INTERNATIONAL
IRI

PHASE CONTROL THYRISTOR

T25A

FEATURES

- Hermetic glass to metal seal
- High di/dt & dv/dt capabilities.
- Voltage grade upto 1600V

TYPICAL APPLICATIONS

- DC Motor control
- Controlled rectifiers
- AC Controllers

TECHNICAL DATA

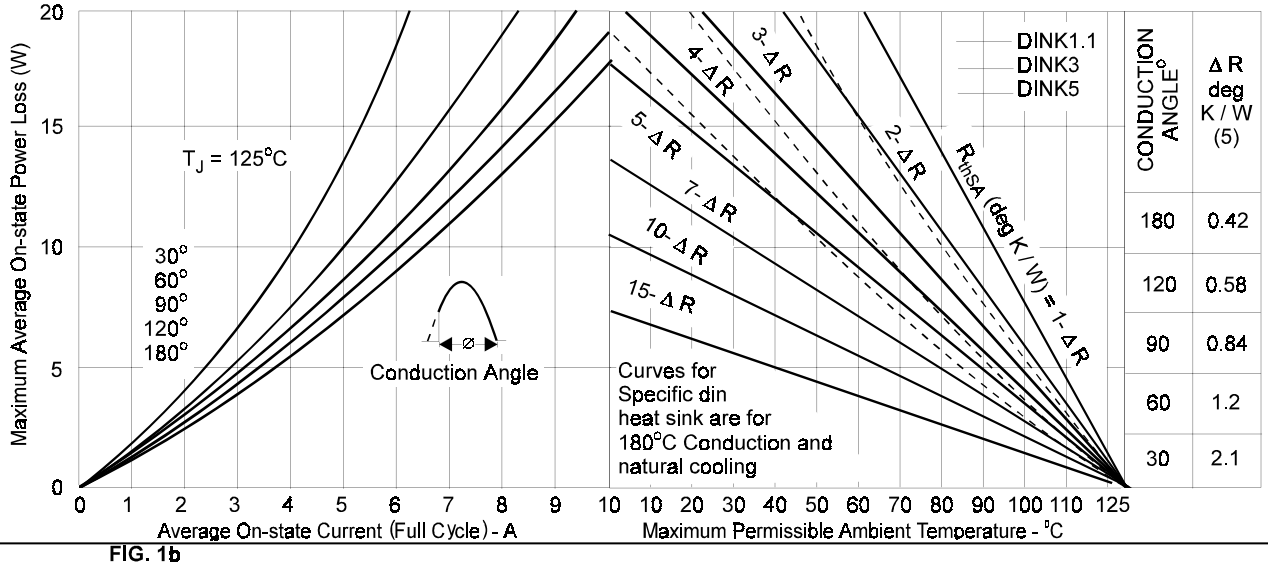
DEVICE TYPE	V_{DRM}/V_{RRM} (V)	V_{RSM} (V)
T25A120	1200	1300
T25A160	1600	1700

TO-48

SYMBOL	CONDITIONS	VALUES
I_{TAV} I_{RMS}	Sin. 180; T_{case} =85 °C Ta = 45°C	25 amp. 40 amp.
I_{TSM} I^2t	Tvj=25°C; 10ms Tvj=25°C	395 amp. 615 A^2S
I_{RRM}/ I_{DRM}	Tvj=25°C Tvj=125°C	2 mA 10 mA
V_T	Tvj=25°C (I_T=80 Amp.); max	1.70 V
di/dt		200A/us
dv/dt		500V/us
I_{GT} V_{GT} I_H I_L	Tvj=25 °C Tvj=25 °C Tvj=25 °C Typical value Tvj=25 °C Typical value	90 mA 3.0 V 100 mA 200 mA
$R_{th(j-c)}$ $R_{th(c-h)}$ Tvj Tstg	Junction to case case to heat sink	0.75 °C/W 0.35 °C/W 125 °C -40 +125 °C
Mounting torque		2.5 Nm
Weight	Approx.	14 gm
Package Outline		A

