DRD4350A40

Rectifier Diode

DS5985-1 January 2011 (LN28006)

FEATURES

- Double Side Cooling
- High Surge Capability

KEY PARAMETERS

V_{RRM}	4000V
$I_{F(AV)}$	4346A
I_{FSM}	83000A

APPLICATIONS

- Rectification
- Free-wheel Diode
- DC Motor Control
- Power Supplies
- Welding
- Battery Chargers

VOLTAGE RATINGS

Part and Ordering Number	Repetitive Peak Voltages V_{DRM} and V_{DRM} V	Conditions
DRD4350A40	4000	$V_{RSM} = V_{RRM}+100V$
DRD4350A39	3900	
DRD4350A38	3800	
DRD4350A37	3700	
DRD4350A36	3600	
DRD4350A35	3500	

Lower voltage grades available.

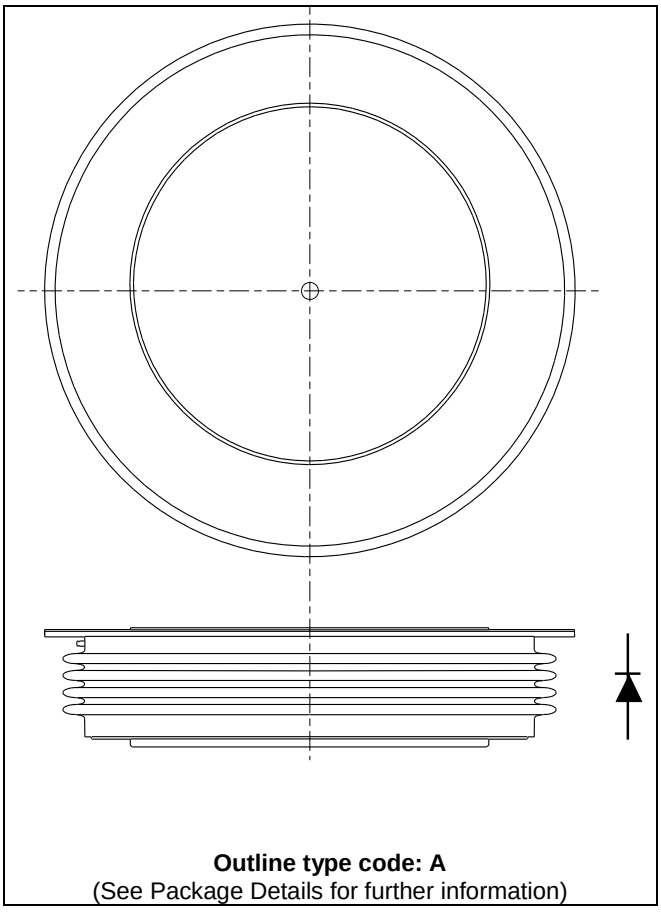
ORDERING INFORMATION

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

For example:

DRD4350A39

Note: Please use the complete part number when ordering and quote this number in any future correspondence relating to your order.



Outline type code: A
(See Package Details for further information)

Fig. 1 Package outlines

CURRENT RATINGS

T_{case} = 75°C unless stated otherwise

Symbol	Parameter	Test Conditions	Max.	Units
Double Side Cooled				
$I_{F(AV)}$	Mean forward current	Half wave resistive load	5651	A
$I_{F(RMS)}$	RMS value	-	8877	A
I_F	Continuous (direct) on-state current	-	8208	A
Single Side Cooled (Anode side)				
$I_{F(AV)}$	Mean forward current	Half wave resistive load	3707	A
$I_{F(RMS)}$	RMS value	-	5821	A
I_F	Continuous (direct) on-state current	-	4976	A

T_{case} = 100°C unless stated otherwise

Symbol	Parameter	Test Conditions	Max.	Units
Double Side Cooled				
$I_{F(AV)}$	Mean forward current	Half wave resistive load	4350	A
$I_{F(RMS)}$	RMS value	-	6830	A
I_F	Continuous (direct) on-state current	-	6160	A
Single Side Cooled (Anode side)				
$I_{F(AV)}$	Mean forward current	Half wave resistive load	2795	A
$I_{F(RMS)}$	RMS value	-	4390	A
I_F	Continuous (direct) on-state current	-	3640	A

