



WESTCODE SEMICONDUCTORS

Technical
Publication
TN275P

Issue 1
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Convertor Grade Stud-Base Thyristor Type N275P

275 amperes average: up to 800 volts V_{RRM}

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

RATING	CONDITIONS	SYMBOL	
Average on-state current	Half sine wave. 85°C case temperature	$I_T(AV)$	275A
R.M.S on-state current		$I_T(RMS)$	355A
Continuous on-state current		I_T	355A
Peak one-cycle surge	10ms duration, 60% V_{RRM} re-applied	$I_{TSM}(1)$	6000A
(non-repetitive) on-state current	10ms duration, $V_R \leq 10$ volts	$I_{TSM}(2)$	6600A
Maximum permissible surge energy	10ms duration, $V_R \leq 10$ volts	$I^2t(2)$	218000A ² s
	3ms duration, $V_R \leq 10$ volts	I^2t	165400A ² s
Peak forward gate current	Anode positive with respect to cathode	I_{FGM}	19A
Peak forward gate voltage	Anode positive with respect to cathode	V_{FGM}	18V
Peak reverse gate voltage		V_{RGM}	5V
Average gate power		P_G	2W
Peak gate power	100μs pulse width	P_{GM}	100W
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)	$\left. \begin{array}{l} \text{Gate drive 20 volts, 20 ohms with } t_r \leq 1 \mu s \\ \text{Anode voltage } \leq 80\% V_{DRM} \end{array} \right\}$	$di/dt(1)$	500A/μs
Rate of rise on on-state current (non-repetitive)		$di/dt(2)$	1000A/μs
Operating temperature range		T case	-40 + 125°C
Storage temperature range		T _{stg}	-40 + 150°C

Characteristics

(Maximum values at 125°C T_j unless stated otherwise)

CHARACTERISTIC	CONDITIONS	SYMBOL	
Peak on-state voltage	At 690A, I_{TM}	V_{TM}	1.22V
Forward conduction threshold voltage		V_O	0.85V
Forward conduction slope resistance		r	0.535 mΩ
Repetitive peak off-state current	At V_{DRM}	I_{DRM}	20mA
Repetitive peak reverse current	At V_{RRM}	I_{RRM}	20mA
Maximum gate current required to fire all devices	$\left. \begin{array}{l} V_A = 6V, I_A = 2A \text{ at } 25^\circ C T_j \end{array} \right\}$	I_{GT}	150mA
Maximum gate voltage required to fire all devices		V_{GT}	3V
Maximum holding current		I_H	400mA
Maximum gate voltage which will not trigger any device		V_{GD}	0.25V
Thermal resistance, junction to case	DC and 180° sine wave	$R_{th(j-c)}$	0.12°C/W
for a device with a maximum forward volt drop characteristic	120° rectangular wave		0.14°C/W
Thermal resistance case to heatsink		$R_{th(c-hs)}$	0.04°C/W

VOLTAGE CODE	H02	H04	H06	H08				
Repetitive peak voltages	V_{RRM}	V_{DRM}						
Non-repetitive peak off-state voltage	V_{DSM}	200	400	600	800			
Non-repetitive peak reverse blocking voltage	V_{RSM}	300	500	700	900			

Ordering Information

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

N	2	7	5	P	● ● ●	
					Voltage code (see ratings)	Typical code: N275PH06 = 600 V_{RRM} 600 V_{DRM} 200 V/μs. dv/dt to 80% V_{DRM}

* Other values of dv/dt may be available.

