

DS1101SG

RECTIFIER DIODE

APPLICATIONS

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

KEY PARAMETERS

V_{RRM}	1800V
$I_{F(AV)}$	1730A
I_{FSM}	31250A

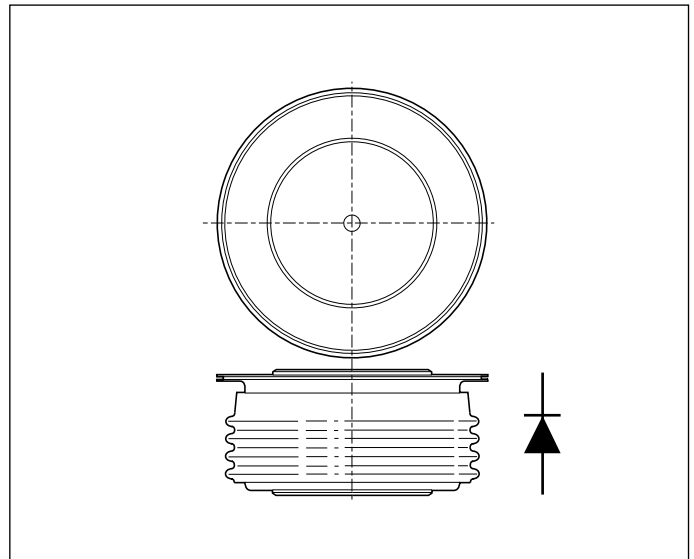
FEATURES

- Double Side Cooling.
- High Surge Capability.

VOLTAGE RATINGS

Type Number	Repetitive Peak Reverse Voltage V_{RRM} V	Conditions
DS1101SG18	1800	$V_{RSM} = V_{RRM} + 100V$
DS1101SG17	1700	
DS1101SG16	1600	
DS1101SG15	1500	
DS1101SG14	1400	
DS1101SG13	1300	

Lower voltage grades available.



Outline type code: G. Turn to page 7 for further information.

CURRENT RATINGS

Symbol	Parameter	Conditions	Max.	Units
Double Side Cooled				
$I_{F(AV)}$	Mean forward current	Half wave resistive load, $T_{case} = 100^{\circ}C$	1730	A
$I_{F(RMS)}$	RMS value	$T_{case} = 100^{\circ}C$	2715	A
I_F	Continuous (direct) forward current	$T_{case} = 100^{\circ}C$	2250	A
Single Side Cooled (Anode side)				
$I_{F(AV)}$	Mean forward current	Half wave resistive load, $T_{case} = 100^{\circ}C$	1040	A
$I_{F(RMS)}$	RMS value	$T_{case} = 100^{\circ}C$	1630	A
I_F	Continuous (direct) forward current	$T_{case} = 100^{\circ}C$	1260	A

SURGE RATINGS

Symbol	Parameter	Conditions	Max.	Units
I_{FSM}	Surge (non-repetitive) forward current	10ms half sine; $T_{case} = 175^{\circ}C$ $V_R = 50\% V_{RRM} - 1/4$ sine	25.0	kA
I^2t	I^2t for fusing		3.12×10^6	A ² s
I_{FSM}	Surge (non-repetitive) forward current	10ms half sine; $T_{case} = 175^{\circ}C$ $V_R = 0$	31.25	kA
I^2t	I^2t for fusing		4.88×10^6	A ² s

