DSF21545SV

Fast Recovery Diode

DS4153-5 July 2014 (LN31805)

APPLICATIONS

■ The DSF21545SV is a purpose designed freewheel diode to complement the DG858BW GTO in inverter circuits, using energy recovery snubbers.

FEATURES

■ The DSF21545SV is designed for fast turn-on thus minimising reverse current through the GTO.

■ Low recovered charge for low losses.

■ DSF21545SV is housed in a similar outline to that of the DG858BW therefore offering complete mechanical compatibility for parallel and series clamping.

VOLTAGE RATINGS

Part and Ordering Number	Repetitive Peak Voltages V_{RRM} V	Conditions
DSF21545SV45	4500	$V_{RSM} = V_{RRM}+100V$

Lower voltage grades available.

ORDERING INFORMATION

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

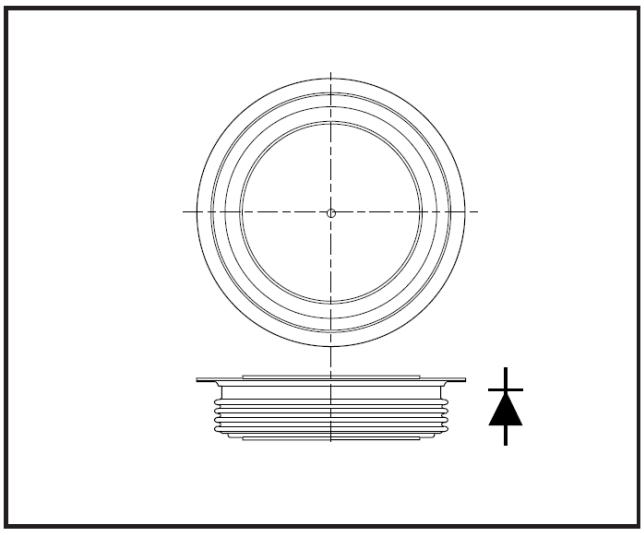
For example:

DSF21545SF44 for a 4500V 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**
$I_{F(AV)}$	**3230A**
I_{FSM}	**20000A**
Q_r	**1800µC**
t_{rr}	**7.0µs**



Outline type code: V.
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	3230	A
$I_{F(RMS)}$	RMS value	T_{case}= 65°C -	5080	A
I_F	Continuous (direct) on-state current	T_{case}= 65°C -	4680	A
Single Side Cooled (Anode side)				
$I_{F(AV)}$	Mean forward current	Half wave resistive load T_{case}= 65°C -	2070	A
$I_{F(RMS)}$	RMS value	T_{case}= 65°C --	3255	A
I_F	Continuous (direct) on-state current	T_{case}= 65°C --	2875	A

SURGE RATINGS

Symbol	Parameter	Test Conditions	Max.	Units
I_{FSM}	Surge (non-repetitive) on-state current	10ms half sine, T_{case} = 150°C	16	kA
I^2t	I^2t for fusing	V_R = 50% V_{RRM}	1.28	MA^2s
I_{FSM}	Surge (non-repetitive) on-state current	10ms half sine, T_{case} = 150°C	20.0	kA
I^2t	I^2t for fusing	V_R = 0	2.0	MA^2s

