

## PHASE CONTROL THYRISTORS

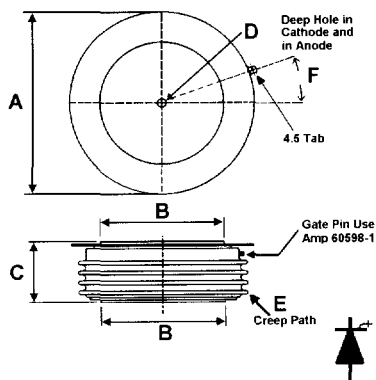
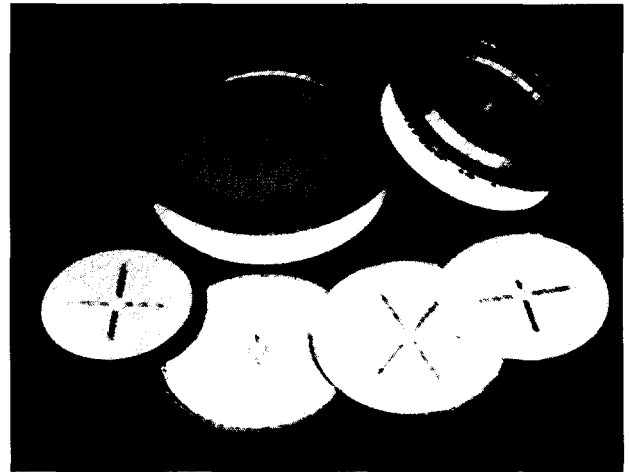
High power solutions for the Power Electronics Industry offering a comprehensive range of Phase Control Thyristors for all power electronic application needs

### Key Features:

- Pressure contact technology
- 19 – 100mm silicon slice range
- Up to 6500V technology
- High Reliability
- Industry Standard Outlines
- Clamps and Heatsinks as required

### Key Applications

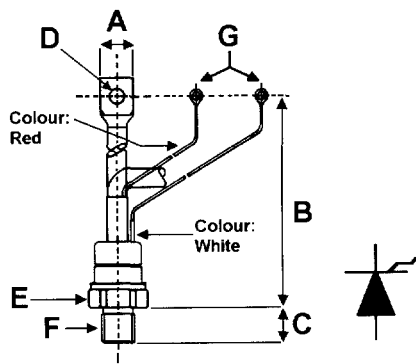
- DC Drives
- Fully Controlled Rectifiers
- Crow Bar Applications
- Marine Drives / Cycloconverters – 4.2 / 5.2kV
- Induction Forging – Front End – 2.8 / 3.5kV
- Large Power Supplies (Electrochemical) – 2.8kV
- HVDC and SVC – 4.2 / 5.2 / 6.5kV



### Phase Control Thyristors - Capsule Types

#### Dimensions:

Size	Wt (g)	A Max Ø mm	B Max Ø mm	C Range mm	D Ø / Hole Depth	E Creep Path Min	F Gate Tag
1	70	42	19 ± 0.1	14.4 - 13.1	3.6 / 3.5x1.8	8	25° ± 5°
2	90	42	25.1 ± 0.1	15.1 - 14.2	3.6 / 3.5x1.8	9	25° ± 5°
3	340	58.5	34 ± 0.1	27.0 - 25.4	3.6 / 3.5x1.8	25.4	20° ± 5°
4	510	74	47 ± 0.1	27.7 - 25.9	3.6 / 3.5x2.3	25.4	20° ± 5°
5	1000	101.6	63 ± 0.1	34 - 32	3.6 / 3.5x3	46	20° ± 5°
6	1700	110.5	73 ± 0.1	37.7 - 37.7	3.6 / 3.5x3	41.5	20° ± 5°
7	1230	112	75 ± 0.1	26.1 - 27.1	3.6 / 3.5x2	33.5	20° ± 5°
8	1230	144	99.3 ± 0.1	35 - 36.5	3.6 / 3.5x1.8	41.6	20° ± 5°



### Phase Control Thyristors - StudTypes

#### Dimensions:

Size	Wt (g)	A Max mm	B Max mm	C Range mm	D Boss	E Nut A/F	F Thread	G Pin Ø
1	10	7.6	27 max	11	4.4	14	1/4"-28UNF-2A	1.8
2	33	n/a	28.7	11	3.7	17.5 / 17.3	1/4"-28UNF-2A	1.5
3	130	17 max	45.3	20.5	5.1	26.9	1/2"-20UNF-2A	1.7
4	130	16.5	174 min	20.5 max	7	26.9	1/2"-20UNF-2A	4.3
5	280	19	210 ± 10	21 max	8.2 / 8.8	31.6 / 31.4	3/4"-16UNF-2A	4.3