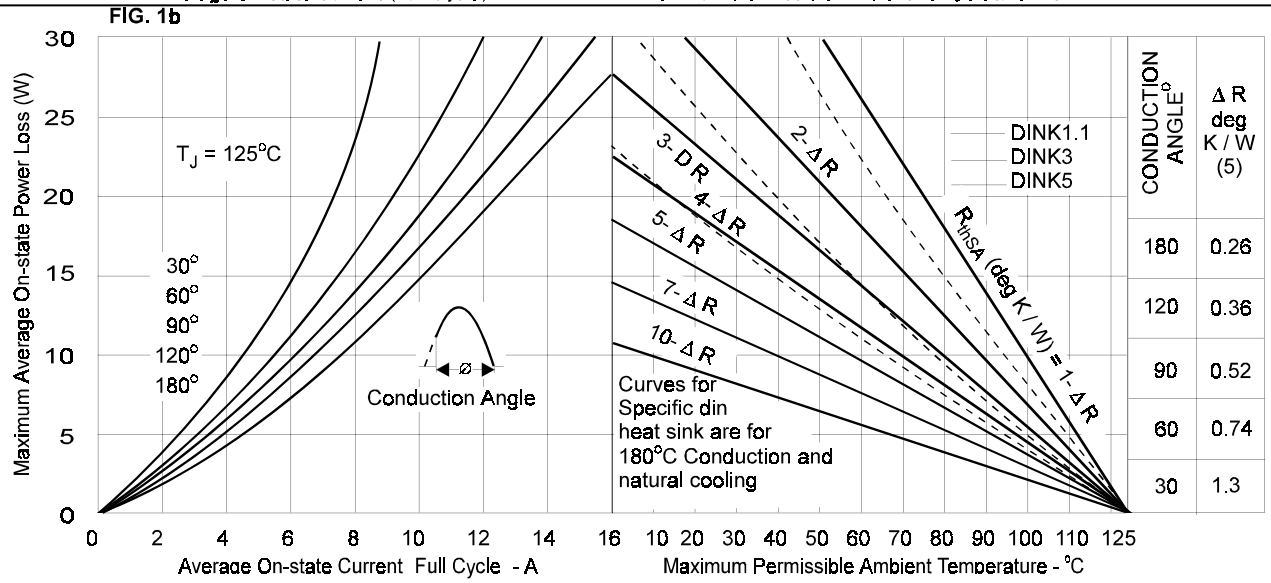
Fig. 1- Continuous Current Rating Characteristics For Phase Angle Controlled Half-Sinsoidal Waves 50 - 400 Hz

FIG. 1a



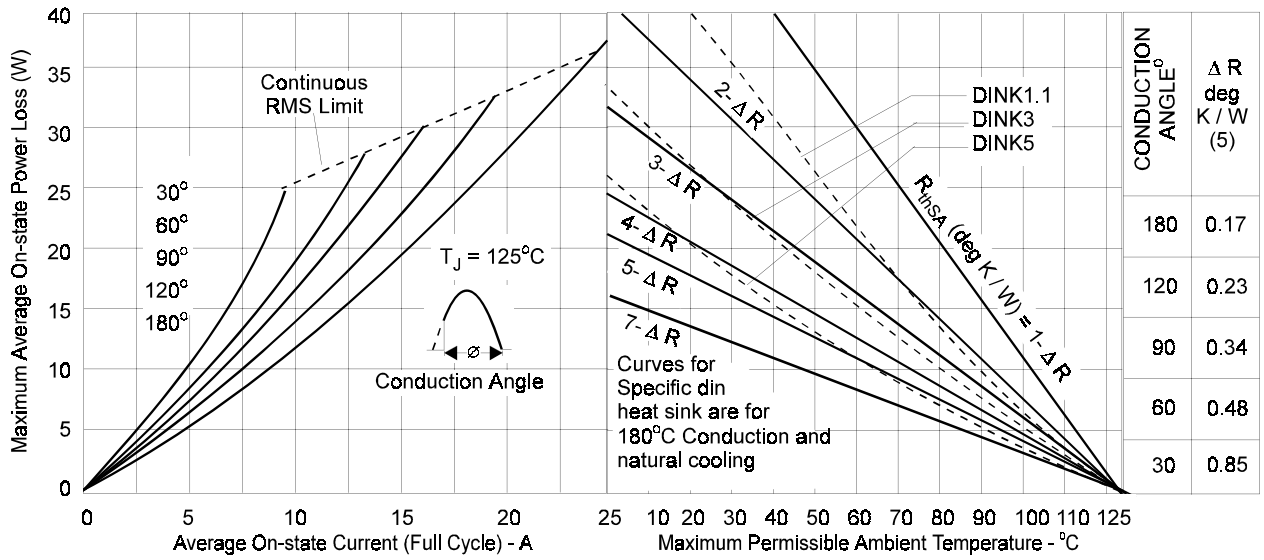
CONDUCTION ANGLE°	ΔR deg K / W (5)
180	0.42
120	0.58
90	0.84
60	1.2
30	2.1

