

FEATURES

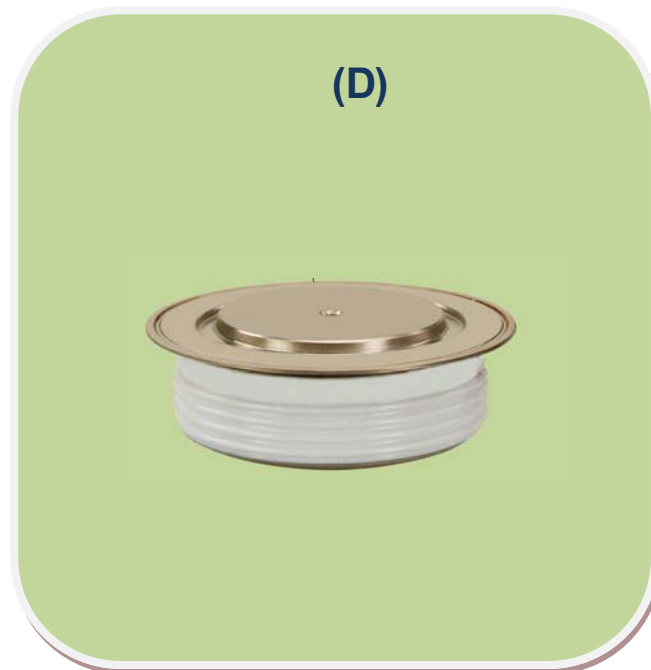
- Available In Normal & Reverse Polarity
- All Diffused Series
- Industrial Grade
- Available In Avalanche Characteristic

TYPICAL APPLICATIONS

- Power supplies
- Machine tool controls
- Power supplies
- Battery chargers
- Welders

TECHNICAL DATA

DEVICE TYPE	V_{RRM} (V)	V_{RSM} (V)
DS2002SD1414	1400	1500
DS2002SD1616	1600	1700
DS2002SD1818	1800	1900



CURRENT RATINGS

$T_{case} = 75^{\circ}C$ unless otherwise stated

Symbol	Parameter	Conditions	Max.	Units
Double Side Cooled				
$I_{F(AV)}$	Mean forward current	Half wave resistive load	2996	A
$I_{F(RMS)}$	RMS value	-	4707	A
I_F	Continuous (direct) forward current	-	4122	A
Single Side Cooled (Anode side)				
$I_{F(AV)}$	Mean forward current	Half wave resistive load	2093	A
$I_{F(RMS)}$	RMS value	-	3288	A
I_F	Continuous (direct) forward current	-	2693	A

$T_{case} = 100^{\circ}\text{C}$ unless otherwise stated

Symbol	Parameter	Conditions	Max.	Units
Double Side Cooled				
$I_{F(AV)}$	Mean forward current	Half wave resistive load	2320	A
$I_{F(RMS)}$	RMS value	-	3644	A
I_F	Continuous (direct) forward current	-	3300	A
Single Side Cooled (Anode side)				
$I_{F(AV)}$	Mean forward current	Half wave resistive load	1345	A
$I_{F(RMS)}$	RMS value	-	2110	A
I_F	Continuous (direct) forward current	-	1630	A

SURGE RATINGS

Symbol	Parameter	Conditions	Max.	Units
I_{FSM}	Surge (non-repetitive) forward current	10ms half sine; $T_{case} = 175^{\circ}\text{C}$ $V_R = 50\% V_{RRM} - 1/4$ sine	33.0	kA
I^2t	I^2t for fusing		5.44×10^6	A^2s
I_{FSM}	Surge (non-repetitive) forward current	10ms half sine; $T_{case} = 175^{\circ}\text{C}$ $V_R = 0$	41.25	kA
I^2t	I^2t for fusing		8.5×10^6	A^2s

