

Capsule Phase Control Thyristor

Consists of a diffused silicon element mounted in an hermetic ceramic cold welded capsule, and features an amplifying gate. Available in industry standard housing and thin housings.

Ratings	Unless otherwise indicated $T_J = 125^\circ\text{C}$	Maximum Limits						Units
	Voltage Codes	02	04	06	08	10	12	
V_{DRM}	Repetitive peak off-state voltage	200	400	600	800	1000	1200	V
V_{DSM}	Non-repetitive peak off-state voltage	200	400	600	800	1000	1200	V
V_{RRM}	Repetitive peak reverse voltage	200	400	600	800	1000	1200	V
V_{RSM}	Non-repetitive peak reverse voltage	300	500	700	900	1100	1300	V

$I_{\text{T(AV)}}$	Average on-state current	Half sine wave $\left\{ \begin{array}{l} 55^\circ\text{C heatsink temperature} \\ \text{(double side cooled)} \\ 85^\circ\text{C heatsink temperature} \\ \text{(single side cooled)} \end{array} \right.$					4090	A
$I_{\text{T(RMS)}}$	R.M.S on-state current	25°C heatsink temperature, double side cooled					1610	A
I_{T}	Continuous on-state current	25°C heatsink temperature, double side cooled					8165	A
$I_{\text{TSM(1)}}$	Peak one-cycle surge	10ms duration, 60% V_{RRM} re-applied					6840	A
$I_{\text{TSM(2)}}$	Peak one-cycle surge	10ms duration, $V_{\text{R}} \leq 10$ volts					64.0	KA
$I^2 t_{(2)}$	Maximum permissible surge energy	10ms duration, $V_{\text{R}} \leq 10$ volts					70.0	KA
		3ms duration, $V_{\text{R}} \leq 10$ volts					24.50×10^6	$\text{A}^2 \text{s}$
I_{FGM}	Peak forward gate current	Anode positive with respect to cathode					15.30×10^6	$\text{A}^2 \text{s}$
V_{FGM}	Peak forward gate voltage	Anode positive with respect to cathode					7.5	A
V_{RGM}	Peak reverse gate voltage						10	V
P_{G}	Average gate power						5	V
P_{GM}	Peak gate power	100µs pulse width					4	W
dv/dt	Rate of rise of off-state voltage	Linear to 80% V_{DRM} gate open-circuit					30	W
$di/dt_{(1)}$	Rate of rise of on-state current (repetitive)	$\left\{ \begin{array}{l} \text{Gate drive 20 volts, 20 ohms} \\ \text{with } t_r \leq 1\mu\text{s.} \\ \text{Anode voltage } \leq 80\% V_{\text{DRM}} \end{array} \right.$					*200	V/µs
$di/dt_{(2)}$	Rate of rise of on-state current (non-repetitive)						150	A/µs
T_J	Operating temperature range						300	A/µs
T_{slg}	Storage temperature range						-40 to +125	°C
							-40 to +150	°C

Characteristics Unless otherwise indicated $T_J = 125^\circ\text{C}$				
V_{TM}	Peak on-state voltage	$I_{\text{TM}} = 3000 \text{ A}$	1.06	V
V_{O}	Forward conduction threshold voltage		0.85	V
r	Forward conduction slope resistance		0.07	mΩ
I_{DRM}	Repetitive peak off-state current	At V_{DRM}	200	mA
I_{RRM}	Repetitive peak reverse current	At V_{RRM}	200	mA
I_{GT}	Maximum gate current required to fire all devices	$\left\{ \begin{array}{l} \text{At } 25^\circ\text{C, } V_{\text{A}} = 6 \text{ V, } I_{\text{A}} = 2 \text{ A} \end{array} \right.$	300	mA
V_{GT}	Maximum gate voltage required to fire all devices		3.0	V
I_{H}	Maximum holding current		1.0	A
V_{GD}	Maximum gate voltage which will not trigger any device		0.25	V
$R_{\text{th (j-hs)}}$	Thermal resistance, junction to heat sink	Double side cooled	0.011	K/W
		Single side cooled	0.022	K/W

