

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

$T_{case} = 75^{\circ}\text{C}$ 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

$T_{case} = 100^{\circ}\text{C}$ 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; $T_{case} = 150^{\circ}\text{C}$	14.4	kA
I^2t	I^2t for fusing	$V_R = 50\% V_{RRM}$ - 1/4 sine	1.00×10^6	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)	-	160	$^{\circ}\text{C}$
		Reverse (blocking)	-	150	$^{\circ}\text{C}$
T_{stg}	Storage temperature range		-55	175	$^{\circ}\text{C}$
-	Clamping force		18.0	22.0	kN

CHARACTERISTICS

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

CURVES

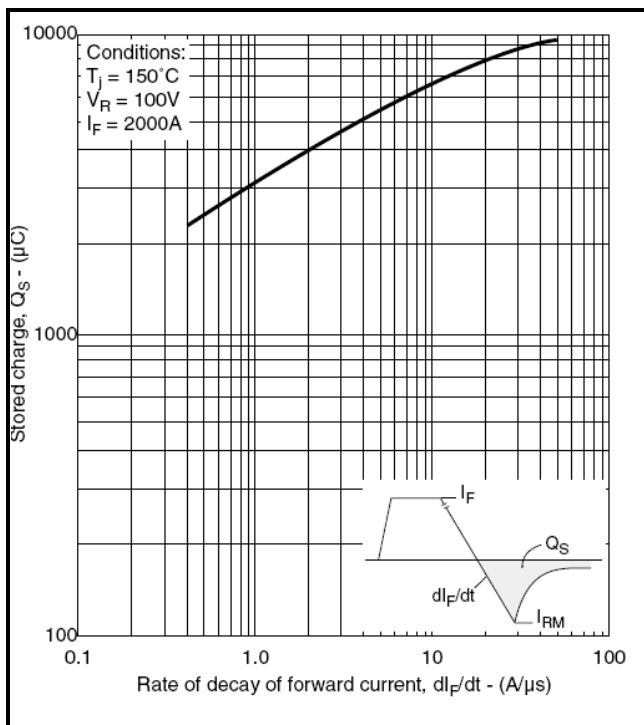


Fig.1 Total stored charge

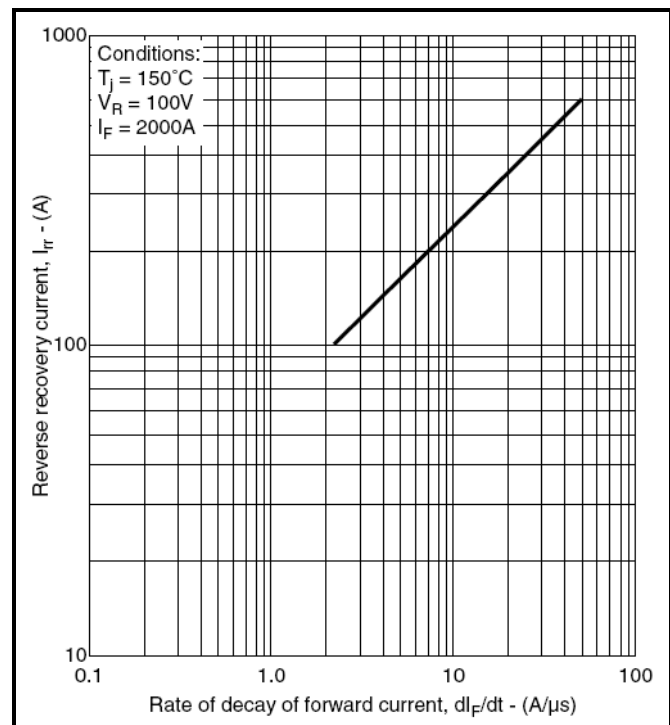


Fig.2 Maximum reverse recovery current

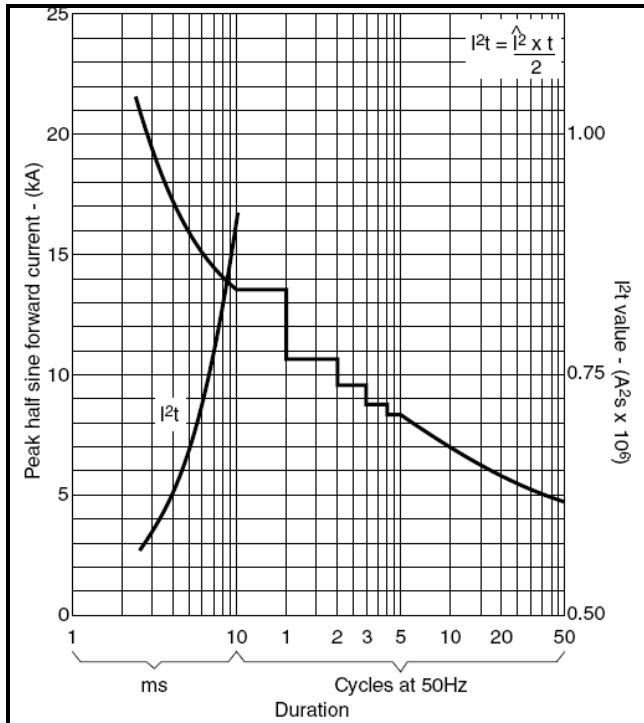


Fig.3 Surge (non-repetitive) forward current vs time
(with 50% V_{RRM} at T_{case} 150°C)

