DSF20545SF

Fast Recovery Diode

DS4152-5 July 2014 (LN31790)

FEATURES

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

APPLICATIONS

- Antiparallel and FWD for GTO

VOLTAGE RATINGS

Part and Ordering Number	Repetitive Peak Voltages 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.

ORDERING INFORMATION

When ordering, select the required part number shown in the Voltage Ratings selection table.

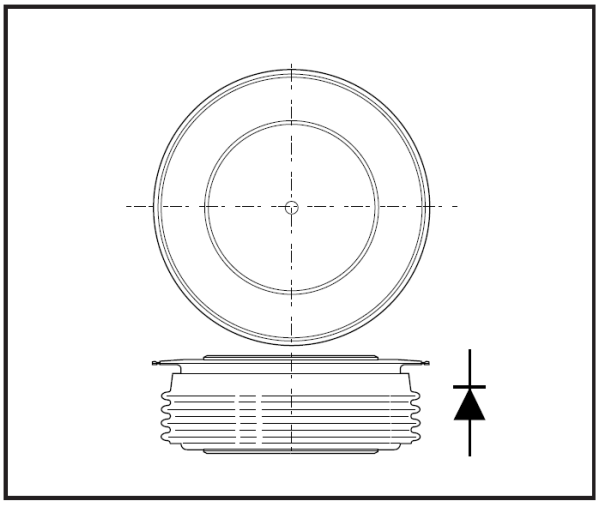
For example:

DSF20545SF44 for a 4400V device

Note: Please use the complete part number when ordering and quote this number in any future correspondence relating to your order

KEY PARAMETERS

V_{RRM}	**4500V**
$I_{F(AV)}$	**1256A**
I_{FSM}	**16000A**
Q_r	**1250µC**
t_{rr}	**7.0µs**



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

Fig. 1 Package outline

CURRENT RATINGS

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

SURGE RATINGS

Symbol	Parameter	Test Conditions	Max.	Units
I_{FSM}	Surge (non-repetitive) on-state current	10ms half sine, T_{case} = 150°C	12.8	kA
I^2t	I^2t for fusing	V_R = 50% V_{RRM}	819	kA^2s
I_{FSM}	Surge (non-repetitive) on-state current	10ms half sine, T_{case} = 150°C	16.0	kA
I^2t	I^2t for fusing	V_R = 0	1.28	MA^2s

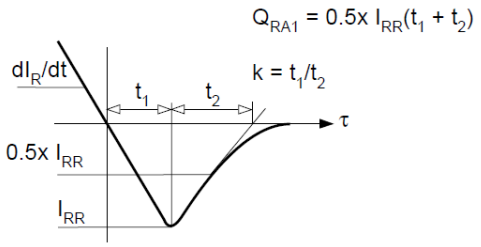
THERMAL AND MECHANICAL RATINGS

Symbol	Parameter	Test 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	Double side	-	0.004	°C/W
		(with mounting compound)	Single side	-	0.008	°C/W
T_{vj}	Virtual junction temperature	On-state (conducting)		-	150	°C
		Reverse (blocking)		-	150	°C
T_{stg}	Storage temperature range			-55	150	°C
F_m	Clamping force			17.5	21.5	kN

CHARACTERISTICS

Symbol	Parameter	Test Conditions	Typ.	Max.	Units
V_{FM}	Forward voltage	At 1800A peak, T_{case} = 25°C	-	2.1	V
I_{RM}	Peak reverse current	At $V_{DRM,}$ T_{case} = 150°C	-	50	mA
t_{rr}	Reverse recovery time	I_F = 1000A, dI_{RR}/dt =100A/µs T_{case} =150°C, V_R =100V		7.0	µs
Q_S	Total stored charge		-	1250	µC
I_{rr}	Peak reverse recovery current			400	A
K	Softness 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_{FRM}	Forward recovery voltage	Di/dt = 1000A/us, T_j = 125°C		160	V

