

APPLICATIONS

- Rectification.
- Freewheel Diode.
- DC Motor Control.
- Power Supplies.
- Welding.
- Battery Chargers.

KEY PARAMETERS

V_{RRM}	6000V
$I_{F(AV)}$	1015A
I_{FSM}	16500A

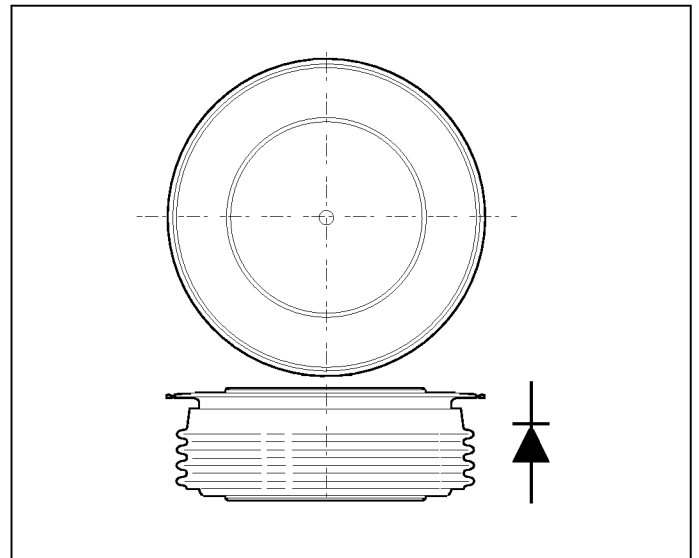
FEATURES

- Double Side Cooling.
- High Surge Capability.

VOLTAGE RATINGS

Type Number	Repetitive Peak Reverse Voltage V_{RRM}	Conditions
DS2012SF60	6000	$V_{RSM} = V_{RRM} + 100V$
DS2012SF59	5900	
DS2012SF58	5800	
DS2012SF57	5700	
DS2012SF56	5600	
DS2012SF55	5500	

Lower voltage grades available.



Outline type code: F. Turn to page 7 for further information.

CURRENT RATINGS

Symbol	Parameter	Conditions	Max.	Units
Double Side Cooled				
$I_{F(AV)}$	Mean forward current	Half wave resistive load, $T_{case} = 100^{\circ}C$	1015	A
$I_{F(RMS)}$	RMS value	$T_{case} = 100^{\circ}C$	1594	A
I_F	Continuous (direct) forward current	$T_{case} = 100^{\circ}C$	1480	A
Single Side Cooled (Anode side)				
$I_{F(AV)}$	Mean forward current	Half wave resistive load, $T_{case} = 100^{\circ}C$	680	A
$I_{F(RMS)}$	RMS value	$T_{case} = 100^{\circ}C$	1067	A
I_F	Continuous (direct) forward current	$T_{case} = 100^{\circ}C$	920	A

DS2012SF

SURGE RATINGS

Symbol	Parameter	Conditions	Max.	Units
I_{FSM}	Surge (non-repetitive) forward current	10ms half sine; $T_{case} = 150^{\circ}C$	13.5	kA
I^2t	I^2t for fusing	$V_R = 50\% V_{RRM}$ - 1/4 sine	0.92×10^6	A ² s
I_{FSM}	Surge (non-repetitive) forward current	10ms half sine; $T_{case} = 150^{\circ}C$	16.5	kA
I^2t	I^2t for fusing	$V_R = 0$	1.425×10^6	A ² s