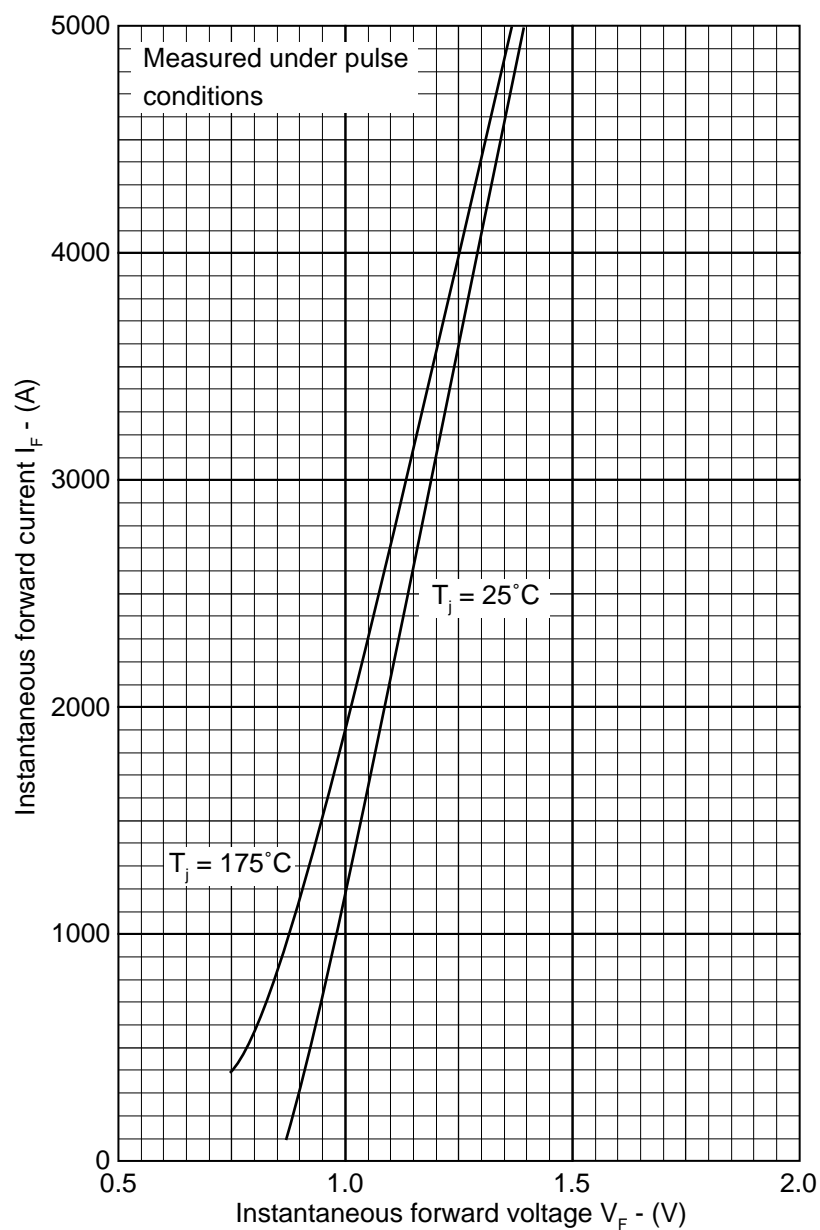
THERMAL AND MECHANICAL DATA

Symbol	Parameter	Conditions		Min.	Max.	Units
$R_{th(j-c)}$	Thermal resistance - junction to case	Double side cooled	dc	-	0.032	$^{\circ}C/W$
		Single side cooled	Anode dc	-	0.064	$^{\circ}C/W$
			Cathode dc	-	0.064	$^{\circ}C/W$
$R_{th(c-h)}$	Thermal resistance - case to heatsink	Clamping force 12.0kN with mounting compound	Double side	-	0.008	$^{\circ}C/W$
			Single side	-	0.016	$^{\circ}C/W$
T_{vj}	Virtual junction temperature	Forward (conducting)		-	185	$^{\circ}C$
		Reverse (blocking)		-	175	$^{\circ}C$
T_{stg}	Storage temperature range			-55	200	$^{\circ}C$
-	Clamping force			11.5	13.5	kN