THERMAL AND MECHANICAL DATA

Symbol	Parameter	Conditions	Min.	Max.	Units
$R_{th(j-c)}$	Thermal resistance - junction to case	Double side cooled	dc	-	0.022 $^{\circ}\text{C/W}$
		Single side cooled	Anode dc	-	0.038 $^{\circ}\text{C/W}$
			Cathode dc	-	0.052 $^{\circ}\text{C/W}$
$R_{th(c-h)}$	Thermal resistance - case to heatsink	Clamping force 19.5kN with mounting compound	Double side	-	0.004 $^{\circ}\text{C/W}$
			Single side	-	0.008 $^{\circ}\text{C/W}$
T_{vj}	Virtual junction temperature	Forward (conducting)	-	185	$^{\circ}\text{C}$
		Reverse (blocking)	-	175	$^{\circ}\text{C}$
T_{stg}	Storage temperature range		-55	200	$^{\circ}\text{C}$
-	Clamping force		18.0	22.0	kN

CHARACTERISTICS

Symbol	Parameter	Conditions	Min.	Max.	Units
V_{FM}	Forward voltage	At 3400A peak, $T_{case} = 25^{\circ}C$	-	1.18	V
I_{RRM}	Peak reverse current	At V_{RRM} , $T_{case} = 175^{\circ}C$	-	50	mA
Q_S	Total stored charge	$I_F = 2000A$, $dI_{RR}/dt = 3A/\mu s$	-	1500	μC
I_{RR}	Peak recovery current	$T_{case} = 175^{\circ}C$, $V_R = 100V$	-	90	A
V_{TO}	Threshold voltage	At $T_{vj} = 175^{\circ}C$	-	0.74	V
r_T	Slope resistance	At $T_{vj} = 175^{\circ}C$	-	0.088	m Ω