# WESTCODE

Type / Part Number	V <sub>DRM</sub> V <sub>RRM</sub> Range (Note 5) (V)	I <sub>T(AV)</sub> @ T <sub>HS</sub> 55°C (A)	I <sub>TRMS</sub> 10ms V <sub>R</sub> ≤ 10V (Note 1) (A)	I <sub>DRM</sub> (Note 1) (A <sup>2</sup> s)	di/dt Non-Rep/Rep (Note 4) (A / μs)	I <sub>DRM</sub> I <sub>DRM</sub> @ 125°C (mA)	R <sub>th</sub> J-hs d.c. 180° sine (K/W)	V <sub>o</sub> @ T <sub>J</sub> 125°C (Note 2) (V) (mΩ)	Mounting Force (kgf)	Size Ref.
N086 CHx	200-1500	195	1950	19 x 10 <sup>3</sup>	1000/500	20	0.135	1.57 2.29	330-550	1
N105 CHx	200-1600	256	2695	36.3 x 10 <sup>3</sup>	1000/500	20	0.135	0.90 1.79	330-550	1
N170 CHx	200-1600	340	4620	107 x 10 <sup>3</sup>	1000/500	20	0.095	1.08 1.30	330-550	1
N195 CHx	200-1600	390	5120	131 x 10 <sup>3</sup>	1000/500	20	0.095	0.92 0.99	330-550	1
N275 CHx	200-800	490	6600	218 x 10 <sup>3</sup>	1000/500	20	0.095	0.85 0.535	330-550	1
N282 CHx	2000-2500	607	7810	305 x 10 <sup>3</sup>	600/300	40	0.050	1.14 0.781	530-1000	2
N281 CHx	1200-1800	680	8300	345 x 10 <sup>3</sup>	1000/500	40	0.050	1.09 0.587	530-1000	2
N280 CHx	200-1600	735	9270	430 x 10 <sup>3</sup>	1000/500	40	0.050	1.03 0.483	530-1000	2
N283 CHx	200-1600	752	10205	521 x 10 <sup>3</sup>	1000/500	40	0.050	0.92 0.45	530-1000	2
N310 CHx	200-600	990	12100	732 x 10 <sup>3</sup>	1000/500	40	0.050	0.82 0.24	530-1000	2
N200 CHx	4500-6500	485	4400†	96.8 x 10 <sup>3†</sup>	100/50*	60†	0.032	1.35† 2.10†	1000-2000	3
N255 CHx	3600-4500	590	5780	167 x 10 <sup>3</sup>	300/150	60	0.0342	1.22 1.53	1000-2000	3
N257 CHx	2600-4200	610	7700	0.298 x 10 <sup>6</sup>	300/150	100	0.0342	1.10 1.50	1000-2000	3
N260 CHx	200-3600	620	6270	196 x 10 <sup>3</sup>	400/200	60	0.0342	1.21 1.36	1000-2000	3
N330 CHx	1800-2600	910	10100	510 x 10 <sup>3</sup>	500/300	60	0.0342	1.04 0.61	1000-2000	3
N350 CHx	200-1800	1045	12650	800 x 10 <sup>3</sup>	1000/500	60	0.032	1.08 0.40	1000-2000	3
N370 CHx	200-1800	1130	14000	975 x 10 <sup>3</sup>	1000/500	60	0.032	1.06 0.31	1000-2000	3
N520 CHx	200-1500	1265	16000	1.28 x 10 <sup>6</sup>	1000/500	60	0.032	0.90 0.265	1000-2000	3
N320 CHx	3600-4500	880	8470	359 x 10 <sup>3</sup>	300/150	100	0.024	1.30 0.92	1900-2600	4
N360 CHx	2200-3800	1010	13300	884 x 10 <sup>3</sup>	400/200	100	0.024	1.17 0.687	1900-2600	4
N390 CHx	2200-3200	1130	15700	1.23 x 10 <sup>6</sup>	400/200	100	0.024	1.15 0.51	1900-2600	4
N450 CHx	1400-2600	1300	19400	1.88 x 10 <sup>6</sup>	500/300	100	0.024	1.03 0.38	1900-2600	4
N490 CHx	200-2600	1470	23600	2.78 x 10 <sup>6</sup>	1000/500	100	0.024	1.00 0.27	1900-2600	4
N510 CHx	200-2000	1550	25600	3.28 x 10 <sup>6</sup>	1000/500	100	0.024	0.92 0.252	1900-2600	4
N540 CHx	200-1800	1715	29900	4.47 x 10 <sup>6</sup>	1000/500	100	0.024	0.965 0.174	1900-2600	4
N600 CHx	200-1500	1800	32500	5.28 x 10 <sup>6</sup>	1000/500	100	0.024	0.855 0.171	1900-2600	4
N610 CHx	200-1000	2090	38000	7.22 x 10 <sup>6</sup>	1000/500	100	0.024	0.84 0.108	1900-2600	4
N410 CHx	4200-6500	630	7300†	0.266 x 10 <sup>6†</sup>	100/50*	150†	0.024	1.38† 1.64†	1900-2600	4
N500 CHx	3000-4200	1160	16100	1.30 x 10 <sup>6</sup>	300/150	100	0.022	1.10 0.574	1900-2600	4
N570 CHx	2600-3600	1315	18290	1.67 x 10 <sup>6</sup>	300/150	100	0.022	1.00 0.437	1900-2600	4
N620 CHx	2000-3000	1467	23000	2.65 x 10 <sup>6</sup>	400/200	100	0.022	0.92 0.345	1900-2600	4
N680 CHx	1200-2000	1665	27000	3.65 x 10 <sup>6</sup>	100/50*	100	0.022	0.95 0.233	1900-2600	4
N740 CHx	1400-1600	2045	32200	5.18 x 10 <sup>6</sup>	300/150	100	0.022	0.98 0.114	1900-2600	4
N560 CHx	3600-4500	1350	20000	2.00 x 10 <sup>6</sup>	300/150	150	0.017	1.20 0.553	2700-3400	5
N630 CHx	2600-3600	1663	25000	3.13 x 10 <sup>6</sup>	300/150	150	0.017	1.04 0.35	2700-3400	5
N640 CHx	2000-3000	1715	30000	4.50 x 10 <sup>6</sup>	300/150	150	0.017	1.05 0.32	2700-3400	5
N760 CHx	200-2200φ	2290	40000	8.00 x 10 <sup>6</sup>	300/150	150	0.017	0.956 0.148	2700-3400	5
N990 CHx	200-1600	2500	45000	10.1 x 10 <sup>6</sup>	300/150	150	0.017	0.88 0.124	2700-3400	5
N635 CHx	4500-6500	1555	22000†	2.42 x 10 <sup>6†</sup>	100/50*	200	0.011	1.20 0.60	2700-4700	6
N750 CHx	2600-4500	2175	33500	5.61 x 10 <sup>6</sup>	300/150	200	0.011	1.35 0.294	2700-4700	6
N850 CHx	3000-3600	2420	36000	6.48 x 10 <sup>6</sup>	300/150	200	0.011	1.16 0.246	2700-4700	6
N880 CHx	2000-3000	2550	39000	7.61 x 10 <sup>6</sup>	300/150	200	0.011	0.78 0.274	2700-4700	6
N900 CHx	2000-2600	3015	49700	12.40 x 10 <sup>6</sup>	300/150	200	0.011	0.92 0.16	2700-4700	6
N980 CHx	200-2200φ	3000	55000	15.1 x 10 <sup>6</sup>	300/150	200	0.011	0.88 0.164	2700-4700	6
N1400 CHx	200-2000	3545	60000	18.0 x 10 <sup>6</sup>	300/150	200	0.011	0.97 0.095	2700-4700	6
N1600 CHx	200-1200	4090	70000	24.5 x 10 <sup>6</sup>	300/150	200	0.011	0.85 0.070	2700-4700	6

