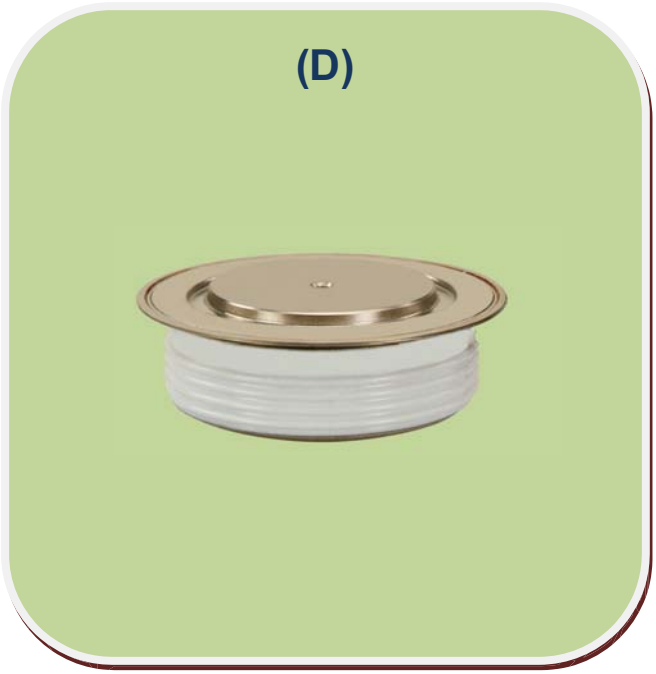
INTERNATIONAL
IRI

STANDARD RECOVERY DIODE

DS2004SD

FEATURES

- Wide current range
- High voltage ratings up to 2800 V
- High surge current capabilities
- Diffused junction



TYPICAL APPLICATIONS

- Converters
- Power supplies
- Machine tool controls
- High power drives
- Medium traction applications

TECHNICAL DATA

DEVICE TYPE	V_{RRM} (V)	V_{RSM} (V)
DS2004SD2424	2400	2500
DS2004SD2626	2600	2700
DS2004SD2828	2800	2900

CURRENT RATINGS

T_{case} = 75°C unless otherwise stated

Symbol	Parameter	Conditions	Max.	Units
Double Side Cooled				
$I_{F(AV)}$	Mean forward current	Half wave resistive load	2372	A
$I_{F(RMS)}$	RMS value	-	3726	A
I_F	Continuous (direct) forward current	-	3352	A
Single Side Cooled (Anode side)				
$I_{F(AV)}$	Mean forward current	Half wave resistive load	1684	A
$I_{F(RMS)}$	RMS value	-	2645	A
I_F	Continuous (direct) forward current	-	2235	A

T_{case} = 100°C unless otherwise stated

Symbol	Parameter	Conditions	Max.	Units
Double Side Cooled				
$I_{F(AV)}$	Mean forward current	Half wave resistive load,	1960	A
$I_{F(RMS)}$	RMS value	-	3077	A
I_F	Continuous (direct) forward current	-	2750	A
Single Side Cooled (Anode side)				
$I_{F(AV)}$	Mean forward current	Half wave resistive load	1300	A
$I_{F(RMS)}$	RMS value	-	2040	A
I_F	Continuous (direct) forward current	-	1600	A

