DSF20545SF



Fast Recovery Diode

 V_{RRM}

F(AV)

FSM

KEY PARAMETERS

4500V

1256A

16000A

1250μC

7.0μs

APPLICATIONS

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

FEATURES

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

VOLTAGE RATINGS

Type Number	Repetitive Peak Reverse Voltage V	Conditions
DSF20545SF45	4500	$V_{RSM} = V_{RRM} + 100V$
DSF20545SF44	4400	KOW KKW
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 Sic	Double Side Cooled						
I _{F(AV)}	Mean forward current	Half wave resistive load, T _{case} = 65°C	1256	А			
I _{F(RMS)}	RMS value	$T_{case} = 65^{\circ}C$	1971	А			
I _F	Continuous (direct) forward current	$T_{\text{case}} = 65^{\circ}\text{C}$	1765	А			
Single Side	Single Side Cooled (Anode side)						
I _{F(AV)}	Mean forward current	Half wave resistive load, T _{case} = 65°C		А			
I _{F(RMS)}	RMS value	$T_{case} = 65^{\circ}C$	1552	А			
I _F	Continuous (direct) forward current	$T_{\text{case}} = 65^{\circ}\text{C}$	1335	А			

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SURGE RATINGS

Symbol	Parameter	Conditions	Max.	Units
I _{FSM}	Surge (non-repetitive) forward current	10ms half sine: with 09/ V	16	kA
l ² t	I ² t for fusing	10ms half sine; with 0% V_{RRM} , $T_j = 150$ °C	1280 x 10 ³	A ² s
I _{FSM}	Surge (non-repetitive) forward current	10mg half sings with F00/ V T 1F00C	12.8	kA
l ² t	I ² t for fusing	10ms half sine; with 50% V_{RRM} , $T_j = 150$ °C	819.2 X 10 ³	A ² s
I _{FSM}	Surge (non-repetitive) forward current	10mg half ging; with 1009/ \/ T = 150°C	-	kA
l ² t	I ² t for fusing	10ms half sine; with 100% V_{RRM} , $T_j = 150$ °C	-	A ² s

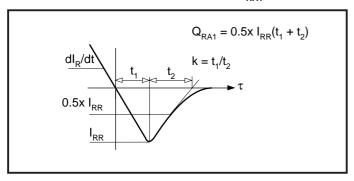
THERMAL AND MECHANICAL DATA

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

CHARACTERISTICS

Symbol	Parameter	Conditions	Тур.	Max.	Units
V_{FM}	Forward voltage	At 1800A peak, T _{case} = 25°C	-	2.1	٧
I _{RRM}	Peak reverse current	At V _{RRM} , T _{case} = 150°C	-	50	mA
t _{rr}	Reverse recovery time		-	7.0	μs
Q _{RA1}	Recovered charge (50% chord)	$I_F = 1000A$, $di_{RR}/dt = 100A/\mu s$	-	1250	μС
I _{RM}	Reverse recovery current	$T_{case} = 150^{\circ}C, V_{R} = 100V$	-	400	А
К	Soft factor		1.8	-	-
V _{TO}	Threshold voltage	At T _{vj} = 150°C	-	1.36	V
r _T	Slope resistance	At T _{vj} = 150°C	-	0.47	mΩ
$V_{_{\mathrm{FRM}}}$	Forward recovery voltage	di/dt = 1000A/μs, T _j = 125°C	-	160	V