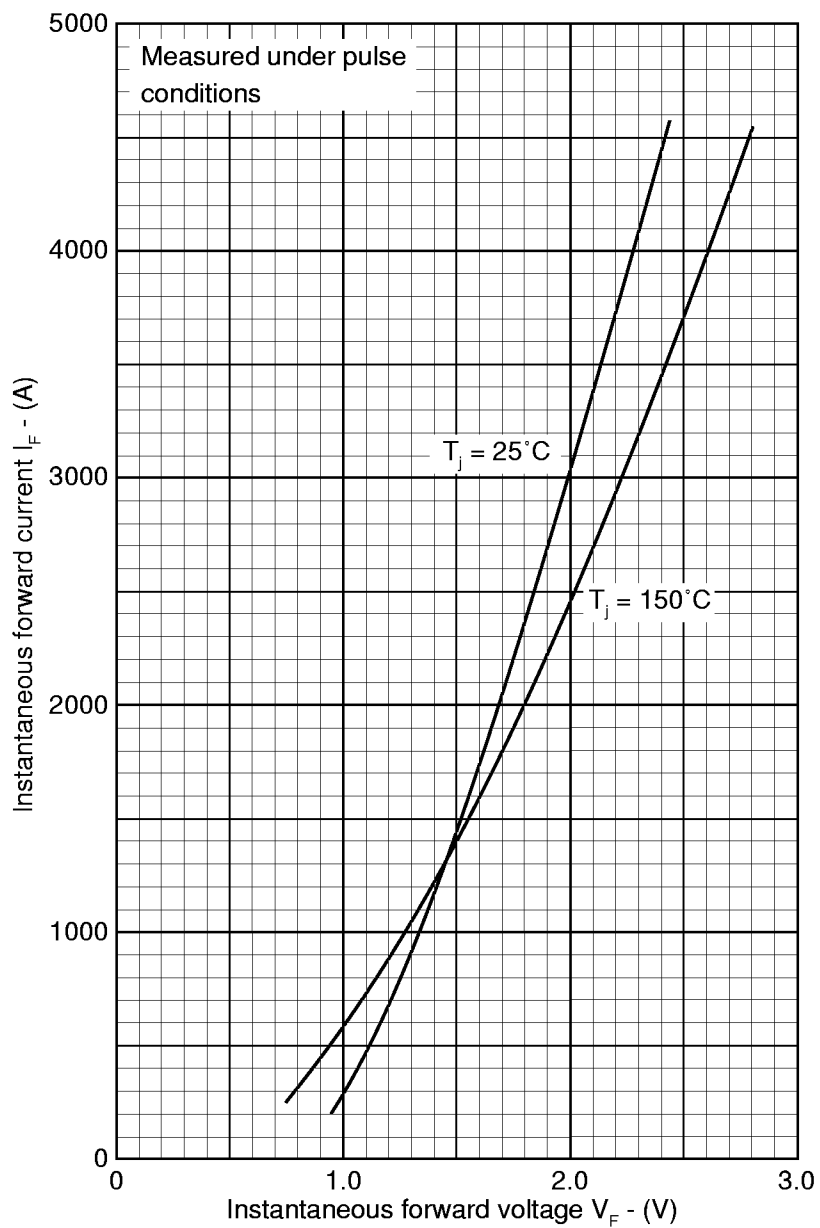
THERMAL AND MECHANICAL DATA

Symbol	Parameter	Conditions	Min.	Max.	Units	
$R_{th(j-c)}$	Thermal resistance - junction to case	Double side cooled	dc	-	0.022	$^{\circ}C/W$
		Single side cooled	Anode dc	-	0.038	$^{\circ}C/W$
			Cathode dc	-	0.052	$^{\circ}C/W$
$R_{th(c-h)}$	Thermal resistance - case to heatsink	Clamping force 19.5kN with mounting compound	Double side	-	0.004	$^{\circ}C/W$
			Single side	-	0.008	$^{\circ}C/W$
T_{vj}	Virtual junction temperature	Forward (conducting)		-	160	$^{\circ}C$
		Reverse (blocking)		-	150	$^{\circ}C$
T_{stg}	Storage temperature range		-55	175	$^{\circ}C$	
-	Clamping force		18.0	22.0	kN	

CHARACTERISTICS

Symbol	Parameter	Conditions	Min.	Max.	Units
V_{FM}	Forward voltage	At 3400A peak, $T_{case} = 25^{\circ}C$	-	2.1	V
I_{RRM}	Peak reverse current	At V_{RRM} , $T_{case} = 150^{\circ}C$	-	75	mA
Q_S	Total stored charge	$I_F = 2000A$, $dI_{RR}/dt = 3A/\mu s$,	-	4500	μC
I_{RR}	Peak recovery current	$T_{case} = 150^{\circ}C$, $V_R = 100V$	-	120	A
V_{TO}	Threshold voltage	At $T_{vj} = 150^{\circ}C$	-	1.0	V
r_T	Slope resistance	At $T_{vj} = 150^{\circ}C$	-	0.42	m Ω

