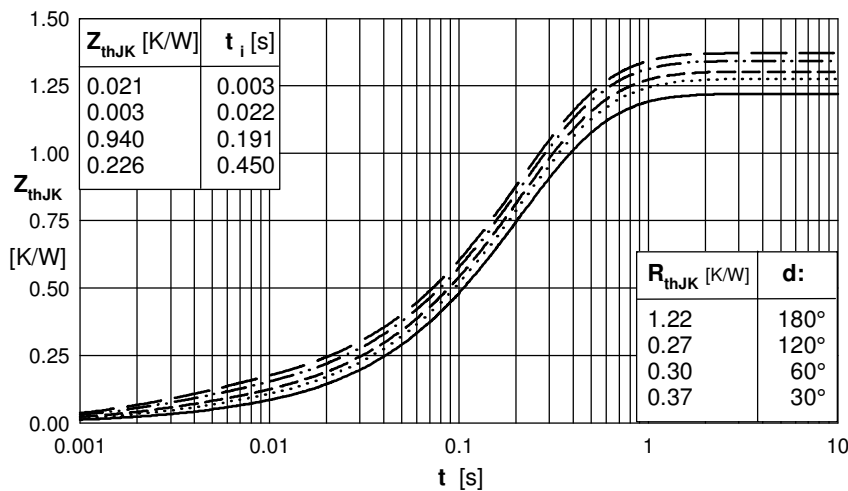| R_{thJK} [K/W]	d:
1.22	180°
0.27	120°
0.30	60°
0.37	30°

Fig. 7 Transient thermal impedance junction to heatsink (per thyristor)
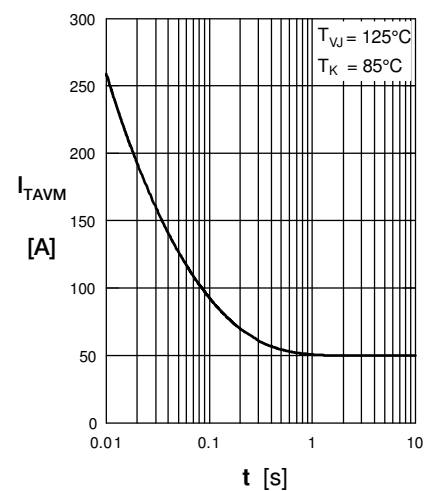
Fig. 8 Rated RMS current vs. time (360° conduction)

IXYS reserves the right to change limits, conditions and dimensions.　　Data according to IEC 60747and per semiconductor unless otherwise specified　　20151102c
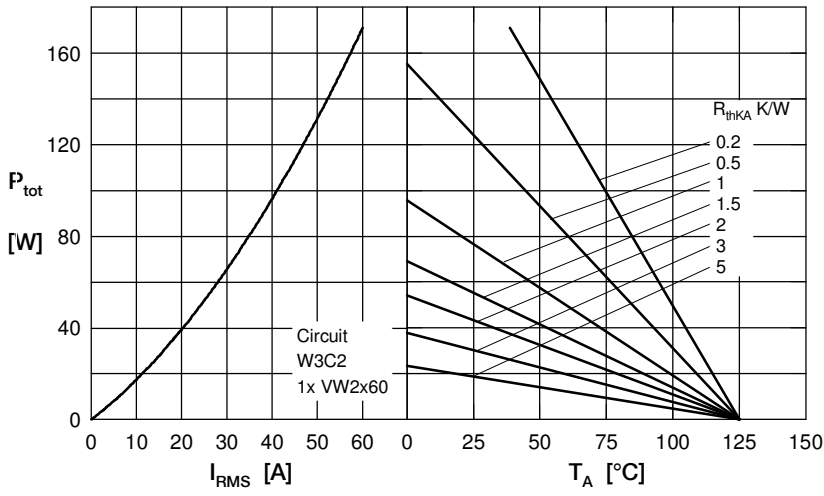
Rectifier

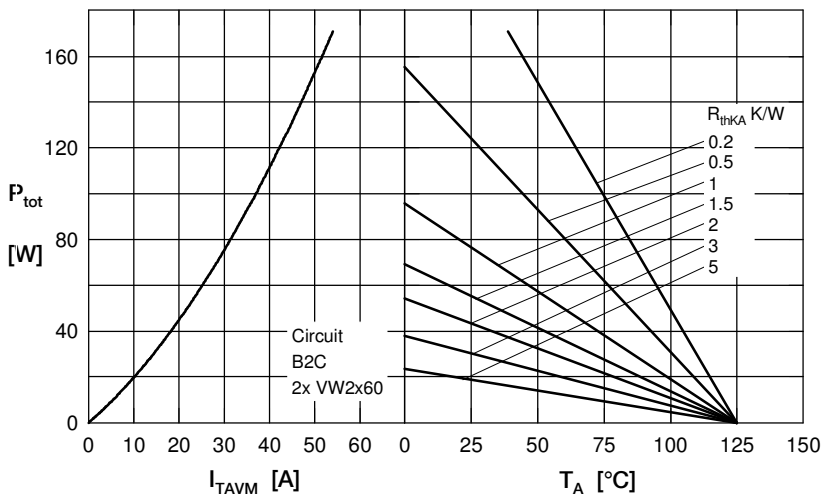Fig. 9 Load current capability for two phase AC controller

Fig. 10 Power dissipation vs. direct output current and ambient temperature
cyclo converter, four quadrant operation