DEFINITION OF K FACTOR AND \mathbf{Q}_{RA1}



CURVES

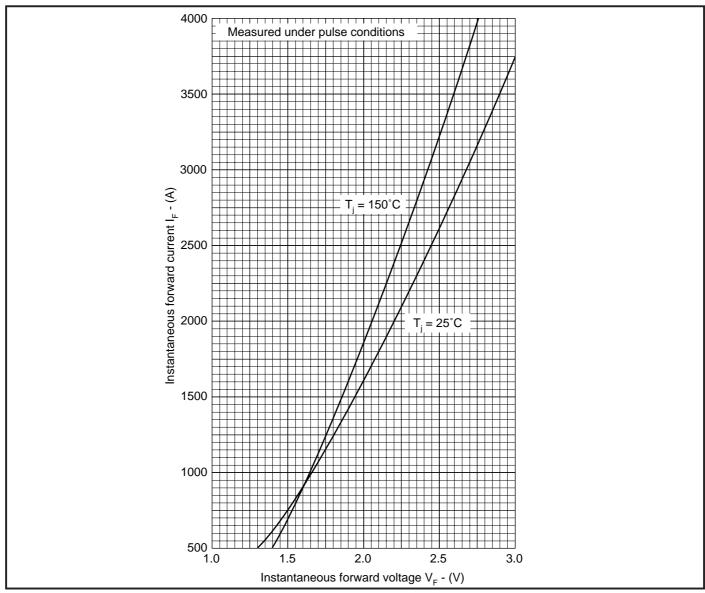


Fig.1 Maximum (limit) forward characteristics

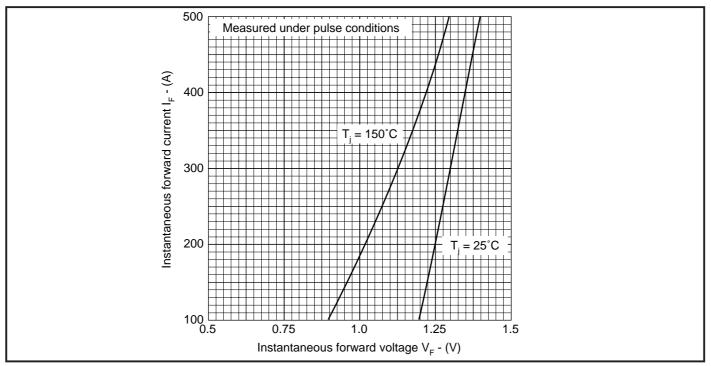


Fig.2 Maximum (limit) forward characteristics

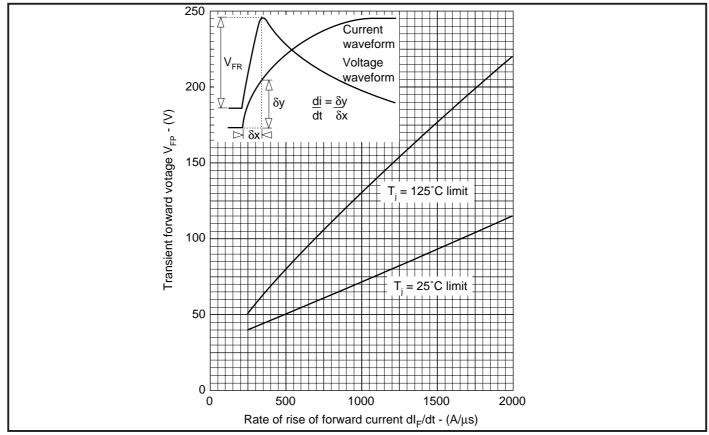


Fig.3 Transient forward voltage vs rate of rise of forward current

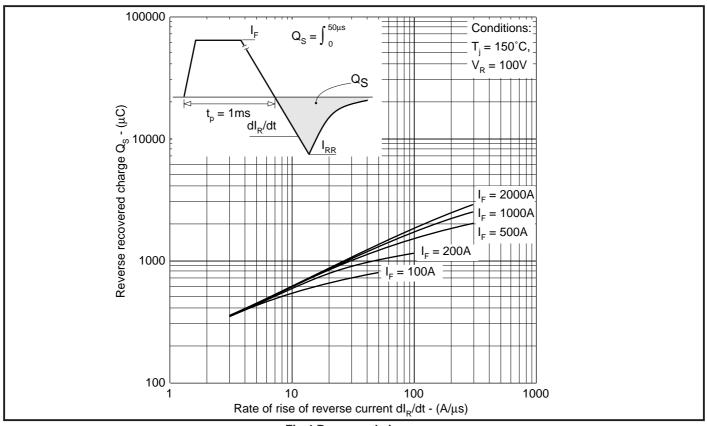


Fig.4 Recovered charge