CURVES

**FIG. 1 MAXIMUM (LIMIT) FORWARD CHARACTERISTICS**

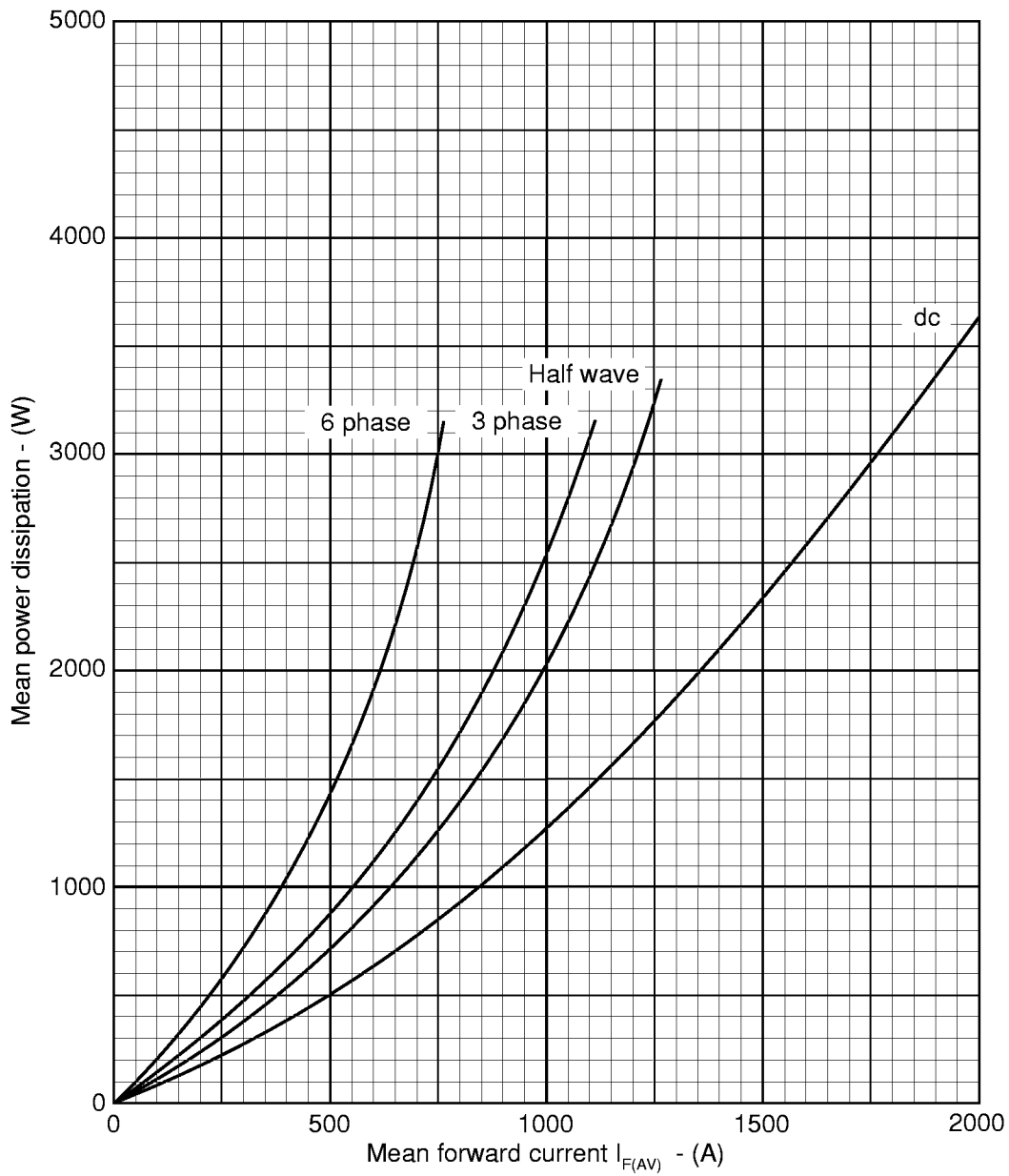


FIG. 2 DISSIPATION CURVES

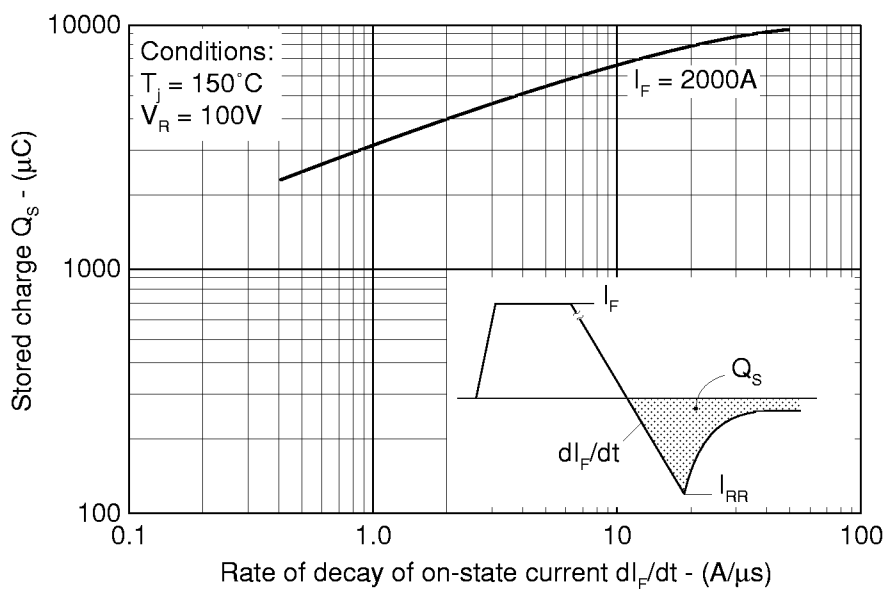


FIG. 3 MAXIMUM TOTAL STORED CHARGE