CHARACTERISTICS

Symbol	Parameter	Conditions	Min.	Max.	Units
V_{FM}	Forward voltage	At 1800A peak, $T_{case} = 25^{\circ}C$	-	1.07	V
I_{RRM}	Peak reverse current	At V_{RRM} , $T_{case} = 175^{\circ}C$	-	50	mA
Q_S	Total stored charge	$I_F = 1000A$, $dI_{RR}/dt = 3A/\mu s$ $T_{case} = 175^{\circ}C$, $V_R = 100V$	-	600	μC
I_{RR}	Peak recovery current		-	60	A
V_{TO}	Threshold voltage	At $T_{vj} = 175^{\circ}C$	-	0.77	V
r_T	Slope resistance	At $T_{vj} = 175^{\circ}C$	-	0.118	m Ω

CURVES

**FIG. 1 MAXIMUM (LIMIT) FORWARD CHARACTERISTICS**

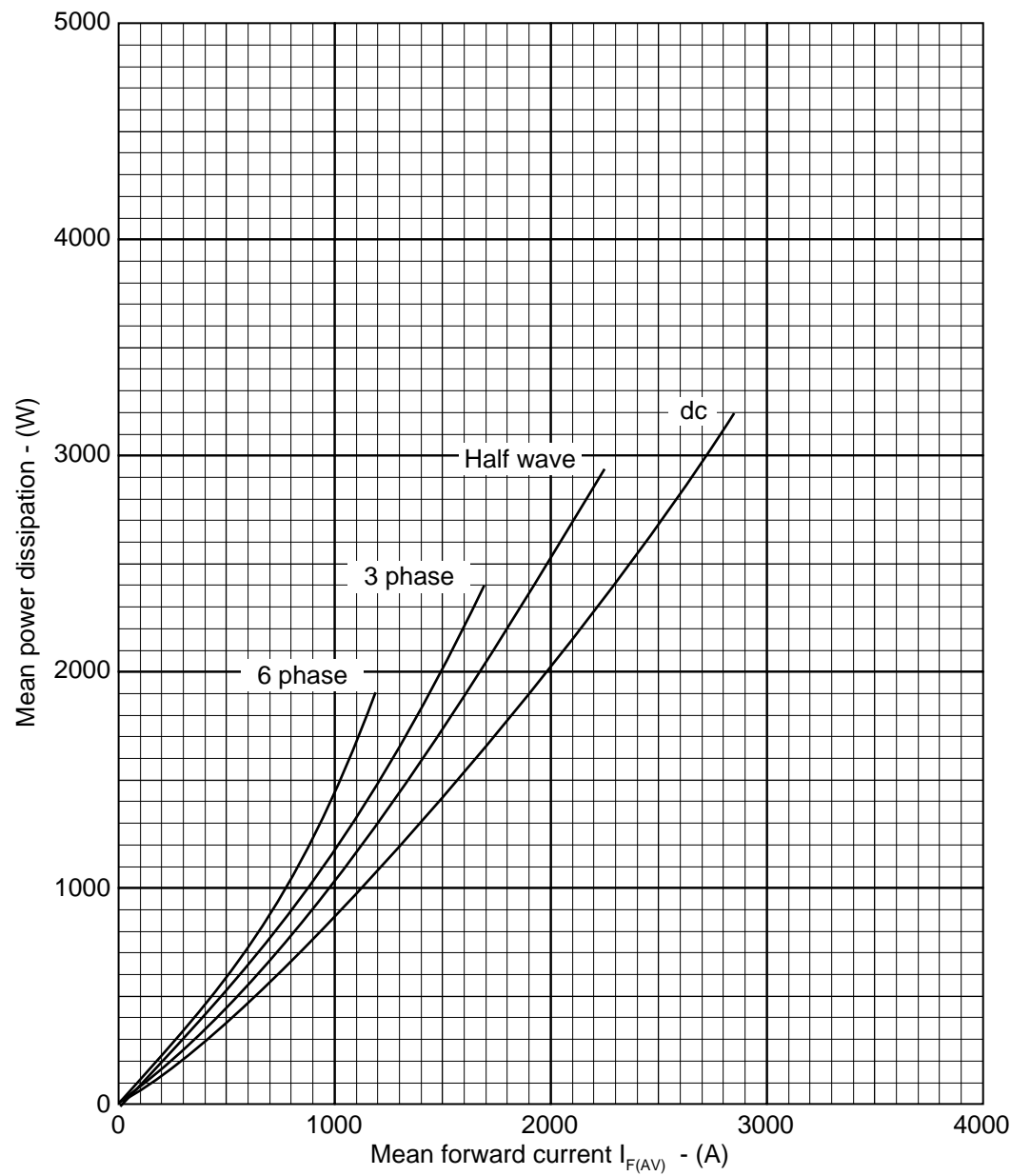
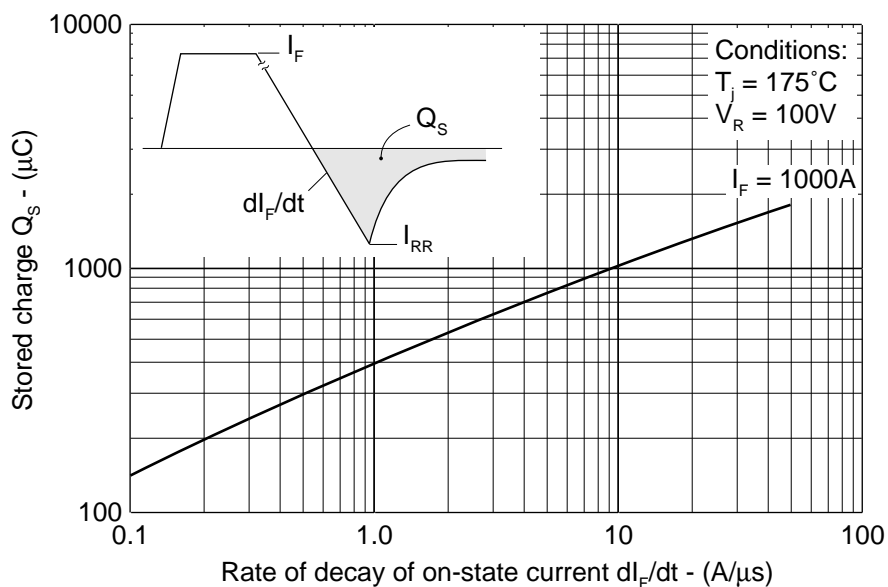
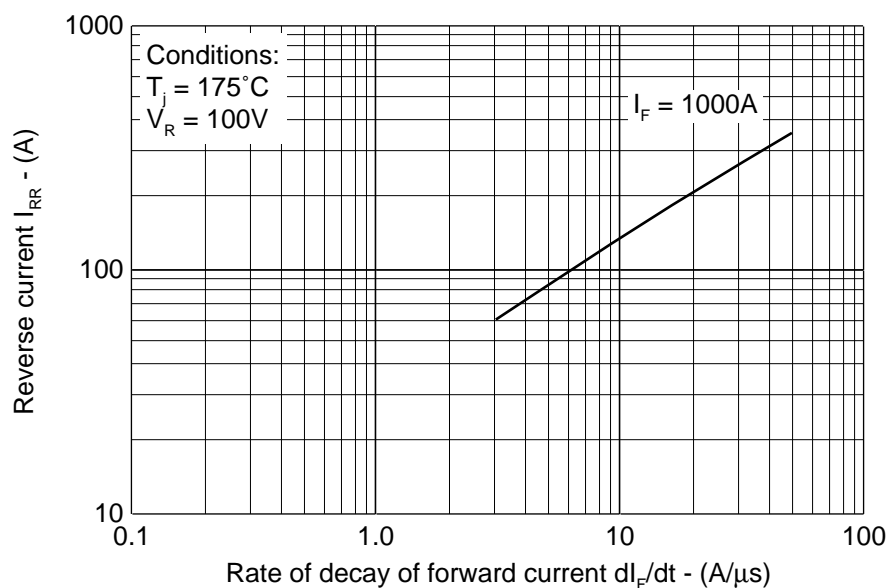