Ordering Information (Please quote device code as explained below)

N1600	• H	• •	* dv/dt Code for 80% V_{DRM}
Fixed Type Code	Outline Code Nominal Thickness CH – 36.825 DH – 26.250	Voltage Code (see ratings)	200V/µs – No Code 300V/µs – GOO 400V/µs – HOO 500V/µs – JOO 750V/µs – KOO 1000V/µs – LOO

Typical code: N1600CH10LOO, 1000 V_{DRM} , 1000 V_{RRM} , 1000V/µs dv/dt to 80% V_{DRM} , Thick Housing

Figure 1. Dissipation/Sink Temperature v. Mean Current.

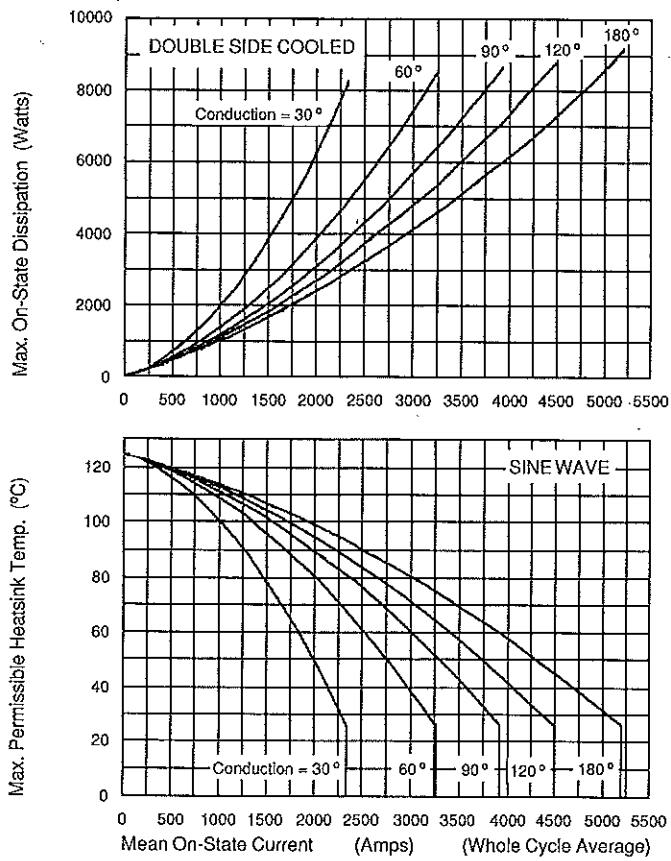


Figure 2. Dissipation/Sink Temperature v. Mean Current.

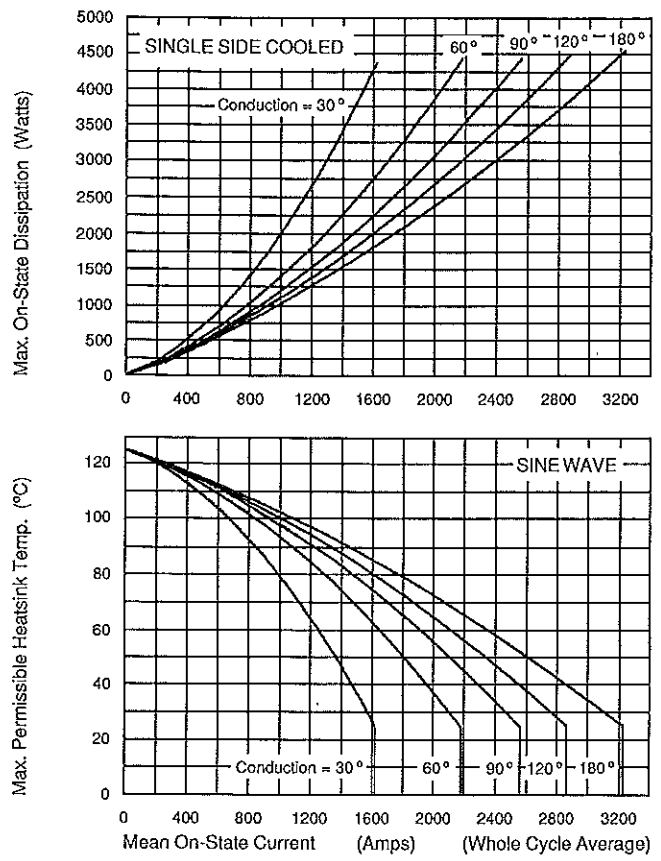


Figure 3. Junction to Sink Transient Thermal Impedance.

