

DS501ST

Rectifier Diode

Replaces October 2000, version DS5344-2.0

DS5344-3.0 October 2001

FEATURES

- Double Side Cooling
- High Surge Capability

APPLICATIONS

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

VOLTAGE RATINGS

Type Number	Repetitive Peak Reverse Voltage V _{RRM} V	Conditions
DS501ST06	600	$V_{RSM} = V_{RRM} + 100V$
DS501ST05	500	KSIWI KKIWI
DS501ST04	400	
DS501ST03	300	
DS501ST02	200	
DS501ST01	100	

ORDERING INFORMATION

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

DS501ST04

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

KEY PARAMETERS

 $egin{array}{ll} V_{\text{RRM}} & 600V \\ I_{\text{F(AV)}} & 940A \\ I_{\text{FSM}} & 11000A \end{array}$

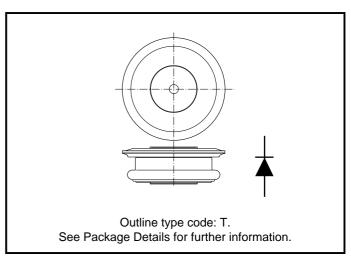


Fig.1 Package outline



CURRENT RATINGS

$T_{case} = 75$ °C unless otherwise stated

Symbol	Parameter	Conditions	Max.	Units			
Double Sid	Double Side Cooled						
I _{F(AV)}	Mean forward current	Half wave resistive load	940	А			
I _{F(RMS)}	RMS value	-	1477	А			
I _F	Continuous (direct) forward current	-	1322	А			
Single Side Cooled (Anode side)							
I _{F(AV)}	Mean forward current	Half wave resistive load	596	А			
I _{F(RMS)}	RMS value	-	937	Α			
I _F	Continuous (direct) forward current	-	760	Α			

$T_{case} = 100$ °C unless otherwise stated

Symbol	Parameter	Conditions	Max.	Units				
Double Sid	Double Side Cooled							
I _{F(AV)}	Mean forward current	Half wave resistive load	765	А				
I _{F(RMS)}	RMS value	-	1205	А				
I _F	Continuous (direct) forward current	-	1055	А				
Single Side	Single Side Cooled (Anode side)							
I _{F(AV)}	Mean forward current	Half wave resistive load	480	А				
I _{F(RMS)}	RMS value	-	750	А				
l _F	Continuous (direct) forward current	-	600	А				



SURGE RATINGS

Symbol	Parameter	Conditions	Max.	Units
I _{FSM}	Surge (non-repetitive) forward current	10ms half sine; T _{case} = 175°C	8.8	kA
l ² t	I ² t for fusing	$V_{R} = 50\% V_{RRM} - 1/4 \text{ sine}$	387 x 10 ³	A²s
I _{FSM}	Surge (non-repetitive) forward current	10ms half sine; T _{case} = 175°C	11.0	kA
l ² t	I ² t for fusing	V _R = 0	605 x 10 ³	A²s

THERMAL AND MECHANICAL DATA

Symbol	Parameter	Conditions		Min.	Max.	Units
R _{th(j-c)}	Thermal resistance - junction to case	Double side cooled	dc	-	0.07	°C/W
		Single side cooled	Anode dc	-	0.14	°C/W
			Cathode dc	-	0.14	°C/W
R _{th(c-h)}	Thermal resistance - case to heatsink	Clamping force 4.5kN with mounting compound	Double side	-	0.02	°C/W
			Single side	-	0.04	°C/W
T _{vj}	Virtual junction temperature	Forward (conducting)		-	185	°C
		Reverse (blocking)		-	175	°C
T _{stg}	Storage temperature range			-55	200	°C
-	Clamping force			4.0	5.0	kN

