WESTCODE SEMICONDUCTORS

Technical Publication
TN350C
Issue 2
June 1985

Convertor Grade Capsule Thyristor Type N350C

820 amperes average: up to 1800 volts V_{RRM}

Ratings (Maximum values at 125°C Tj unless stated otherwise)

RATING	CONDITIONS	SYMBOL	
Average on-state current	Half sine wave, 55°C heatsink temperature (double side cooled)	$I_{T(AV)}$	820A
	Half sine wave, 85°C heatsink temperature (single side cooled)	$I_{T(AV)}$	320A
R.M.S. on-state current	25°C heatsink temperature, double side cooled	$I_{T(RMS)}$	1640A
Continuous on-state current	25°C heatsink temperature, double side cooled	I_T	1400A
Peak one-cycle surge (non-repetitive) on state current	10ms duration, 60% V_{RRM} re-applied	$I_{TSM(1)}$	11500A
	10ms duration, $V_R \leq$ 10 volts	$I_{TSM(2)}$	12650A
Maximum permissible surge energy	10ms duration, $V_R \leq$ 10 volts	I^2t (2)	800000A^2s
	3ms duration, $V_R \leq$ 10 volts	I^2t	590000A^2s
Peak forward gate current	Anode positive with respect to cathode	I_{FGM}	20A
Peak forward gate voltage	Anode positive with respect to cathode	V_{FGM}	22V
Peak reverse gate voltage		V_{RGM}	5V
Average gate power		P_G	4W
Peak gate power	100μs. pulse width	P_{GM}	120W
Rate of rise of off-state voltage	To 80% V_{DRM} gate open-circuit	dv/dt	*200V/μs
Rate of rise of on-state current (repetitive)	Gate drive 20 volts, 20 ohms with $t_r \leq 1\mu s$.	di/dt (1)	500A/μs
Rate of rise of on-state current (non-repetitive)	Anode voltage ≤ 80% V_{DRM}	di/dt (2)	1000A/μs
Operating temperature range		T_{hs}	−40 + 125°C
Storage temperature range		T_{stg}	−40 + 150°C

Characteristics (Maximum values at 125°C Tj unless stated otherwise)

CHARACTERISTIC	CONDITIONS	SYMBOL	
Peak on-state voltage	At 1700 A, I_{TM}	V_{TM}	1.75V
Forward conduction threshold voltage		V_O	1.08V
Forward conduction slope resistance		r	0.395Ω
Repetitive peak off-state current	At V_{DRM}	I_{DRM}	60mA
Repetitive peak reverse current	At V_{RRM}	I_{RRM}	60mA
Maximum gate current required to fire all devices	V_A = 6 V, I_A = 2 A at 25°C Tj	I_{GT}	300mA
Maximum gate voltage required to fire all devices		V_{GT}	3V
Maximum holding current		I_H	1A
Maximum gate voltage which will not trigger any device		V_{GD}	0.25V
Thermal resistance, junction to heatsink, for a device with a maximum forward volt drop characteristic	Double side cooled	$R_{th(j-hs)}$	0.044°C/W
	Single side cooled	$R_{th(j-hs)}$	0.088°C/W

VOLTAGE CODE		H02	H04	H06	H08	H10	H12	H14	H16	H18
Repetitive peak voltages Non-repetitive peak off-state voltage	V_{RRM} V_{DRM} V_{DSM}	200	400	600	800	1000	1200	1400	1600	1800
Non-repetitive peak reverse blocking voltage	V_{RSM}	300	500	700	900	1100	1300	1500	1700	1900

Ordering Information (Please quote device code as explained below – 8 digits)

N 3 5 0 C	● ● ●	
	Voltage code (see ratings)	Typical code: N350CH16 = 1600 V_{RRM} 1600V_{DRM}, 200 V/μs. dv/dt to 80% V_{DRM}

* Other values of dv/dt may be available.