CURVES

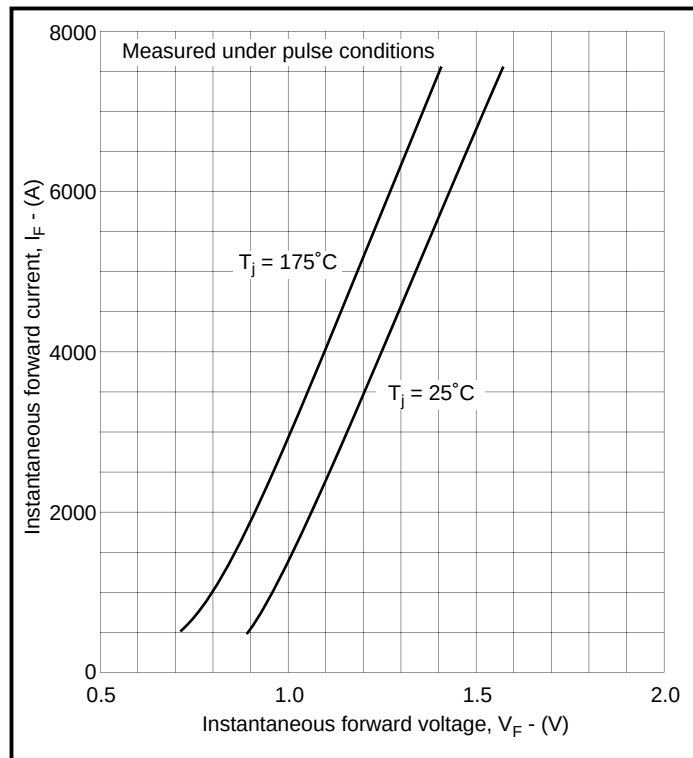


Fig.2 Maximum (limit) forward characteristics

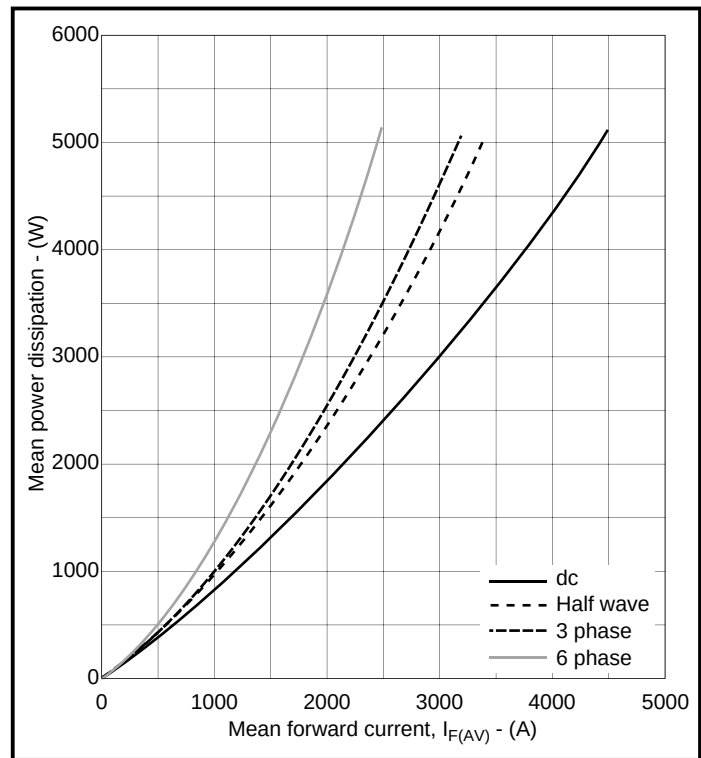


Fig.3 Dissipation curves

V_{FM} Equation:-

$$V_{FM} = A + B \ln(I_F) + C \cdot I_F + D \cdot \sqrt{I_F}$$

Where

$$A = -0.64773$$

$$B = 0.268581$$

$$C = 0.00016$$

$$D = -0.01796$$