SURGE RATINGS

Symbol	Parameter	Conditions	Max.	Units
I_{FSM}	Surge (non-repetitive) forward current	10ms half sine; T_{case} = 175°C	25.0	kA
I^2t	I^2t for fusing	V_R = 50% V_{RRM} - 1/4 sine	3.12 x 10^6	A^2s
I_{FSM}	Surge (non-repetitive) forward current	10ms half sine; T_{case} = 175°C	31.25	kA
I^2t	I^2t for fusing	V_R = 0	4.88 x 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	°C/W
		Single side cooled	Anode dc	-	0.038	°C/W
			Cathode dc	-	0.052	°C/W
$R_{th(c-h)}$	Thermal resistance - case to heatsink	Clamping force 19.5kN with mounting compound	Double side	-	0.004	°C/W
			Single side	-	0.008	°C/W
T_{vj}	Virtual junction temperature	Forward (conducting)		-	185	°C
		Reverse (blocking)		-	175	°C
T_{stg}	Storage temperature range			–55	180	°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°C	-	1.3	V
I_{RRM}	Peak reverse current	At V_{RRM}, T_{case} = 175°C	-	50	mA
Q_S	Total stored charge	I_F = 2000A, dI_{RR}/dt = 3A/µs,	-	2500	µC
I_{RR}	Peak recovery current	T_{case} = 175˚C, V_R = 100V	-	105	A
V_{TO}	Threshold voltage	At T_{vj} = 175˚C	-	0.82	V
r_T	Slope resistance	At T_{vj} = 175˚C	-	0.16	mΩ

