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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!



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Thyristor Module

 V_{RRM} 1600 V

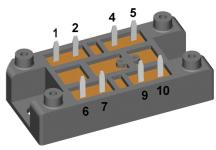
27 A

 V_{T} 1,28 V

AC Controlling 2~ full-controlled

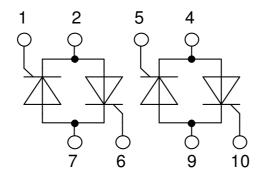
Part number

VW2x60-16io1



Backside: isolated





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 60747 and per semiconductor unless otherwise specified

20151102c



Rectifier					Ratings			
Symbol	Definition	Conditions		min.	typ.	max.	Un	
V _{RSM/DSM}	max. non-repetitive reverse/forwar	rd blocking voltage	$T_{VJ} = 25^{\circ}C$			1700		
V _{RRM/DRM}	max. repetitive reverse/forward blo	ocking voltage	$T_{VJ} = 25^{\circ}C$			1600		
I _{R/D}	reverse current, drain current	$V_{R/D} = 1600 \text{ V}$	$T_{VJ} = 25^{\circ}C$			100	μ	
		$V_{R/D} = 1600 \text{ V}$	$T_{VJ} = 125^{\circ}C$			5	m	
V _T	forward voltage drop	$I_T = 40 \text{ A}$	$T_{VJ} = 25^{\circ}C$			1,25		
		$I_T = 80 A$				1,65		
		$I_T = 40 \text{ A}$	T _{VJ} = 125°C			1,28		
		I _T = 80 A				1,75		
I _{TAV}	average forward current	$T_c = 85^{\circ}C$	$T_{VJ} = -40$ °C			27		
I _{RMS}	RMS forward current per phase	180° sine				60		
V _{T0}	threshold voltage		T _{v1} = -40°C			0,85		
r _T	slope resistance } for power lo	ss calculation only	VO			11	m!	
R _{thJC}	thermal resistance junction to case	2				0,92	!	
R _{thCH}	thermal resistance case to heatsir				0,30	*,*=	K/V	
P _{tot}	total power dissipation	**	T _C = 25°C		0,00	110	٧	
	max. forward surge current	t = 10 ms; (50 Hz), sine	$T_{VJ} = 45^{\circ}C$			520		
I _{TSM}	max. Torward surge surrem	t = 8.3 ms; (60 Hz), sine	$V_R = 0 V$			560		
		t = 6,5 ms, (60 Hz), sine t = 10 ms; (50 Hz), sine	$V_R = 0 V$ $T_{VJ} = -40 ^{\circ}C$			440		
		, ,				_	į	
In.	value for frains	t = 8,3 ms; (60 Hz), sine	$V_R = 0 V$			475	1.00	
l²t	value for fusing	t = 10 ms; (50 Hz), sine	$T_{VJ} = 45^{\circ}C$			1,35	kA ²	
		t = 8,3 ms; (60 Hz), sine	$V_R = 0 V$			1,31	<u> </u>	
		t = 10 ms; (50 Hz), sine	$T_{VJ} = -40$ °C			970	A ²	
		t = 8,3 ms; (60 Hz), sine	$V_R = 0 V$			940	A ²	
C _J	junction capacitance	$V_R = 400 V$ f = 1 MHz	$T_{VJ} = 25^{\circ}C$		64		р	
P_{GM}	max. gate power dissipation	t _P = 30 μs	$T_{\rm C} = -40^{\circ} \rm C$			10	٧	
		$t_{P} = 300 \mu s$				5	٧	
P_{GAV}	average gate power dissipation					0,5	٧	
(di/dt) _{cr}	critical rate of rise of current	$T_{VJ} = 125 ^{\circ}\text{C}; f = 50 \text{ Hz}$ re	petitive, $I_T = 45 A$			100	A/μ	
	$t_P = 200 \mu s; di_G/dt = 0.45 A/\mu s;$							
		$I_{G} = 0.45 \text{ A}; V = \frac{2}{3} V_{DRM}$ no	on-repet., $I_T = 27 \text{ A}$			500	A/μ	
(dv/dt) _{cr}	critical rate of rise of voltage	$V = \frac{2}{3} V_{DRM}$	T _{vJ} = 125°C			1000	V/μ	
		R _{GK} = ∞; method 1 (linear volta	ge rise)				 	
V _{GT}	gate trigger voltage	$V_D = 6 \text{ V}$	$T_{VJ} = 25^{\circ}C$			1,5	,	
		_	$T_{VJ} = -40$ °C			1,6	,	
I _{GT}	gate trigger current	$V_D = 6 V$	$T_{VJ} = 25^{\circ}C$			100	m	
-01			$T_{VJ} = -40$ °C			200	m	
V _{GD}	gate non-trigger voltage	$V_D = \frac{2}{3} V_{DRM}$	$T_{VJ} = 125^{\circ}C$			0,2	,,,,,	
I _{GD}	gate non-trigger current	• В — 73 • Внм	. v3 — 120 G			5	m	
'GD 	latching current	t _p = 10 μs	T _{vJ} = 25°C			450	m	
IL.	laterling current	r				430	1117	
	h alalia a a coma at	$I_G = 0.45 \text{ A}; \text{ di}_G/\text{dt} = 0.45 \text{ A}/\mu\text{s}$				000		
I _H	holding current	$V_D = 6 V R_{GK} = \infty$	$T_{VJ} = 25^{\circ}C$			200	m	
t _{gd}	gate controlled delay time	$V_D = \frac{1}{2} V_{DRM}$	$T_{VJ} = 25$ °C			2	μ	
		$I_{\rm G} = 0.45{\rm A}; {\rm di_G/dt} = 0.45{\rm A/\mu s}$						
t _q	turn-off time	$V_R = 100 \text{ V}; I_T = 20 \text{ A}; V = \frac{2}{3}$			150		μ	
		$di/dt = 10 A/\mu s dv/dt = 15 V/$	$\mu s t_{p} = 200 \mu s$	1			1	



