

FAST RECOVERY RECTIFIER DIODE

MAJOR PRODUCTS CHARACTERISTICS

$I_{F(AV)}$	3 A
V_{RRM}	400 V
t_{rr}	25 ns
$V_F (max)$	1.4 V

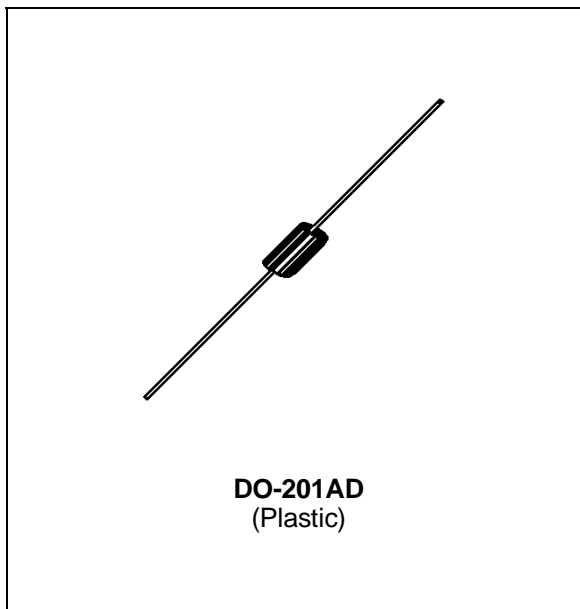
FEATURES

- VERY LOW REVERSE RECOVERY TIME
- VERY LOW SWITCHING LOSSES
- LOW NOISE TURN-OFF SWITCHING

DESCRIPTION

Free wheeling diode in converters and motor control circuits.

Rectifiers in S.M.P.S.



ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
V_{RRM}	Repetitive peak reverse voltage		400	V
V_{RSM}	Non repetitive peak reverse voltage		400	V
I_{FRM}	Repetive peak forward current	$t_p = 10\mu s$	60	A
$I_F (AV)$	Average forward current*	$T_a = 65^\circ C$ $\delta = 0.5$	3	A
I_{FSM}	Surge non repetitive forward current	$t_p = 10ms$ Sinusoidal	60	A
P	Power dissipation *	$T_a = 65^\circ C$	4.2	W
T_{stg} T_j	Storage and junction temperature range		- 40 to + 150 - 40 to + 150	$^\circ C$

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
$R_{th(j-a)}$	Junction-ambient*	20	C/W

* On infinite heatsink with 10mm lead length.

STATIC ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
I_R	$T_j = 25^\circ\text{C}$	$V_R = V_{RRM}$			20	μA
	$T_j = 100^\circ\text{C}$				0.5	mA
V_F	$T_j = 25^\circ\text{C}$	$I_F = 3\text{A}$			1.5	V
	$T_j = 100^\circ\text{C}$				1.4	

RECOVERY CHARACTERISTICS

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
t_{rr}	$T_j = 25^\circ\text{C}$	$I_F = 1\text{A}$ $di_F/dt = -15\text{A}/\mu\text{s}$ $V_R = 30\text{V}$			55	ns
		$I_F = 0.5\text{A}$ $I_R = 1\text{A}$ $I_{rr} = 0.25\text{A}$			25	

TURN-OFF SWITCHING CHARACTERISTICS - Without series inductance

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
t_{IRM}	$di_F/dt = -50\text{A}/\mu\text{s}$	$V_{CC} = 200\text{V}$ $I_F = 3\text{A}$ $L_p \leq 0.05\mu\text{H}$ $T_j = 100^\circ\text{C}$		35	50	ns
I_{RM}	$di_F/dt = -50\text{A}/\mu\text{s}$			1.5	2	A

To evaluate the conduction losses use the following equations :
 $V_F = 1.1 + 0.050 I_F$ $P = 1.1 \times I_{F(AV)} + 0.050 I_F^2 (RMS)$

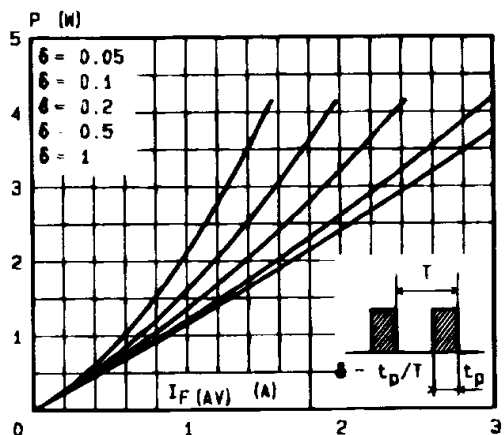


Fig.1 - Maximum average power dissipation versus average forward current.