these values are valid for $T_j = 125^{\circ}C$ for I_F 500A to 8000A

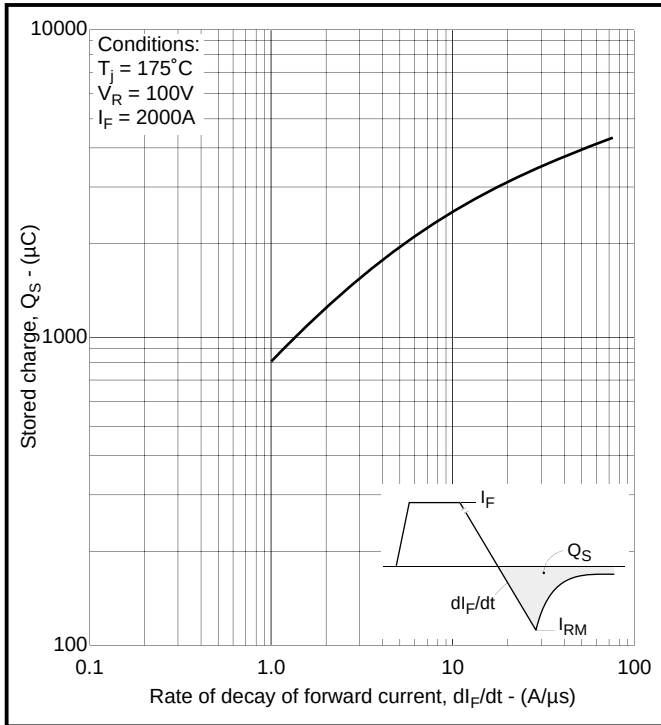


Fig.4 Total stored charge

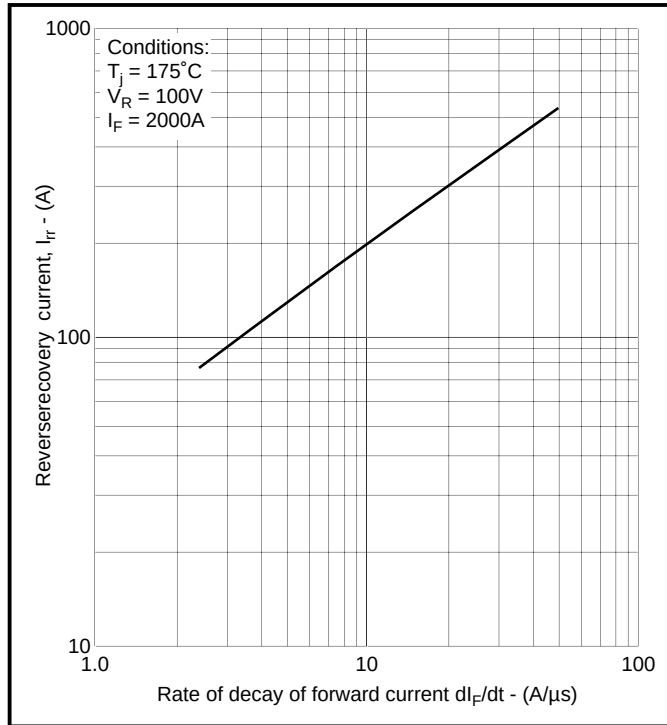


Fig.5 Maximum reverse recovery current

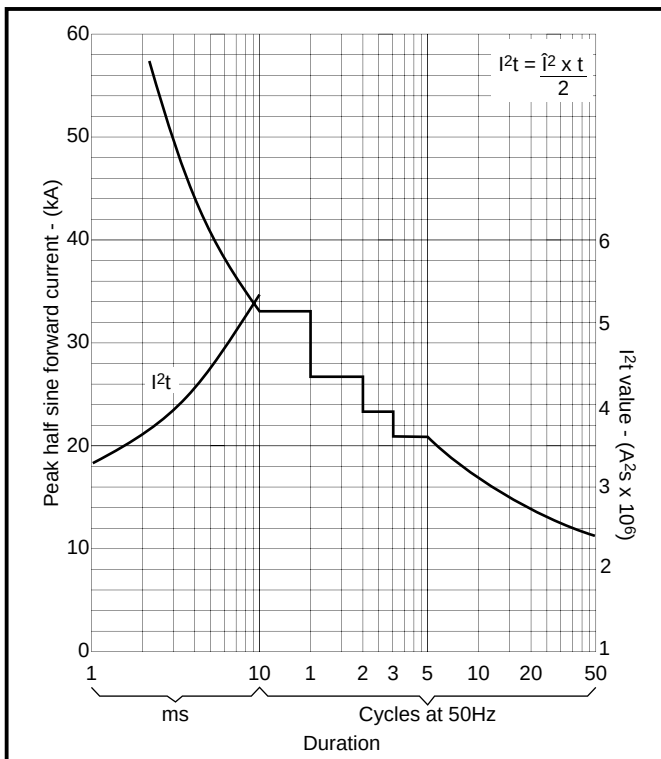


Fig.6 Surge (non-repetitive) forward current vs time (with 50% V_{RRM} at $T_{case} = 175^\circ\text{C}$)

