RD33FG

Rectifier Diode

Target Information

Replaces November 2000, version DS5415-1.1

DS5415-2.0 October 2001

FEATURES

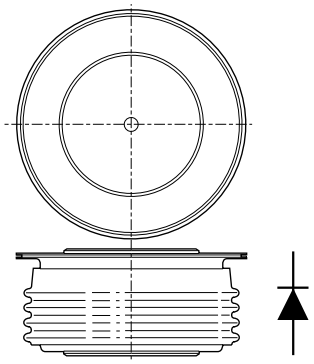
- Optimised For High Current Rectifiers
- High Surge Capability
- Very Low On-state Voltage

APPLICATIONS

- Electroplating
- Power Supplies
- Welding

KEY PARAMETERS

V_{RRM}		600V
$I_{F(AV)}$	(max)	3997A
I_{FSM}	(max)	46750A



Outline type code: G

(See Package Details for further information)

Fig. 1 Package outline

VOLTAGE RATINGS

Part and Ordering Number	Repetitive Peak Reverse Voltage V_{RRM} V	Conditions
RD33FG06	600	$V_{RSM} = V_{RRM}$
RD33FG05	500	
RD33FG04	400	
RD33FG03	300	
RD33FG02	200	
RD33FG01	100	

ORDERING INFORMATION

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

For example:

RD33FG03

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

CURRENT RATINGS

T_{case} = 75°C unless otherwise stated

Symbol	Parameter	Conditions	Max.	Units
Double Side Cooled				
$I_{F(AV)}$	Mean forward current	Half wave resistive load	3997	A
$I_{F(RMS)}$	RMS value	-	6278	A
I_F	Continuous (direct) forward current	-	6358	A
Single Side Cooled (Anode side)				
$I_{F(AV)}$	Mean forward current	Half wave resistive load	2831	A
$I_{F(RMS)}$	RMS value	-	4447	A
I_F	Continuous (direct) forward current	-	4401	A

T_{case} = 85°C unless otherwise stated

Symbol	Parameter	Test Conditions	Max.	Units
Double Side Cooled				
$I_{F(AV)}$	Mean forward current	Half wave resistive load	3830	A
$I_{F(RMS)}$	RMS value	-	6010	A
I_F	Continuous (direct) forward current	-	6080	A
Single Side Cooled				
$I_{F(AV)}$	Mean forward current	Half wave resistive load	2710	A
$I_{F(RMS)}$	RMS value	-	4260	A
I_F	Continuous (direct) forward current	-	4210	A

SURGE RATINGS

Symbol	Parameter	Test Conditions	Max.	Units
I_{FSM}	Surge (non-repetitive) forward current	10ms half sine, T_{case} = 175˚C	37.4	kA
I^2t	I^2t for fusing	V_R = 50% V_{RRM} - 1/4 sine	7.0 x 10^6	A^2s
I_{FSM}	Surge (non-repetitive) forward current	10ms half sine, T_{case} = 175˚C	46.75	kA
I^2t	I^2t for fusing	V_R = 0	10.93 x 10^6	A^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	-	0.032	˚CW
		Single side cooled	Anode DC	-	0.064	˚CW
			Cathode DC	-	0.064	˚CW
$R_{th(c-h)}$	Thermal resistance - case to heatsink	Clamping force 12.0kN	Double side	-	0.008	˚CW
		(with mounting compound)	Single side	-	0.016	˚CW
T_{vj}	Virtual junction temperature	Forward (conducting)		-	225	˚C
		Reverse (blocking)		-	200	˚C
T_{stg}	Storage temperature range			–55	200	˚C
F_m	Clamping force			10.8	13.2	kN

CHARACTERISTICS

Symbol	Parameter	Test Conditions	Min.	Max.	Units
I_{RM}	Peak reverse current	At V_{RRM}, T_{case} = 200˚C	-	50	mA
I_{rr}	Peak reverse recovery current	I_F = 1000A, dI_{RR}/dt = 3A/µs,	-	30	A
Q_S	Total stored charge	T_{case} = 200˚C, V_R = 100V	-	160	µC
V_{TO}	Threshold voltage	At T_{vj} = 200˚C	-	0.6	V
r_T	Slope resistance	At T_{vj} = 200˚C	-	0.0872	mΩ