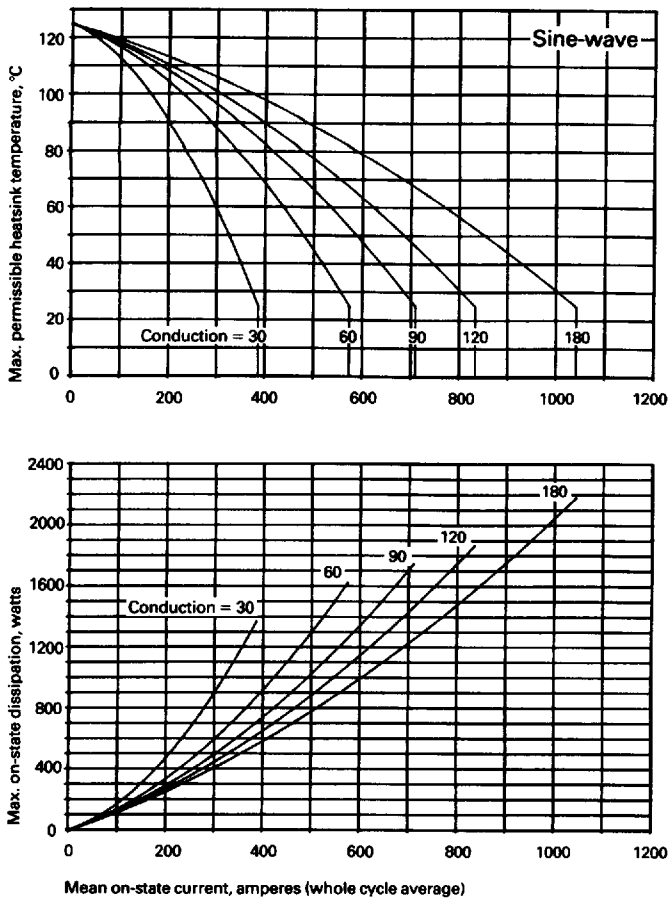


Figure 1 Dissipation and heatsink temperature v. current (Double side cooled)

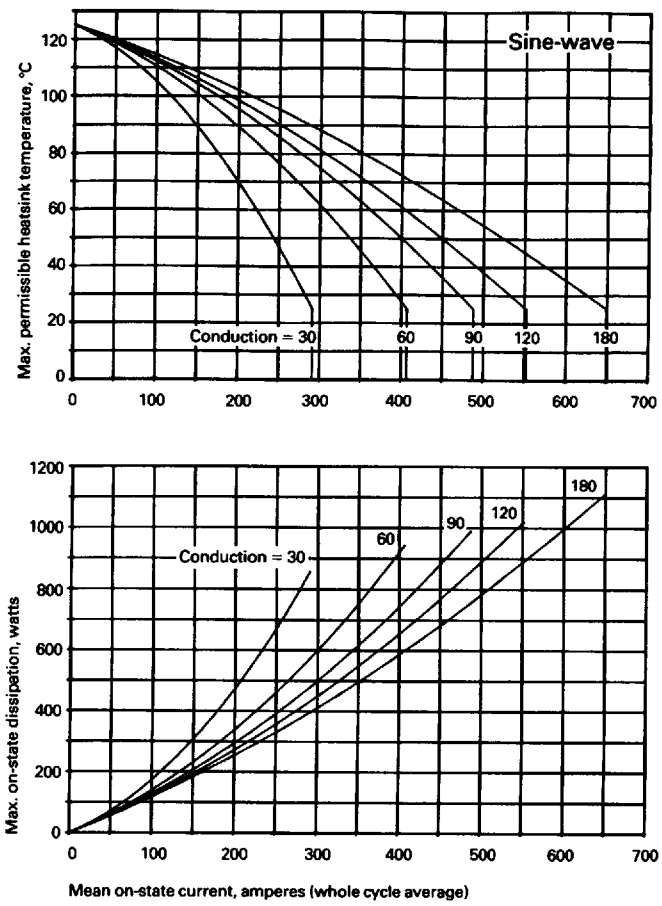


Figure 2 Dissipation and heatsink temperature v. current (Single side cooled)

