

Isolated Base Power Modules

Available as DOUBLE THYRISTOR, THYRISTOR/DIODE, DIODE/THYRISTOR, DOUBLE DIODE. Features compression mounted ceramic units ensuring hermeticity. Isolation 2.5KV RMS using non-hazardous materials. Integral water cooled unit available.

Ratings	Unless otherwise indicated	T _J 130°C	Maximum Limits						Units	
			04	06	08	10	12	14		16
V _{DRM}	Voltage Codes									
V _{DSM}	Repetitive peak off-state voltage		400	600	800	1000	1200	1400	1600	V
V _{RRM}	Non-repetitive peak off-state voltage		400	600	800	1000	1200	1400	1600	V
V _{RRM}	Repetitive peak reverse voltage		400	600	800	1000	1200	1400	1600	V
V _{RSM}	Non-repetitive peak reverse voltage		500	700	900	1100	1300	1500	1700	V

I _{T(AV)}	Average on-state current (thyristor)	Half sine wave T _B = 85°C	250	A
I _{T(AV)}	Average on-state current (thyristor)	Half sine wave T _B = 73°C	300	A
I _{F(AV)}	Average forward current (diode)	Half sine wave T _B = 85°C	280	A
I _{T(RMS)}	R.M.S. on-state current	As AC switch T _B = 85°C	555	A
I _{T(RMS)}	R.M.S. on-state current	As AC switch - water cooled	755/640*	A
I _{TSM/FSM}	Peak one-cycle surge	10ms duration, 100% V _{RRM} re-applied Thyristor/diode	7.5/11.0	KA
I _{TSM/FSM}	(non-repetitive) on-state and forward current	10ms duration, no voltage re-applied Thyristor/diode	9.5/12.2	KA
I ² t	Maximum permissible surge energy (thyristor)	10ms duration, no voltage re-applied	451 × 10 ³	A ² s
I ² t	Maximum permissible surge energy (diode)	10ms duration, no voltage re-applied	744 × 10 ³	A ² s
V _{RGIM}	Peak reverse gate voltage		5	V
P _{G(AV)}	Average gate power		2	W
P _{GM}	Peak gate power	100µs pulse width	100	W
dv/dt	Rate of rise of off-state voltage	To 80% V _{DRM} gate open-circuit	500	V/µs
di/dt	Rate of rise of on-state current - repetitive	Gate drive 20 volts, 20 ohms with t _r ≤ 1µs. Anode voltage ≤ 80% V _{DRM}	500	A/µs
T _j	Operating temperature range		-40 to +130	°C
T _{stg}	Storage temperature range		-40 to +130	°C

* Inlet water 25°C/45°C, Flow rate 4.5 L/Min

Characteristics	Unless otherwise indicated	T _J 130°C		Units
V _{TM/FM}	Peak on-state and forward voltage	At 785/880A Thyristor/diode	1.31/1.16	V
V _o	Forward conduction threshold voltage	Thyristor/diode	0.90/0.87	V
r	Forward conduction slope resistance	Thyristor/diode	0.52/0.33	mΩ
I _{DRM}	Repetitive peak off-state current	At V _{DRM}	50	mA
I _{RRM}	Repetitive peak reverse current	At V _{RRM}	50	mA
I _{GT}	Maximum gate current required to fire all devices	At 25°C, V _A = 10V, I _A = 1A	150	mA
V _{GT}	Maximum gate voltage required to fire all devices		3.0	V
I _H	Maximum holding current		500	mA
V _{GD}	Maximum gate voltage which will not trigger any device		0.25	V
R _{th(j-b)}	Thermal resistance, junction to base	Per module DC, half sine	0.0735	°C/W
R _{th(b-s)}	Thermal resistance, base to heat sink	Per module	0.02	°C/W

Ordering Information (Please quote device code as explained below - 11 digits)

WK	•	-	•	•
Fixed	Variable See back page	250	Voltage Code	Water Cooled W

Example: WKT250 - 12, Double Thyristor, V_{DRM/RRM} 1200 Volts.