SURGE RATINGS

Symbol	Parameter	Test Conditions	Max.	Units
I_{FSM}	Surge (non-repetitive) on-state current	10ms half sine, T_{case} = 150°C	66.5	kA
I^2t	I^2t for fusing	V_R = 50% V_{RRM} - ¼ sine	22	MA^2s
I_{FSM}	Surge (non-repetitive) on-state current	10ms half sine, T_{case} = 150°C	83	kA
I^2t	I^2t for fusing	V_R = 0	34.5	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	-	0.0065	°C/W
		Single side cooled	Anode DC	-	0.013	°C/W
			Cathode DC	-	0.013	°C/W
$R_{th(c-h)}$	Thermal resistance – case to heatsink	Clamping force 83.0kN	Double side	-	0.001	°C/W
		(with mounting compound)	Single side	-	0.002	°C/W
T_{vj}	Virtual junction temperature	On-state (conducting)		-	160	°C
		Reverse (blocking)		-	150	°C
T_{stg}	Storage temperature range			-55	150	°C
F_m	Clamping force			75.0	91.0	kN

CHARACTERISTICS

Symbol	Parameter	Test Conditions	Min.	Max.	Units
V_{FM}	Forward voltage	At 3000A peak, T_{case} = 25°C	-	1.06	V
I_{RM}	Peak reverse current	At V_{DRM}, T_{case} = 150°C	-	400	mA
V_{TO}	Threshold voltage	At T_{vj} = 150°C	-	0.78	V
r_T	Slope resistance	At T_{vj} = 150°C	-	0.0763	mΩ