FIG. 1b



CONDUCTION ANGLE°	ΔR deg K / W (5)
180	0.26
120	0.36
90	0.52
60	0.74
30	1.3

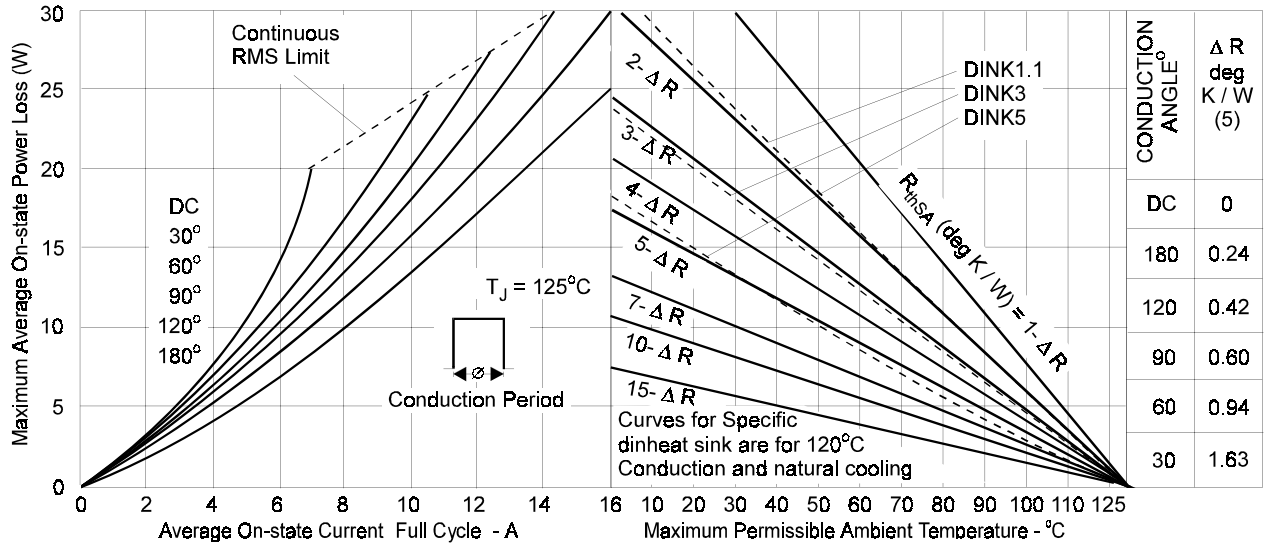
FIG. 1C



CONDUCTION ANGLE°	Δ R deg K / W (5)
180	0.17
120	0.23
90	0.34
60	0.48
30	0.85