Package V1-A-Pack				Ratings			
Symbol	Definition	Conditions		min.	typ.	max.	Unit
I _{RMS}	RMS current	per terminal				100	Α
T _{VJ}	virtual junction temperature			-40		-40	°C
T _{op}	operation temperature			-40		-65	°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	50/60 Hz, RMS; IISOL ≤ 1 mA	3600			٧
		t = 1 minute		3000			٧



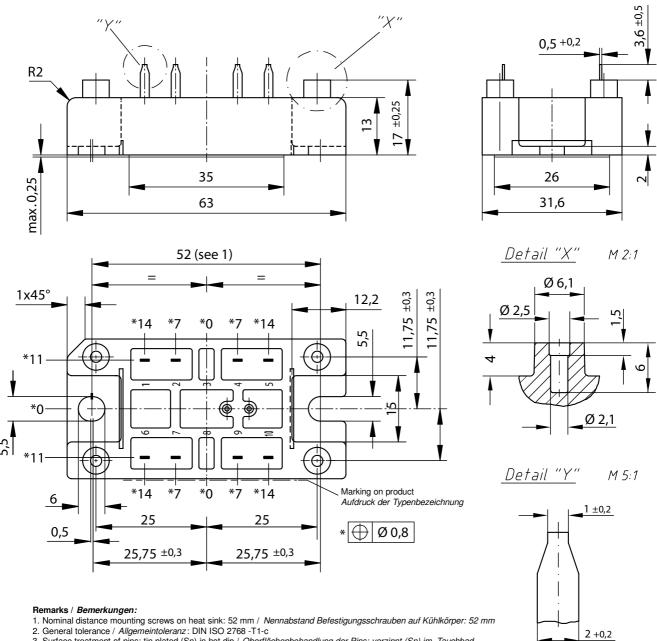
Data Matrix: Typ (1-19), DC+Prod.Index (20-25), FKT# (26-31) leer (33), lfd.# (33-36)

Ordering	Ordering Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	VW2x60-16io1	VW2x60-16io1	Blister	24	471410