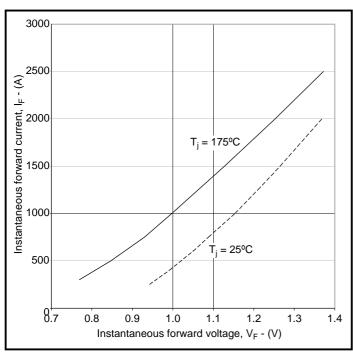
CHARACTERISTICS

Symbol	Parameter	Conditions	Min.	Max.	Units
I _{RM}	Peak reverse current	At V _{RRM} , T _{case} = 175°C	-	30	mA
V _{TO}	Threshold voltage	At T _{vj} = 175°C	-	0.7	V
r _T	Slope resistance	At T _{vj} = 175°C	-	0.25	mΩ

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CURVES



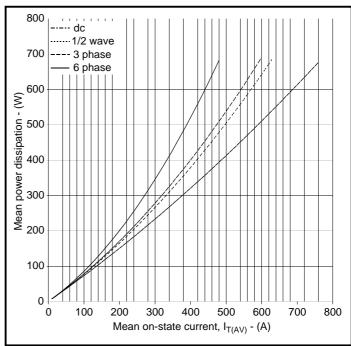


Fig.2 Maximum (limit) forward characteristics



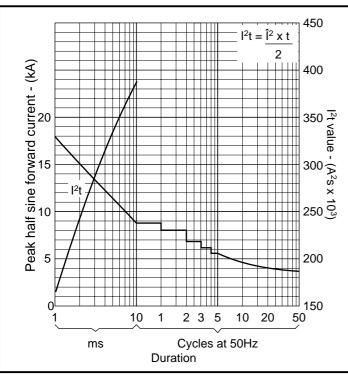


Fig.4 Surge (non-repetitive) forward current vs time (with 50% V_{RRM} , T_{case} = 175°C)

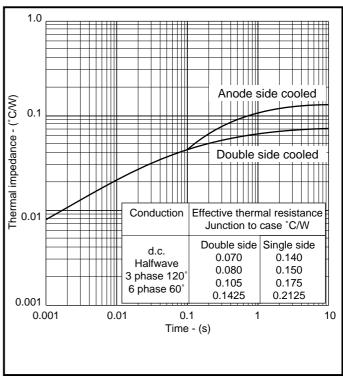
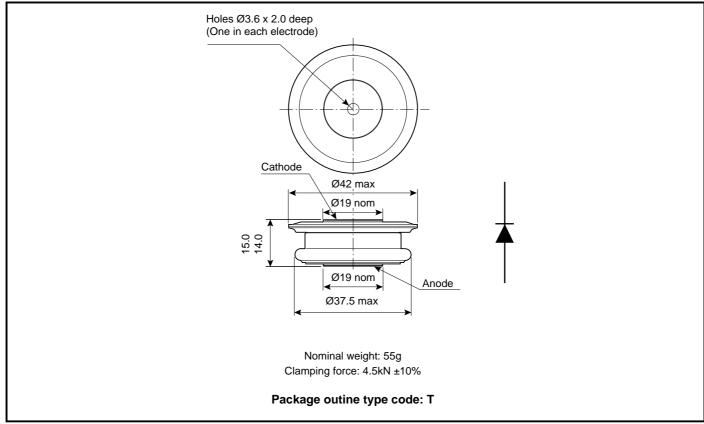


Fig.5 Maximum (limit) transient thermal impedance junction to case - (°C/W)



PACKAGE DETAILS

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



Note:

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

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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.



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

SALES OFFICES

Benelux, Italy & Switzerland: Tel: +33 (0)1 64 66 42 17. Fax: +33 (0)1 64 66 42 19.

France: Tel: +33 (0)2 47 55 75 52. Fax: +33 (0)2 47 55 75 59.

Germany, Northern Europe, Spain & Rest Of World: Tel: +44 (0)1522 502753 / 502901.

Fax: +44 (0)1522 500020

North America: Tel: (613) 723-7035. Fax: (613) 723-1518. Toll Free: 1.888.33.DYNEX (39639) /

Tel: (949) 733-3005. Fax: (949) 733-2986.

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No Annotation: The product parameters are fixed and the product is available to datasheet specification.

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