INTERNATIONAL
IRI

STANDARD RECOVERY DIODE

DS2012SF

FEATURES

- Wide current range
- High voltage ratings up to 6000 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)
DS2012SF55	5500	5600
DS2012SF57	5700	5800
DS2012SF60	6000	6100

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	1152	A
$I_{F(RMS)}$	RMS value	-	1872	A
I_F	Continuous (direct) forward current	-	1612	A
Single Side Cooled (Anode side)				
$I_{F(AV)}$	Mean forward current	Half wave resistive load	832	A
$I_{F(RMS)}$	RMS value	-	1307	A
I_F	Continuous (direct) forward current	-	1101	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	960	A
$I_{F(RMS)}$	RMS value	-	1507	A
I_F	Continuous (direct) forward current	-	1344	A
Single Side Cooled (Anode side)				
$I_{F(AV)}$	Mean forward current	Half wave resistive load	640	A
$I_{F(RMS)}$	RMS value	-	1005	A
I_F	Continuous (direct) forward current	-	787	A

SURGE RATINGS

Symbol	Parameter	Conditions	Max.	Units
I_{FSM}	Surge (non-repetitive) forward current	10ms half sine; T_{case} = 150°C	14.4	kA
I^2t	I^2t for fusing	V_R = 50% V_{RRM} - 1/4 sine	1.00 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)		-	160	°C
		Reverse (blocking)		-	150	°C
T_{stg}	Storage temperature range			-55	175	°C
-	Clamping force			18.0	22.0	kN

CHARACTERISTICS

Symbol	Parameter	Conditions	Min.	Max.	Units
V_{FM}	Forward voltage	At 1500A peak, T_{case} = 25°C	-	1.75	V
I_{RRM}	Peak reverse current	At V_{RRM}, T_{case} = 150°C	-	75	mA
Q_S	Total stored charge	I_F = 2000A, dI_{RR}/dt = 3A/µs,	-	4500	µC
I_{RR}	Peak recovery current	T_{case} = 150°C, V_R = 100V	-	120	A
V_{TO}	Threshold voltage	At T_{vj} = 150°C	-	1.00	V
r_T	Slope resistance	At T_{vj} = 150°C	-	0.45	mΩ