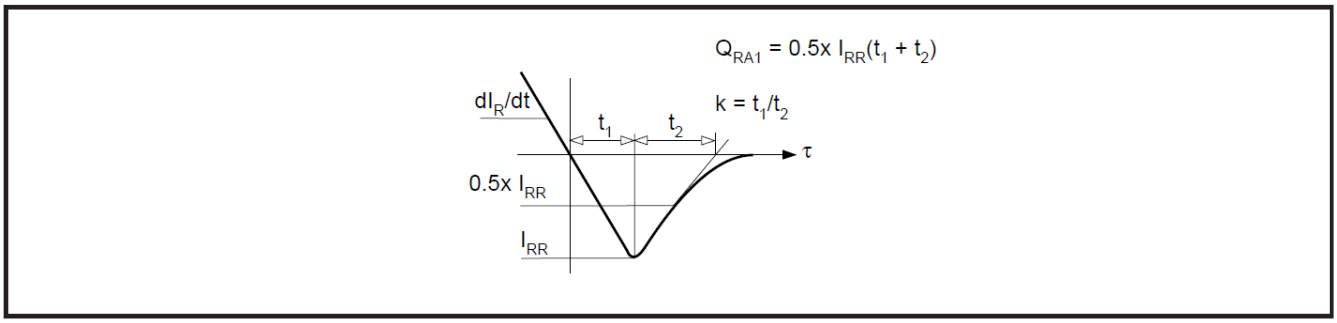
THERMAL AND MECHANICAL RATINGS

Symbol	Parameter	Test Conditions		Min.	Max.	Units
$R_{th(j-c)}$	Thermal resistance – junction to case	Double side cooled	DC	-	0.0075	°C/W
		Single side cooled	Anode DC	-	0.015	°C/W
			Cathode DC	-	0.015	°C/W
$R_{th(c-h)}$	Thermal resistance – case to heatsink	Clamping force 35kN	Double side	-	0.002	°C/W
		(with mounting compound)	Single side	-	0.004	°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			34	48	kN

CHARACTERISTICS

Symbol	Parameter	Test Conditions	Typ.	Max.	Units
V_{FM}	Forward voltage	At 300A peak, T_{case} = 25°C	-	2.0	V
I_{RM}	Peak reverse current	At V_{DRM}, T_{case} = 150°C	-	150	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		-	1800	µC
I_{rr}	Peak reverse recovery current			500	A
K	Softness Factor		2	-	-
V_{TO}	Threshold voltage	At T_{vj} = 150°C	-	1.25	V
r_T	Slope resistance	At T_{vj} =150°C	-	0.25	mΩ
V_{FRM}	Forward recovery voltage	Di/dt = 1000A/us, T_j = 125°C		75	V

