DS1109SG

RECTIFIER DIODE

APPLICATIONS

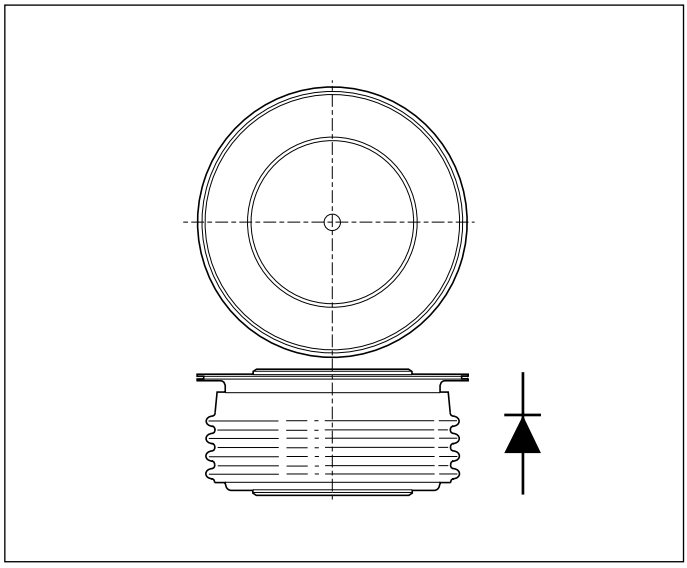
- Rectification.
- Freewheel Diode.
- DC Motor Control.
- Power Supplies.
- Welding.
- Battery Chargers.

KEY PARAMETERS

V_{RRM}	5000V
$I_{F(AV)}$	710A
I_{FSM}	11500A

FEATURES

- Double Side Cooling.
- High Surge Capability.



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VOLTAGE RATINGS

Type Number	Repetitive Peak Reverse Voltage V_{RRM} V	Conditions
DS1109SG50	5000	$V_{RSM} = V_{RRM} + 100V$
DS1109SG49	4900	
DS1109SG48	4800	
DS1109SG47	4700	
DS1109SG46	4600	
DS1109SG45	4500	

Lower voltage grades available.

CURRENT RATINGS

Symbol	Parameter	Conditions	Max.	Units
Double Side Cooled				
$I_{F(AV)}$	Mean forward current	Half wave resistive load, T_{case} = 100°C	710	A
$I_{F(RMS)}$	RMS value	T_{case} = 100°C	1115	A
I_F	Continuous (direct) forward current	T_{case} = 100°C	1000	A
Single Side Cooled (Anode side)				
$I_{F(AV)}$	Mean forward current	Half wave resistive load, T_{case} = 100°C	450	A
$I_{F(RMS)}$	RMS value	T_{case} = 100°C	706	A
I_F	Continuous (direct) forward current	T_{case} = 100°C	570	A

SURGE RATINGS

Symbol	Parameter	Conditions	Max.	Units
I_{FSM}	Surge (non-repetitive) forward current	10ms half sine; T_{case} = 150°C	9.2	kA
I^2t	I^2t for fusing	V_R = 50% V_{RRM} - 1/4 sine	422x 10^3	A^2s
I_{FSM}	Surge (non-repetitive) forward current	10ms half sine; T_{case} = 150°C	11.5	kA
I^2t	I^2t for fusing	V_R = 0	660 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 12.0kN with mounting compound	Double side	-	0.008	°C/W
			Single side	-	0.016	°C/W
T_{vj}	Virtual junction temperature	Forward (conducting)		-	160	°C
		Reverse (blocking)		-	150	°C
T_{stg}	Storage temperature range			-55	175	°C
-	Clamping force			11.5	13.5	kN