CURVES

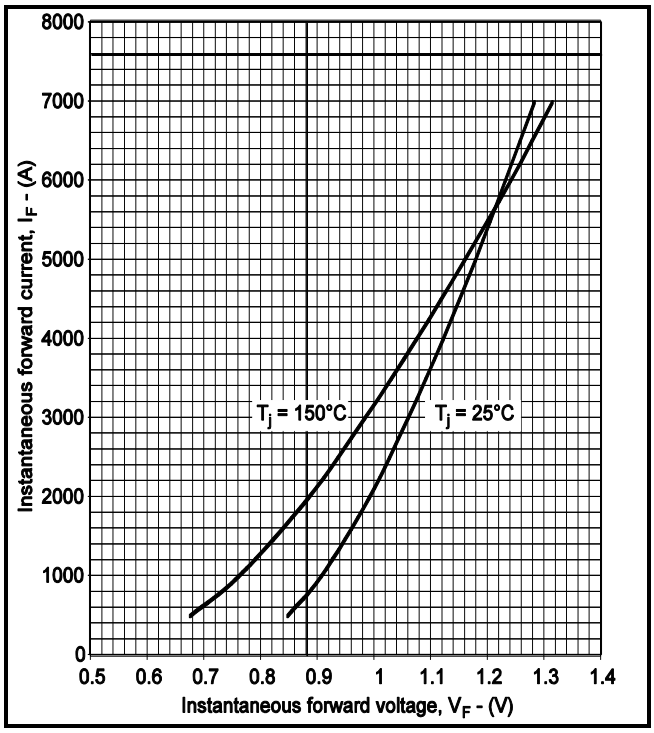


Fig.2 Maximum (limit) forward characteristics

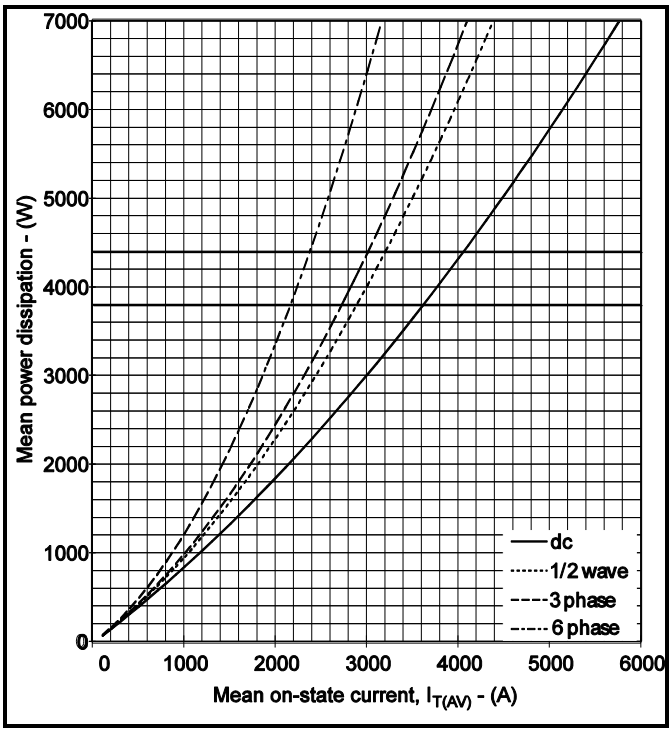


Fig.3 Power loss curves

V_{TM} EQUATION

$V_{TM} = A + B\ln(I_T) + C.I_T + D.\sqrt{I_T}$

Where A = - 0.01591
B = 0.113682
C = 8.04×10^{-5}
D = - 0.00284

these values are valid for T_j = 150°C for I_F 500A to 7000A