CURVES

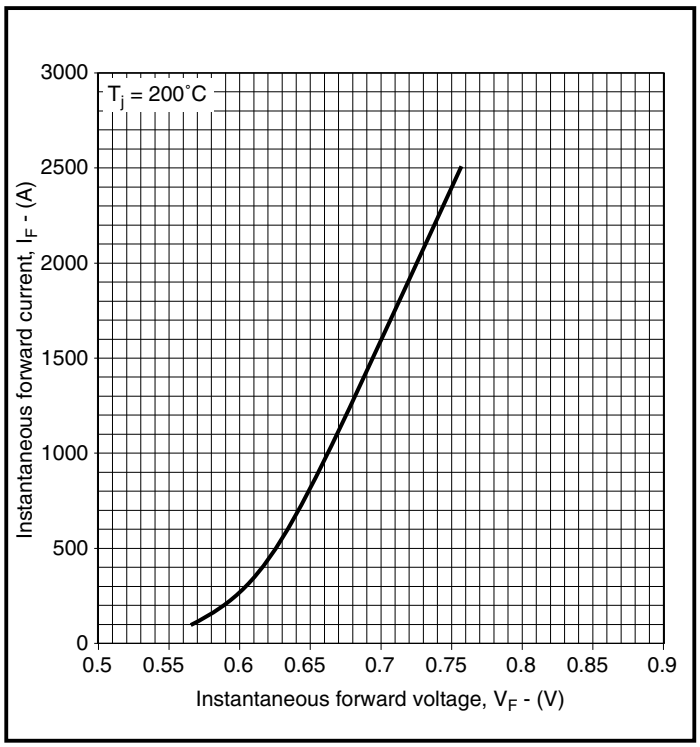


Fig. 2 Maximum (limit) forward characteristics

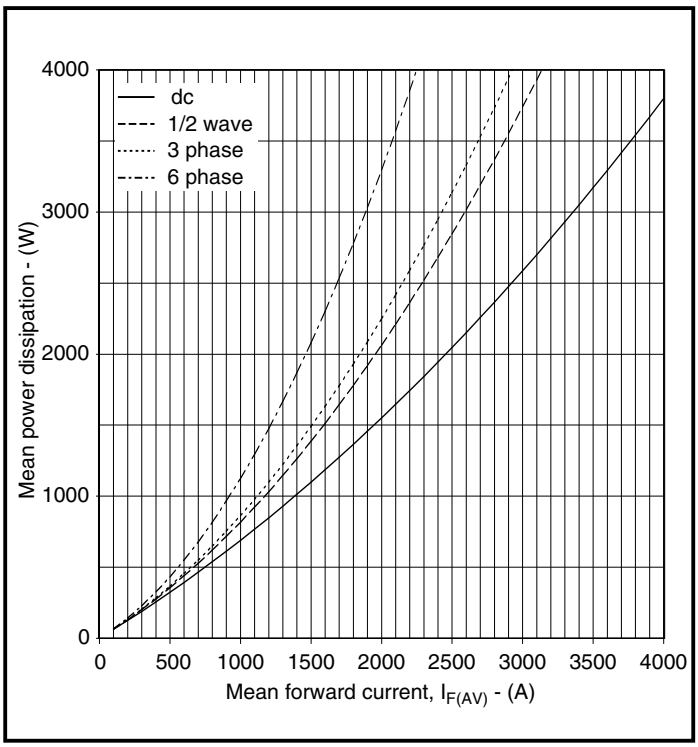


Fig. 3 Power dissipation

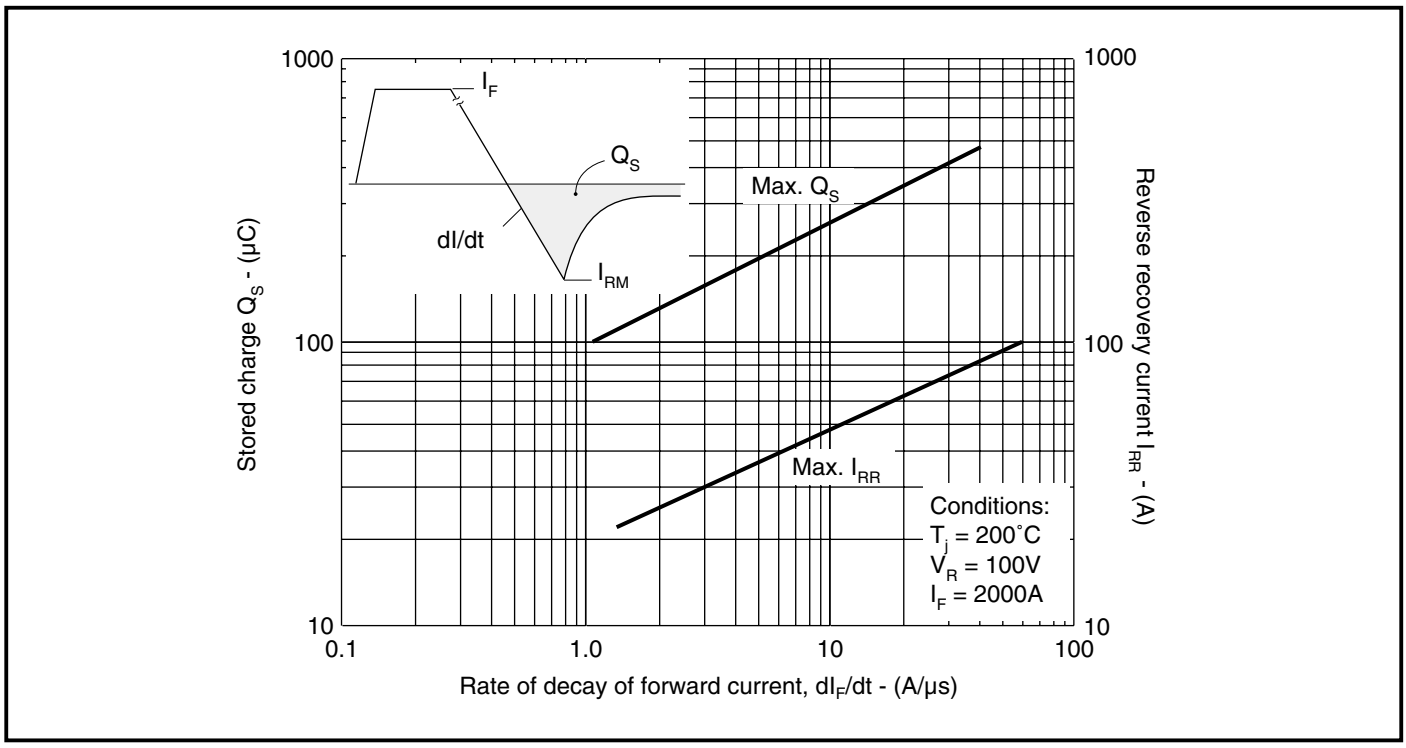