DEFINITION OF K FACTOR AND Q_{RA1}



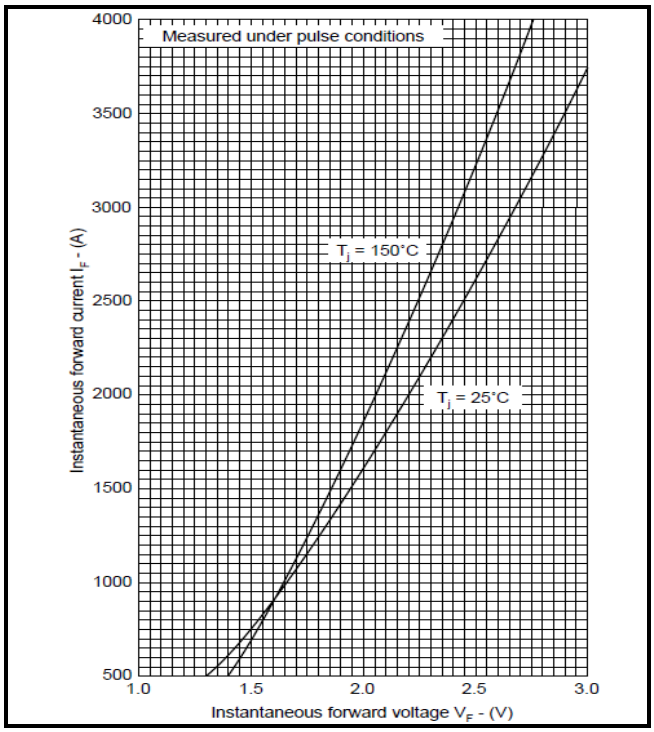


Fig.2 Maximum (limit) on-state characteristics

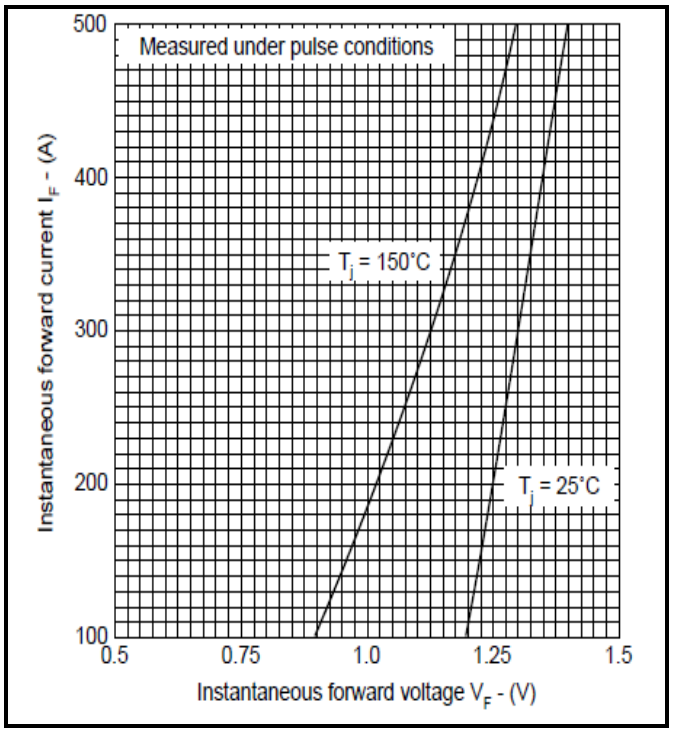


Fig.3 Maximum (limit) on-state characteristics

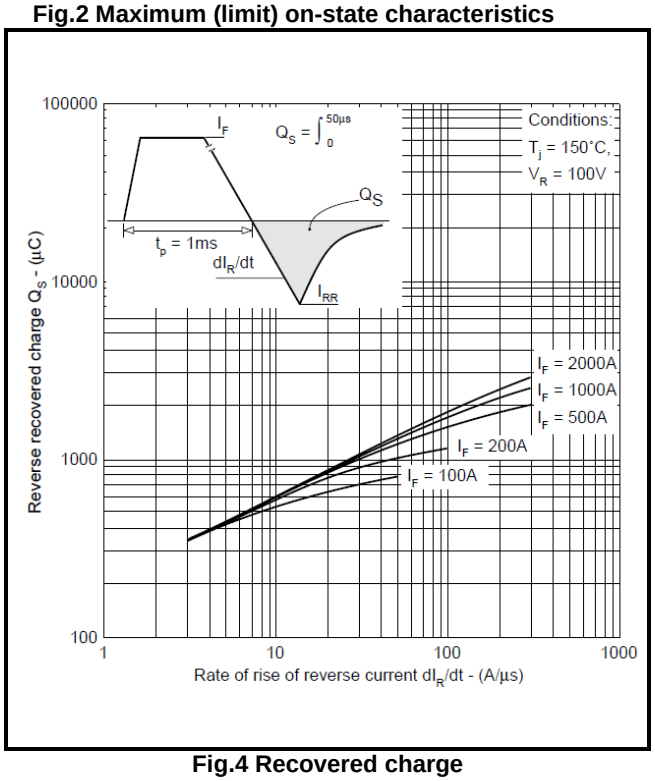


Fig.4 Recovered charge

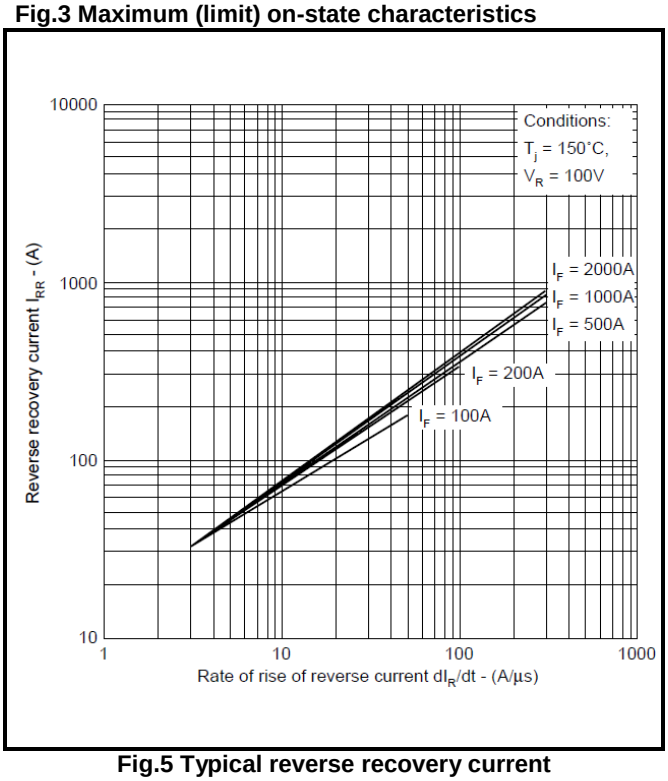