FIG. 2 DISSIPATION CURVES

**FIG. 3 MAXIMUM TOTAL STORED CHARGE****FIG. 4 MAXIMUM REVERSE RECOVERY CURRENT**

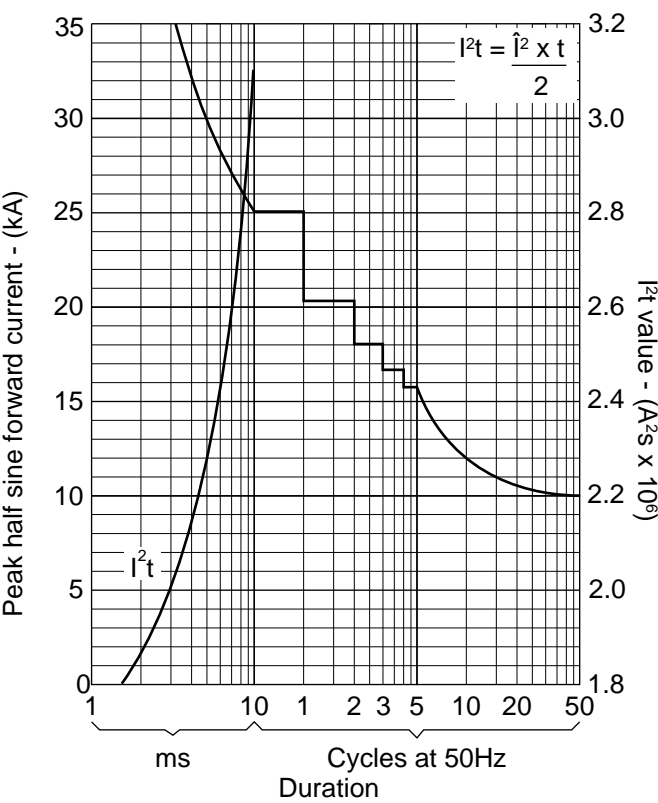


FIG. 5 SURGE (NON-REPETITIVE) FORWARD CURRENT vs TIME (WITH 50% V_{RRM} $T_{case} = 175^{\circ}C$)