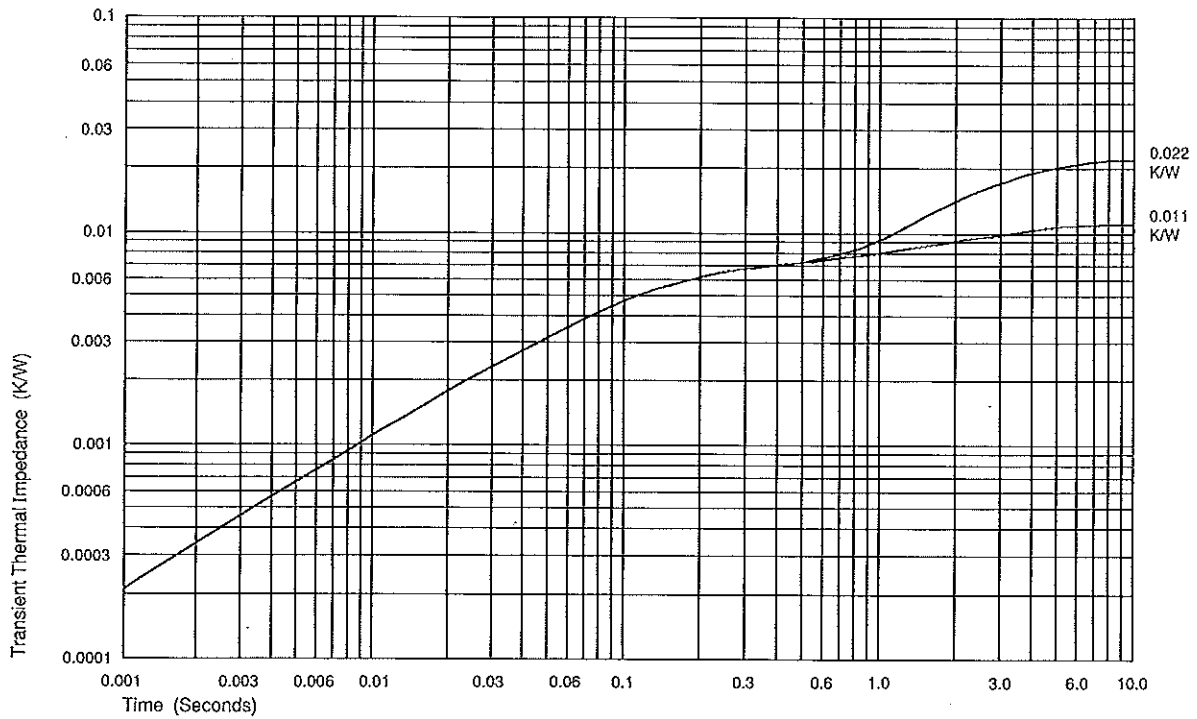


Figure 4. Dissipation/Sink Temperature v. Mean Current.