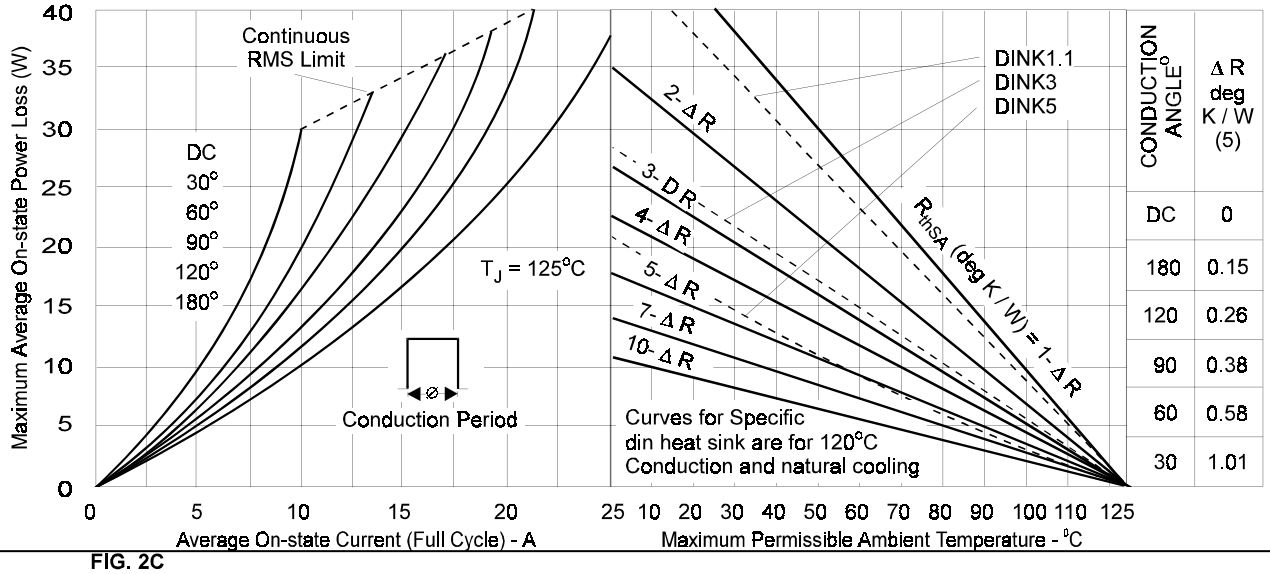
Fig. 2- Continuous Current Rating Characteristics For Rectangular Waves

FIG. 2a



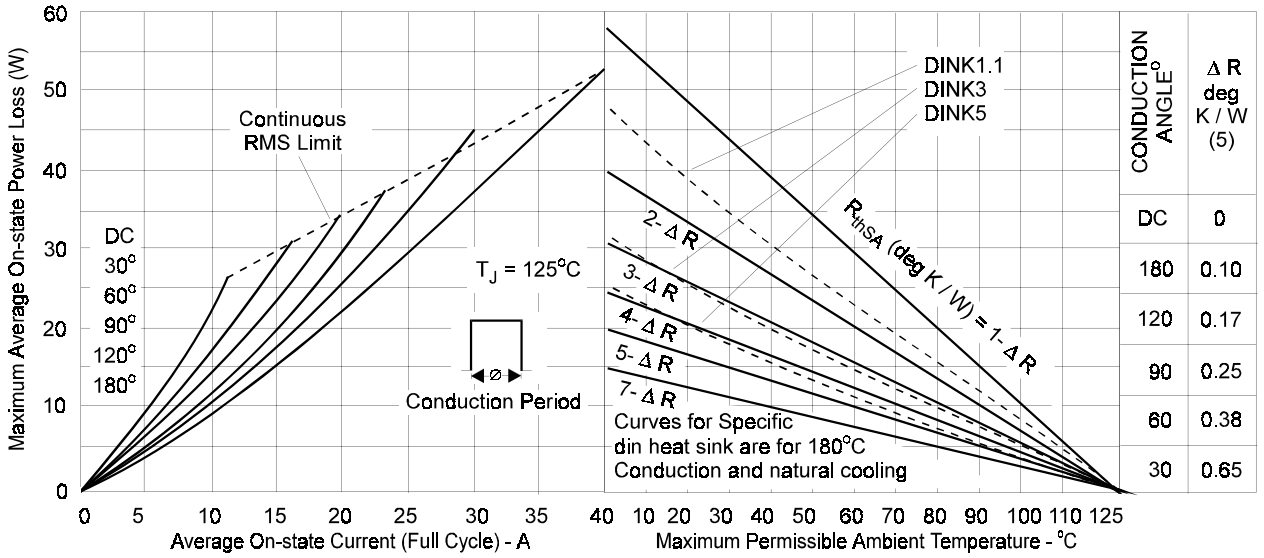
CONDUCTION ANGLE°	Δ R deg K / W (5)
DC	0
180	0.24
120	0.42
90	0.60
60	0.94
30	1.63