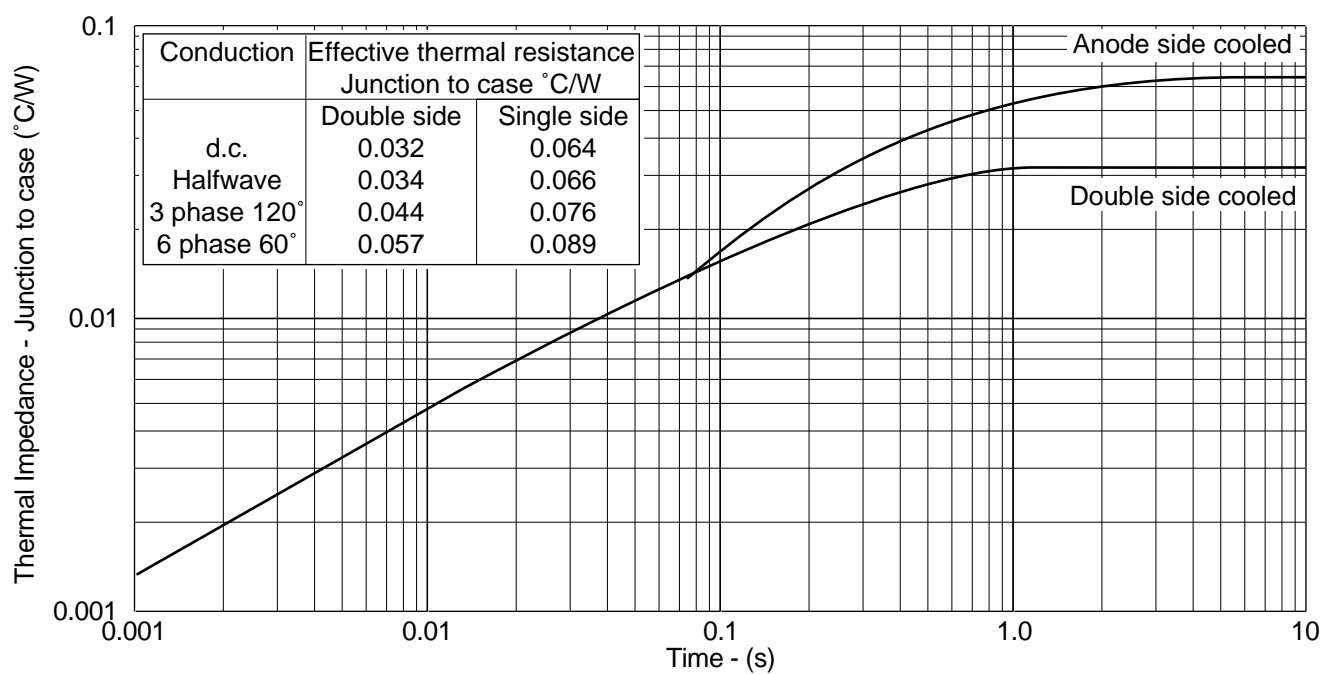
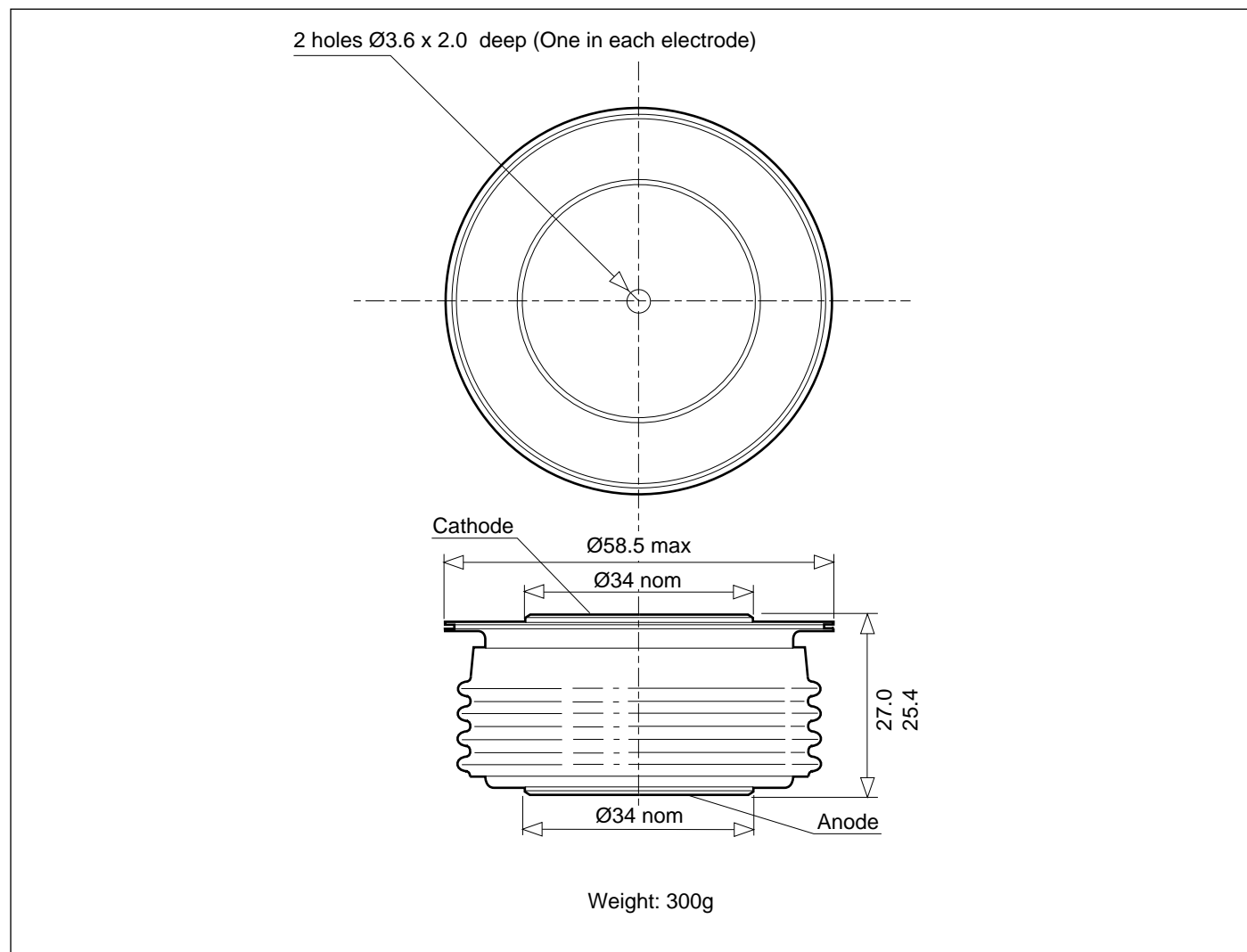