Figure 1. Power Loss Characteristics – Sine Wave, per Thyristor

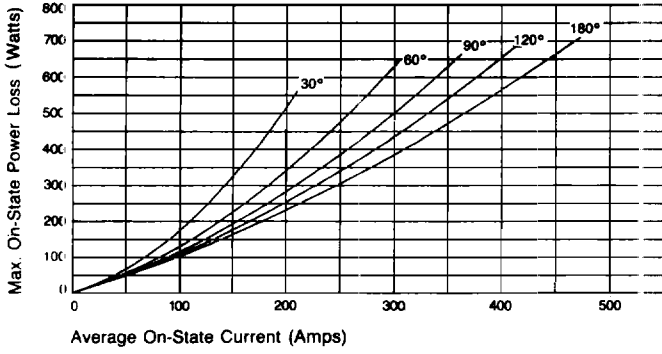


Figure 2. Base Temperature Ratings – Sine Wave, per Thyristor

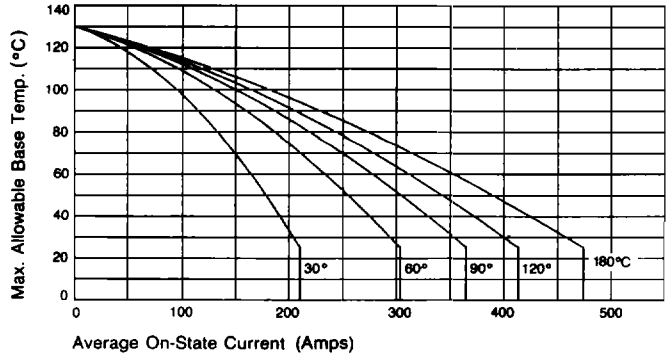


Figure 3. Power Loss Characteristics – Square Wave, per Thyristor

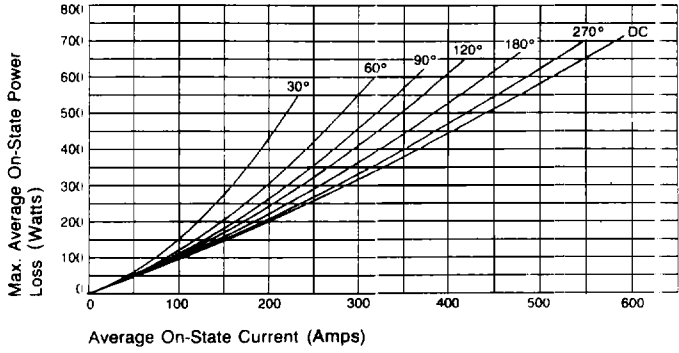


Figure 4. Base Temperature Ratings – Square Wave, per Thyristor

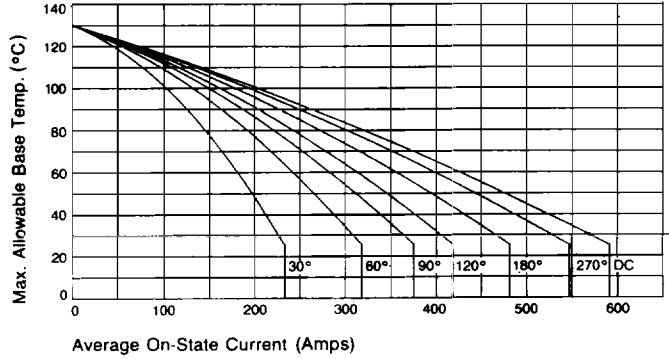


Figure 5. Power Loss Characteristics – Sine Wave, per Diode

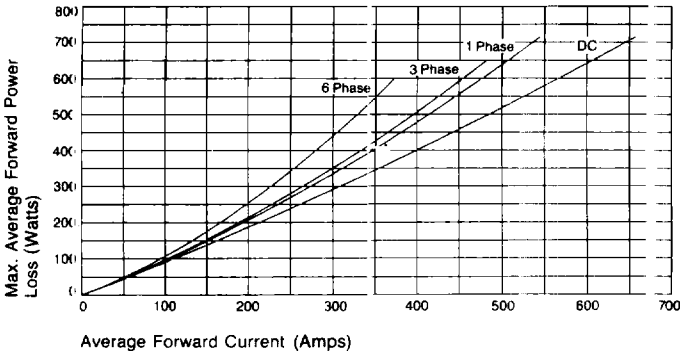


Figure 6. Base Temperature Ratings – Sine Wave, per Diode

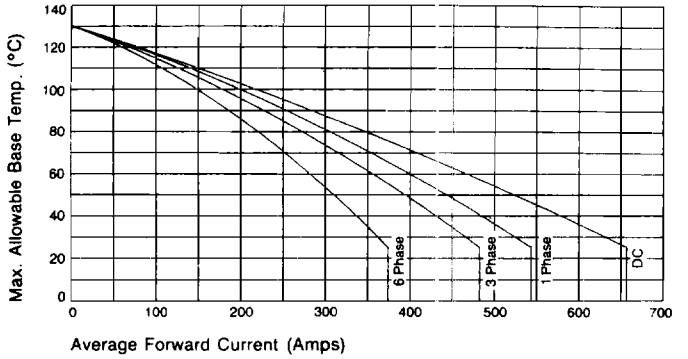


Figure 7. Maximum Instantaneous On-State Characteristics – Thyristor Tj. 130°C.