CURVES

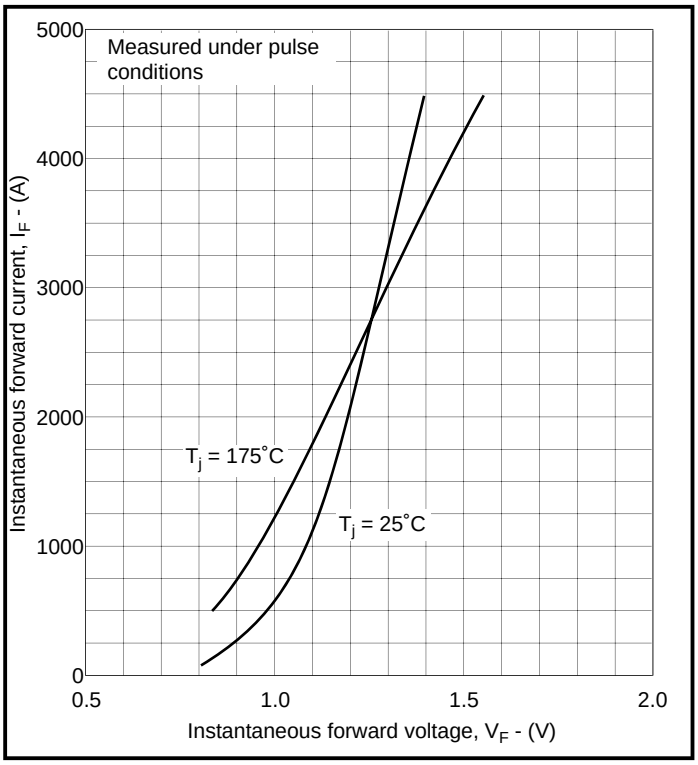


Fig.2 Maximum (limit) forward characteristics

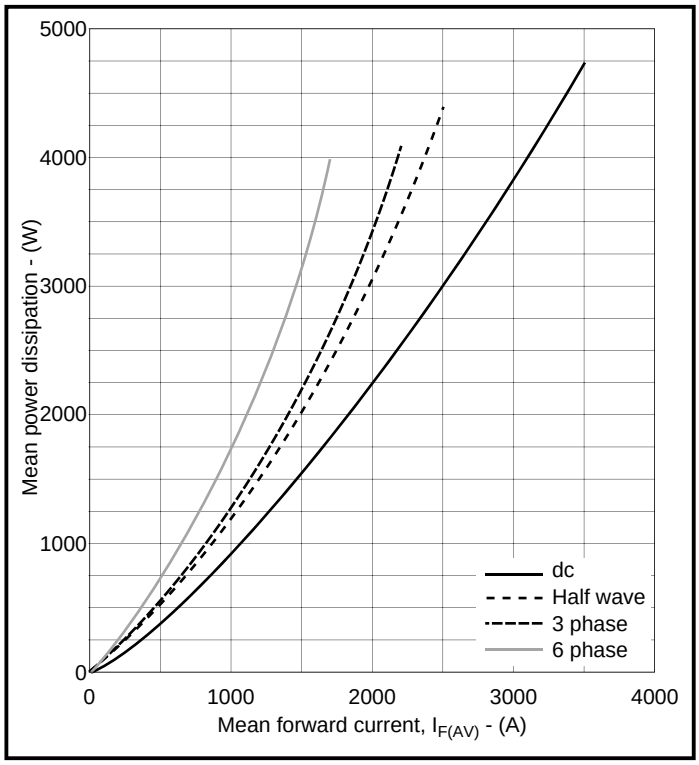


Fig.3 Dissipation curves

V_{FM} Equation:-

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

Where A = –0.23148
B = 0.203801
C = 0.00023
D = –0.0443