FIG. 6 TRANSIENT THERMAL IMPEDANCE - JUNCTION TO CASE - ($^{\circ}C/W$)

PACKAGE DETAILS - G

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





HEADQUARTERS OPERATIONS

GEC PLESSEY SEMICONDUCTORS

Cheney Manor, Swindon,
Wiltshire, SN2 2QW, United Kingdom.

Tel: + 44 (0)1793 518000

Fax: + 44 (0)1793 518411

GEC PLESSEY SEMICONDUCTORS

P.O. Box 660017

1500 Green Hills Road,
Scotts Valley, California 95067-0017,
United States of America.

Tel: + 1 (408) 438 2900

Fax: + 1 (408) 438 5576

POWER PRODUCT CUSTOMER SERVICE CENTRES

- **FRANCE.** 2 rue Henri-Bergson, 92665 Asnieres Cedex.
Tel: + 33 1 40 80 54 00. Fax: + 33 1 40 80 55 87.
- **GERMANY.** Ungererstrasse 129, 80505 München.
Tel: + 49 (0)89 36 09 060. Fax: + 49 (0)89 36 09 06 55.
- **NORTH AMERICA.** Two Dedham Place, Suite 125, 3 Allied Drive, Dedham. MA 02026.
Tel: + 1 617 251 0126. Fax: + 1 617 251 0106.
- **UNITED KINGDOM.** Doddington Road, Lincoln. LN6 3LF.
Tel: + 44 (0)1522 500500. Fax: + 44 (0)1522 500550.

These are supported by Agents and Distributors in major countries world-wide.

© GEC Plessey Semiconductors 1995 Publication No. DS4166-2 IssueNo. 2.3 August 1995

TECHNICAL DOCUMENTATION - NOT FOR RESALE. PRINTED IN UNITED KINGDOM.

This publication is issued to provide information only which (unless agreed by the Company in writing) may not be used, applied or reproduced for any purpose nor form part of any order or contract nor to be regarded as a representation relating to the products or services concerned. No warranty or guarantee express or implied is made regarding the capability, performance or suitability of any product or service. The Company reserves the right to alter without prior notice the specification, design or price of any product or service. Information concerning possible methods of use is provided as a guide only and does not constitute any guarantee that such methods of use will be satisfactory in a specific piece of equipment. It is the user's responsibility to fully determine the performance and suitability of any equipment using such information and to ensure that any publication or data used is up to date and has not been superseded. These products are not suitable for use in any medical products whose failure to perform may result in significant injury or death to the user. All products and materials are sold and services provided subject to the Company's conditions of sale, which are available on request.