Type / Part Number	V <sub>DRM</sub> V <sub>RRM</sub> Range (Note 5) (V)	I <sub>T(AV)</sub> @ T <sub>JHS</sub> 55°C (A)	I <sub>TSM(2)</sub> 10ms V <sub>R</sub> < 10V (Note 1) (A)	I <sup>2</sup> <sub>t(2)</sub> (Note 1) (A <sup>2</sup> s)	di/dt Non-Rep/Rep (Note 4) (A / μs)	I <sub>DRM</sub> I <sub>RRM</sub> @ 125°C (mA)	R <sub>th</sub> J-hs d.c. 180° sine (K/W)	V <sub>o</sub> r @ T <sub>J</sub> 125°C (Note 2) (V) (mΩ)	Mounting Force (kgf)	Size Ref.
<b>New Products</b>										
N1063 DHx	5300-8500	2010	28†	3.90 x 10 <sup>6</sup> †	300/150	600†	0.011	1.20† 0.385†	6300 - 7700	7
N1263 CHx	4300-5200	2500	42	8.82 x 10 <sup>6</sup>	300/150	500	0.011	1.00 0.25	6300 - 7700	7
N1463 CHx	3600-4200	2850	52	13.5 x 10 <sup>6</sup>	300/150	250	0.011	0.97 0.18	6300 - 7700	7
N1663 CHx	2900-3500	3180	55	15.1 x 10 <sup>6</sup>	300/150	250	0.011	0.90 0.14	6300 - 7700	7
N1863 CHx	1200-2800	3560	60	18.0 x 10 <sup>6</sup>	300/150	250	0.011	0.90 0.10	6300 - 7700	7
N1083 CHx	5300-6500	2310	45†	10.1 x 10 <sup>6</sup> †	300/150	600†	0.009	1.22† 0.29†	8100 - 9800	8
N1283 CHx	4300-5200	2850	55	15.1 x 10 <sup>6</sup>	300/150	600	0.009	0.92 0.25	8100 - 9800	8
N1483 CHx	3600-4200	3400	60	18.0 x 10 <sup>6</sup>	300/150	400	0.009	0.85 0.17	8100 - 9800	8
N1683 CHx	2900-3500	3890	67	22.5 x 10 <sup>6</sup>	300/150	300	0.009	0.94 0.11	8100 - 9800	8
N1883 CHx	1200-2800	4145	75	28.1 x 10 <sup>6</sup>	300/150	300	0.009	0.85 0.10	8100 - 9800	8