these values are valid for T_j = 125˚C for I_F 500A to 5000A

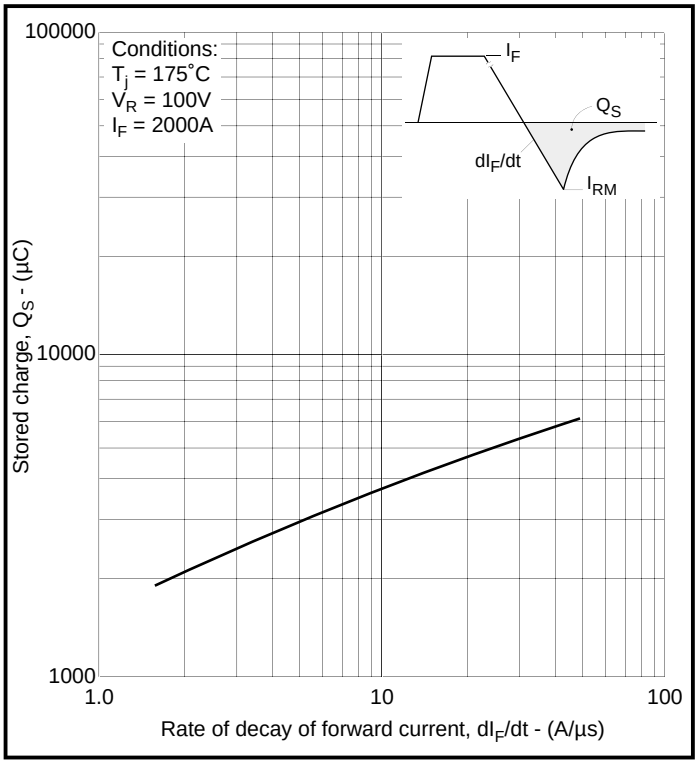


Fig.4 Total stored charge

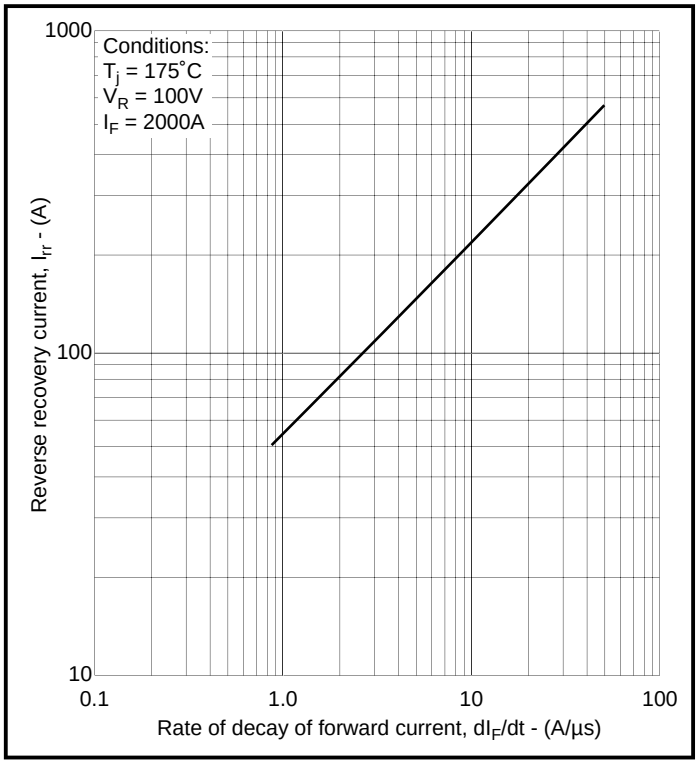


Fig.5 Maximum reverse recovery current

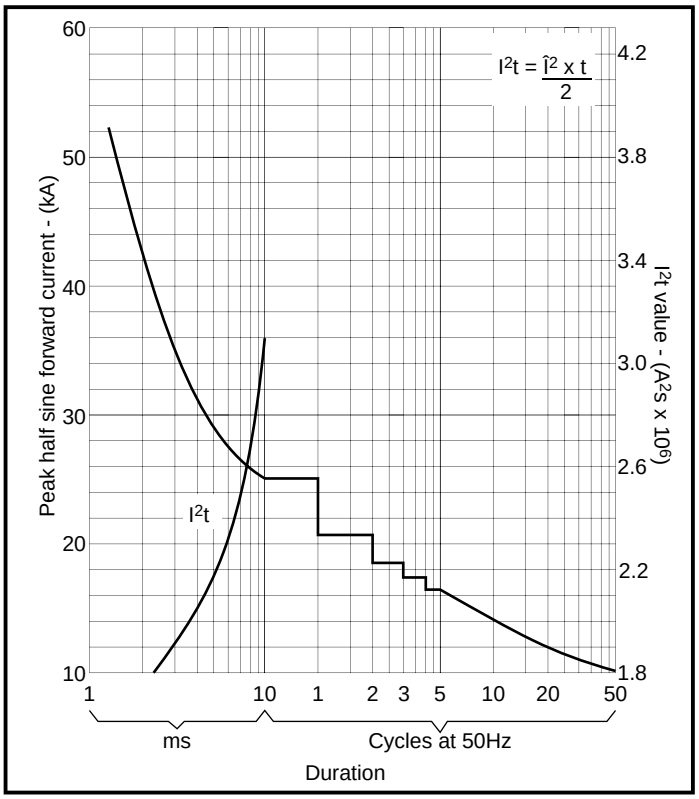


Fig.6 Surge (non-repetitive) forward current vs time (with 50% V_{RRM} at T_{case} 175˚C)