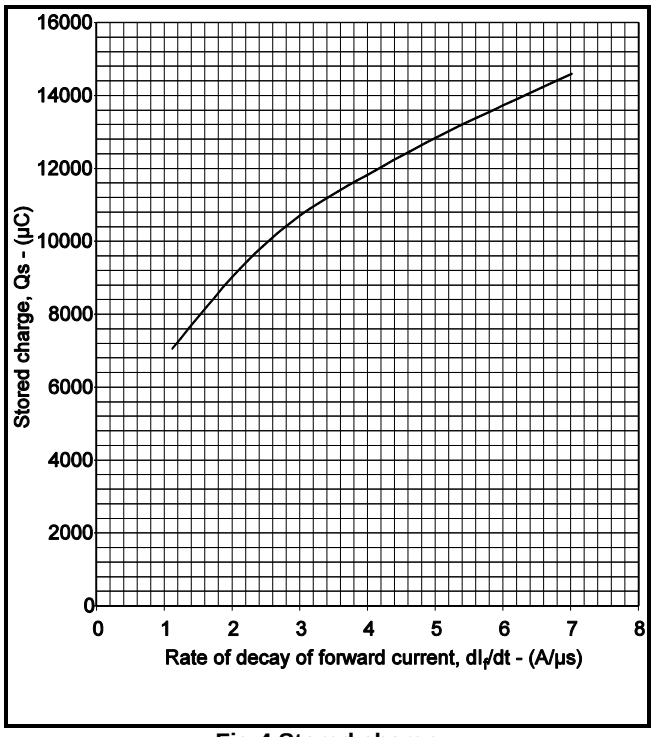


Fig.4 Stored charge

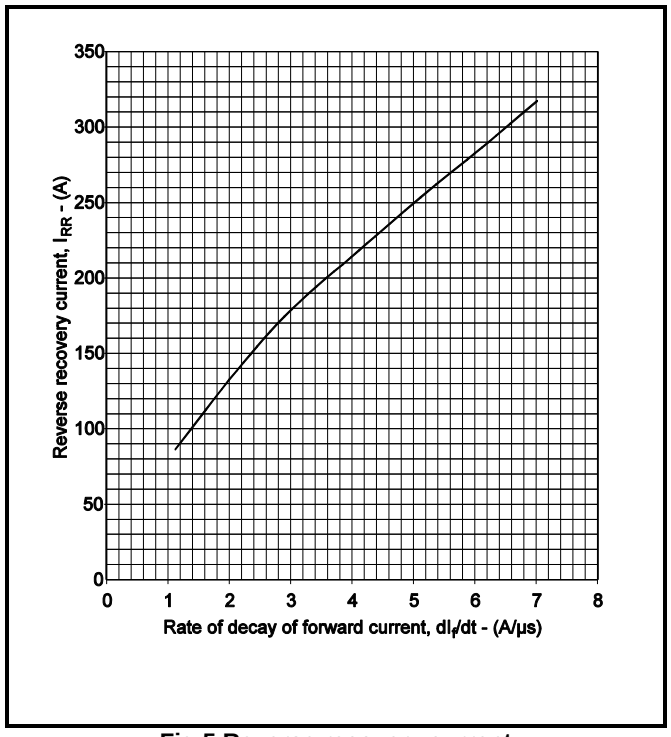


Fig.5 Reverse recovery current

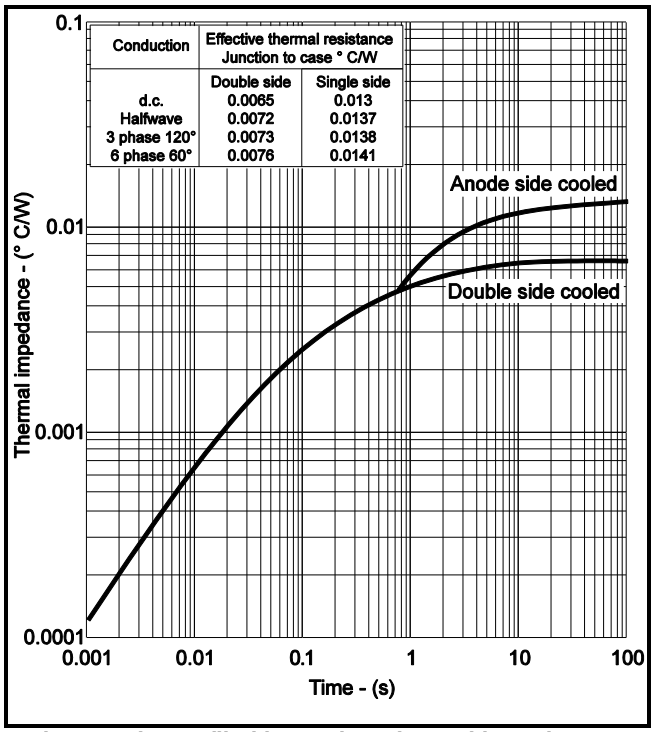


Fig.6 Maximum (limit) transient thermal impedance – junction to case

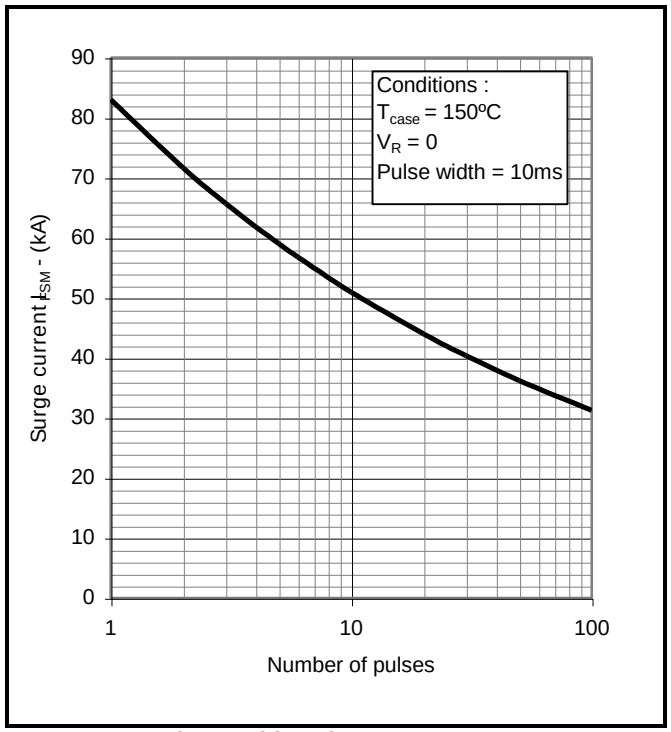


Fig.7 Multi-cycle surge current

