

APPLICATIONS

- Induction Heating
- A.C. Motor Drives
- Inverters And Choppers
- Welding
- High Frequency Rectification
- UPS

KEY PARAMETERS

V_{RRM}	4500V
$I_{F(AV)}$	1256A
I_{FSM}	16000A
Q_r	1250 μ C
t_{rr}	7.0 μ s

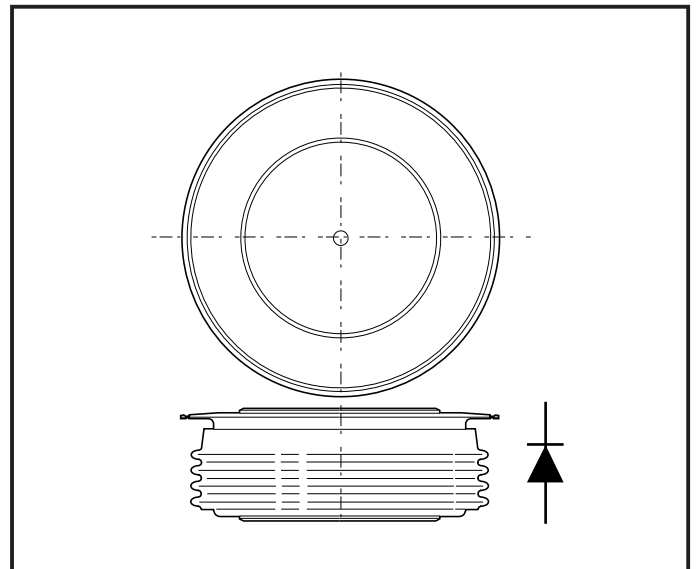
FEATURES

- Double Side Cooling
- High Surge Capability
- Low Recovery Charge

VOLTAGE RATINGS

Type Number	Repetitive Peak Reverse Voltage V_{RRM} V	Conditions
DSF20545SF45	4500	$V_{RSM} = V_{RRM} + 100V$
DSF20545SF44	4400	
DSF20545SF43	4300	
DSF20545SF42	4200	
DSF20545SF41	4100	
DSF20545SF40	4000	

Lower voltage grades available.



Outline type code: CB450.
See Package Details for further information.

CURRENT RATINGS

Symbol	Parameter	Conditions	Max.	Units
Double Side Cooled				
$I_{F(AV)}$	Mean forward current	Half wave resistive load, $T_{case} = 65^\circ C$	1256	A
$I_{F(RMS)}$	RMS value	$T_{case} = 65^\circ C$	1971	A
I_F	Continuous (direct) forward current	$T_{case} = 65^\circ C$	1765	A
Single Side Cooled (Anode side)				
$I_{F(AV)}$	Mean forward current	Half wave resistive load, $T_{case} = 65^\circ C$	995	A
$I_{F(RMS)}$	RMS value	$T_{case} = 65^\circ C$	1552	A
I_F	Continuous (direct) forward current	$T_{case} = 65^\circ C$	1335	A

DSF20545SF

SURGE RATINGS

Symbol	Parameter	Conditions	Max.	Units
I_{FSM}	Surge (non-repetitive) forward current	10ms half sine; with 0% V_{RRM} , $T_j = 150^\circ\text{C}$	16	kA
I^2t	I^2t for fusing		1280×10^3	A^2s
I_{FSM}	Surge (non-repetitive) forward current	10ms half sine; with 50% V_{RRM} , $T_j = 150^\circ\text{C}$	12.8	kA
I^2t	I^2t for fusing		819.2×10^3	A^2s
I_{FSM}	Surge (non-repetitive) forward current	10ms half sine; with 100% V_{RRM} , $T_j = 150^\circ\text{C}$	-	kA
I^2t	I^2t for fusing		-	A^2s