FIG. 2b



CONDUCTION ANGLE°	Δ R deg K / W (5)
DC	0
180	0.15
120	0.26
90	0.38
60	0.58
30	1.01

FIG. 2C



CONDUCTION ANGLE°	Δ R deg K / W (5)
DC	0
180	0.10
120	0.17
90	0.25
60	0.38
30	0.65

Fig. 3 - Maximum On-state Voltage Drop Vs Current

Fig. 3a

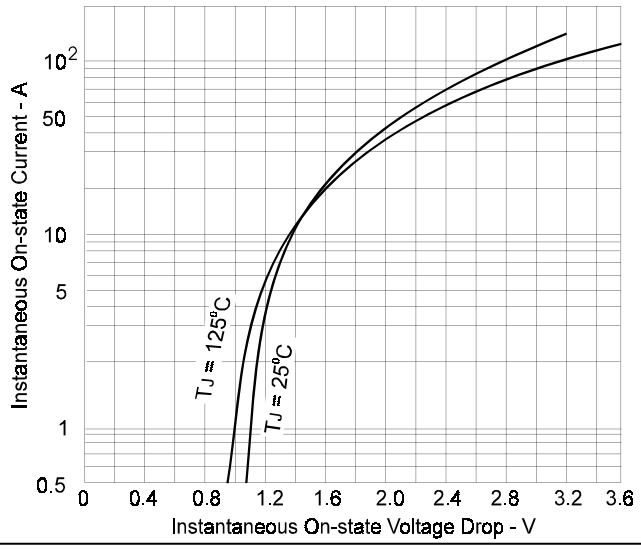


Fig. 3b

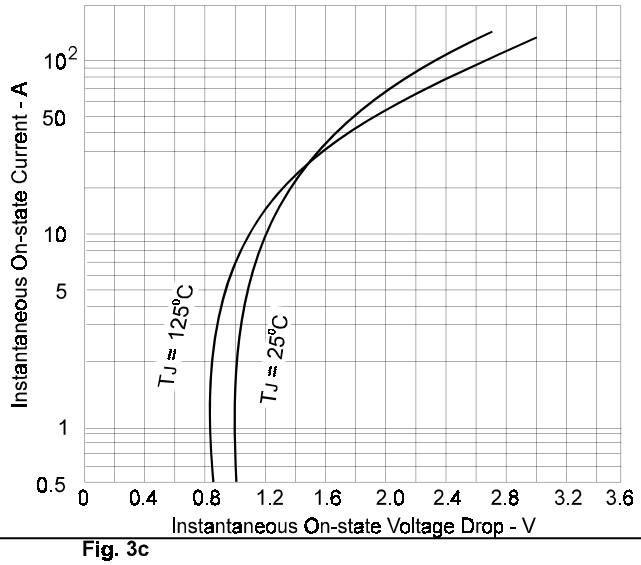


Fig. 3c

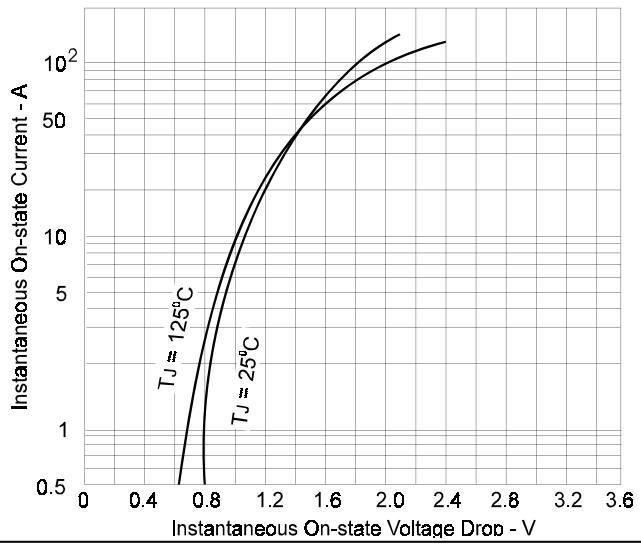


Fig. 4 - Non-Repetitive Surge Current