† Denotes up-rating  
 † @T<sub>J</sub> 115°C  
 \* TO I<sub>TM</sub> of 2 x I<sub>T(AV)</sub> in accordance with IEC 747-6

Type / Part Number	V <sub>DRM</sub> V <sub>RRM</sub> Range (Note 3) (V)	I <sub>T(AV)</sub> @ T <sub>CASE</sub> (A) (°C)	I <sub>TSM(2)</sub> 10ms V <sub>R</sub> < 10V (Note 1) (A)	I <sup>2</sup> <sub>t(2)</sub> (Note 1) (A <sup>2</sup> s)	di/dt Non-Rep/Rep (Note 4) (A / μs)	I <sub>GT</sub> /V <sub>GT</sub> @ 25°C (mA) (V)	I <sub>DRM</sub> I <sub>RRM</sub> @ 125°C (mA)	I <sub>H</sub> @ 25°C (mA)	R <sub>th</sub> J-hs d.c. 180° sine (K/W)	R <sub>th</sub> c-s (K/W)	V <sub>o</sub> r @ T <sub>J</sub> 125°C (Note 2) (V) (mΩ)	Mounting Torque (kgf)	Size Ref.
N018 RHx	200-1500	21 (85)	240	290	400/200	100/3	5	160	1.00	0.10	1.38 10.30	0.41-0.48	1
N023 RHx	200-1500	23 (85)	345	595	400/200	100/3	5	160	1.00	0.10	1.20 8.30	0.41-0.48	1
N029 RHx	200-1500	30 (96)	575	1653	400/200	100/3	5	160	0.55	0.10	1.17 8.10	0.41-0.48	1
N044 RHx	200-1500	45 (85)	863	3720	400/200	100/3	10	160	0.45	0.10	1.10 7.90	0.41-0.48	2
N060 RHx	200-1500	63 (85)	1100	6613	400/200	100/3	10	160	0.35	0.10	0.89 6.10	0.41-0.48	2
N086 PHx	200-1500	85 (85)	1950	19 x 10 <sup>3</sup>	1000/500	150/3	20	600	0.23	0.08	1.57 2.29	1.15-1.45	3
N086 RHx	200-1500	85 (85)	1950	19 x 10 <sup>3</sup>	1000/500	150/3	20	600	0.23	0.08	1.57 2.29	1.15-1.45	4
N105 PHx	200-1600	110 (90)	2695	36.3 x 10 <sup>3</sup>	1000/500	150/3	20	600	0.23	0.08	0.90 1.79	1.15-1.45	3
N105 RHx	200-1600	110 (90)	2695	36.3 x 10 <sup>3</sup>	1000/500	150/3	20	600	0.23	0.08	0.90 1.79	1.15-1.45	4
N170 PHx	200-1600	196 (85)	4620	107 x 10 <sup>3</sup>	1000/500	150/3	20	600	0.12	0.04	1.08 1.30	2.50-2.77	5
N195 PHx	200-1600	226 (85)	5120	131 x 10 <sup>3</sup>	1000/500	150/3	20	600	0.12	0.04	0.92 0.99	2.50-2.77	5
N275 PHx	200-800	226 (94)	6600	218 x 10 <sup>3</sup>	1000/500	150/3	20	400	0.12	0.04	0.85 0.535	2.50-2.77	5

