

APPLICATIONS

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

KEY PARAMETERS

V_{RRM}	3500V
$I_{F(AV)}$	2135A
I_{FSM}	20000A
Q_r	1500μC
t_{rr}	6.5μs

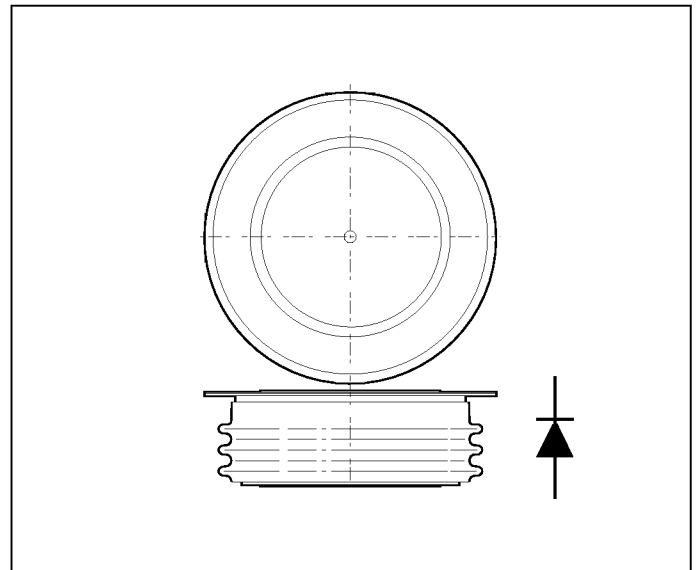
FEATURES

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

VOLTAGE RATINGS

Type Number	Repetitive Peak Reverse Voltage V_{RRM} V	Conditions
DFB54 35	3500	$V_{RSM} = V_{RRM} + 100V$
DFB54 34	3400	
DFB54 33	3300	
DFB54 32	3200	
DFB54 31	3100	
DFB54 30	3000	

Lower voltage grades available.



Outline type code: DO200AD.

See package outlines for further information.

CURRENT RATINGS

Symbol	Parameter	Conditions	Max.	Units
Double Side Cooled				
$I_{F(AV)}$	Mean forward current	Half wave resistive load, $T_{case} = 65^{\circ}C$	2135	A
$I_{F(RMS)}$	RMS value	$T_{case} = 65^{\circ}C$	3350	A
I_F	Continuous (direct) forward current	$T_{case} = 65^{\circ}C$	3060	A
Single Side Cooled (Anode side)				
$I_{F(AV)}$	Mean forward current	Half wave resistive load, $T_{case} = 65^{\circ}C$	1320	A
$I_{F(RMS)}$	RMS value	$T_{case} = 65^{\circ}C$	2080	A
I_F	Continuous (direct) forward current	$T_{case} = 65^{\circ}C$	1810	A

DFB54

SURGE RATINGS

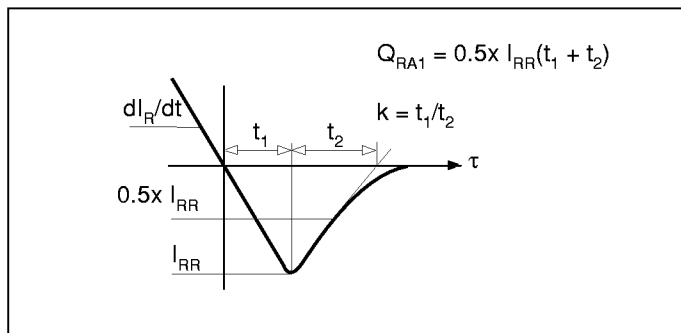
Symbol	Parameter	Conditions	Max.	Units
I_{FSM}	Surge (non-repetitive) forward current	10ms half sine; with 0% V_{RRM} , $T_j = 150^\circ\text{C}$	20.0	kA
I^2t	I^2t for fusing		2000×10^3	A^2s
I_{FSM}	Surge (non-repetitive) forward current	10ms half sine; with 50% V_{RRM} , $T_j = 150^\circ\text{C}$	16	kA
I^2t	I^2t for fusing		1280×10^3	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	-	0.013	$^\circ\text{C}/\text{W}$
		Single side cooled	Anode dc	-	0.025	$^\circ\text{C}/\text{W}$
			Cathode dc	-	0.027	$^\circ\text{C}/\text{W}$
$R_{th(c-h)}$	Thermal resistance - case to heatsink	Clamping force 44kN with mounting compound	Double side	-	0.003	$^\circ\text{C}/\text{W}$
			Single side	-	0.006	$^\circ\text{C}/\text{W}$
T_{vj}	Virtual junction temperature	Forward (conducting)	-	150	$^\circ\text{C}$	
T_{stg}	Storage temperature range		-55	150	$^\circ\text{C}$	
-	Clamping force		39.6	48.4	kN	