Fig.5 Typical reverse recovery current

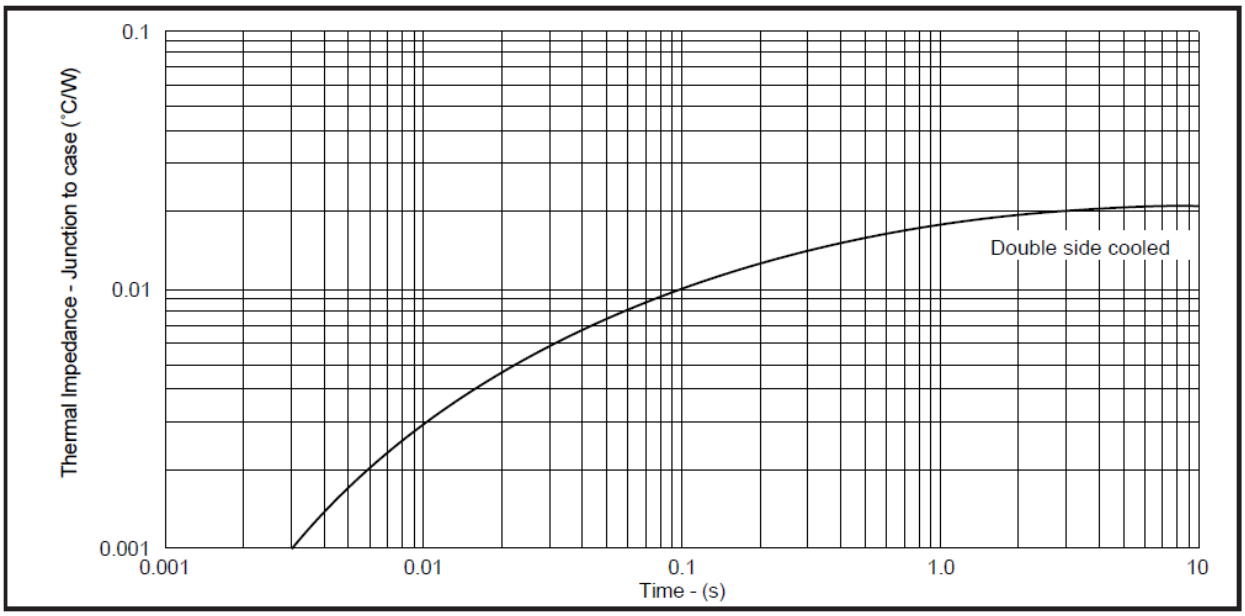


Fig.6 Maximum (limit) transient thermal impedance- junction to case

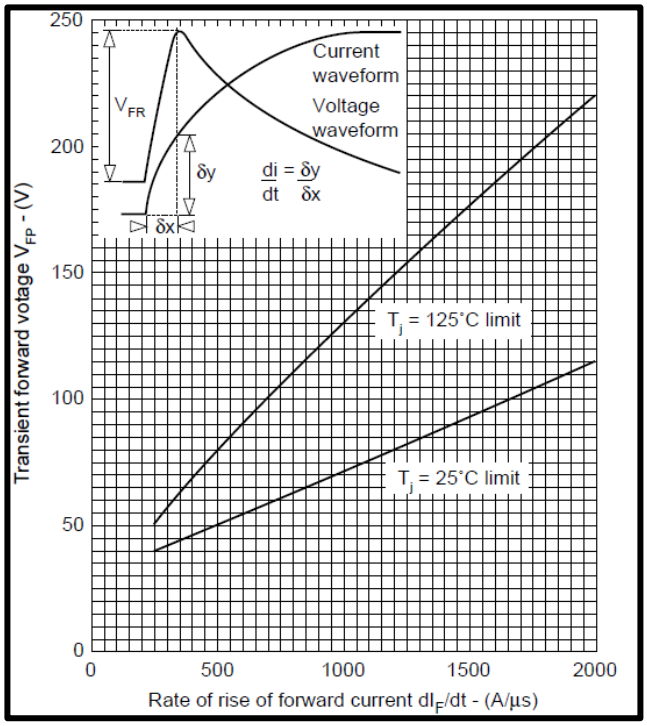
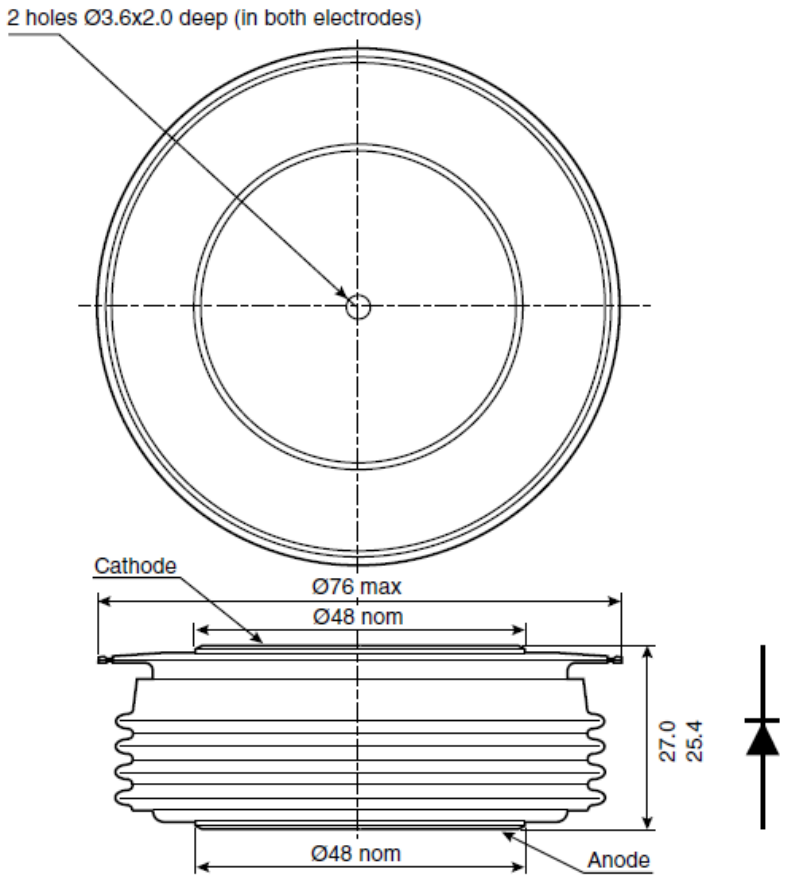


Fig.7 Transient forward voltage

PACKAGE DETAILS

For further package information, please contact Customer Services. All dimensions in mm, unless stated otherwise. DO NOT SCALE.



Nominal weight: 500g
Clamping force: 19.6kN ± 10%

Package outline type code: CB450

Note: Some packages may be supplied with gate and or tags.

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