CHARACTERISTICS

Symbol	Parameter	Conditions	Min.	Max.	Units
V_{FM}	Forward voltage	At 1800A peak, T_{case} = 25°C	-	1.8	V
I_{RRM}	Peak reverse current	At V_{RRM}, T_{case} = 150°C	-	50	mA
Q_S	Total stored charge	I_F = 1000A, dI_{RR}/dt = 3A/µs	-	2600	µC
I_{RR}	Peak recovery current	T_{case} = 150°C, V_R = 100V	-	80	A
V_{TO}	Threshold voltage	At T_{vj} = 150°C	-	0.88	V
r_T	Slope resistance	At T_{vj} = 150°C	-	0.687	mΩ

CURVES

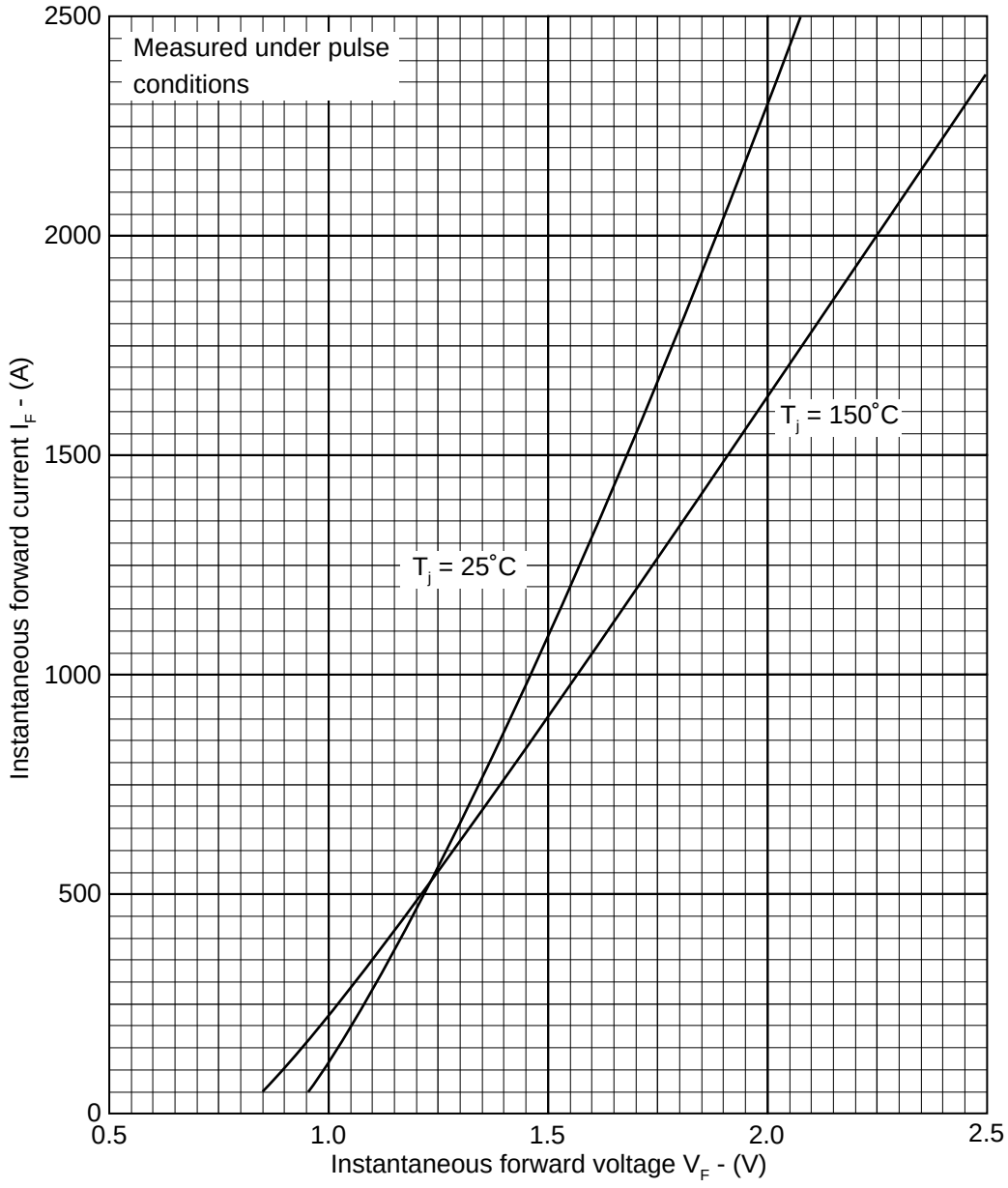


FIG. 1 MAXIMUM (LIMIT) FORWARD CHARACTERISTICS

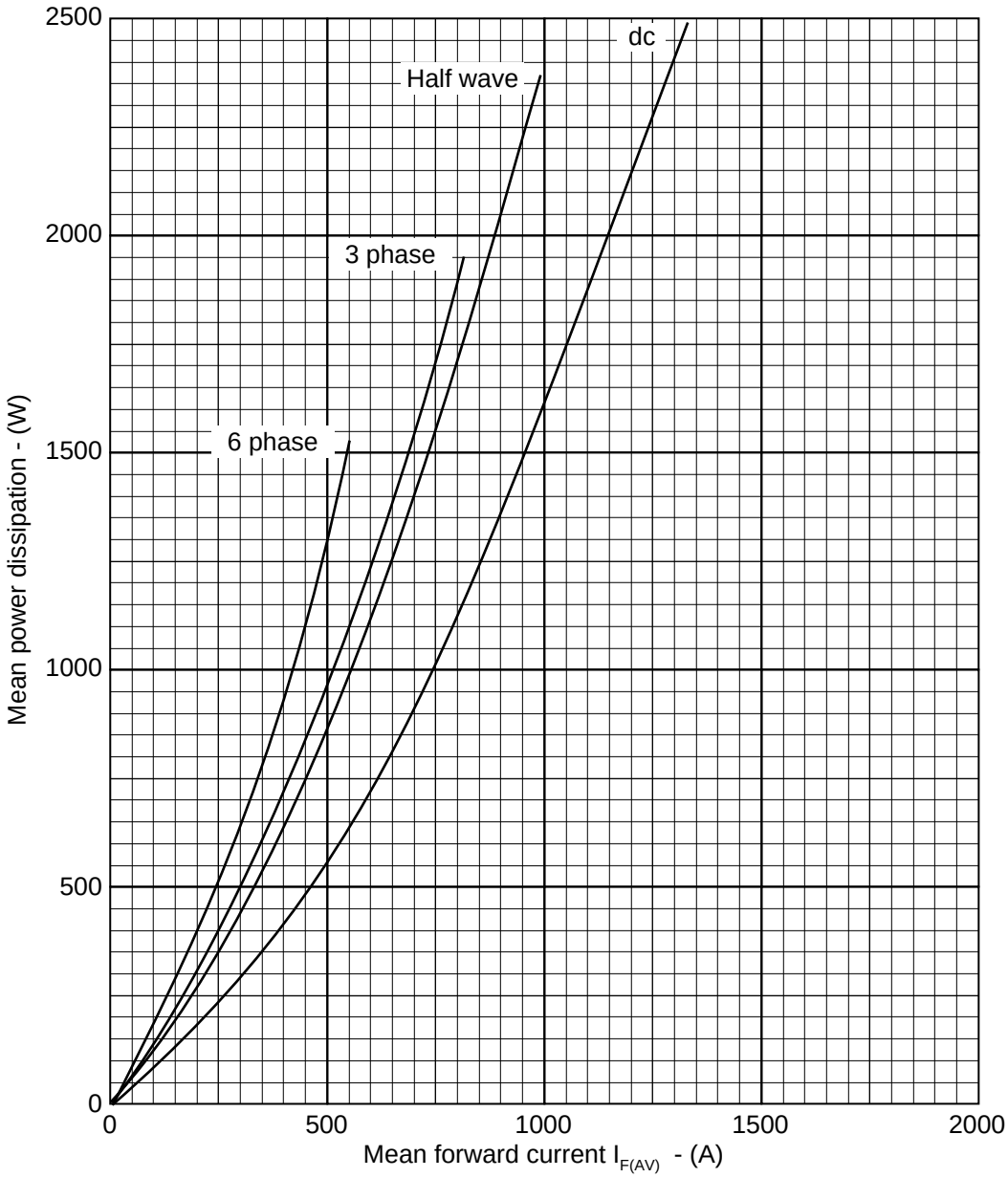


FIG. 2 DISSIPATION CURVES

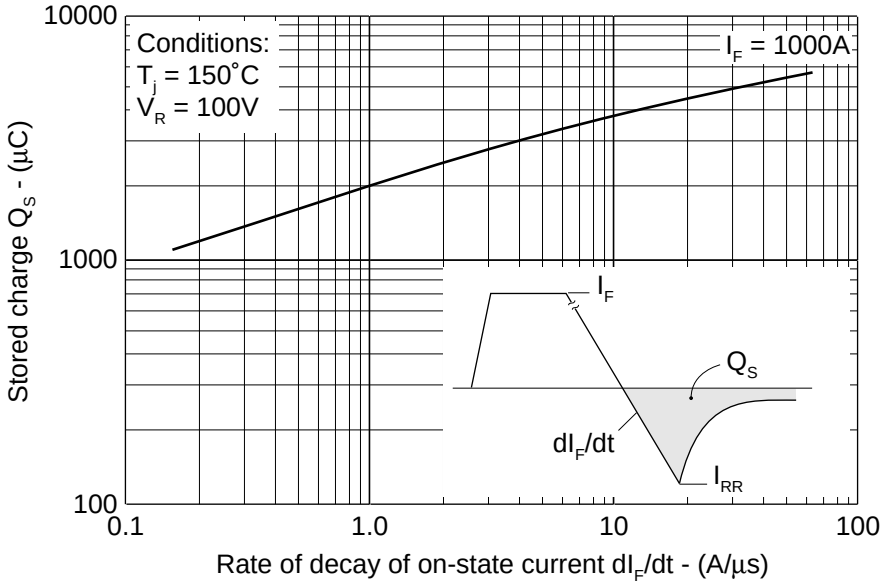