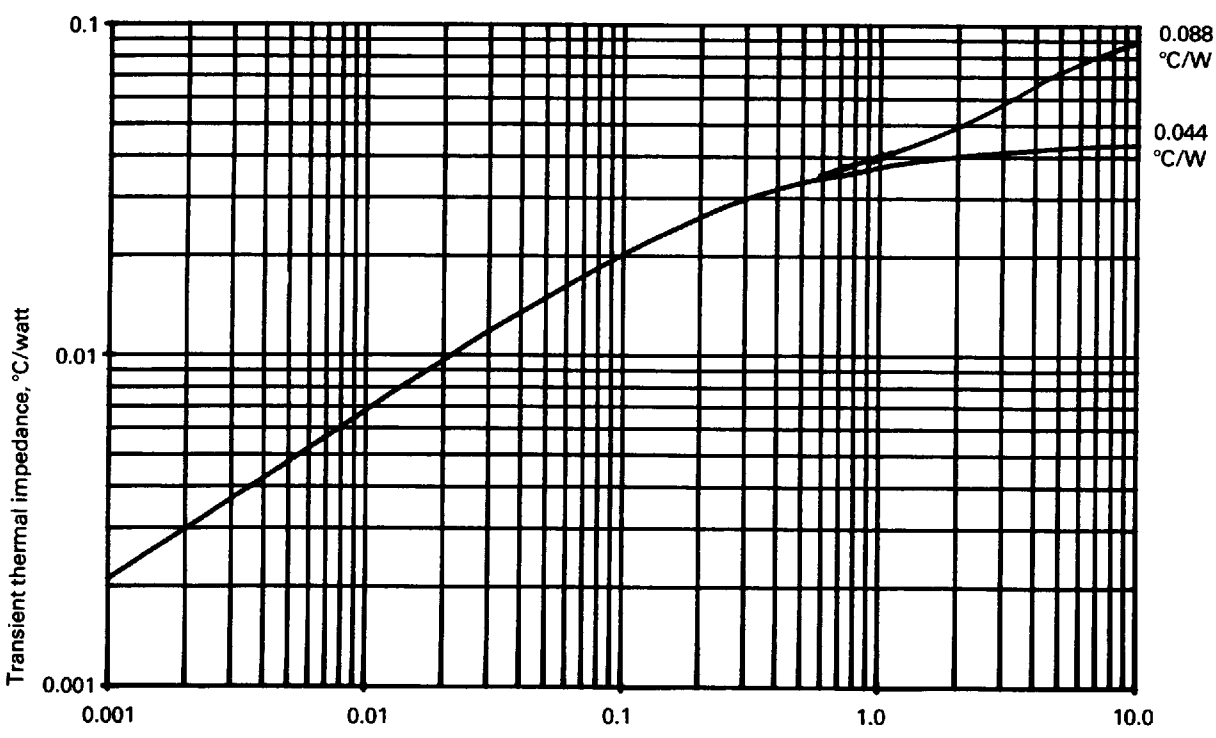


Figure 3 Junction to heatsink thermal impedance

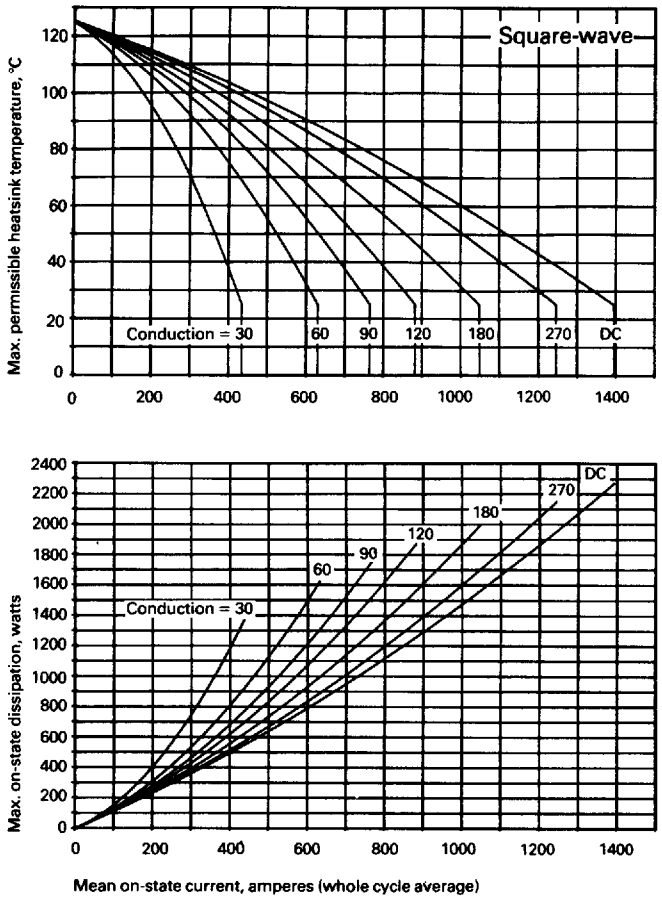


Figure 4 Dissipation and heatsink temperature v. current (Double side cooled)