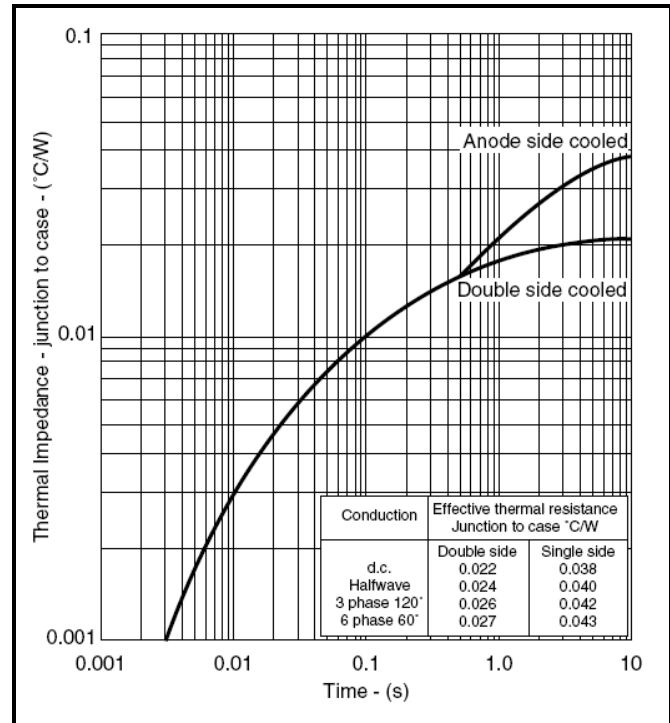
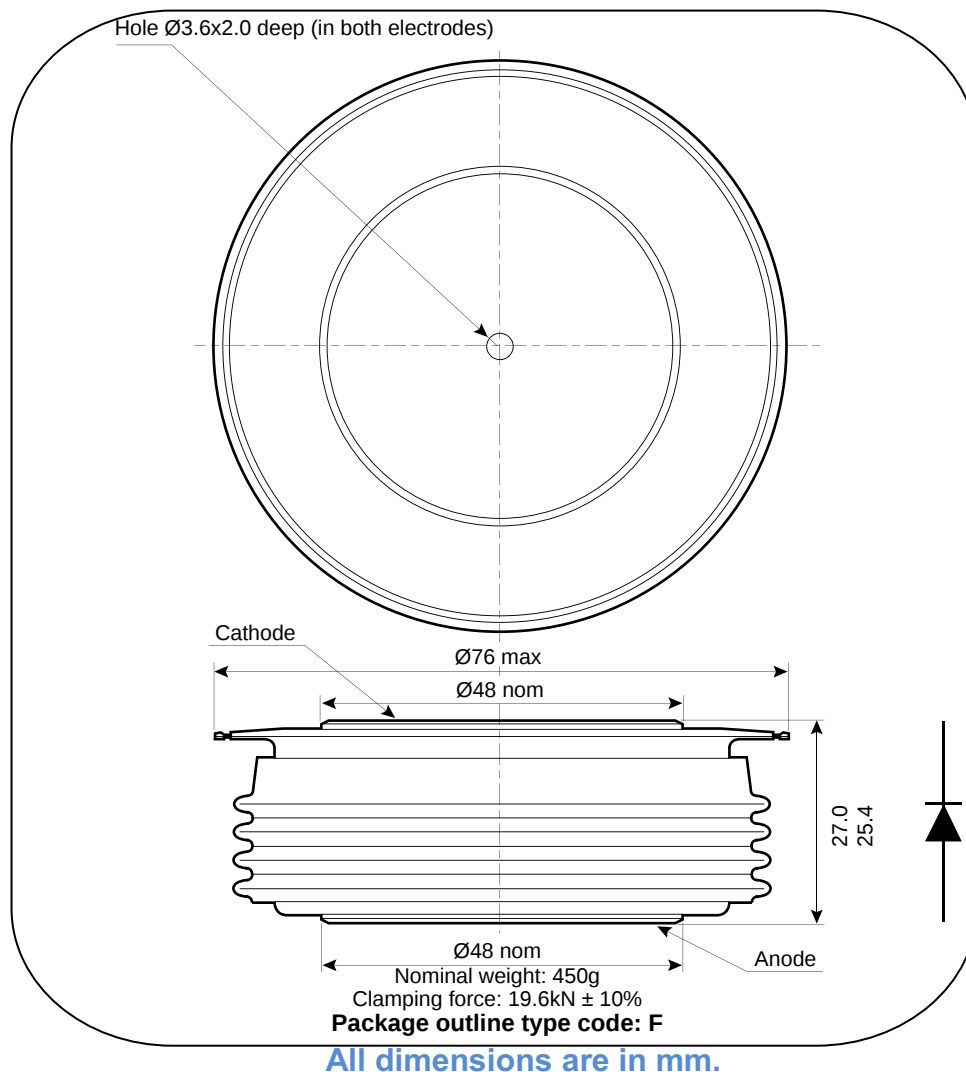


Fig.4 Maximum (limit) transient thermal impedance-junction to case

PACKAGE OUTLINE



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