DSF11060SG

Fast Recovery Diode

DS4548 - 4 July 2014 (LN 31791)

APPLICATIONS

- Snubber Diode For GTO Circuits

KEY PARAMETERS

V_{RRM}	6000V
$I_{F(AV)}$	400A
I_{FSM}	4200A
Q_r	700μC
t_{rr}	6.0μs

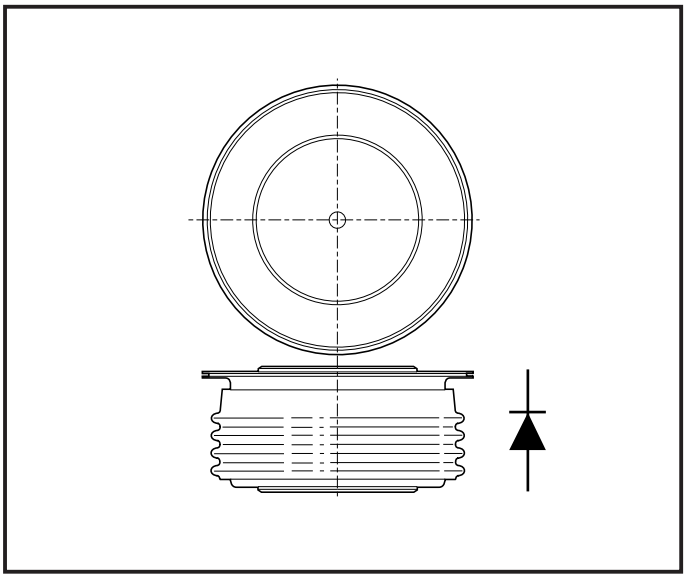
FEATURES

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

VOLTAGE RATINGS

Type Number	Repetitive Peak Reverse Voltage V_{RRM} V	Conditions
DSF11060SG60	6000	$V_{RSM} = V_{RRM} + 100V$
DSF11060SG58	5800	
DSF11060SG56	5600	
DSF11060SG55	5500	

Lower voltage grades available.



Outline type code: M779b.
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°C	400	A
$I_{F(RMS)}$	RMS value	T_{case} = 65°C	631	A
I_F	Continuous (direct) forward current	T_{case} = 65°C	585	A
Single Side Cooled (Anode side)				
$I_{F(AV)}$	Mean forward current	Half wave resistive load, T_{case} = 65°C	265	A
$I_{F(RMS)}$	RMS value	T_{case} = 65°C	420	A
I_F	Continuous (direct) forward current	T_{case} = 65°C	365	A

SURGE RATINGS

Symbol	Parameter	Conditions	Max.	Units
I_{FSM}	Surge (non-repetitive) forward current	10ms half sine; with 0% $V_{RRM,}$ T_j = 150°C	4.2	kA
I^2t	I^2t for fusing		88 x 10^3	A^2s
I_{FSM}	Surge (non-repetitive) forward current	10ms half sine; with 50% $V_{RRM,}$ T_j = 150°C	3.4	kA
I^2t	I^2t for fusing		57.8 x 10^3	A^2s

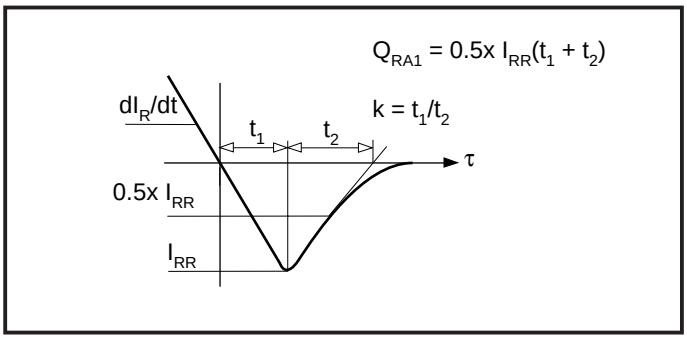
THERMAL AND MECHANICAL DATA

Symbol	Parameter	Conditions		Min.	Max.	Units
$R_{th(j-c)}$	Thermal resistance - junction to case	Double side cooled	dc	-	0.032	°C/W
		Single side cooled	Anode dc	-	0.064	°C/W
			Cathode dc	-	0.064	°C/W
$R_{th(c-h)}$	Thermal resistance - case to heatsink	Clamping force 12kN with mounting compound	Double side	-	0.008	°C/W
			Single side	-	0.016	°C/W
T_{vj}	Virtual junction temperature	Forward (conducting)		-	135	°C
T_{stg}	Storage temperature range			-55	125	°C
-	Clamping force			10.8	13.2	kN