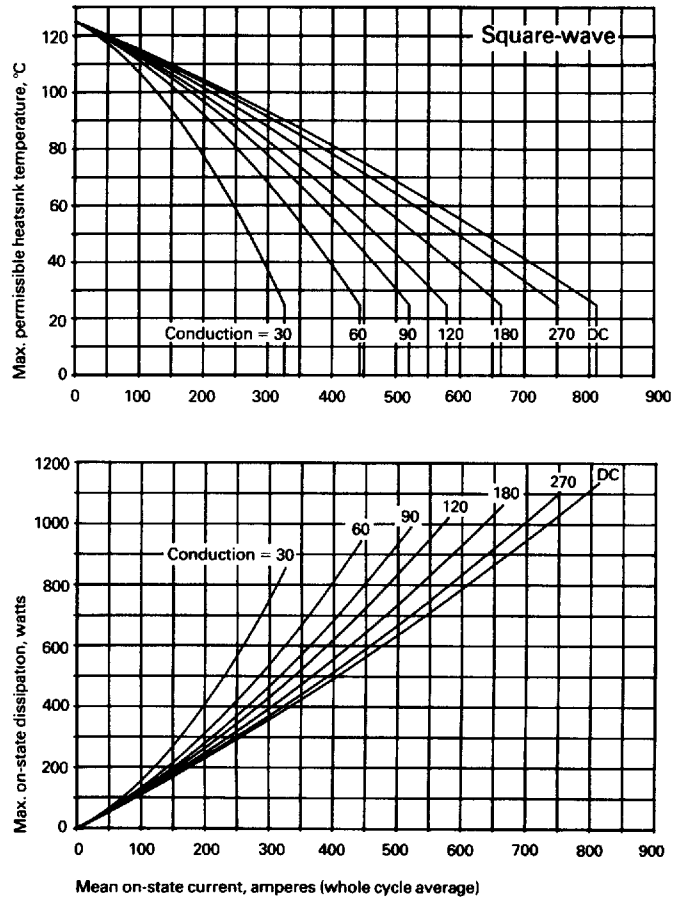


Figure 5 Dissipation and heatsink temperature v. current (Single side cooled)

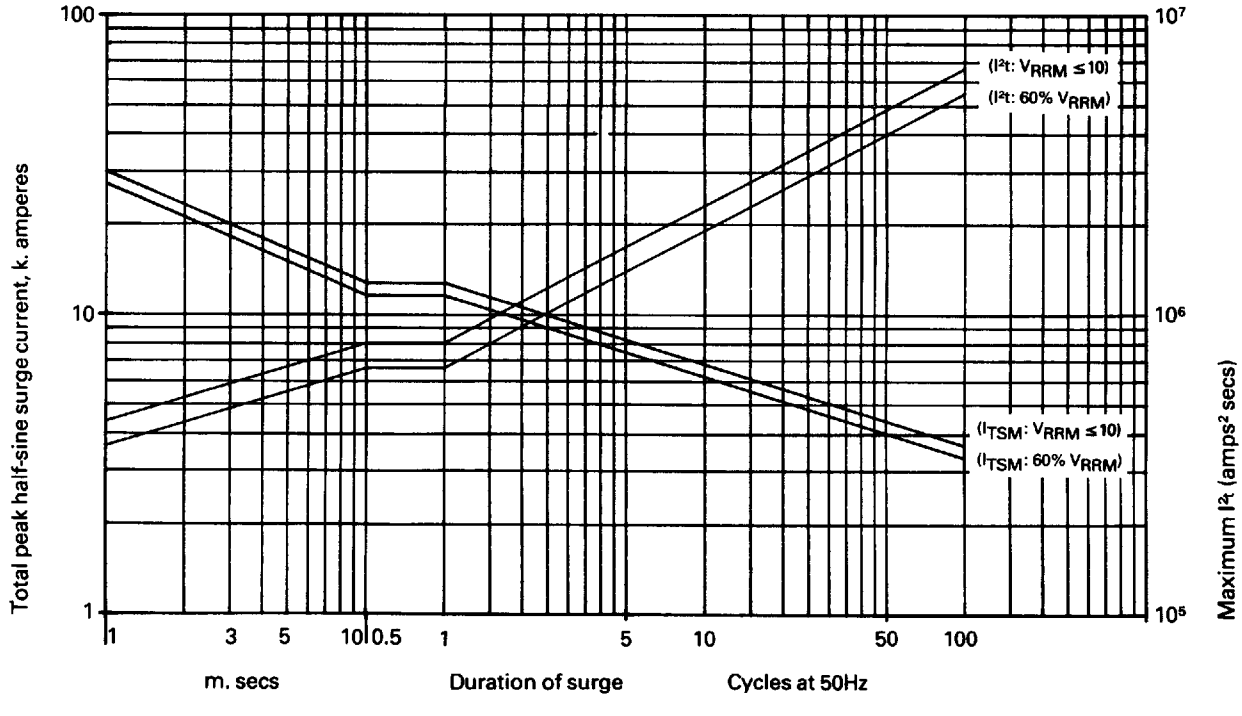


Figure 6 Max. non-repetitive surge current at initial junction temperature 125°C.
(gate may temporarily lose control of firing angle)
Note: This rating must not be interpreted as an intermittent rating