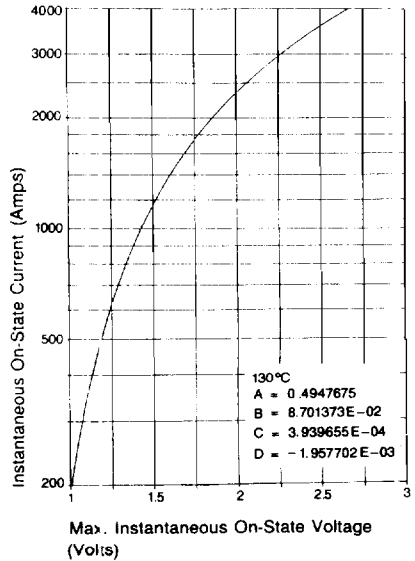


Figure 8. Maximum Instantaneous Forward Characteristics – Diode Tj. 130°C.

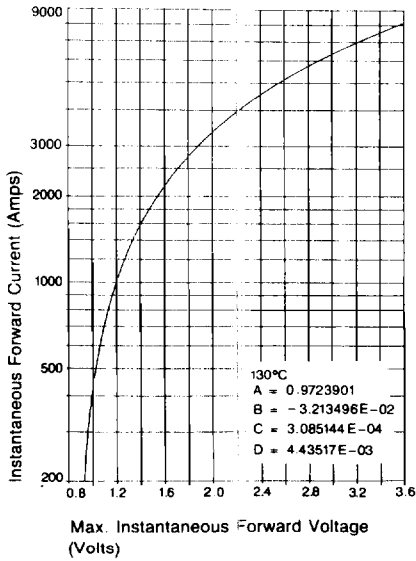


Figure 9. Transient Thermal Impedance, Junction To Base. All Types (per Path)

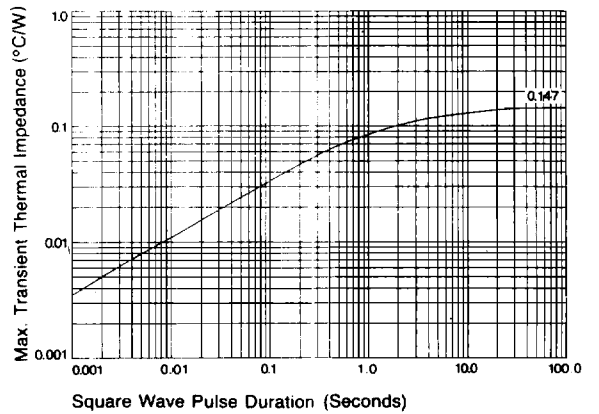


Figure 10. Non-repetitive Surge Current Ratings Thyristor $T_J 130^\circ\text{C}$.

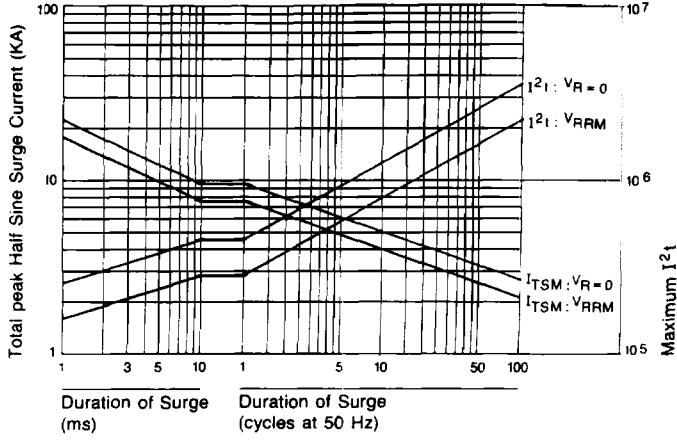


Figure 11. Non-repetitive Surge Current Ratings. Diode $T_J 130^\circ\text{C}$.