CURVES

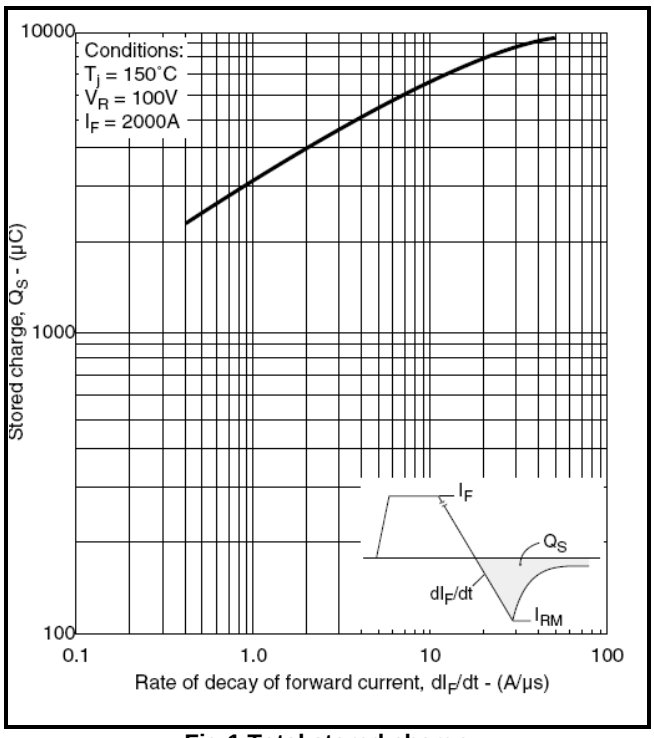


Fig.1 Total stored charge

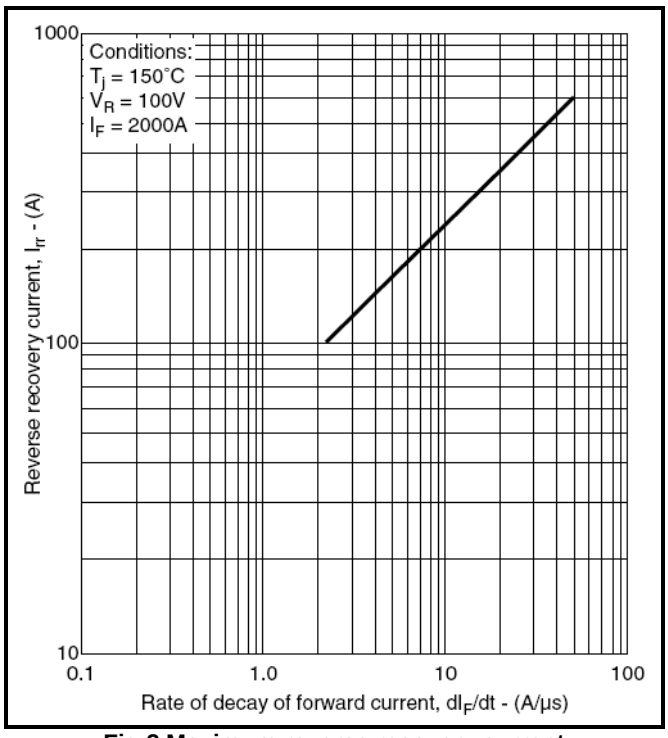


Fig.2 Maximum reverse recovery current

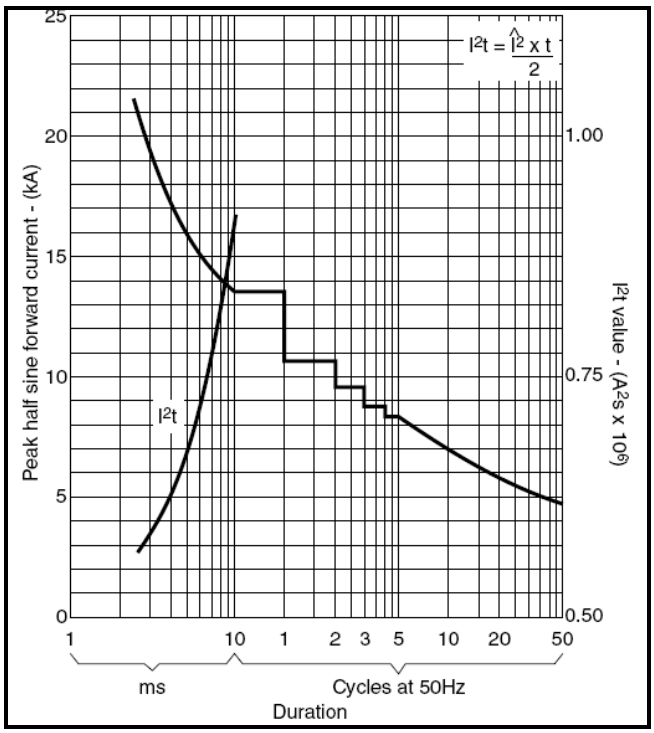


Fig.3 Surge (non-repetitive) forward current vs time (with 50% V_{RRM} at T_{case} 150℃)