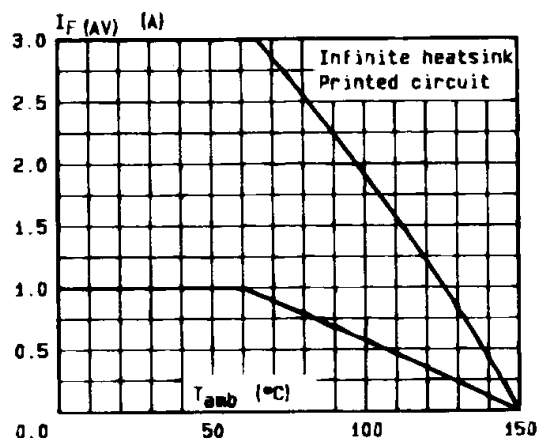


Fig.2 - Average forward current versus ambient temperature.

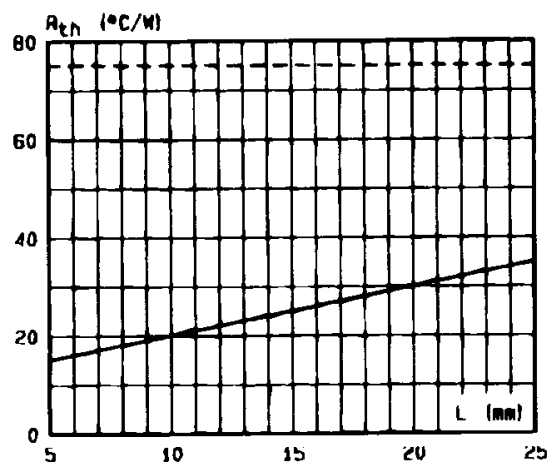


Fig.3 Thermal resistance versus lead length.