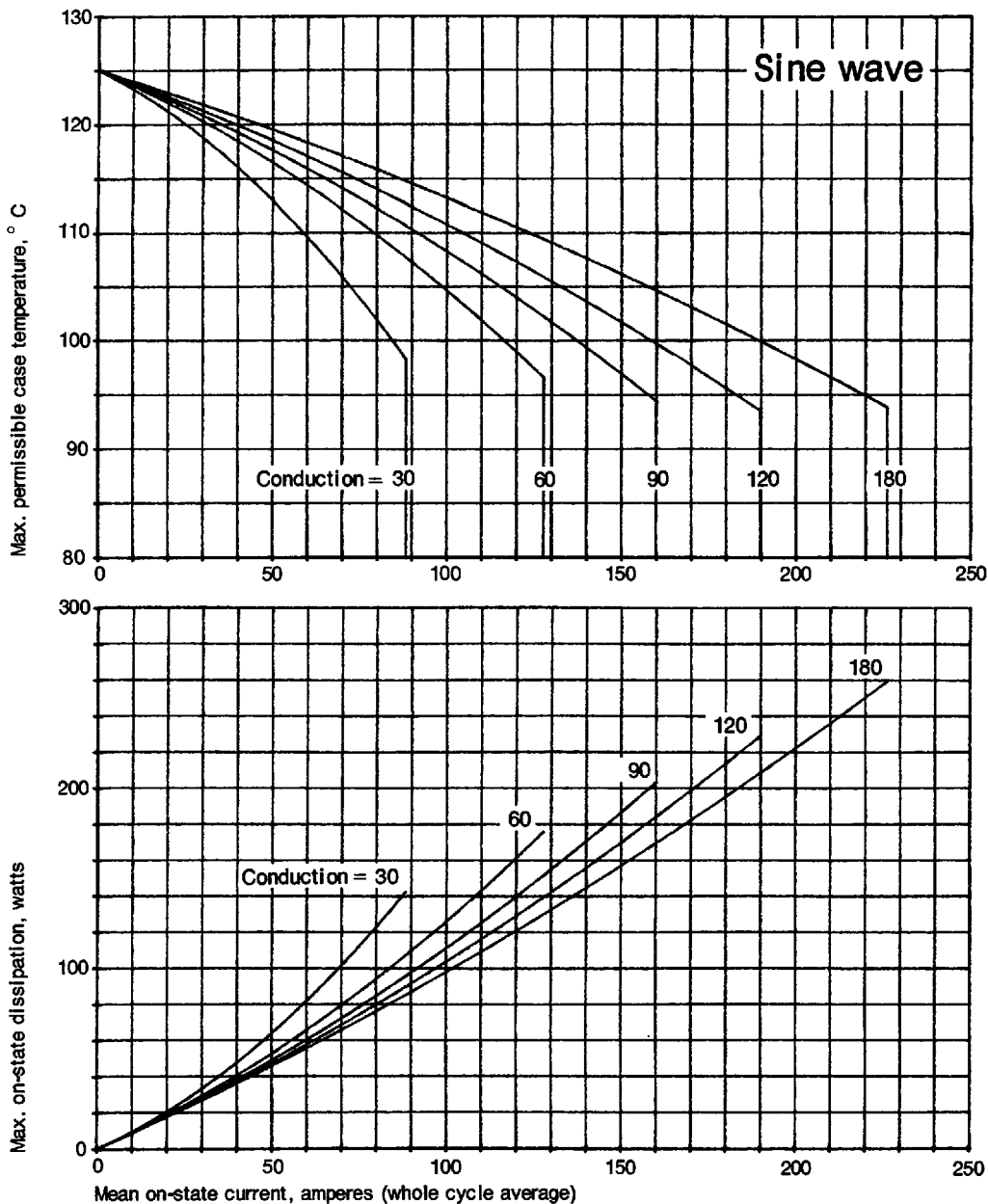


Figure 1 Dissipation and case temperature v. current

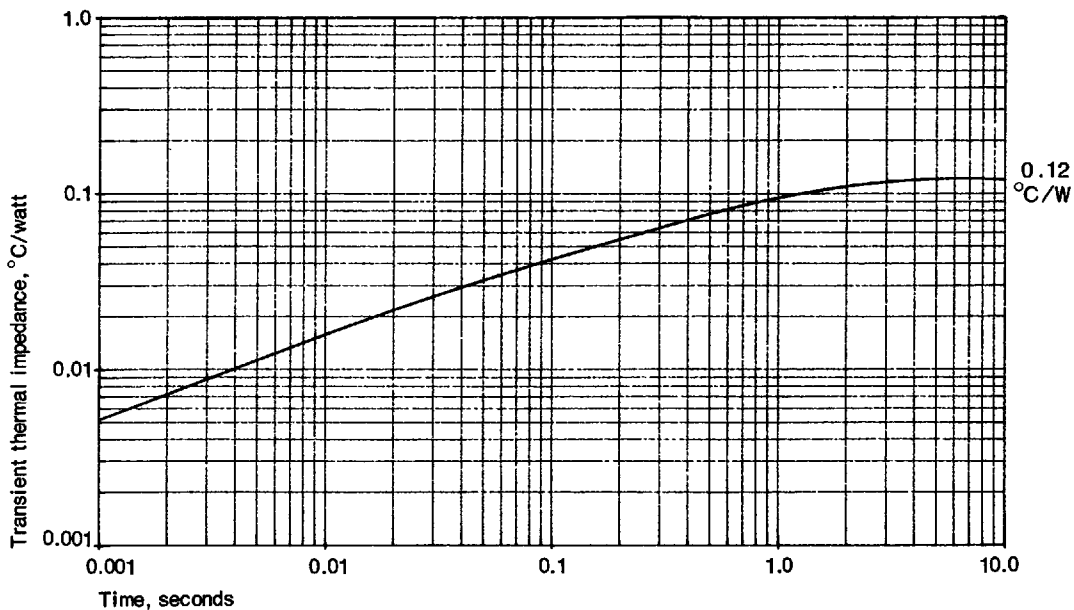