FIG. 3 MAXIMUM TOTAL STORED CHARGE

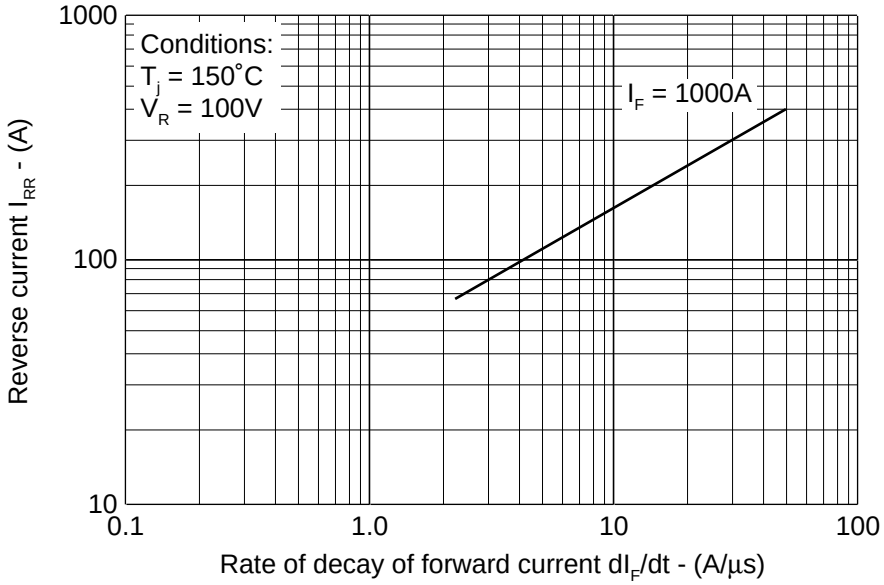


FIG. 4 MAXIMUM REVERSE RECOVERY CURRENT

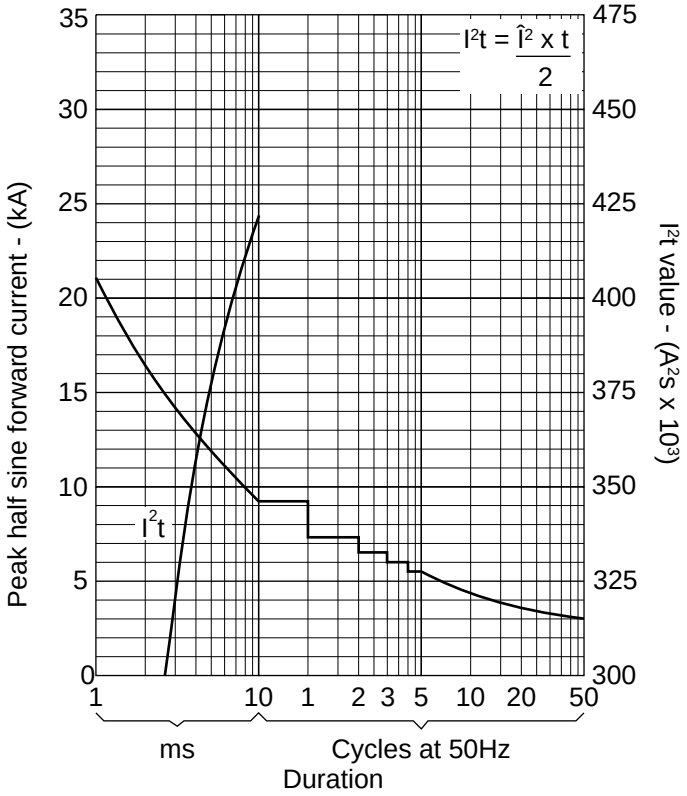
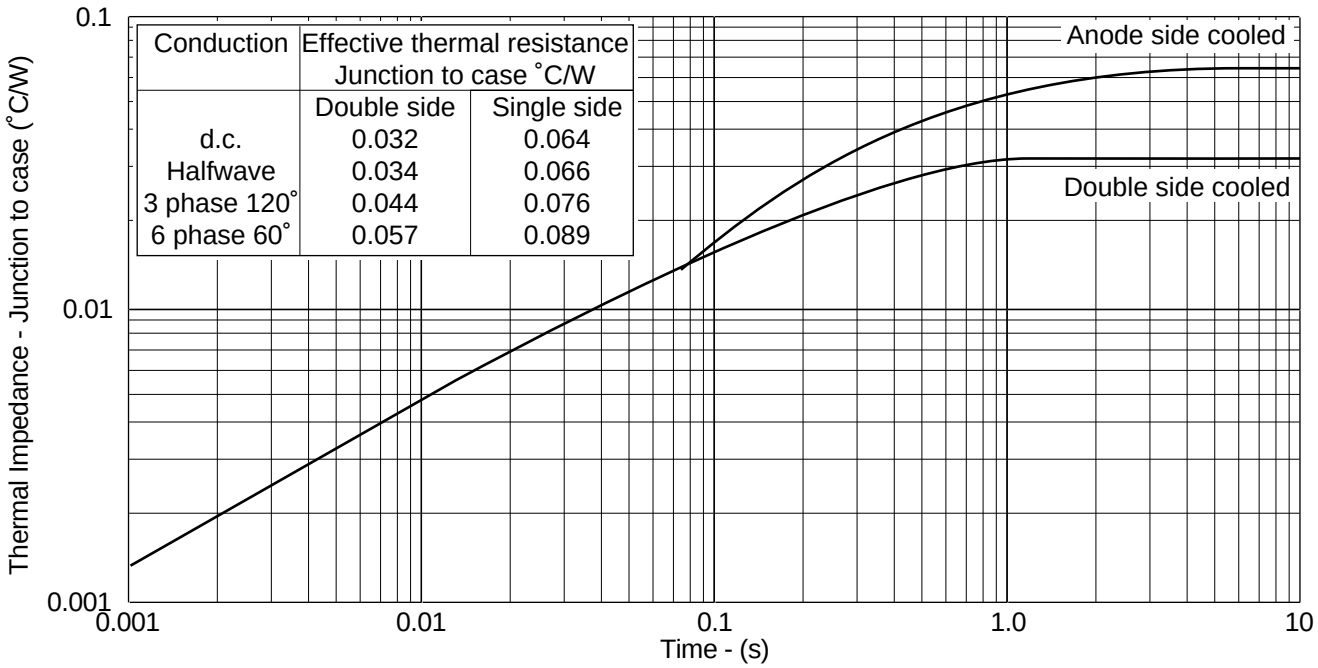