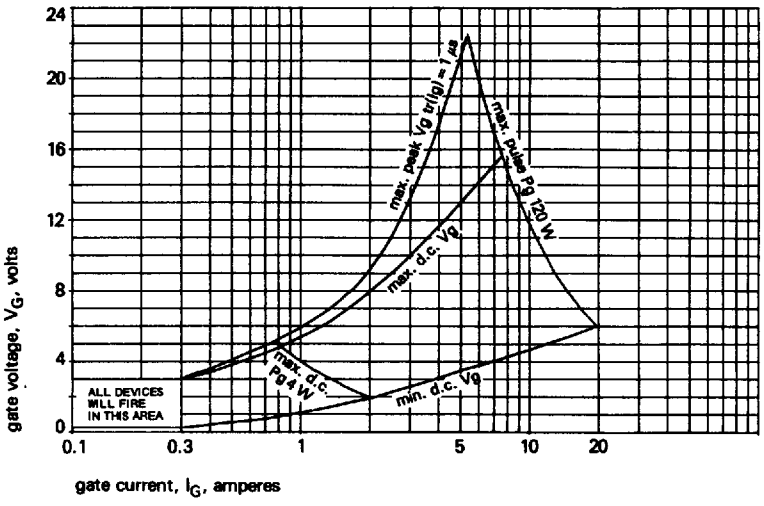


Figure 7 Gate characteristics at 25°C junction temperature

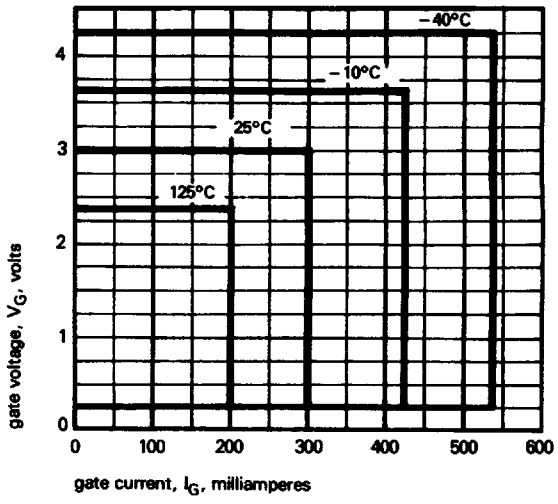


Figure 8 Gate triggering characteristics
Trigger points of all thyristors lie within the areas shown

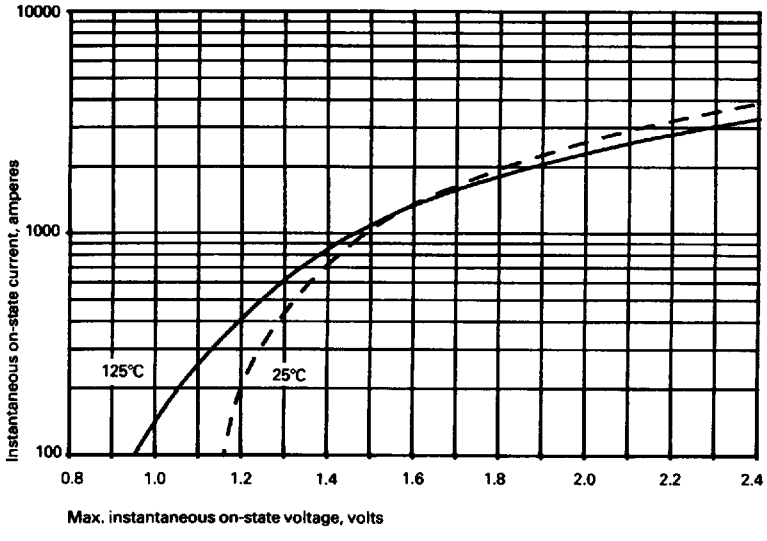
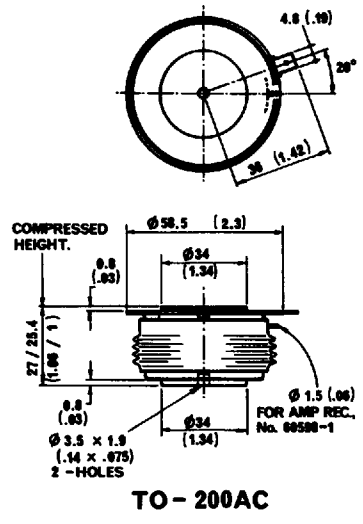


Figure 9 Limit on-state characteristic



TO-200AC

Dimensions in mm (inches)
Mounting force: 1000–2000 Kgf
Weight: 340 grams

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

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