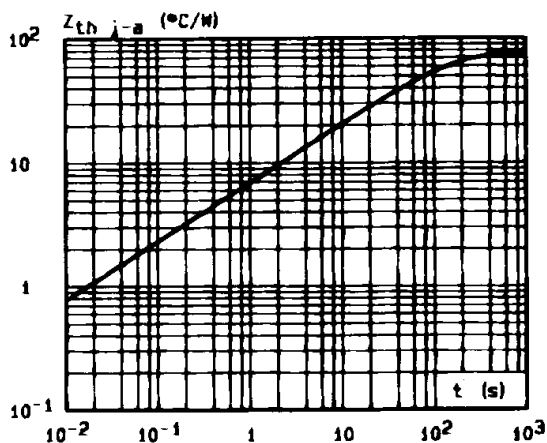
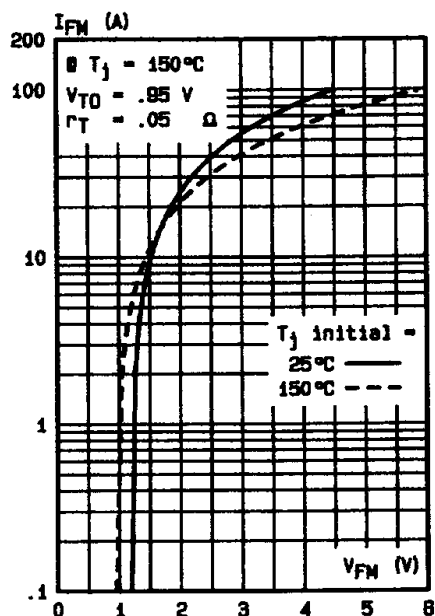
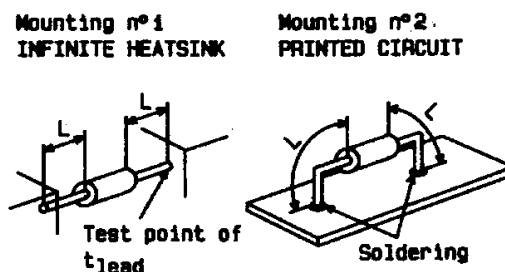
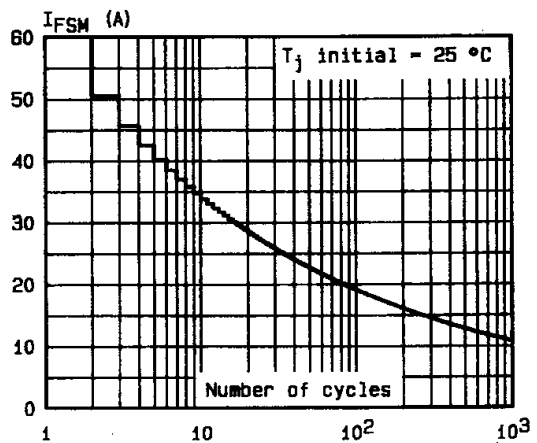
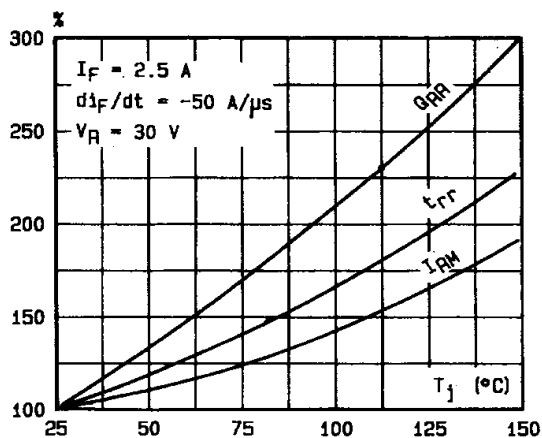
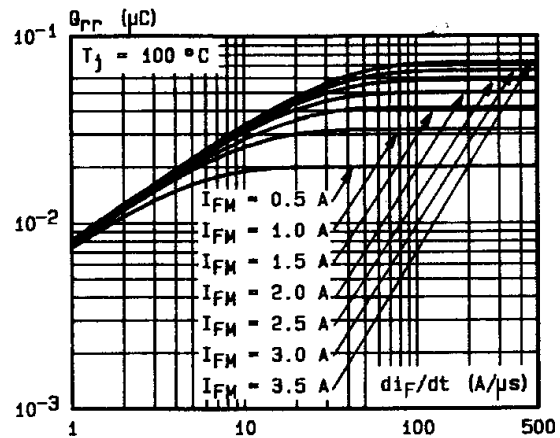
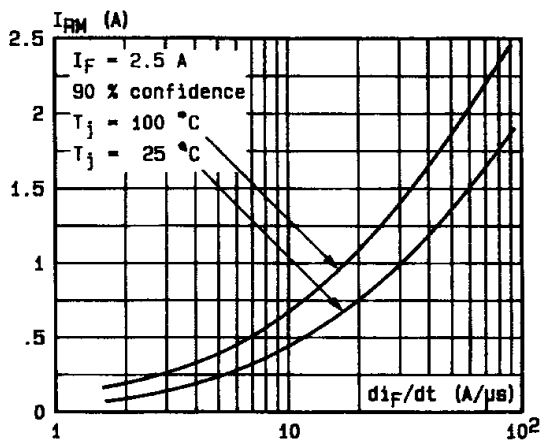
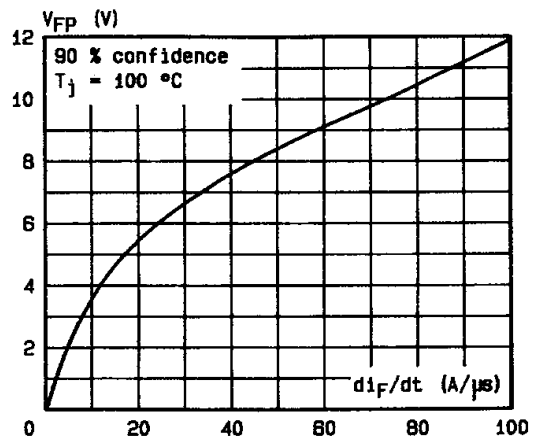
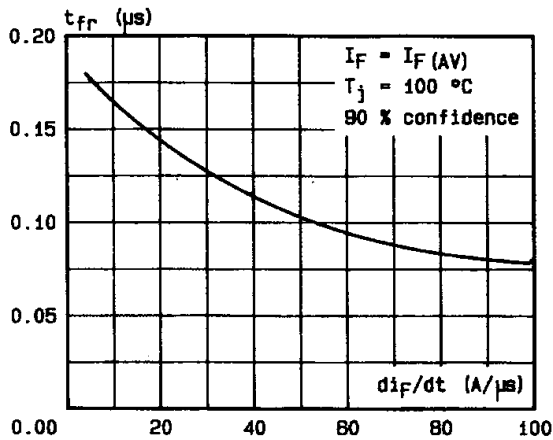
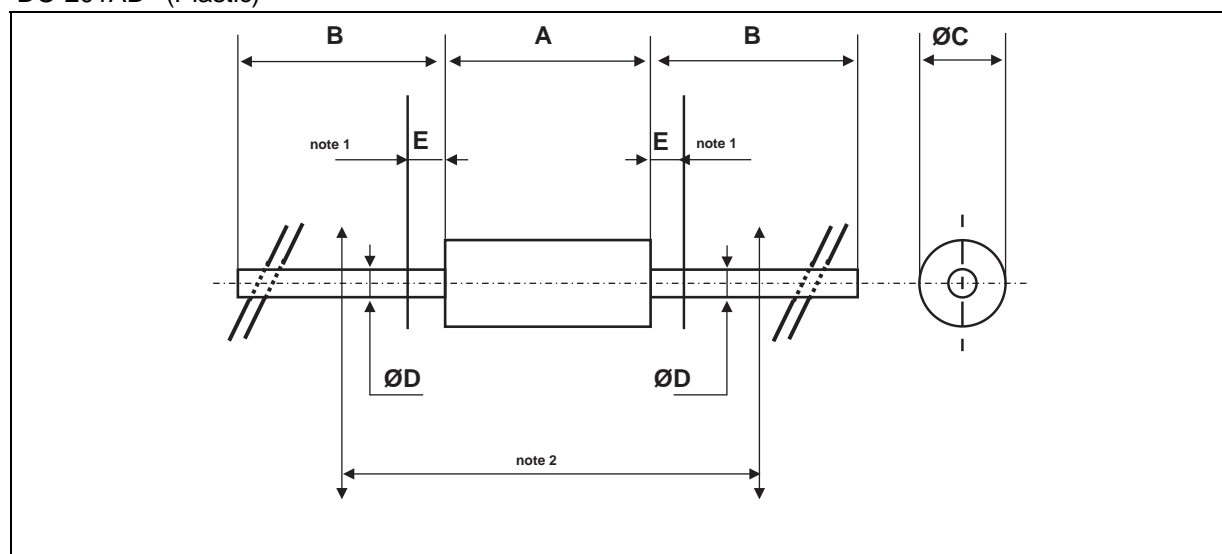