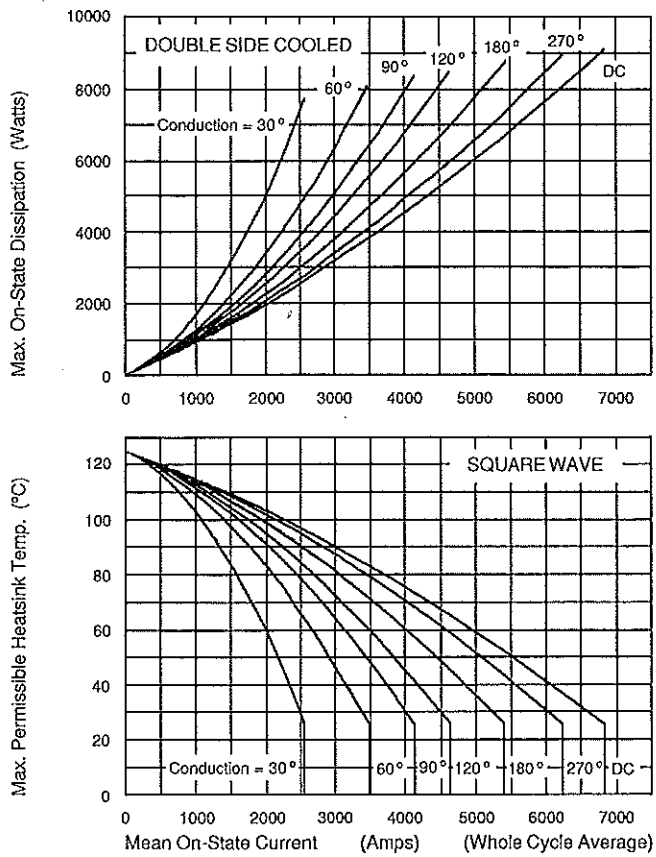


Figure 5. Dissipation/Sink Temperature v. Mean Current.

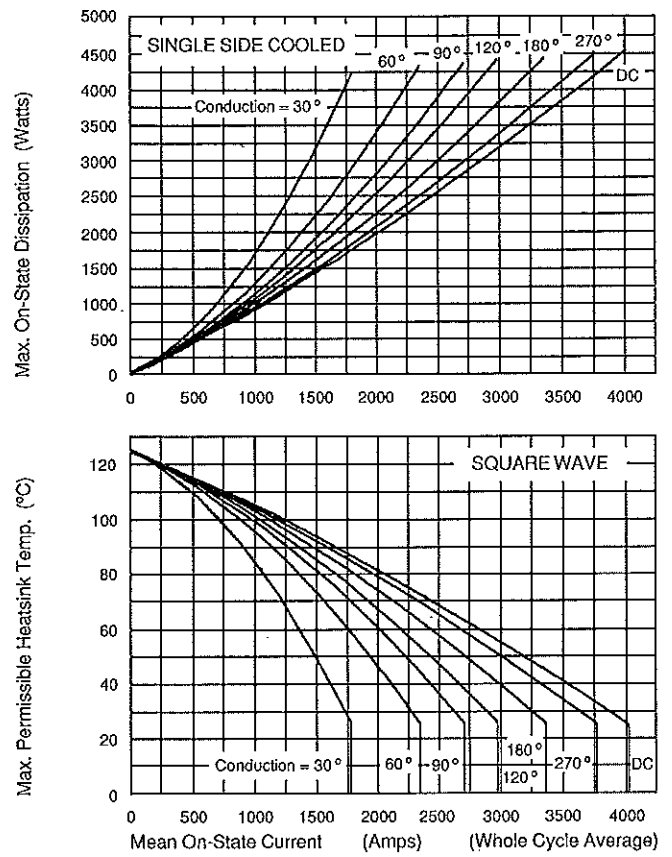


Figure 6. Non-Repetitive Surge Current at Initial Junction Temperature 125°C.