(a) IInitial T_J = 45°C — 100% rated voltage reapplied sinusoidally in either direction after each current pulse

(b) Initial T_J = 125°C — 100% rated voltage reapplied sinusoidally, in the reverse direction after each current pulse

Control of conduction maintained under all conditions

FIG. 4a

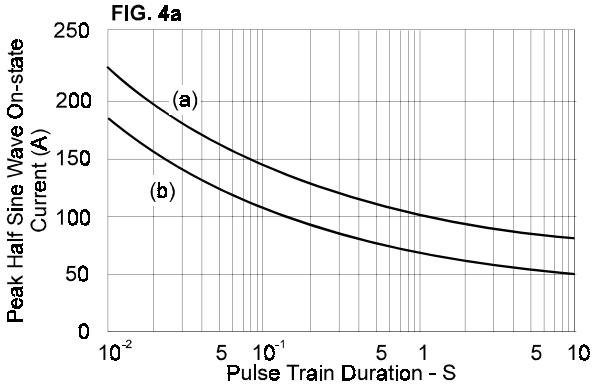


Fig. 4b

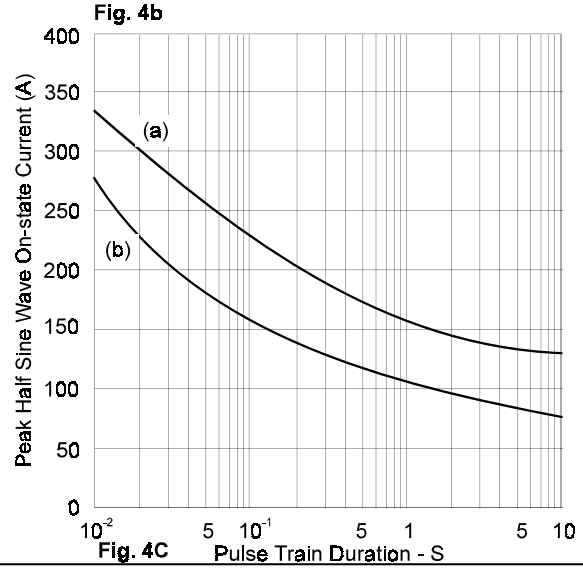
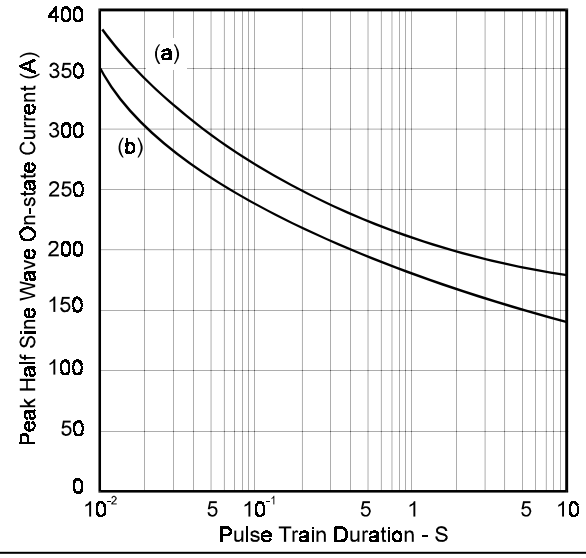