CHARACTERISTICS

Symbol	Parameter	Conditions	Typ.	Max.	Units
V_{FM}	Forward voltage	At 600A peak, T_{case} = 25°C	-	3.8	V
I_{RRM}	Peak reverse current	At V_{RRM}, T_{case} = 125°C	-	70	mA
t_{rr}	Reverse recovery time	I_F = 1000A, di_{RR}/dt = 100A/µs T_{case} = 125°C, V_R = 100V	6.0	-	µs
Q_{RA1}	Recovered charge (50% chord)		-	1000	µC
I_{RM}	Reverse recovery current		350	-	A
K	Soft factor		1.7	-	-
V_{TO}	Threshold voltage	At T_{vj} = 125°C	-	1.5	V
r_T	Slope resistance	At T_{vj} = 125°C	-	2.9	mΩ
V_{FRM}	Forward recovery voltage	di/dt = 1000A/µs, T_j = 100°C	-	400	V

DEFINITION OF K FACTOR AND Q_{RA1}



CURVES

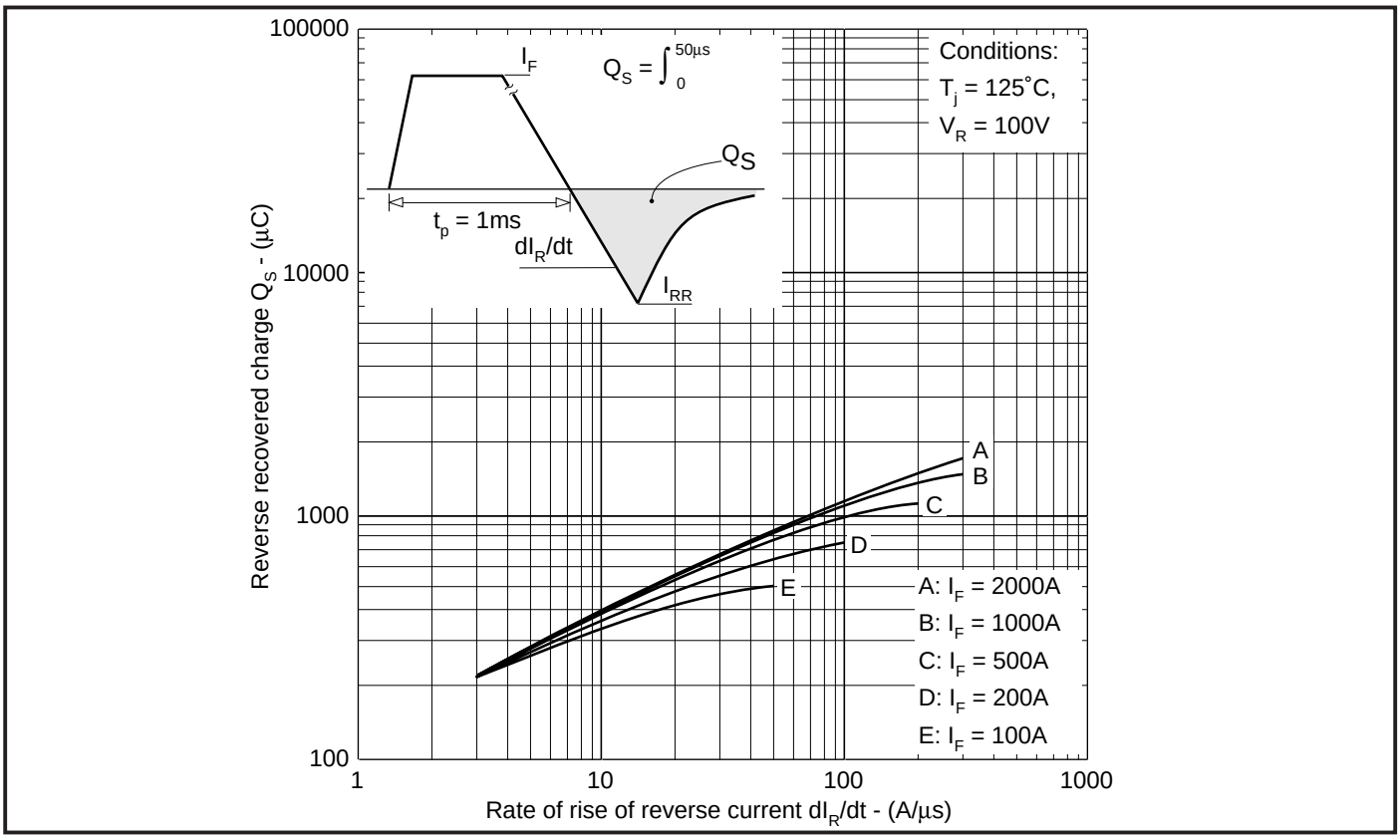


Fig. 1 Recovered charge

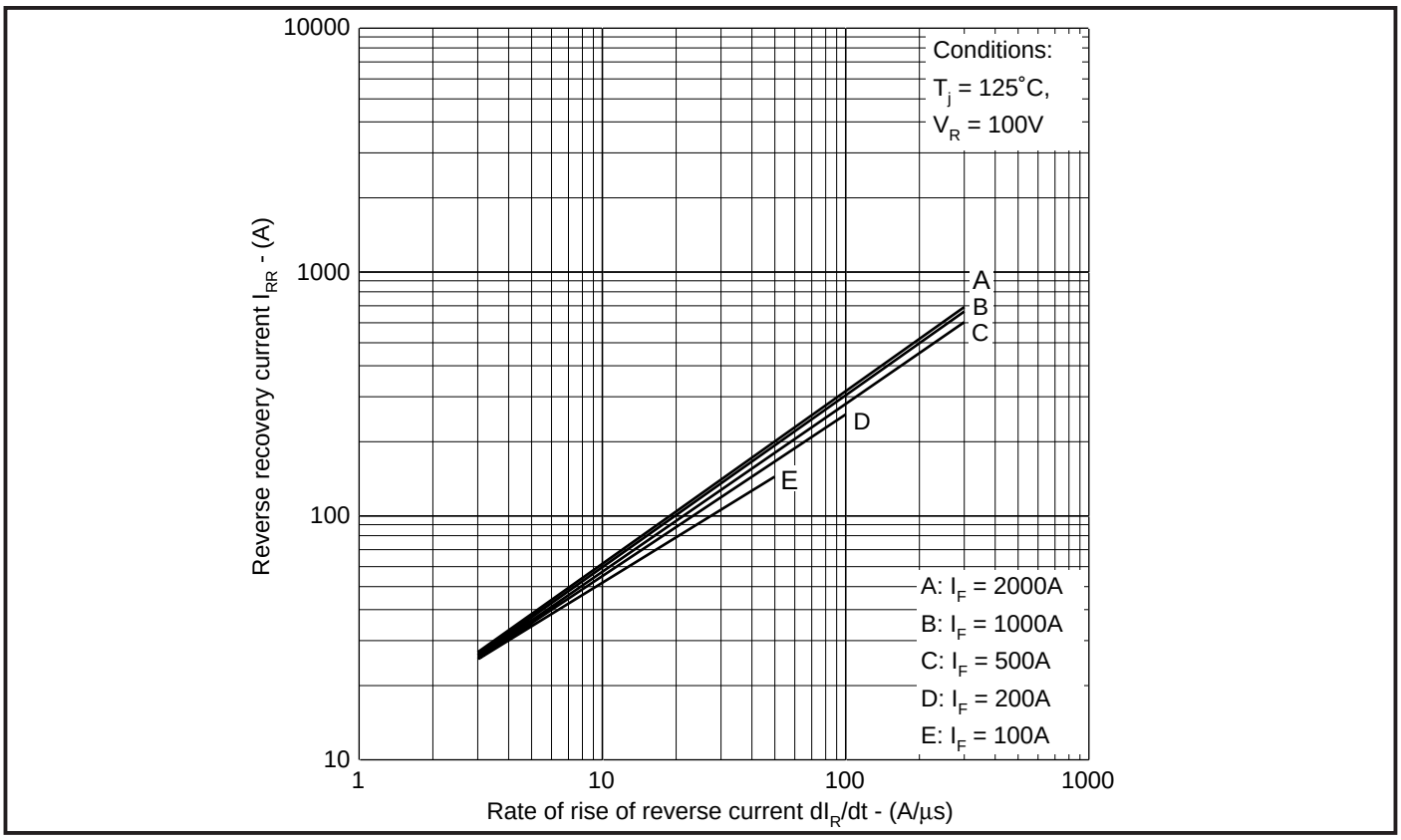


Fig. 5 typical reverse recovery current vs rate of rise of reverse current

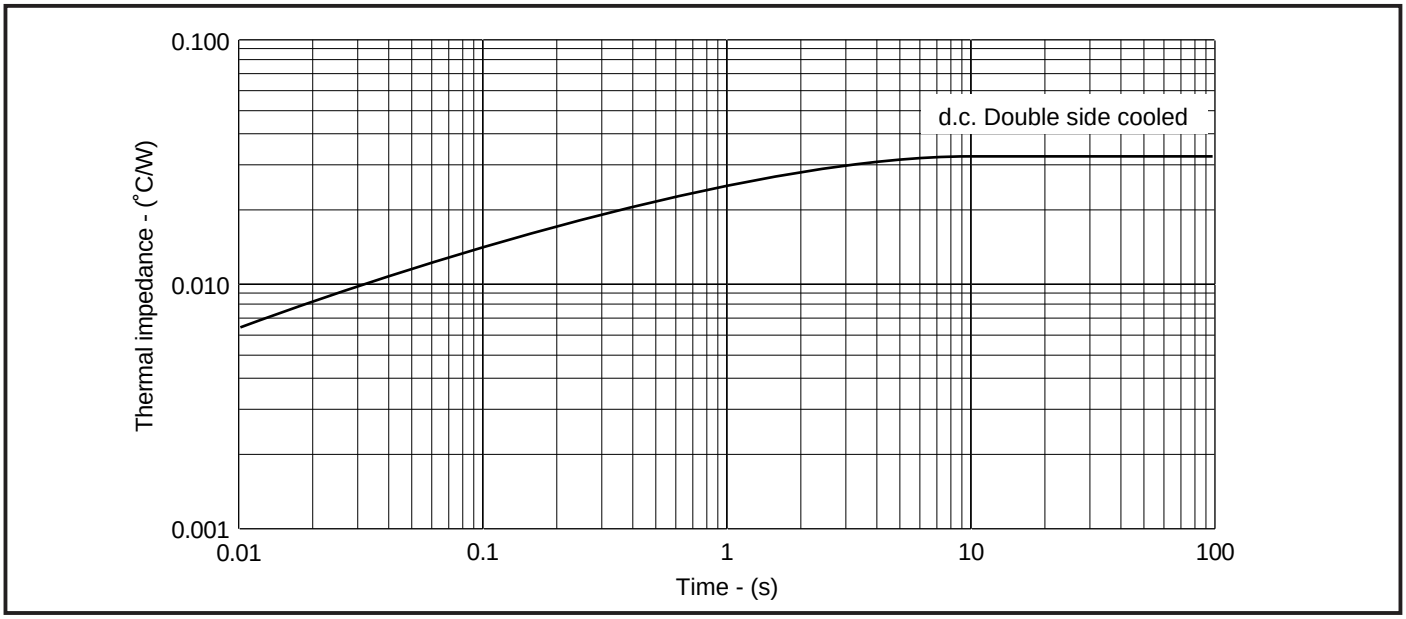
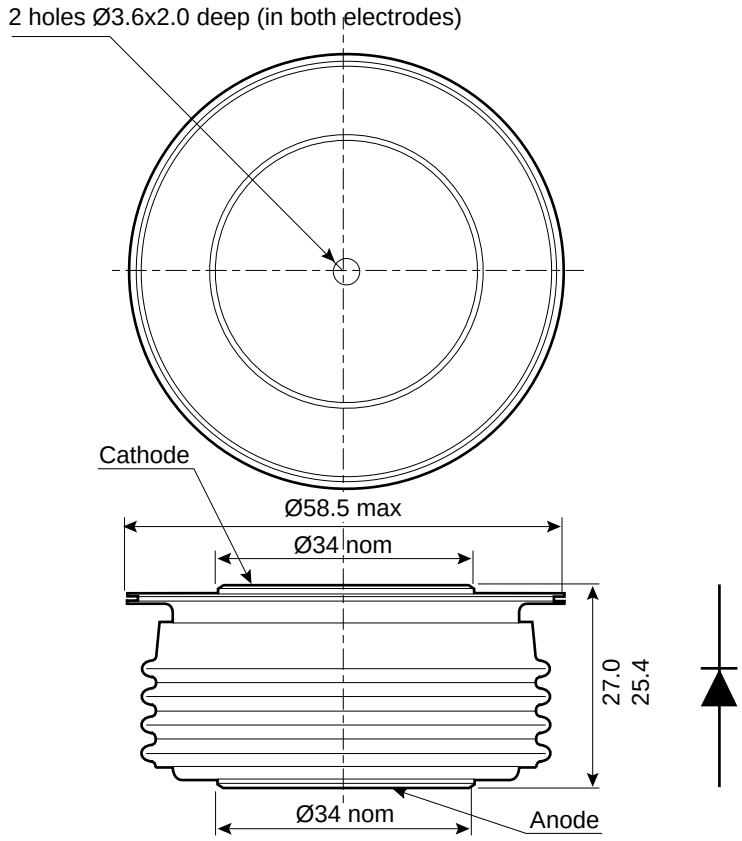


Fig. 3 Maximum (limit) transient thermal impedance - junction to case - (°CW)

PACKAGE DETAILS

(Alternative outline G includes gate connections, all other details are the same as M779b).
For further package information, please contact your local Customer Service Centre. All dimensions in mm, unless stated otherwise. DO NOT SCALE.



Nominal weight: 310g
Clamping force: 12kN ±10%

Package outine type code: M779b

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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