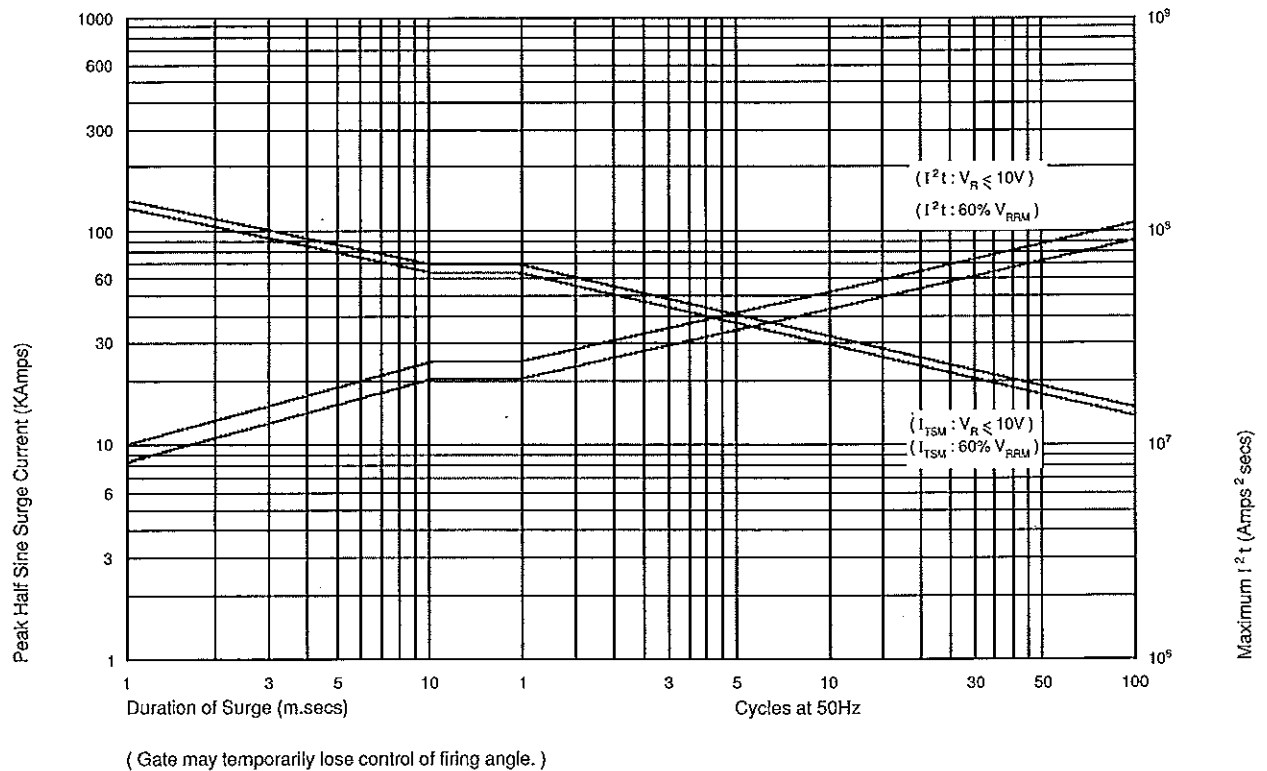


Figure 7. Gate Characteristics at 25°C Junction Temperature.

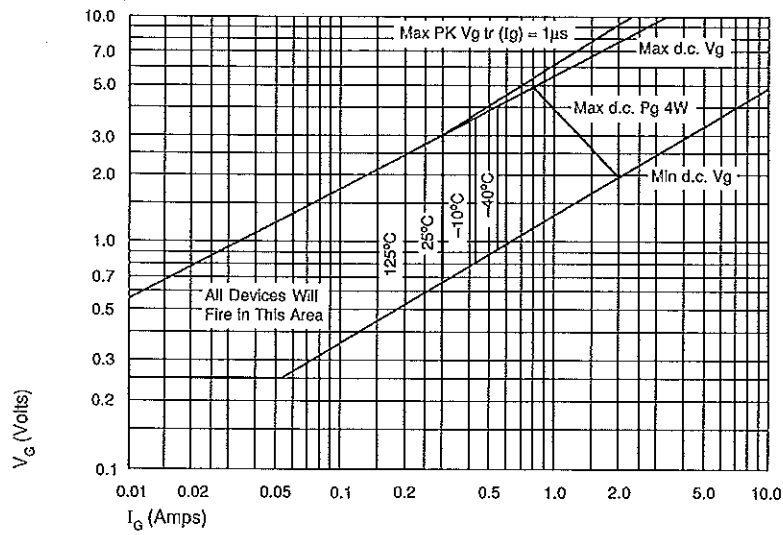
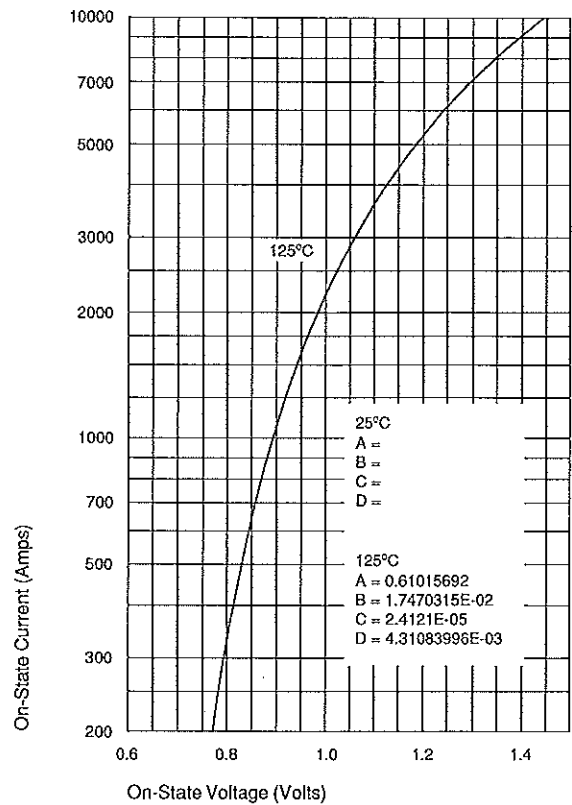