 Fig.4 - Transient thermal impedance junction-ambient for mounting n°2 versus pulse duration ($L = 10$ mm).


Fig.5 - Peak forward current versus peak forward voltage drop (maximum values).



PACKAGE MECHANICAL DATA

DO-201AD (Plastic)



REF.	DIMENSIONS				NOTES
	Millimeters		Inches		
	Min.	Max.	Min.	Max.	
A		9.50		0.374	1 - The lead diameter Ø D is not controlled over zone E 2 - The minimum axial length within which the device may be placed with its leads bent at right angles is 0.59"(15 mm)
B	25.40		1.000		
Ø C		5.30		0.209	
Ø D		1.30		0.051	
E		1.25		0.049	

- Marking: type number, white band indicate cathode
- Cooling method: by convection (method A)
- Weight: 1g

Information furnished is believed to be accurate and reliable. However, STMicroelectronics assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of STMicroelectronics. Specifications mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied. STMicroelectronics products are not authorized for use as critical components in life support devices or systems without express written approval of STMicroelectronics.

The ST logo is a registered trademark of STMicroelectronics

© 1998 STMicroelectronics - Printed in Italy - All rights reserved.

STMicroelectronics GROUP OF COMPANIES

Australia - Brazil - Canada - China - France - Germany - Italy - Japan - Korea - Malaysia - Malta - Mexico - Morocco - The Netherlands - Singapore - Spain - Sweden - Switzerland - Taiwan - Thailand - United Kingdom - U.S.A.