Fig. 4C



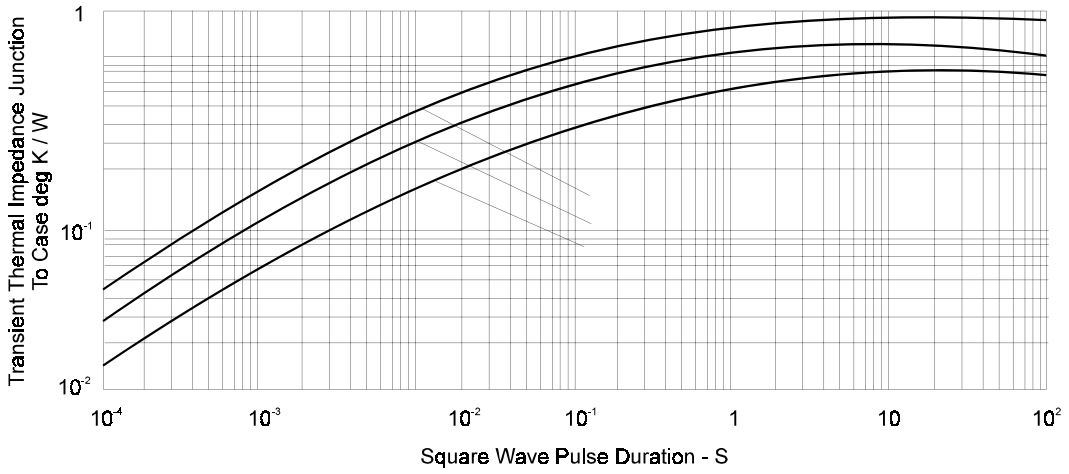
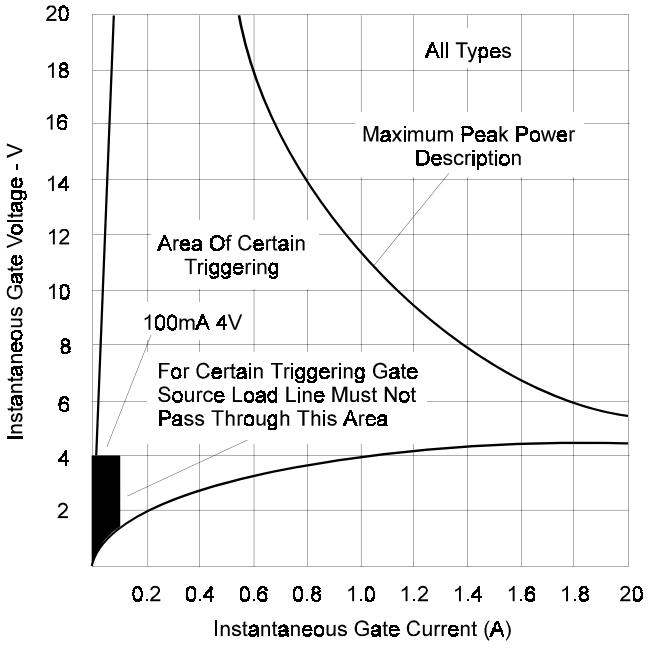