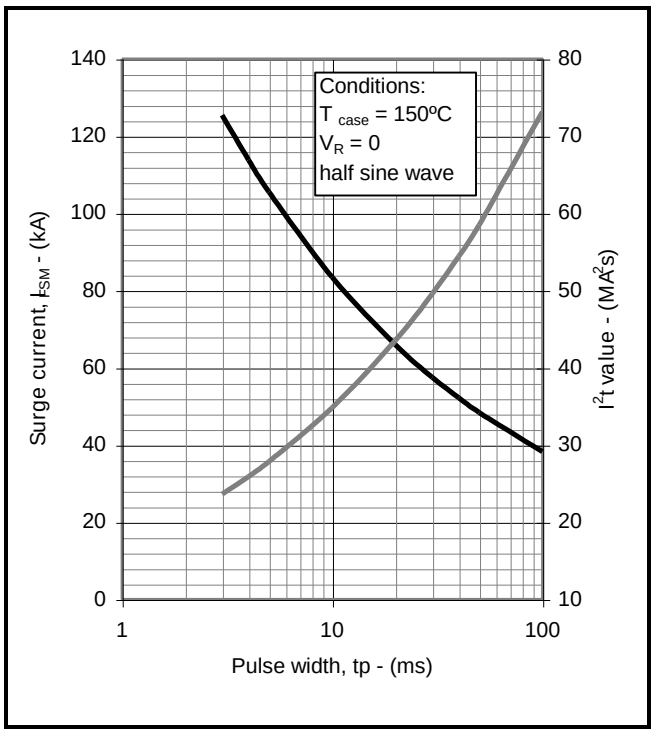
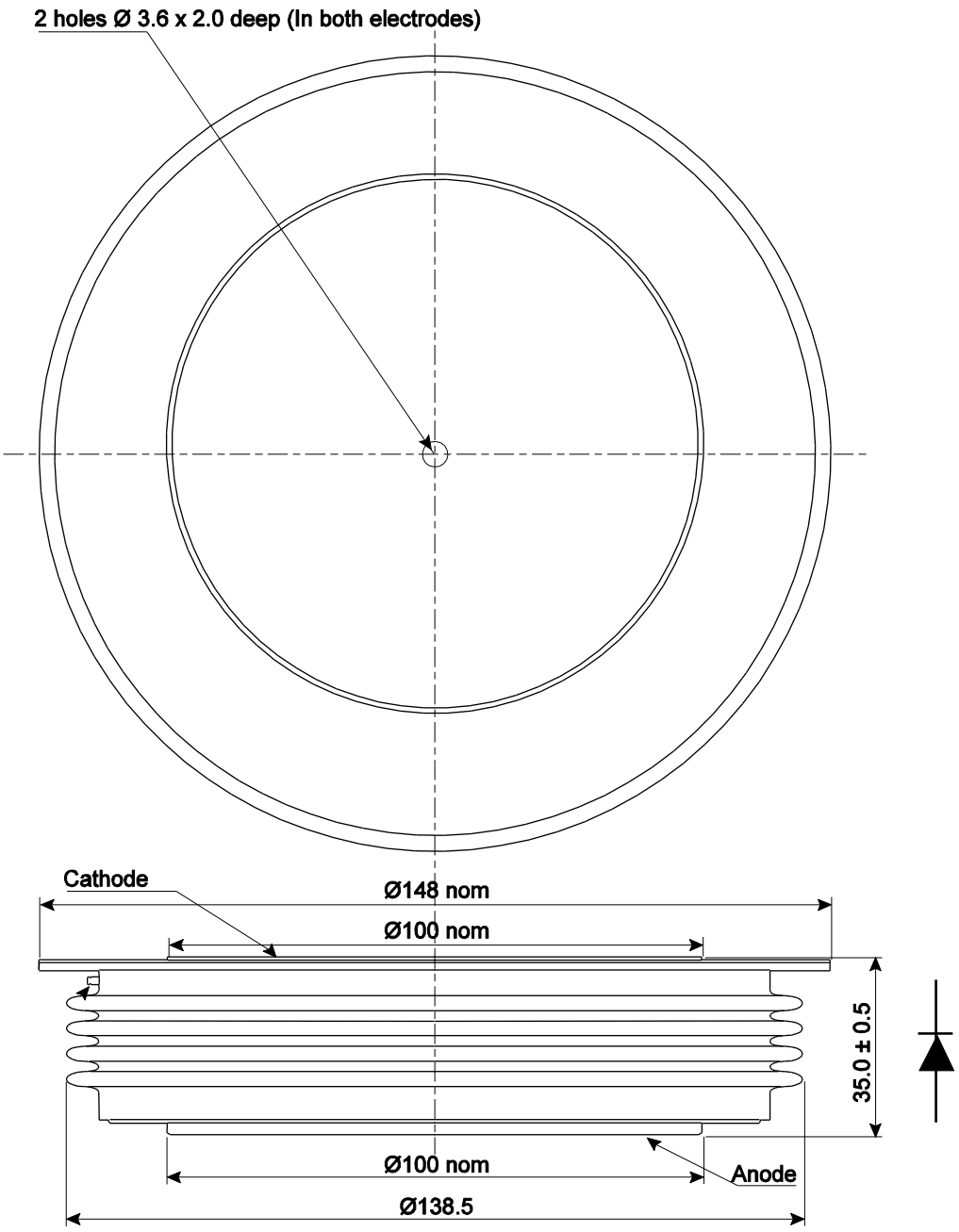


Fig.8 Sub-cycle surge current

PACKAGE DETAILS

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



Nominal weight: 2575g
Clamping force: 83kN ±10%

Package outline type code: A

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