### Notes:

- $I_{TSM} (8.3ms) = I_{TSM} (10ms) \times 1.066$   
 $I^2 t (8.3ms) = I^2 t (10ms) \times 0.943$   
 At initial temperature T<sub>J</sub> 125°C.
- V<sub>o</sub> Threshold voltage ) for conduction loss and heatsink calculations.  
 r Slope resistance ) (T<sub>J</sub> = 125°C)
- A blocking voltage derating factor of 0.13% per degree Celsius is applicable for T<sub>J</sub> below 25°C.
- di/dt ratings refer to the sum of snubber discharge and load currents. For ratings in excess of 300A/μsec, please contact the Westcode Sales Office for details.



N1063DH58-65	Y	N1847TD580-650	5300-6500	2010	3930	25200	28000	$2.6 \times 10^6$	300/150	300/2	200	1000	0.011		1.200	0.385	2.00 / 2000	1230	63.0 - 77.0	101A325
N1263CH45-52	Y	N2503TC450-520	4500-5200	2500	4880	37800	42000	$5.1 \times 10^6$	300/150	300/4	300	1000	0.011		1.00	0.250	2.0 / 4000	1230	63.0 - 77.0	
N1263DH45-52	N	N2503TC450-520	4500-5200	2500	4880	37800	42000	$5.1 \times 10^6$	300/150	300/4	300	1000	0.011		1.00	0.250	2.0 / 4000	1230	63.0 - 77.0	
N1463CH36-42	Y	N2849TC360-420	3600-4200	2850	5590	46800	52000	$8.2 \times 10^6$	300/150	300/3	250	1000	0.011		0.180	0.970	1.87 / 5000	1230	63.0 - 77.0	
N1463DH36-42	N	N2849TC360-420	3600-4200	2850	5590	46800	52000	$8.2 \times 10^6$	300/150	300/3	250	1000	0.011		0.180	0.970	1.87 / 5000	1230	63.0 - 77.0	
N1663CH30-35	Y	N3184TC300-350	3600-4200	3180	5460	49500	55000	$9.8 \times 10^6$	300/150	300/3	250	1000	0.011		0.95	0.14	1.74 / 6000	1230	63.0 - 77.0	
N1663DH30-35	N	N3184TC300-350	3600-4200	3180	5460	49500	55000	$9.8 \times 10^6$	300/150	300/3	250	1000	0.011		0.95	0.14	1.74 / 6000	1230	63.0 - 77.0	
N1863CH20-28	Y	N3573TC200-280	2000-2800	3560	6040	54000	64000	$10.1 \times 10^6$	300/150	300/3	250	1000	0.011		0.9	0.1	1.5 / 6000	1230	63.0 - 77.0	
N1863DH20-28	N	N3573TC200-280	2000-2800	3560	6040	54000	64000	$10.1 \times 10^6$	300/150	300/3	250	1000	0.011		0.9	0.1	1.5 / 6000	1230	63.0 - 77.0	