CHARACTERISTICS

Symbol	Parameter	Conditions	Typ.	Max.	Units
V_{FM}	Forward voltage	At 1500A peak, $T_{case} = 25^{\circ}C$	-	1.7	V
I_{RRM}	Peak reverse current	At V_{RRM} , $T_{case} = 150^{\circ}C$	-	100	mA
t_{rr}	Reverse recovery time	$I_F = 1000A$, $di_{RR}/dt = 100A/\mu s$ $T_{case} = 150^{\circ}C$, $V_R = 100V$	-	6.5	μs
Q_{RA1}	Recovered charge (50% chord)		-	1500	μC
I_{RM}	Reverse recovery current		-	450	A
K	Soft factor		-	-	-
V_{TO}	Threshold voltage	At $T_{vj} = 150^{\circ}C$	-	1.15	V
r_T	Slope resistance	At $T_{vj} = 150^{\circ}C$	-	0.32	$m\Omega$
V_{FRM}	Forward recovery voltage	$di/dt = 1000A/\mu s$, $T_j = 125^{\circ}C$	-	-	V

DEFINITION OF K FACTOR AND Q_{RA1} 

DFB54

CURVES

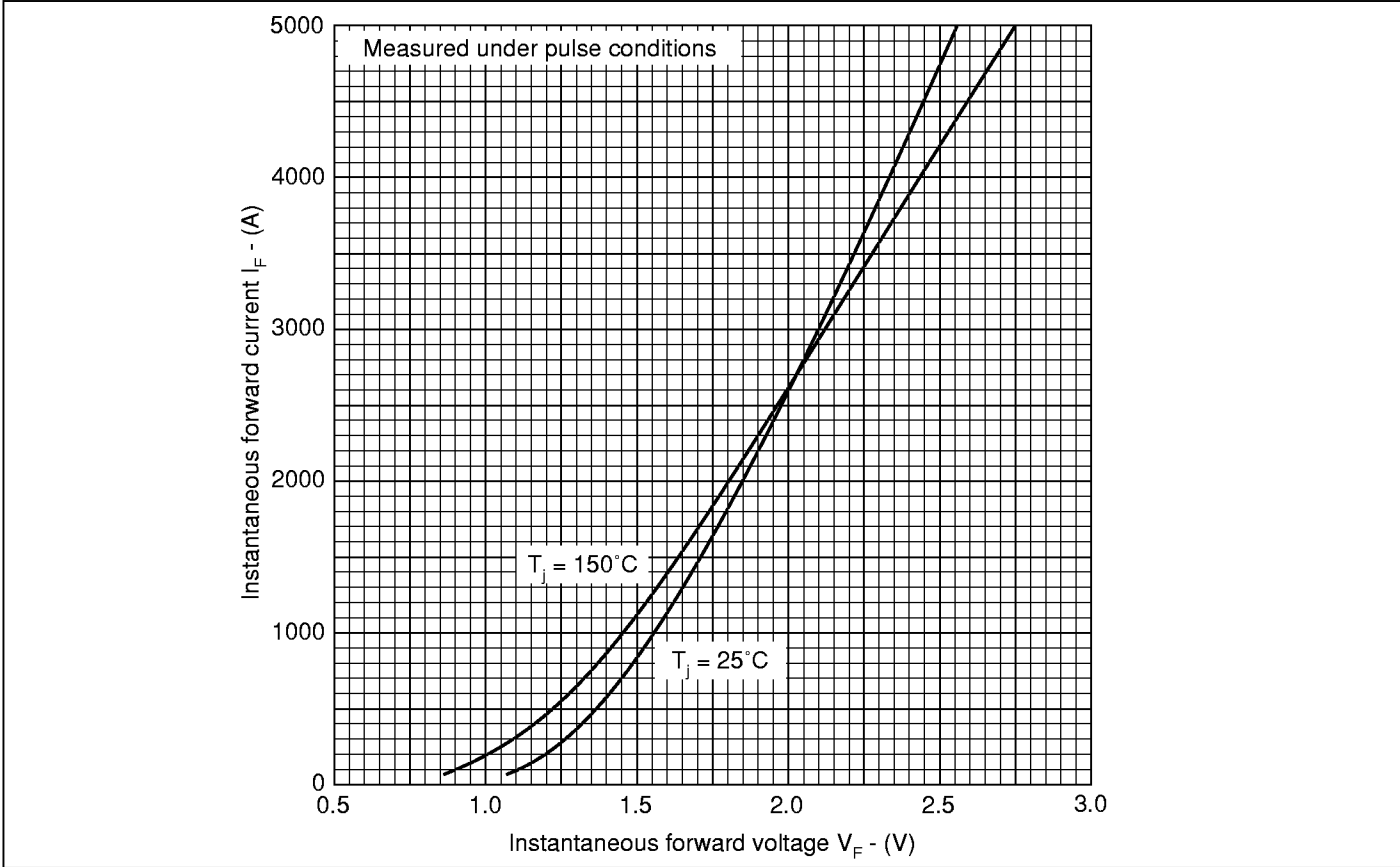


Fig.1 Maximum (limit) forward characteristics

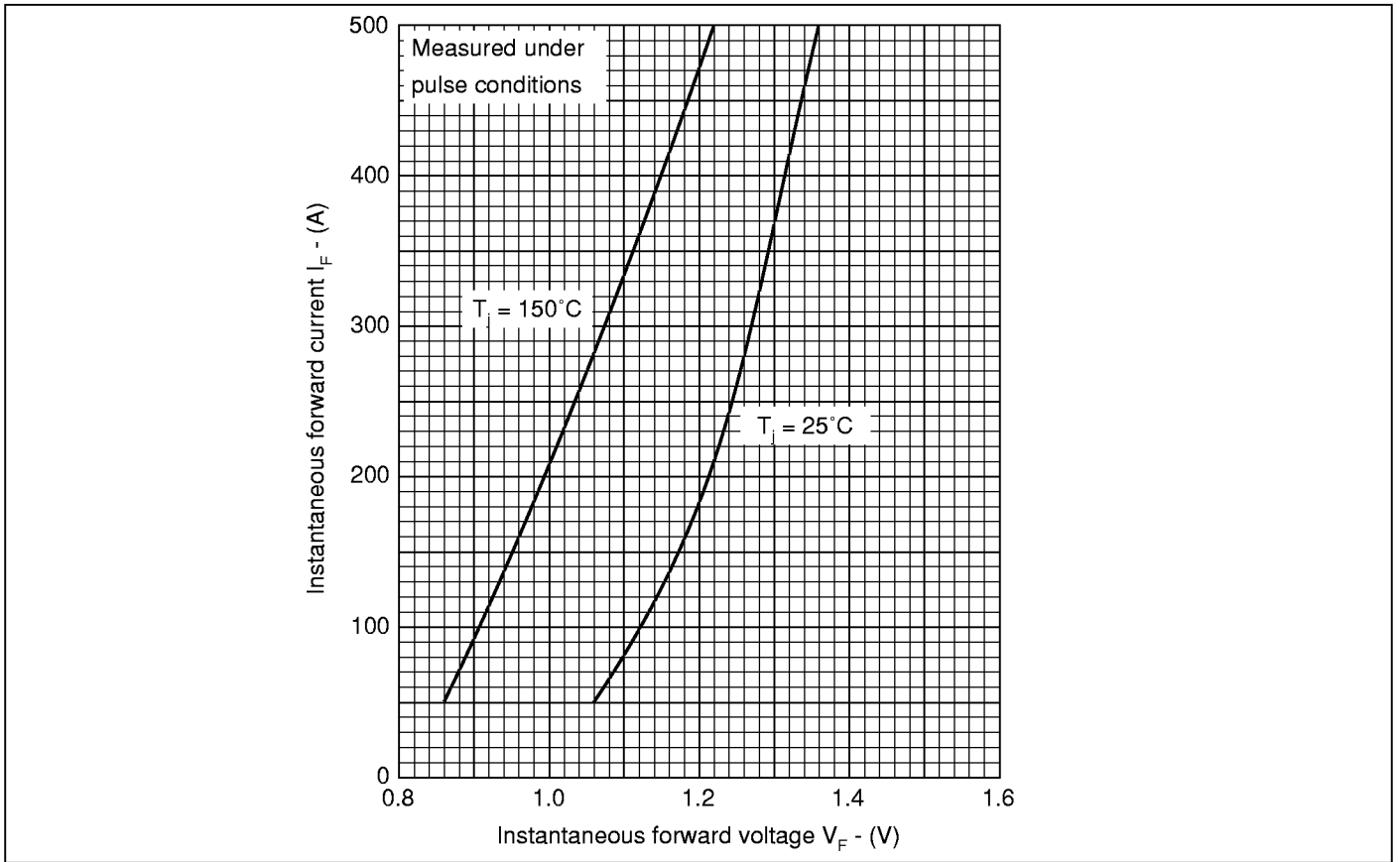


Fig.2 Maximum (limit) forward characteristics

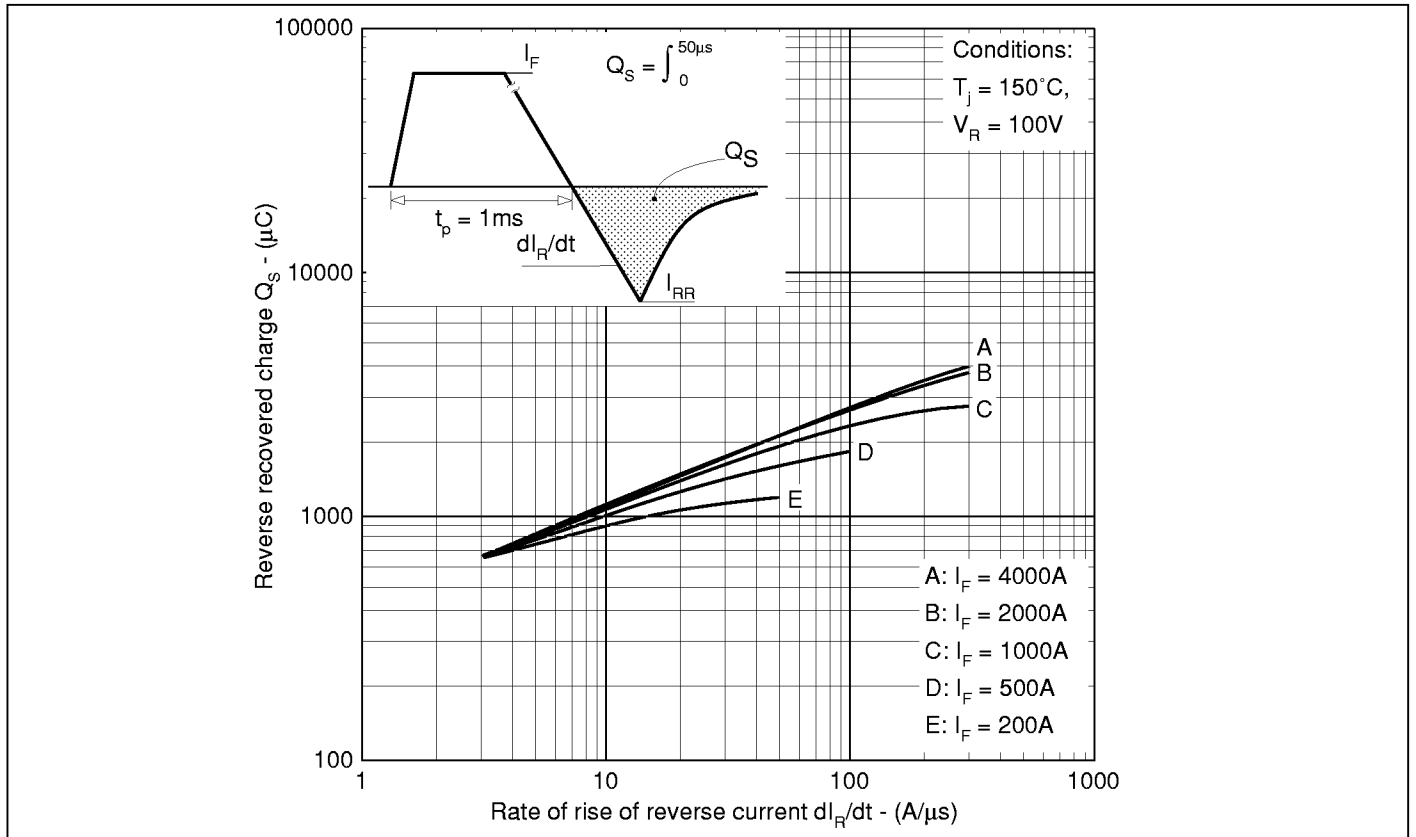