Figure 2 Junction to case thermal impedance

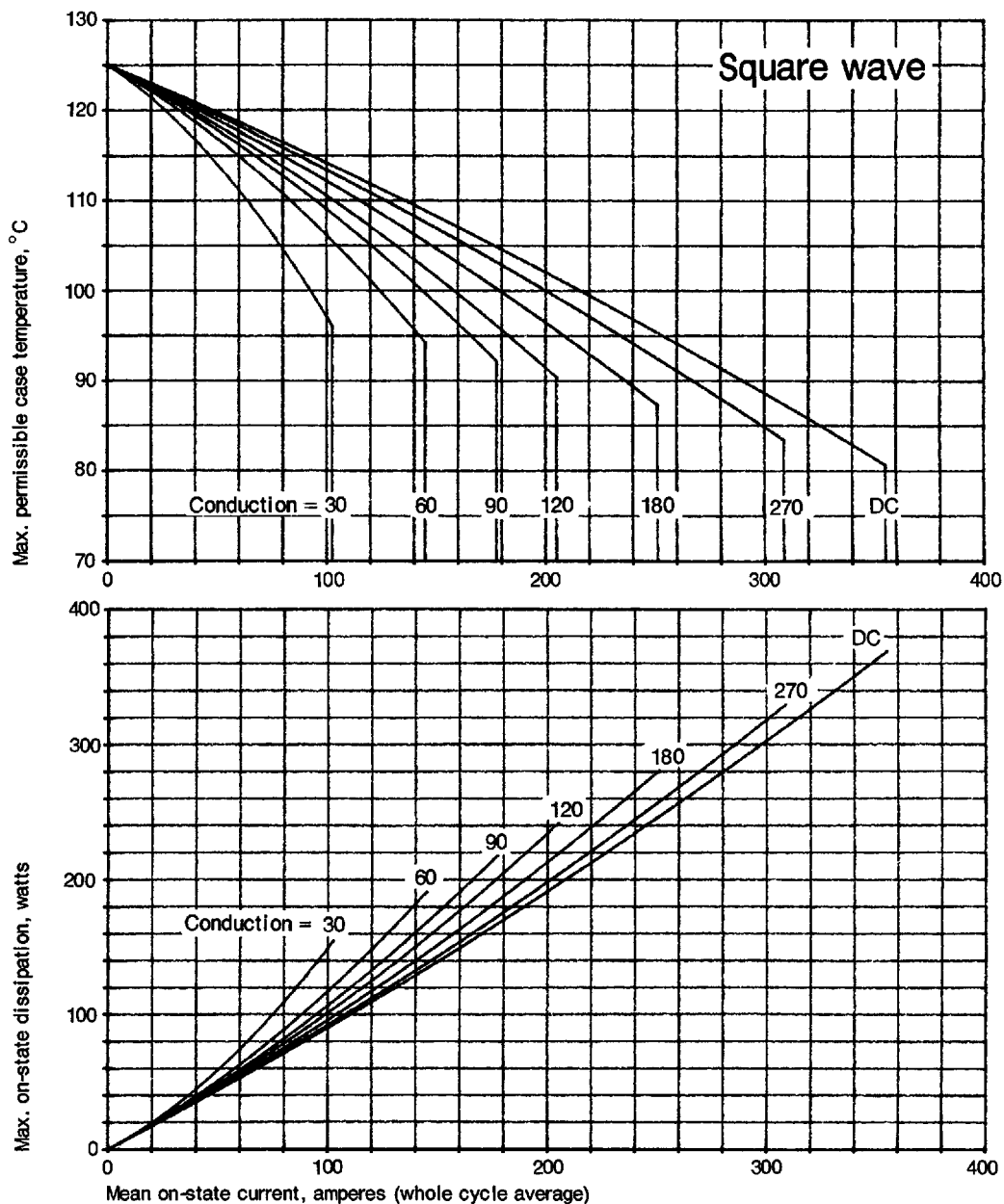


Figure 3 Dissipation and case temperature v. current

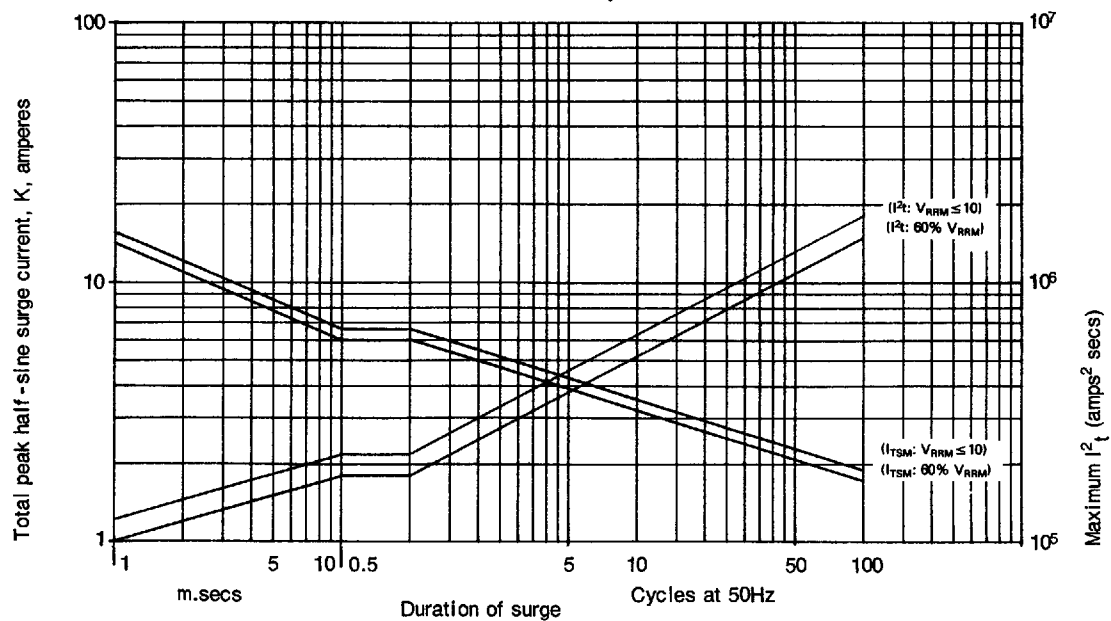


Figure 4 Max. non-repetitive surge current at initial junction temperature 125°C

(gate may temporarily lose control of firing angle)