N1083CH58-65	Y	N2840FC580-650	5800-6500	2310	4130	40000	45000	$6.0 \times 10^6$	300/150	300/3	300	1000	0.009		0.29	1.23	2.10 / 3000	2800	81.0 - 98.0	101A322
N1283CH45-52	Y	N3764FC450-520	4500-5200	3764	6620	49500	55000	$15.13 \times 10^6$	300/150	300/3	300	1000	0.0065		1.0	0.2	2.0 / 5000	2800	81.0 - 98.0	
N1483CH36-42	Y	N4156FC360-420	3600-4200	3400	5950	54000	60000	$10.1 \times 10^6$	300/150	300/3	250	1000	0.009		0.85	0.17	1.87 / 6000	2800	81.0 - 98.0	
N1683CH30-35	Y	N4803FC300-350	3000-3500	3890	6650	60000	67000	$10.2 \times 10^6$	300/150	300/3	250	1000	0.009		0.94	0.11	1.60 / 6000	2800	81.0 - 98.0	
N1883CH20-28	Y	N5107FC200-280	2000-2800	4145	7115	67500	75000	$10.8 \times 10^6$	300/150	300/3	300	1000	0.009		0.8	0.1	1.40 / 6000	2800	81.0 - 98.0	
N1983CH18-22	Y	N5946FC180-220	1800-2200	5946	10155	72000	80000	$32.0 \times 10^6$	300/150	300/3	200	1000	0.0065		0.855	0.065	1.25 / 6000	2800	81.0 - 98.0	

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Note 1  $I_{TSM} (8.3ms) = I^2 t (10ms) \times 0.943$  at initial temperature  $T_J 125^\circ C$

Note 2  $V_o$  Threshold Voltage  
r Slope resistance ) for conduction loss and heatsink calculations ( $T_J = 125^\circ C$ )

Note 3 Capsule outlines available with compressed heights:

Outline 101A281

25.6 / 26.9 = ordering code NxxxDHxx, e.g. N980DH12

Note 4 di/dt ratings refer to the sum of snubber discharge an

Note 5 A blocking derating factor of 0.13 per degree Centigrade for  $T_J$  below  $25^\circ C$

## RECTIFIER DEVICE - Phase Control Thyristors - Medium Power Stud Types

Old Part Number	PDF Data Sheet Available	New Part Number	V <sub>DRM</sub> V <sub>R<sub>RM</sub></sub> Range		I <sub>T(AV)</sub> @ T <sub>CASE</sub>		I <sub>T(RMS)</sub> at T <sub>sink</sub> 25°C	I <sub>T</sub> at T <sub>sink</sub> 25°C	I <sub>TSM(1)</sub> 10ms V <sub>R</sub> £60% V <sub>RRM</sub> (Note 1)	I <sub>TSM(2)</sub> 10ms V <sub>R</sub> £10V (Note 1)	I <sup>2</sup> t <sub>(2)</sub> (Note 1)	di/dt Non-Rep/Rep (Note 4)	I <sub>GT</sub> /V <sub>GT</sub> @ 25°C (mA) (V)	I <sub>DRM</sub> I <sub>RRM</sub> @ 125°C (mA)	I <sub>H</sub> @ 25°C (mA)	Rth j-c		Rth c-s	V <sub>O</sub> @ T <sub>J</sub> 125°C (V) (Note 2)	r	V <sub>TM</sub> at I <sub>TM</sub> @ T <sub>J</sub> 125°C (V) (A)	Wt (Typ) (g)	Mounting Torque (kgfm <sup>-1</sup> )	Outline No. (Note 5)
			(V)	(A)	(°C)	(A)	(A)	(A)	(A)	(A)	(A <sup>2</sup> s)	(A/ms)	(mA)	(mA)	(mA)	d.c. 180° sine (K/W)	120° Rect. (K/W)	(K/W)	(V)	(mW)	(V)	(A)	(g)	(kgfm <sup>-1</sup> )
N060RH06-15	N	<b>N0089SR060-150</b>	600-1500	89	(55)	100	100	1000	1100	6613	400/200	100/3	10	160	0.35		0.10	0.89	6.10	2.10	195	33	0.41-0.48	101A153

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Note 1  $I_{TSM}(8.3ms) = I_{TSM}(10ms) \times 1.066$        $I^2t(8.3ms) = I^2t(10ms) \times 0.943$

Note 2 V<sub>o</sub> Threshold Voltage  
r Slope resistance ) for conduction loss and heatsink calculations. (T<sub>J</sub> = 125°C)

Note 3 A blocking voltage derating factor of 0.13% per degree centigrade is applicable for T<sub>J</sub> below 25°C

Note 4 di/dt ratings refer to the sum of snubber discharge and load currents.

Note 5 Outline 101A153 - leaded types available, code changes from RH to PH. Lead length 146mm (base of hexagon to centre of lug hole).