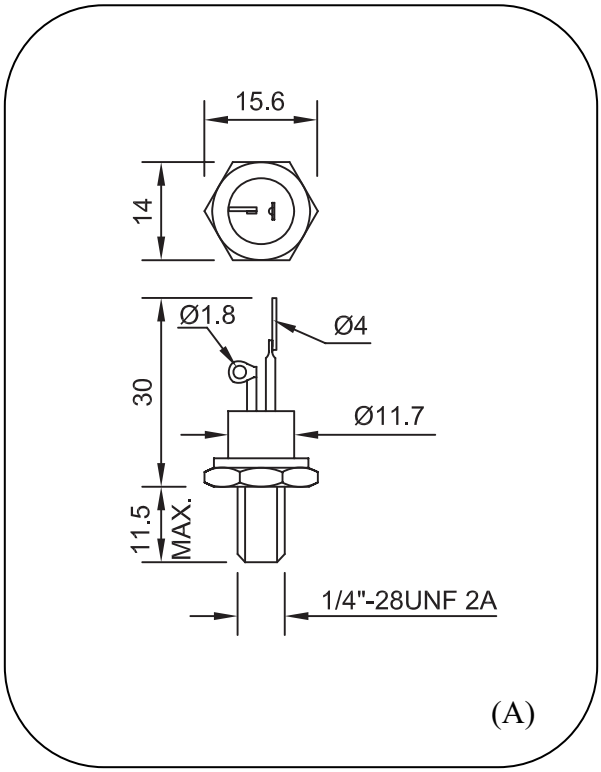
Fig. 5 - Maximum Transient Thermal Impedance Versus Square Wave Pulse Duration



NOTES

1 - GATE OPEN CURRENT.
2 - WITH ZERO OR NEGATIVE GATE BIAS VOLTAGE.
3 - FOR VOLTAGE PULSE LESS THAN 10m Sec.
4 - VOLTAGE REAPPLIED SINUSOIDALLY, 10ms HALF PERIOD
5 - 6V ANODE SUPPLY, RESISTIVE LOAD, GATE OPEN.
6 - 6V ANODE SUPPLY, RESISTIVE LOAD
7 - GATE CURRENT = 200mA, RISE TIME 0.5µs PULSE DURATION AT LEAST 6µs V_D = 0.5 $_{DRM}$ RESISTIVE CIRCUIT I_{TM} = 0.1 X $I_{T\ (AV)}$
8 - I_{TM} = $I_{T(AV)}$ FOR AT LEAST 200 µs, dir/dt = 10A/µs
9 - I_{TM} = $I_{T(AV)}$, dir/dt = 10µs, ON-STATE CURRENT PULSE AT LEAST 200µs DURATION. RESERVE VOLTAGE DURING TURN OFF 100V, REAPPLIED dv/dt = 20V/µs EXPONENTIAL TO 0.67 V_{DRM}.
10 - FROM 0.67V_{DRM}, T_J = 125°C. PEAK GATE CURRENT = 0.5 RISE TIME 1µs, PULSE DURATION AT LEAST 6µs. I_{TM} = A X $I_{T\ (AV)}$
11 - WITH V_{DRM} APPLIED, I_{TM} = 0.1 x $I_{T\ (AV)}$
12 -TO DETERMINE REQUIRED HEAT SINK THERMAL RESISTANCE (R_{thSA}) IN DEG C / W USE VALUE OF Δ R APPROPRIATE TO CONDUCTION ANGLE STATED IN TABLE AND SUBSTITUTE IN FORMULA R_{thSA} = X - Δ R.
e.g. FOR 10RIA AT 180°C CONDUCTION ANGLE, AND 60°C AMBIENT TEMPERATURE R_{thSA} = 3 - 0.42 = 2.58 DEG C / W (FIG. 1)

PACKAGE OUTLINE



All dimension are in mm .

Insel Rectifiers (India) Pvt. Ltd.

(An ISO 9001:2015, ISO 14001:2015 Certified Company)

Plot No 151, Udyog Kendra, Extn.-II, Ecotech-III, Greater Noida-201306

Toll Free No.: 1800 3070 9989, Fax : 011-27491404

E-mail : insel@rectifierindia.com, sales@rectifierindia.com