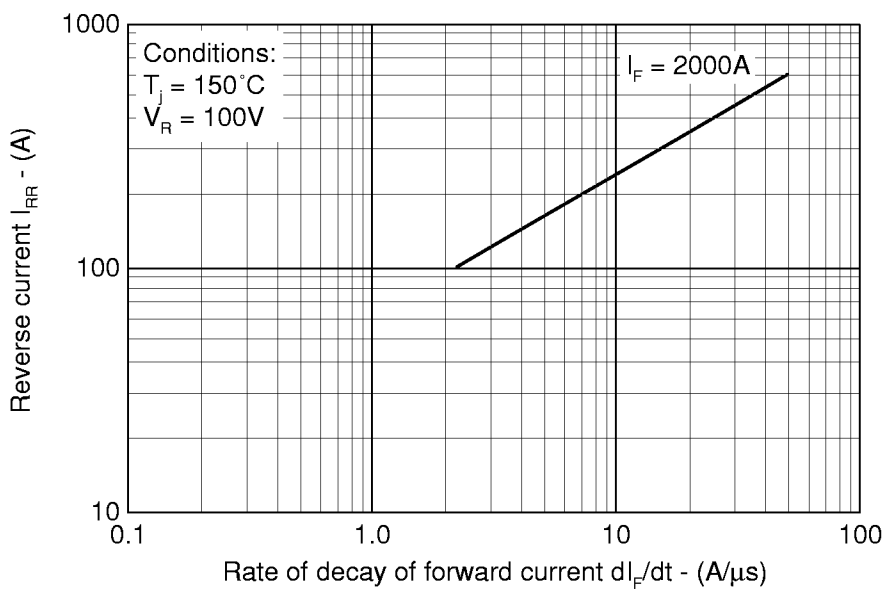


FIG. 4 MAXIMUM REVERSE RECOVERY CURRENT

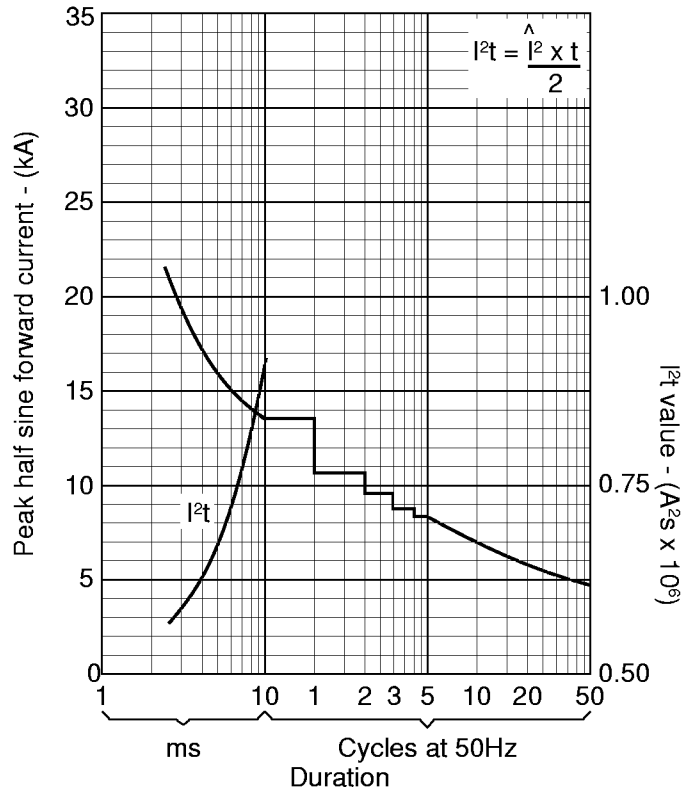


FIG. 5 SURGE (NON-REPETITIVE) FORWARD CURRENT vs TIME (WITH 50% V_{RRM} $T_{case} = 125^\circ C$)