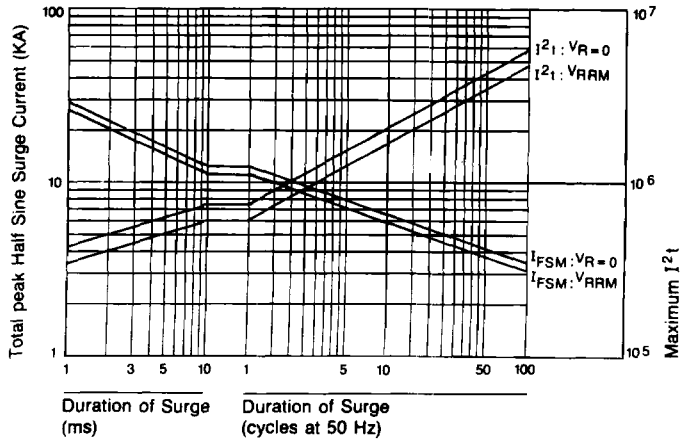


Figure 12. Gate Characteristics at $T_J 25^\circ\text{C}$

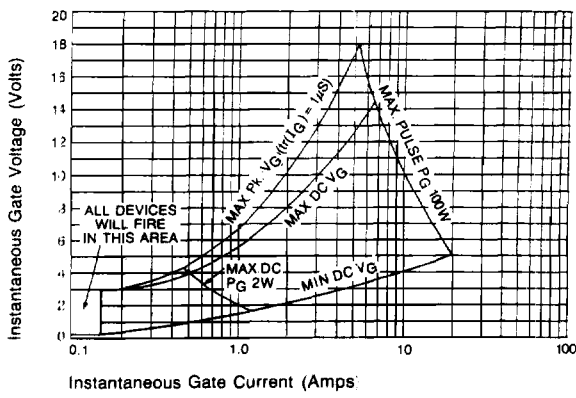


Figure 13. Gate Triggering Characteristics (Trigger points of all Thyristors lie in the area shown)

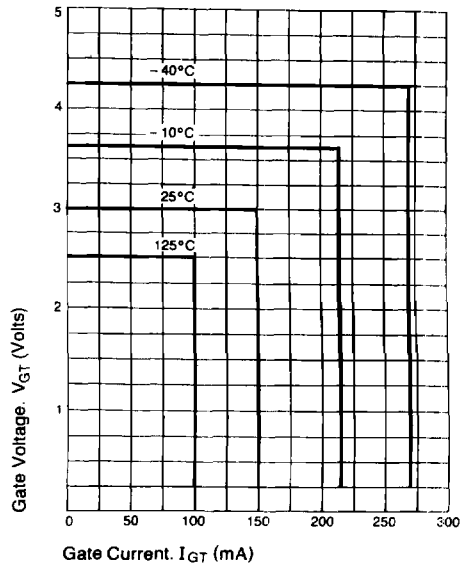


Figure 14. Water Cooled AC Switch Inlet Water at 25°C . 4.5 L/Min

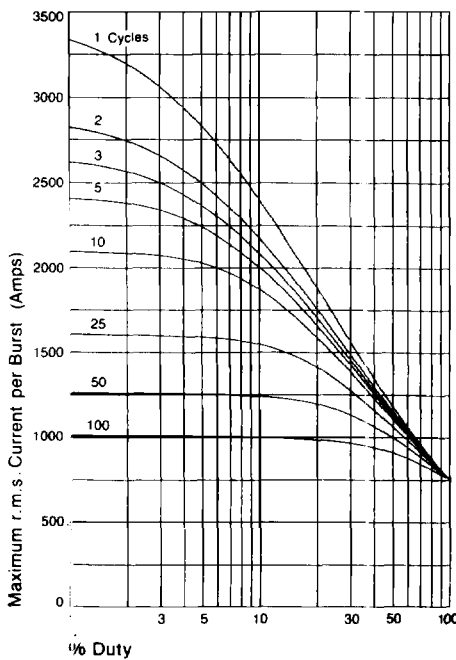
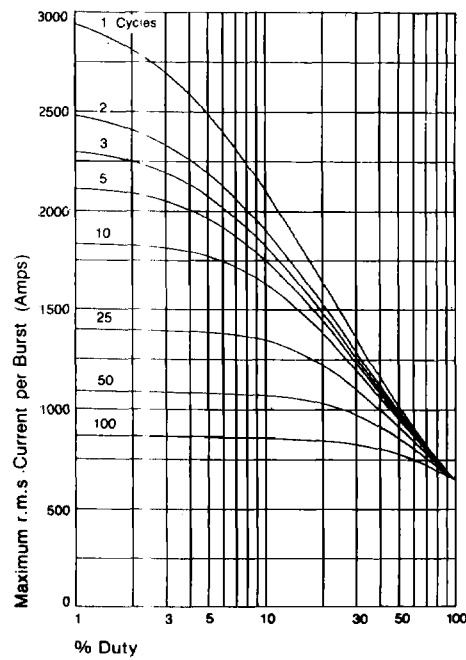


Figure 15. Water Cooled AC Switch Inlet Water at 45°C . 4.5 L/Min



Modules are available incorporating Distributed Gate or Fast turn-off thyristors and Fast Recovery diodes. Apply to your Westcode sales office for ratings.