Figure 8. Limit On-State Characteristic at 125°C.



On-State Voltage (Volts)

Forward Volt-Drop Calculations:

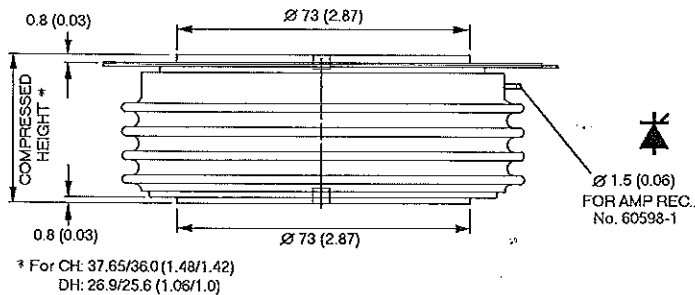
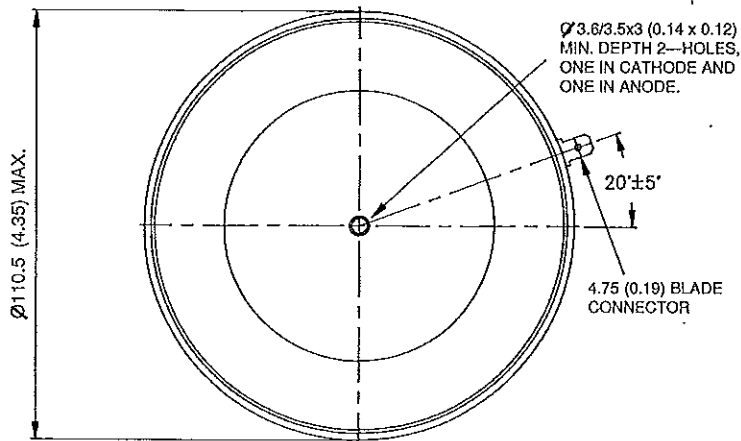
$$V_T = A + B \ln I_T + C I_T + D \sqrt{I_T}$$

Notes:

Dimensions in mm (inches)

Mounting Force: 2700 – 4700 Kg

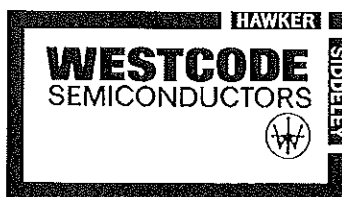
Weight: 1.7 Kilogram



Standard gate leads, 300mm long, available on request.

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

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WESTCODE SEMICONDUCTORS LIMITED

P.O. BOX 57, Chippenham, Wiltshire, England SN15 1JL

Telephone (Sales) : (0249) 444524. Telex 44751.

Telefax : (0249) 659448.

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