Fig.3 Recovered charge

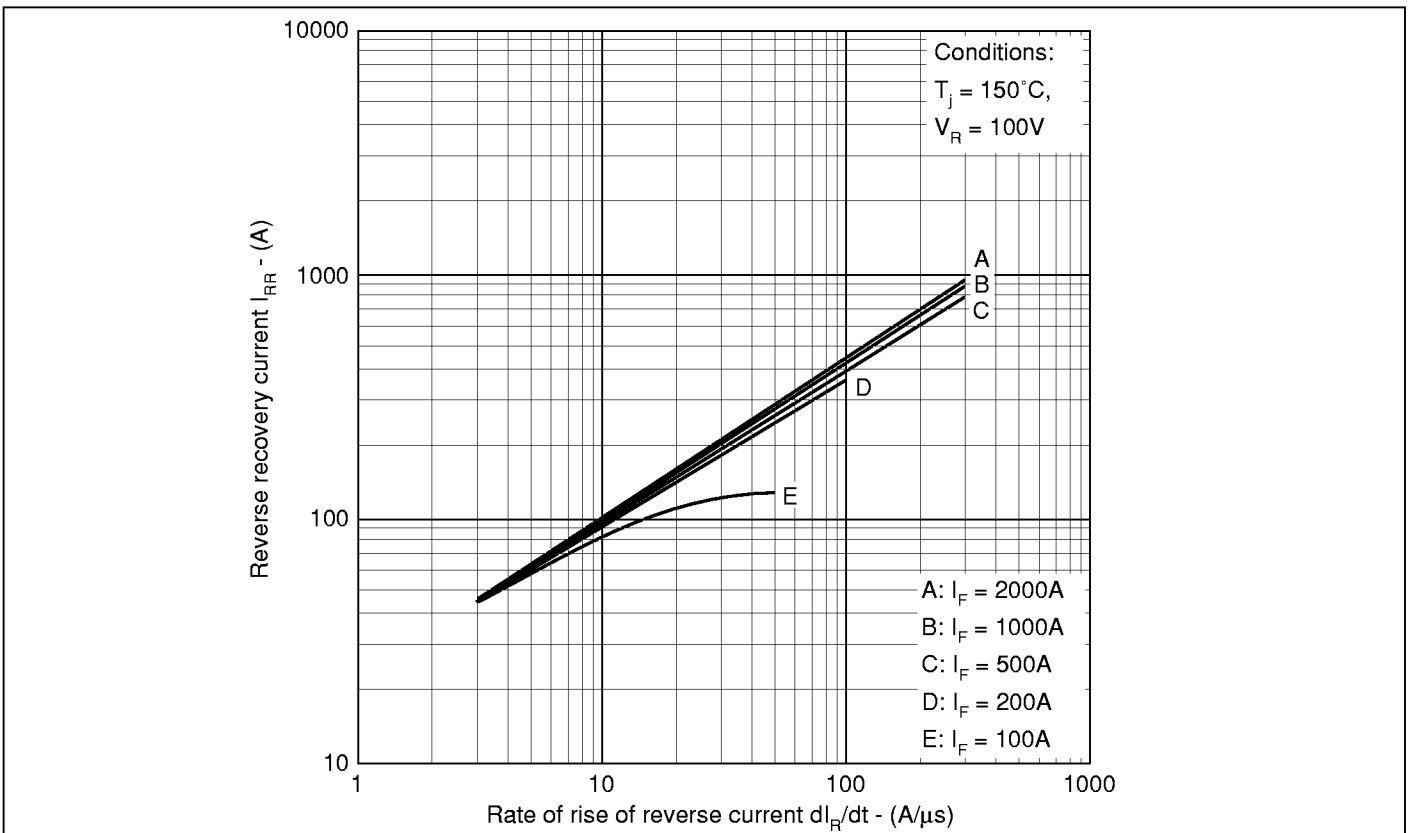


Fig.4 Typical reverse recovery current vs rate of rise of reverse current

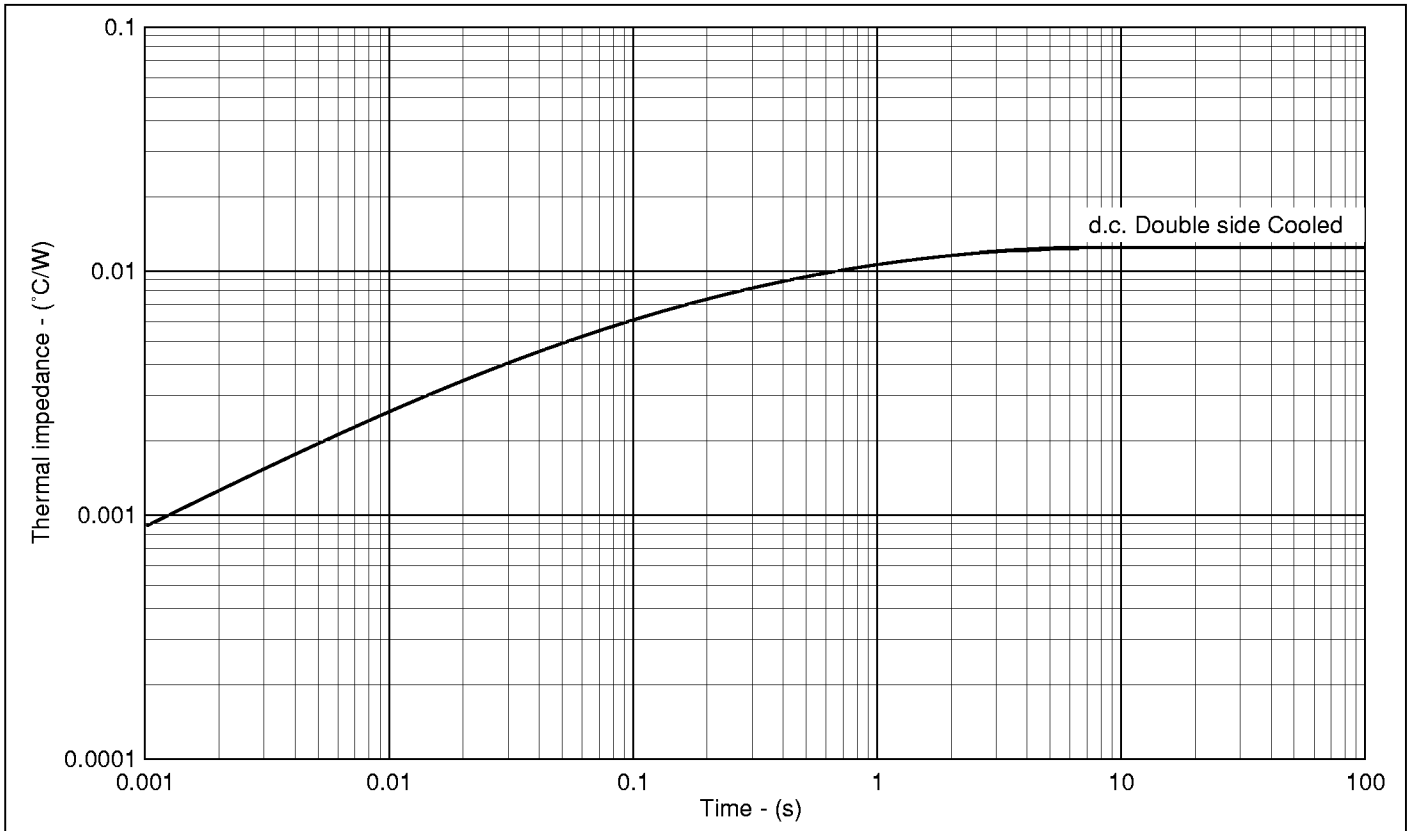
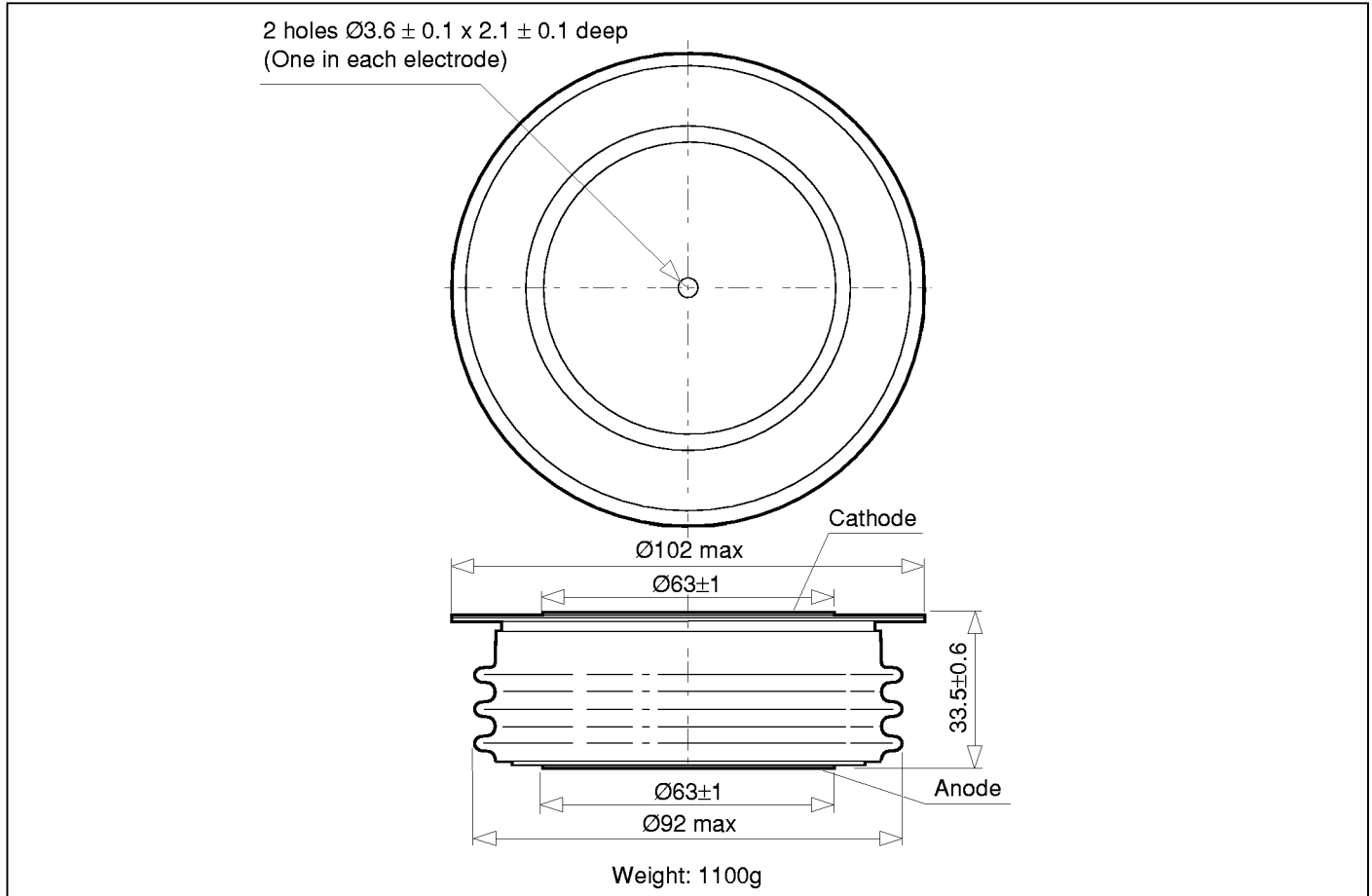