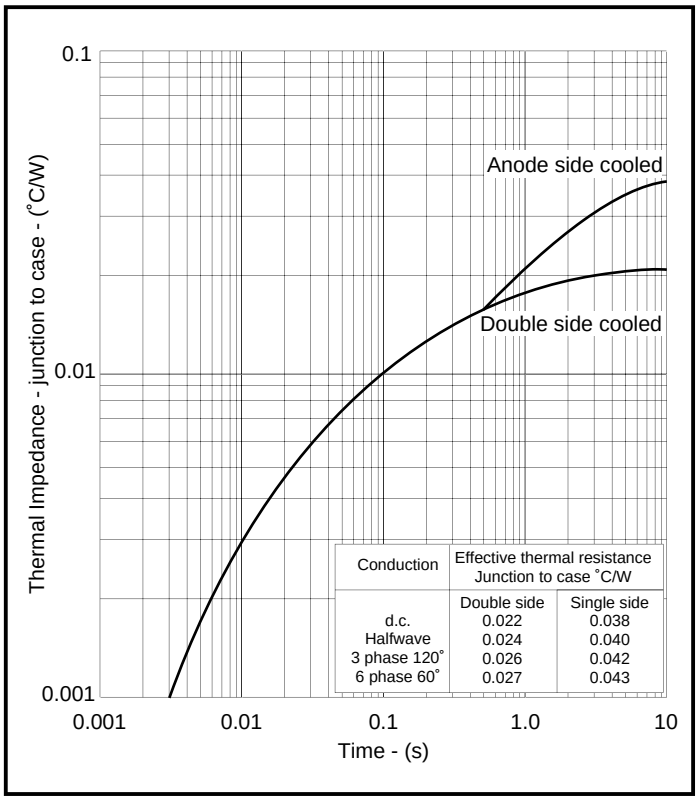
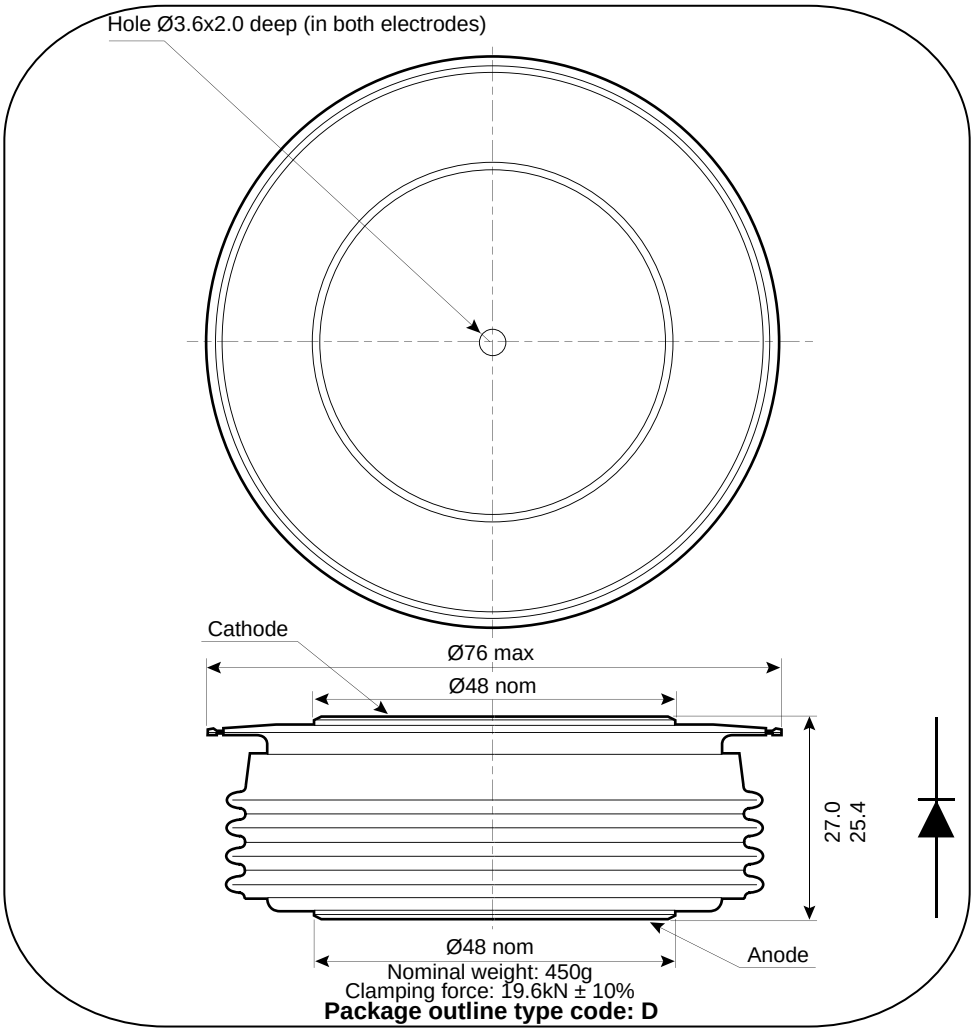


Fig.7 Maximum (limit) transient thermal impedance - junction to case

PACKAGE OUTLINE



Nominal weight: 450g
Clamping force: 19.6kN ± 10%
Package outline type code: D

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