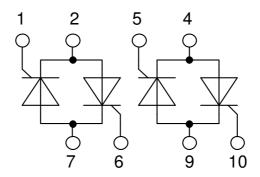
Equivalent Circuits for Simulation			* on die level	$T_{VJ} = -40 ^{\circ}C$
$I \rightarrow V_0$	R_0	Thyristor		
V _{0 max}	threshold voltage	0,85		V
$R_{0 \; \text{max}}$	slope resistance *	8,5		$m\Omega$



Outlines V1-A-Pack



- General tolerance / Allgemeintoleranz: DIN ISO 2768 -T1-c
 Surface treatment of pins: tin plated (Sn) in hot dip / Oberflächenbehandlung der Pins: verzinnt (Sn) im Tauchbad





Thyristor

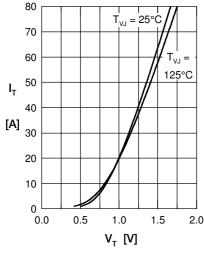


Fig. 1 Forward characteristics

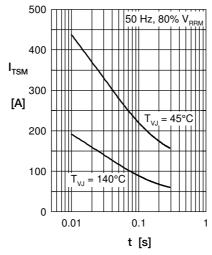


Fig. 2 Surge overload current I_{TSM} : crest value, t: duration

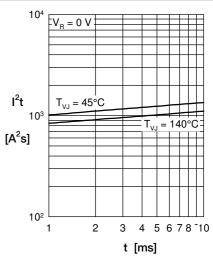


Fig. 3 I²t versus time (1-10 s)

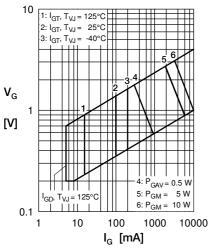


Fig. 4 Gate voltage & gate current

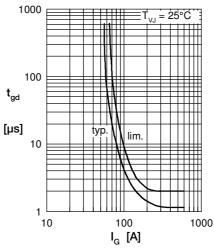


Fig. 5 Gate controlled delay time t_{ad}

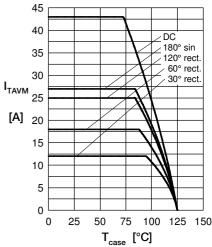


Fig. 6 Max. forward current at case temperature

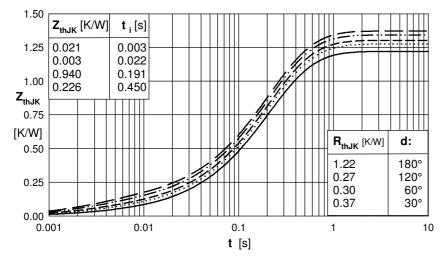


Fig. 7 Transient thermal impedance junction to heatsink (per thyristor)

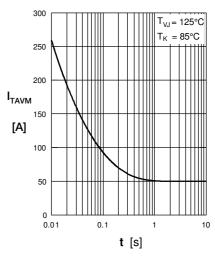


Fig. 8 Rated RMS current vs. time (360° conduction)



Rectifier

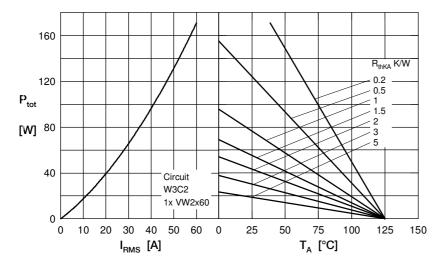


Fig. 9 Load current capability for two phase AC controller

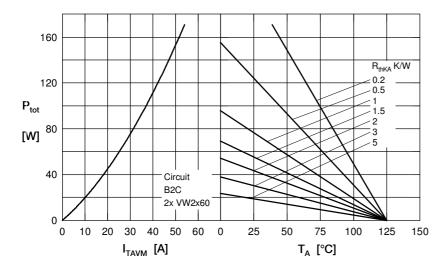


Fig. 10 Power dissipation vs. direct output current and ambient temperature cyclo converter, four quadrant operation