Example:-

Thyristor R216CH12FJO with anti-parallel diode SM12CXC190.

Using R216CHxx data sheet and module thermal impedance, when operating on a trapezoidal waveform, di/dt of 100 A/μs at 1KHz, 50% duty cycle, a current of 350A (Peak) is possible at a module case temperature of 85°C and junction temperature of 125°C.

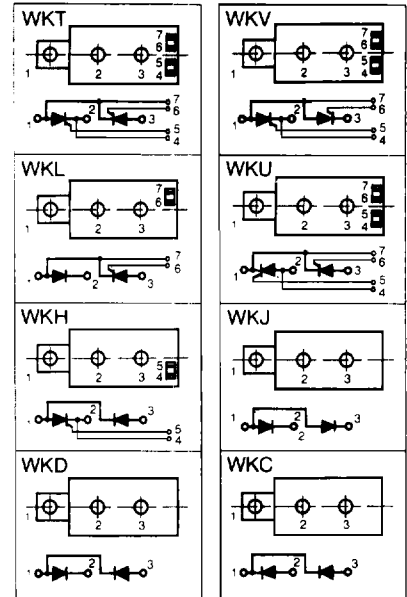
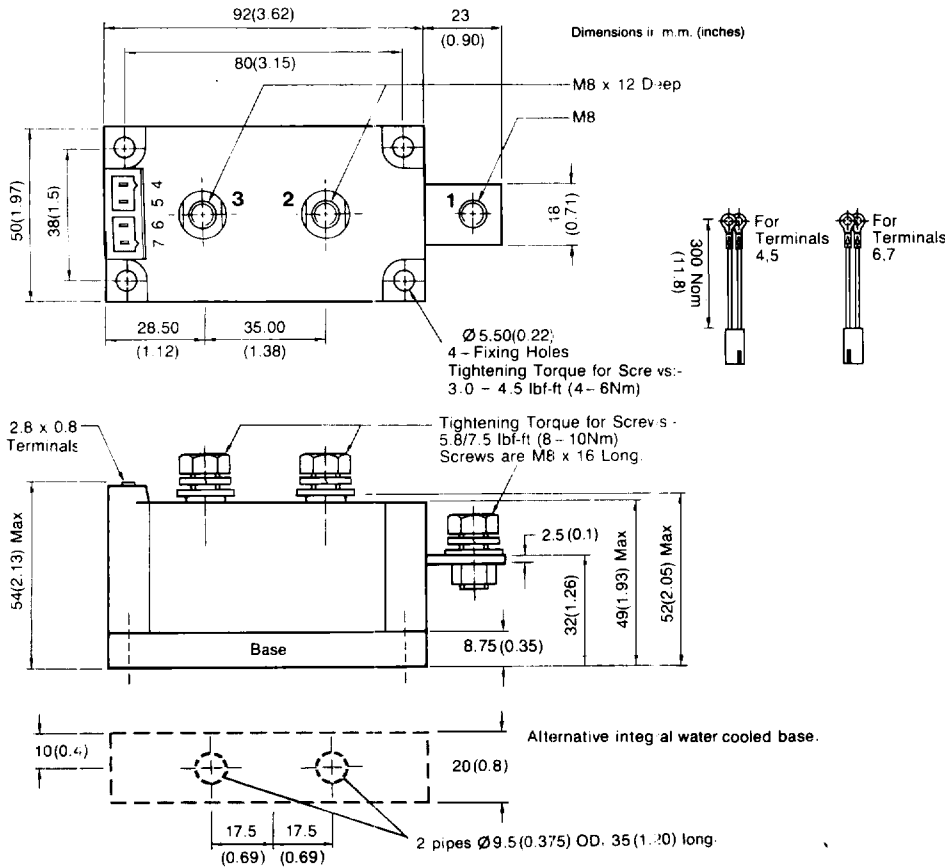
For specific applications contact the nearest Westcode Semiconductor sales office.

Connections made using busbars must be restrained during tightening. Using cable lugs or sockets is not recommended.

Terminal 1 should be supported by a spanner on the fixed nut (under the terminal), during tightening.

Terminal screws should be lubricated e.g. Molycote.

A mounting compound e.g. Bicconix X13 should be used (only a thin smear).



Weight:
910 grams.
1310 grams - Integral water cooled unit

In the interest of product improvement, Westcode reserves the right to change specifications at any time without notice. © Westcode Semiconductors Ltd.



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