DEFINITION OF K FACTOR AND Q_{RA1}



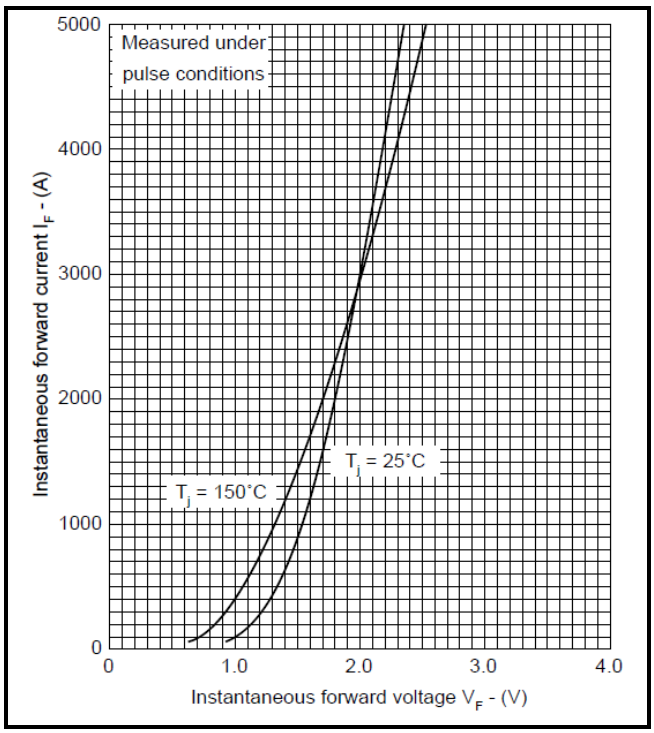


Fig.2 Maximum (limit) on-state characteristics

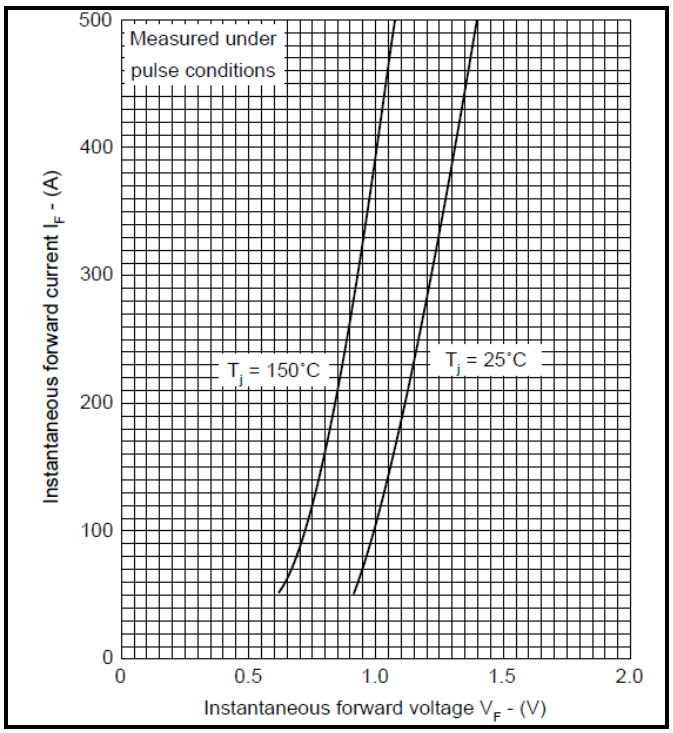


Fig.3 Maximum (limit) on-state characteristics

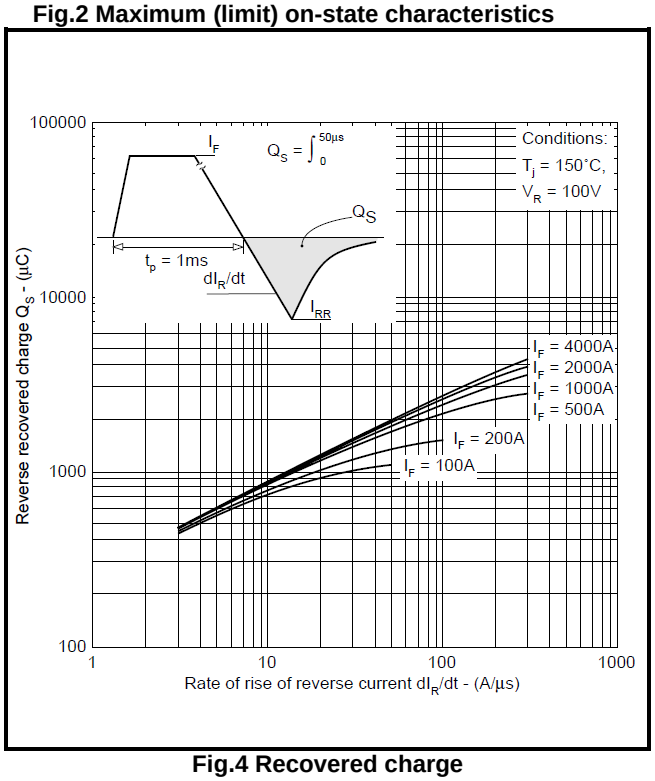


Fig.4 Recovered charge