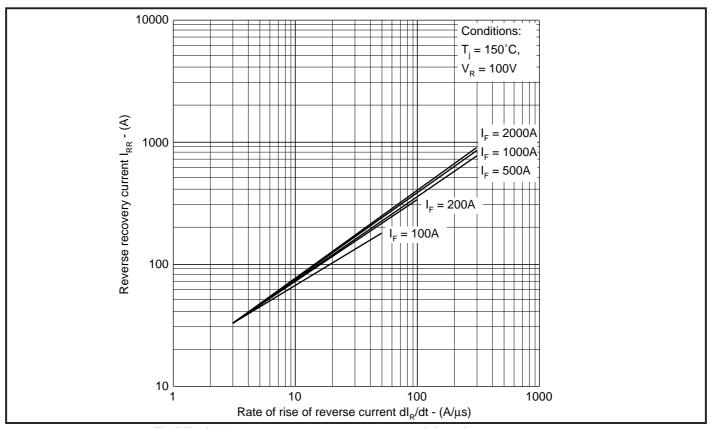


Fig.5 Typical reverse recovery current vs rate of rise of reverse current

DSF20545SF

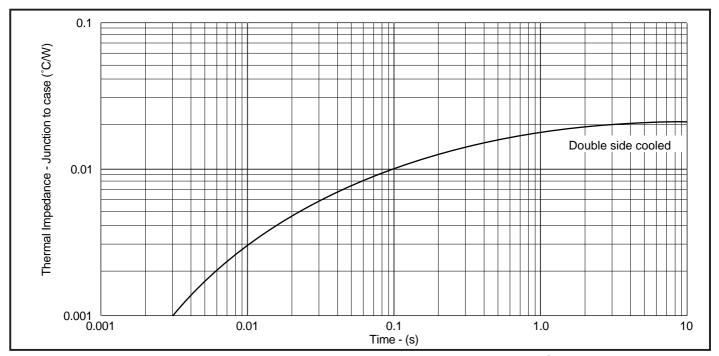
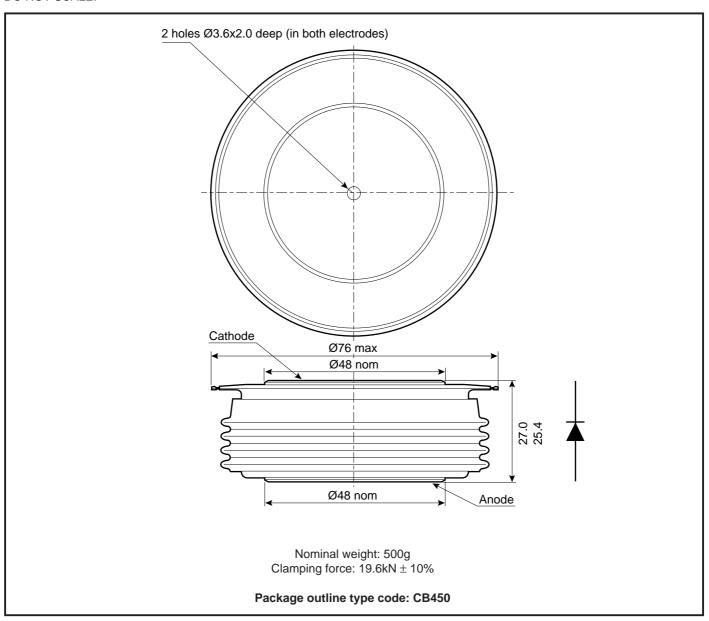


Fig.6 Maximum (limit) transient thermal impedance - junction to case - (°C/W)

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	



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