Fig. 4 Maximum stored charge and reverse recovery current vs dI/dt

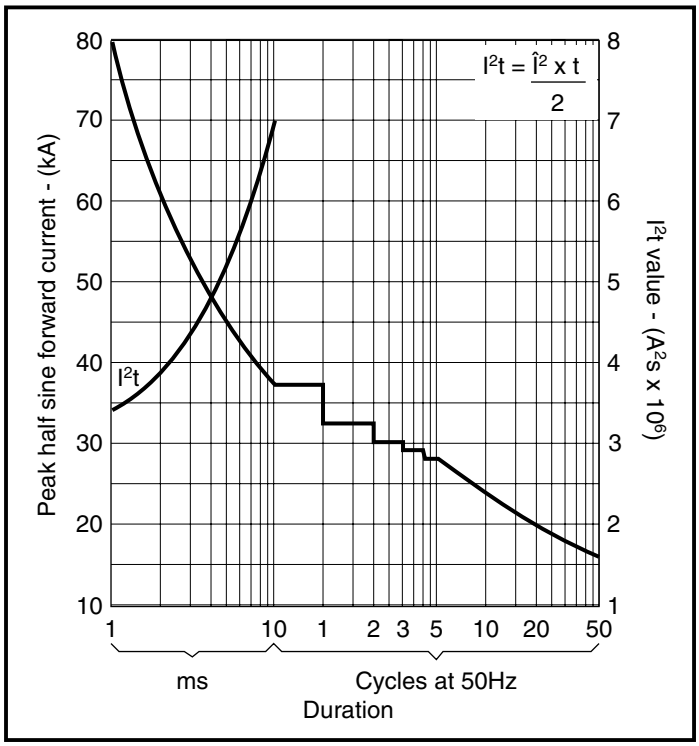


Fig. 5 Surge (non-repetitive) forward current vs time (with 50% V_{RRM} @ T_{case} = 175˚C)