Note: This rating must not be interpreted as an intermittent rating

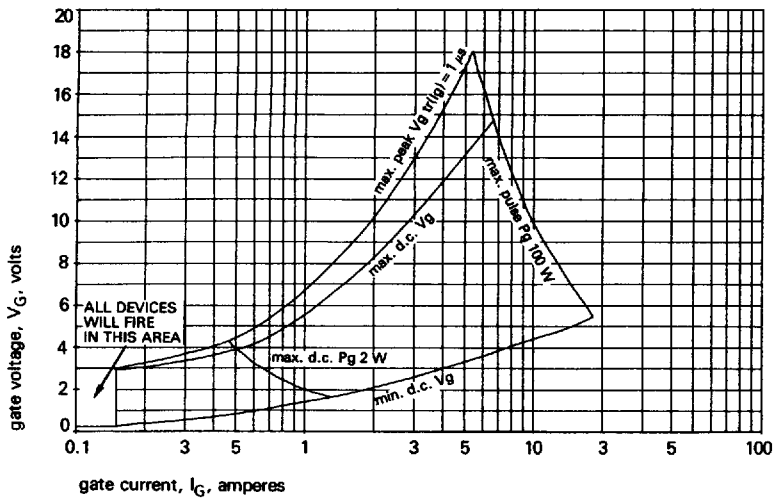
TN275P

Figure 5 Gate characteristics at 25°C junction temperature

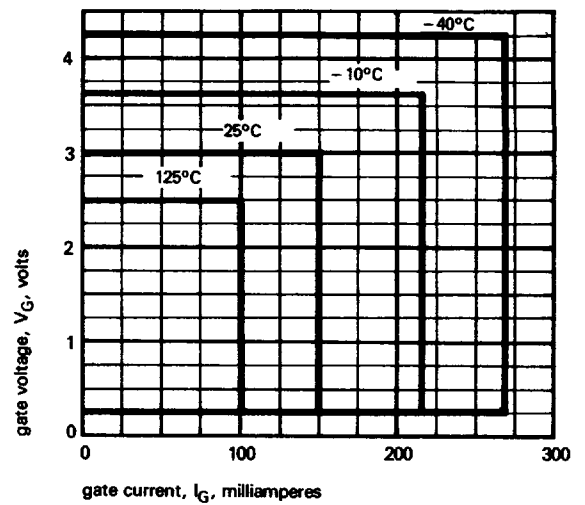


Figure 6 Gate triggering characteristics
Trigger points of all thyristors lie within the areas shown

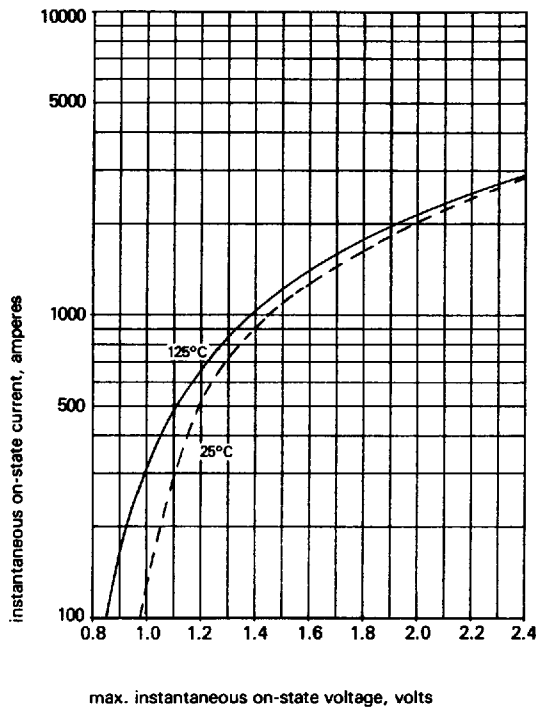
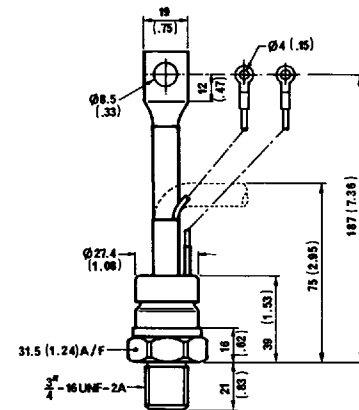


Figure 7 Limit on-state characteristic



dimensions in mm (inches)
Mounting Torque: 24.5-27 Nm
(2.5-2.77 kgf-m)
Weight: 280 grams

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

WESTCODE SEMICONDUCTORS LTD.

P.O. Box 57 Chippenham Wiltshire SN15 1JL England
Telephone Chippenham (0249) 654141 Telex 44751

HAWKER SIDDELEY

Westinghouse Brake and Signal Co. Ltd.