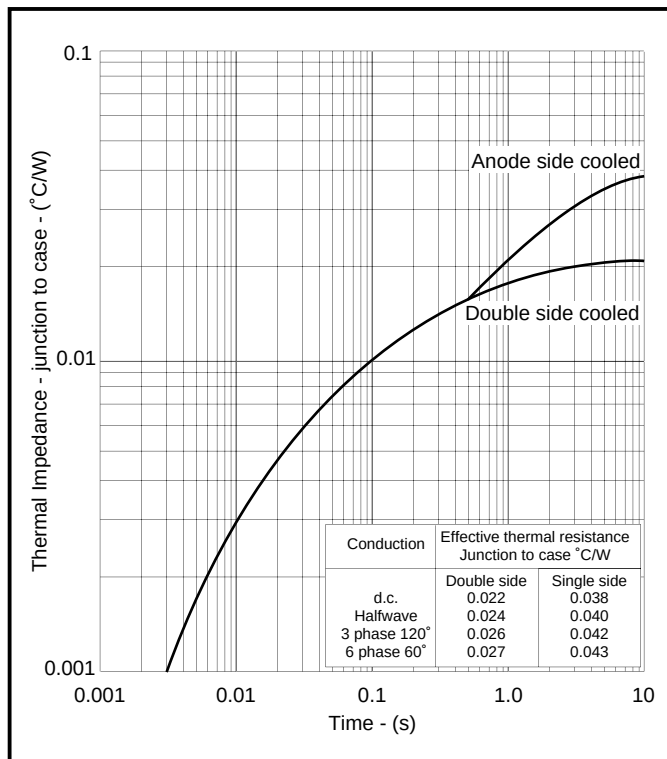
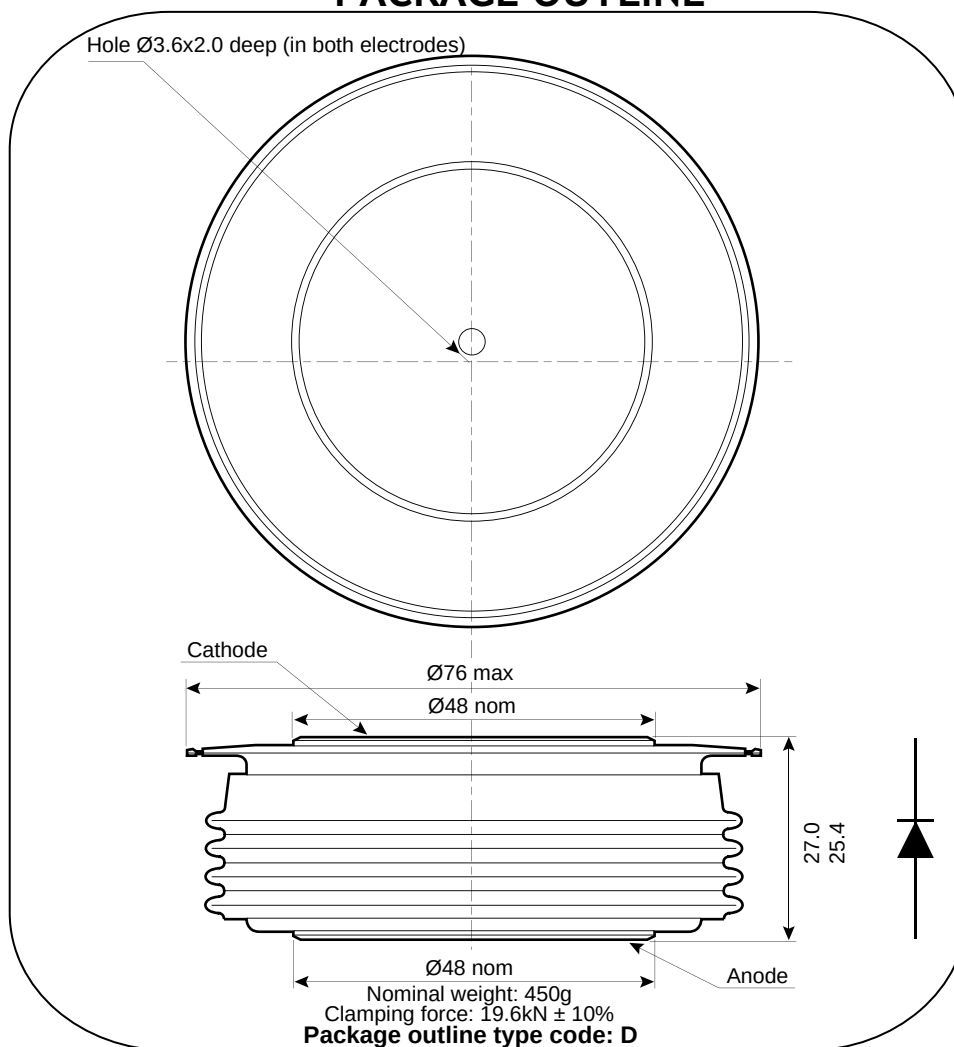


Fig.7 Maximum (limit) transient thermal impedance - junction to case

PACKAGE OUTLINE



All dimensions 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