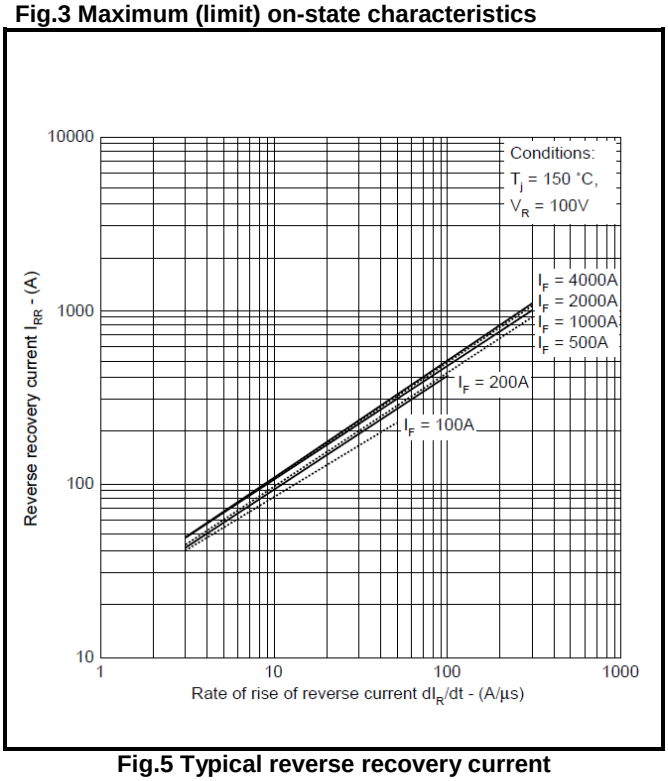


Fig.5 Typical reverse recovery current

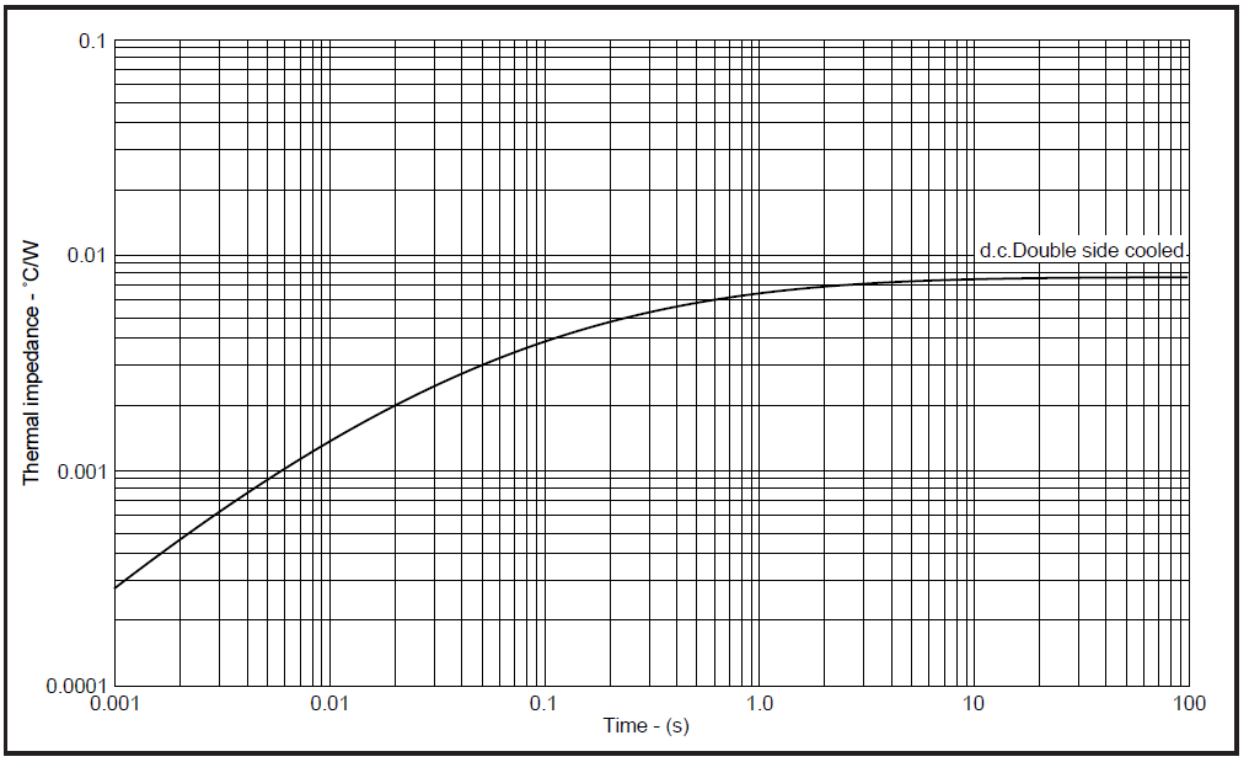


Fig.6 Maximum (limit) transient thermal impedance- junction to case

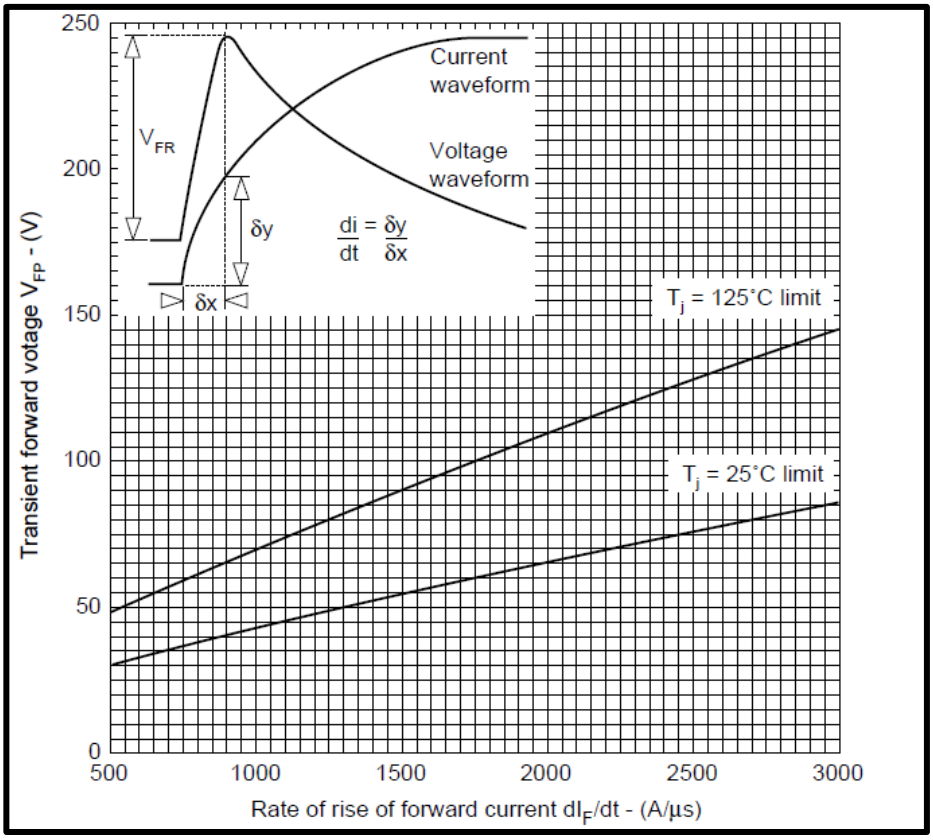
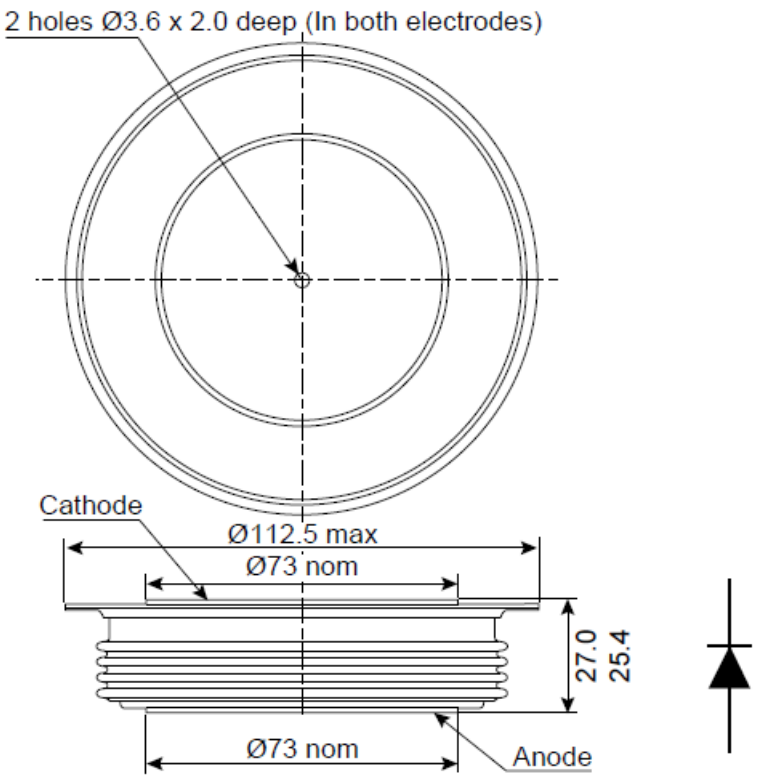


Fig.7 Transient forward voltage

PACKAGE DETAILS

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



Nominal weight: 1100g
Clamping force: 43kN ±10%

Package outine type code: V

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

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