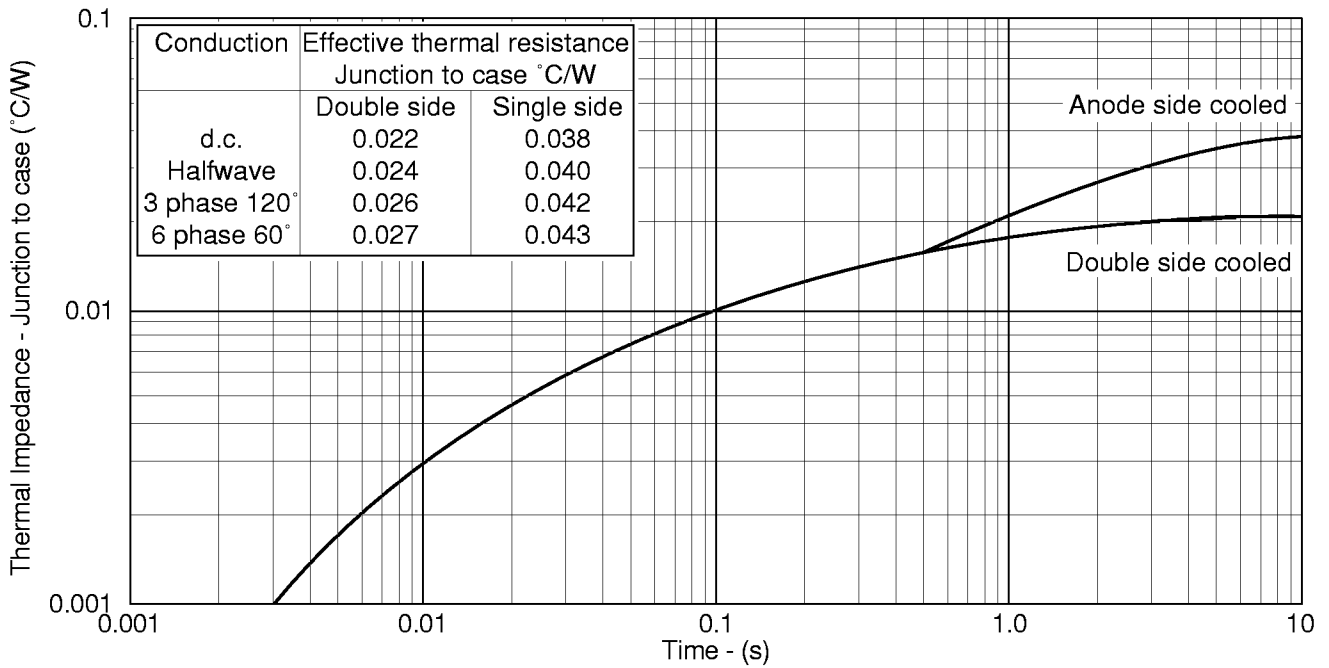
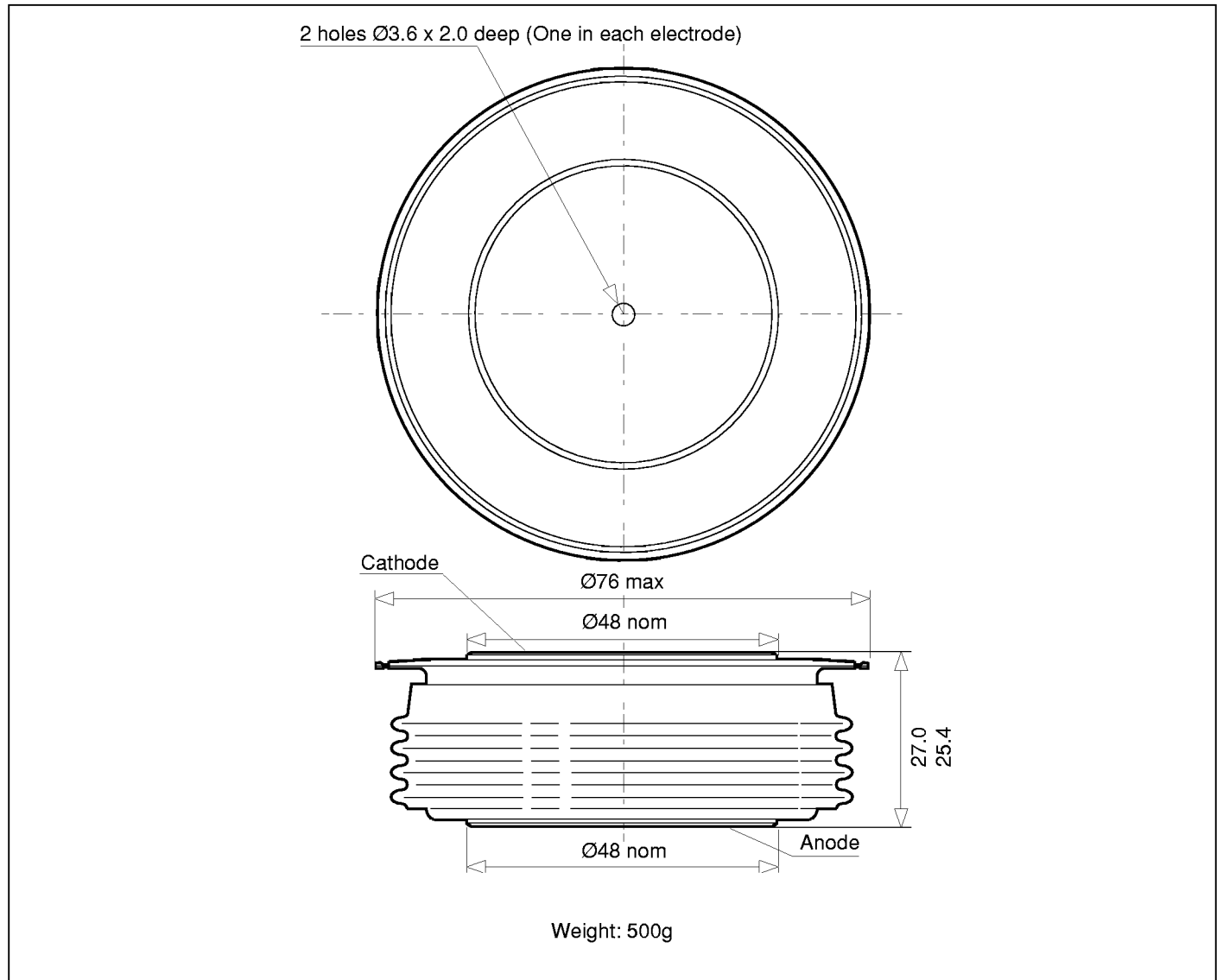


FIG. 6 TRANSIENT THERMAL IMPEDANCE - JUNCTION TO CASE - (°C/W)

PACKAGE DETAILS - F

For further package information, please contact your local Customer Service Centre. All dimensions in mm, unless stated otherwise. DO NOT SCALE.





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