THERMAL AND MECHANICAL DATA

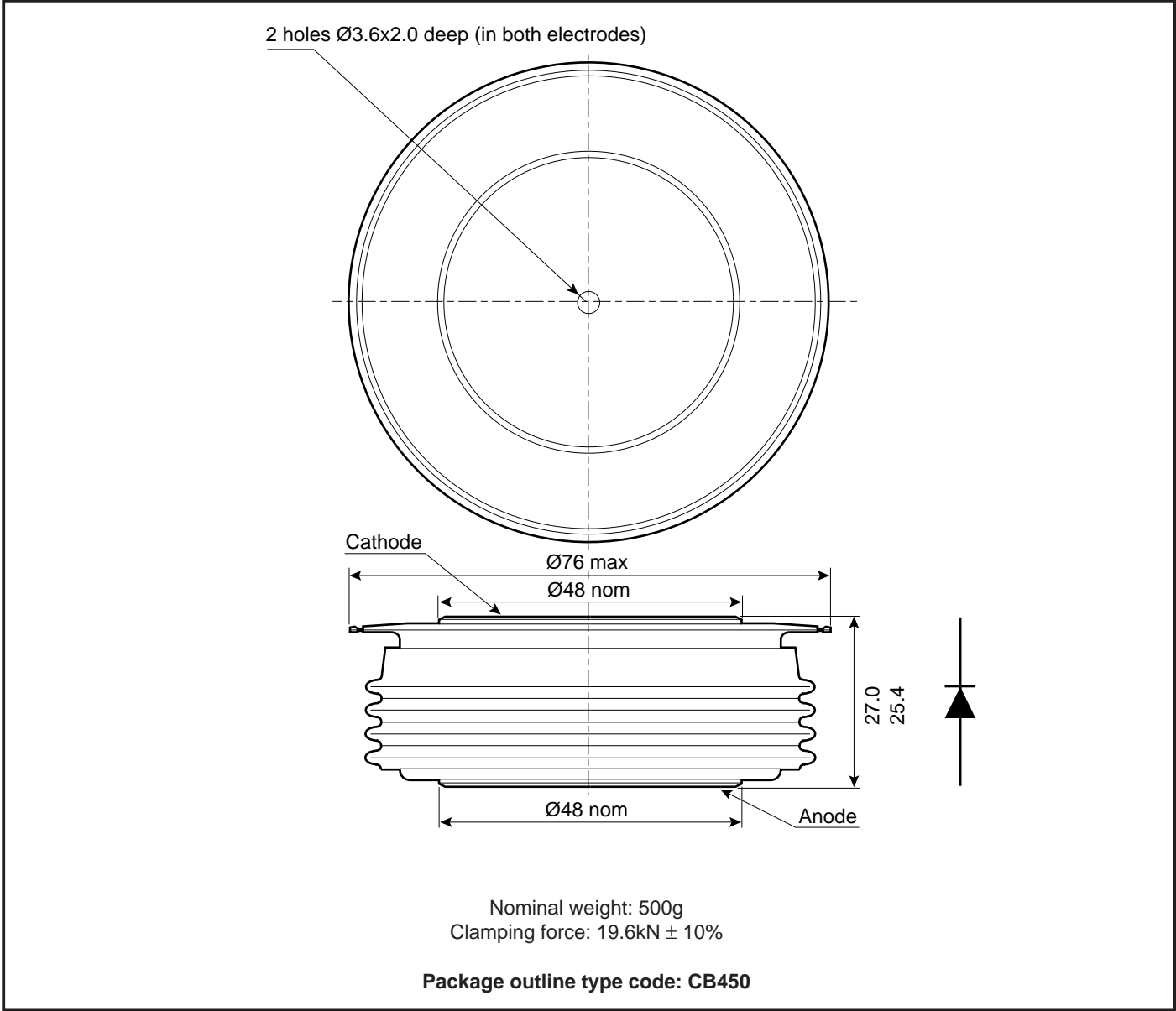
Symbol	Parameter	Conditions	Min.	Max.	Units	
$R_{th(j-c)}$	Thermal resistance - junction to case	Double side cooled	dc	-	0.022	$^\circ\text{C}/\text{W}$
		Single side cooled	Anode dc	-	0.032	$^\circ\text{C}/\text{W}$
			Cathode dc	-	0.032	$^\circ\text{C}/\text{W}$
$R_{th(c-h)}$	Thermal resistance - case to heatsink	Clamping force 15kN with mounting compound	Double side	-	0.004	$^\circ\text{C}/\text{W}$
			Single side	-	0.008	$^\circ\text{C}/\text{W}$
T_{vj}	Virtual junction temperature	On-state (conducting)	-	150	$^\circ\text{C}$	
T_{stg}	Storage temperature range		-55	150	$^\circ\text{C}$	
-	Clamping force		17.5	21.5	kN	

CHARACTERISTICS

Symbol	Parameter	Conditions	Typ.	Max.	Units
V_{FM}	Forward voltage	At 1800A peak, $T_{case} = 25^\circ\text{C}$	-	2.1	V
I_{RRM}	Peak reverse current	At V_{RRM} , $T_{case} = 150^\circ\text{C}$	-	50	mA
t_{rr}	Reverse recovery time	$I_F = 1000\text{A}$, $di_{RR}/dt = 100\text{A}/\mu\text{s}$ $T_{case} = 150^\circ\text{C}$, $V_R = 100\text{V}$	-	7.0	μs
Q_{RA1}	Recovered charge (50% chord)		-	1250	μC
I_{RM}	Reverse recovery current		-	400	A
K	Soft factor		1.8	-	-
V_{TO}	Threshold voltage	At $T_{vj} = 150^\circ\text{C}$	-	1.36	V
r_T	Slope resistance	At $T_{vj} = 150^\circ\text{C}$	-	0.47	$\text{m}\Omega$
V_{FRM}	Forward recovery voltage	$di/dt = 1000\text{A}/\mu\text{s}$, $T_j = 125^\circ\text{C}$	-	160	V

PACKAGE DETAILS

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



ASSOCIATED PUBLICATIONS

Title	Application Note Number
Calculating the junction temperature or power semiconductors	AN4506
Recommendations for clamping power semiconductors	AN4839
Thyristor and diode measurement with a multi-meter	AN4853
Use of V_{TO} , r_T on-state characteristic	AN5001