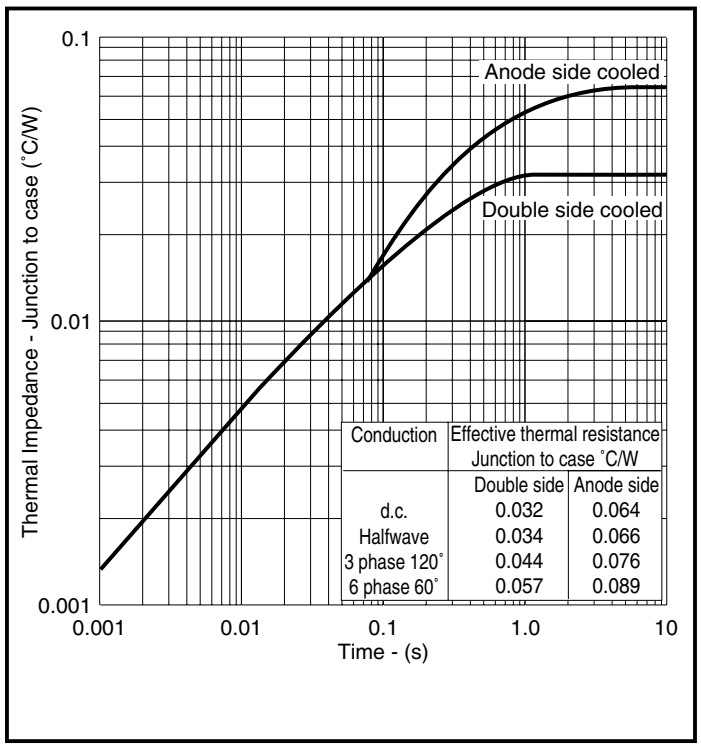
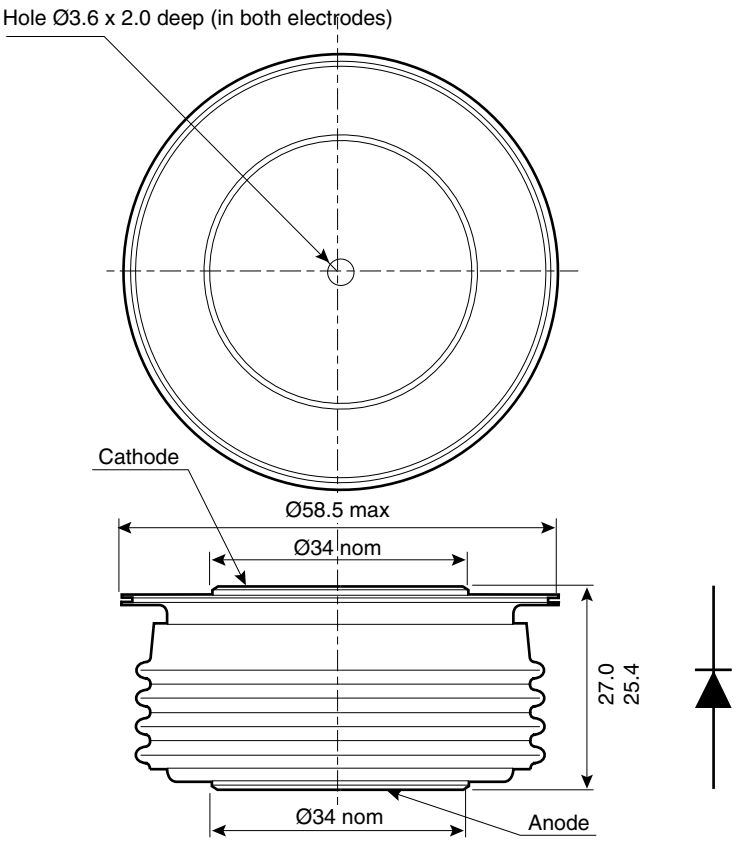


Fig. 6 Maximum (limit) transient thermal impedance

PACKAGE DETAILS

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



Nominal weight: 250g
Clamping force: 12kN ±10%

Package outine type code: G

Note:
1. Package maybe supplied with pins and/or tags.

POWER ASSEMBLY CAPABILITY

The Power Assembly group was set up to provide a support service for those customers requiring more than the basic semiconductor, and has developed a flexible range of heatsink and clamping systems in line with advances in device voltages and current capability of our semiconductors.

We offer an extensive range of air and liquid cooled assemblies covering the full range of circuit designs in general use today. The Assembly group offers high quality engineering support dedicated to designing new units to satisfy the growing needs of our customers.

Using the latest CAD methods our team of design and applications engineers aim to provide the Power Assembly Complete Solution (PACs).

HEATSINKS

The Power Assembly group has its own proprietary range of extruded aluminium heatsinks which have been designed to optimise the performance of Dynex semiconductors. Data with respect to air natural, forced air and liquid cooling (with flow rates) is available on request.

For further information on device clamps, heatsinks and assemblies, please contact your nearest sales representative or Customer Services.

Stresses above those listed in this data sheet may cause permanent damage to the device. In extreme conditions, as with all semiconductors, this may include potentially hazardous rupture of the package. Appropriate safety precautions should always be followed.

http://www.dynexsemi.com

e-mail: power_solutions@dynexsemi.com

HEADQUARTERS OPERATIONS
DYNEX SEMICONDUCTOR LTD
Doddington Road, Lincoln.
Lincolnshire. LN6 3LF. United Kingdom.
Tel: +44-(0)1522-500500
Fax: +44-(0)1522-500550

CUSTOMER SERVICE
Tel: +44 (0)1522 502753 / 502901. Fax: +44 (0)1522 500020