FIG. 5 SURGE (NON-REPETITIVE) FORWARD CURRENT vs TIME (WITH 50% V_{RRM} T_{case} = 150˚C)

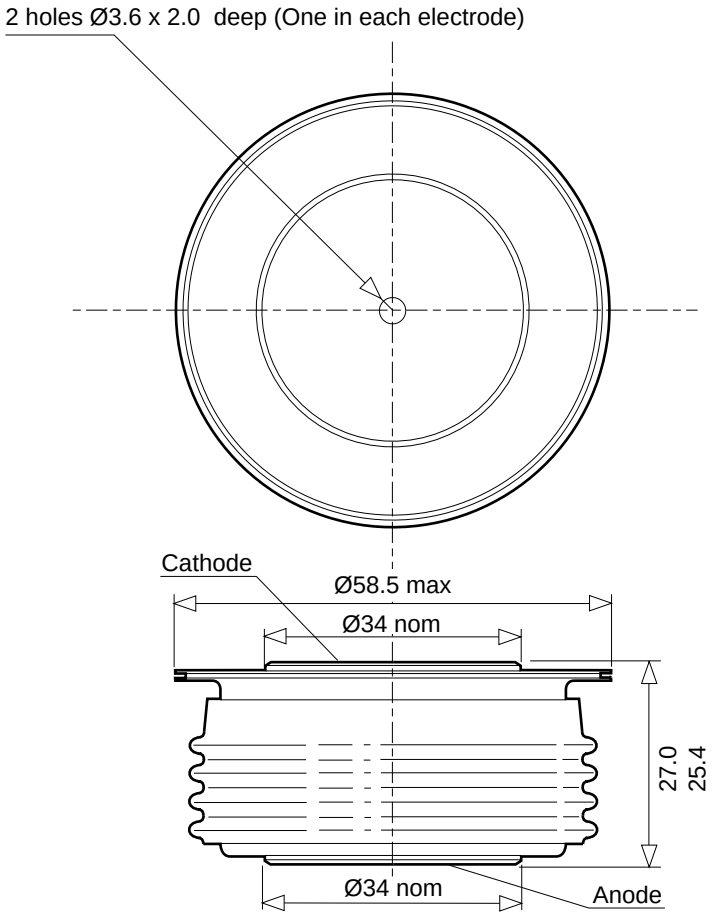


Conduction	Effective thermal resistance Junction to case ˚C/W	
	Double side	Single side
d.c.	0.032	0.064
Halfwave	0.034	0.066
3 phase 120˚	0.044	0.076
6 phase 60˚	0.057	0.089

FIG. 6 TRANSIENT THERMAL IMPEDANCE - JUNCTION TO CASE - (˚C/W)

PACKAGE DETAILS - G

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



Weight: 300g

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