Fig.5 Maximum (limit) transient thermal impedance - junction to case - (°C/W)

DFB54

PACKAGE DETAILS - DO200AD

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



HEADQUARTERS OPERATIONS
MITEL SEMICONDUCTOR
Cheney Manor, Swindon,
Wiltshire SN2 2QW, United Kingdom.
Tel: (01793) 518000
Fax: (01793) 518411

MITEL SEMICONDUCTOR
1500 Green Hills Road,
Scotts Valley, California 95066-4922
United States of America.
Tel (408) 438 2900
Fax: (408) 438 5576/6231

Internet: <http://www.gpsemi.com>

POWER PRODUCT CUSTOMER SERVICE CENTRES

- **FRANCE, BENELUX & SPAIN** Les Ulis Cedex Tel: (1) 69 18 90 00 Fax : (1) 64 46 54 50
- **GERMANY** Munich Tel: (089) 419508-20 Fax : (089) 419508-55
- **NORTH AMERICA** Dedham, USA Tel: (781) 251 0126 Fax: (781) 251 0106
- **UK** Lincoln Tel: (01522) 500500 Fax : (01522) 510550

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

© Mitel Corporation 1998 Publication No. DS4219-2 Issue No. 2.4 March 1998

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.

All brand names and product names used in this publication are trademarks, registered trademarks or trade names of their respective owners.