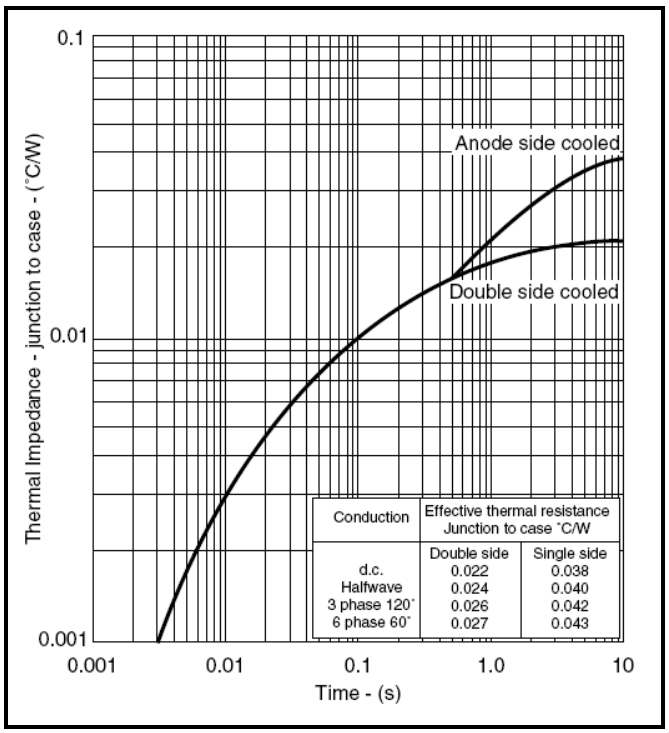
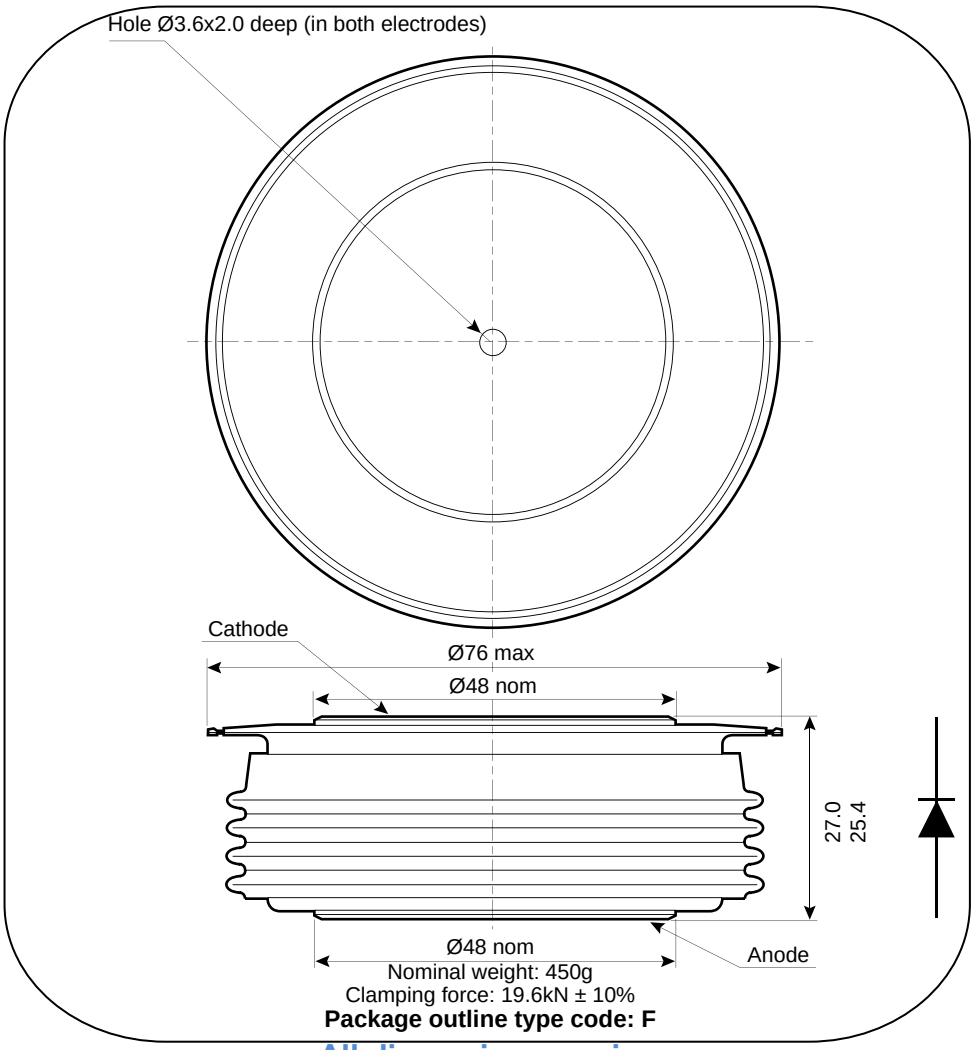


Fig.4 Maximum (limit) transient thermal impedance-junction to case

PACKAGE OUTLINE



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

All dimensions are in mm.

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