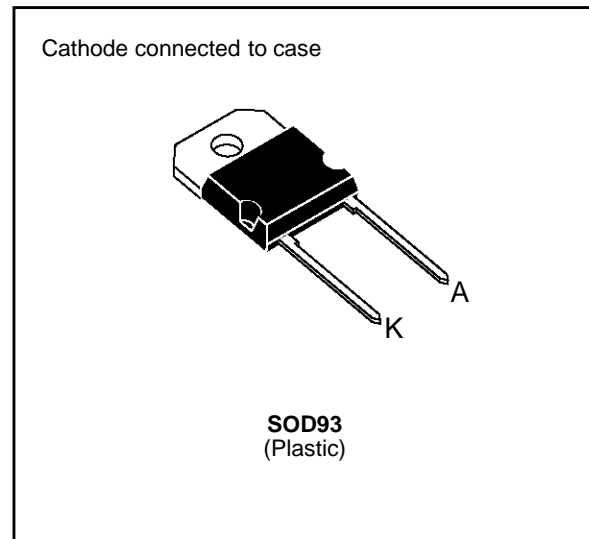


## FAST RECOVERY RECTIFIER DIODES

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


**SUITABLE APPLICATIONS**

- FREE WHEELING DIODE IN CONVERTERS AND MOTOR CONTROL CIRCUITS
- RECTIFIER IN S.M.P.S.

**ABSOLUTE RATINGS** (limiting values)

Symbol	Parameter	Value	Unit	
$I_{FRM}$	Repetitive Peak Forward Current	$t_p \leq 10\mu s$	500	A
$I_F (RMS)$	RMS Forward Current	50	A	
$I_F (AV)$	Average Forward Current	$T_c = 100^\circ C$ $\delta = 0.5$	30	A
$I_{FSM}$	Surge non Repetitive Forward Current	$t_p = 10ms$ Sinusoidal	350	A
P	Power Dissipation	$T_c = 100^\circ C$	50	W
$T_{stg}$ $T_j$	Storage and Junction Temperature Range	- 40 to + 150 - 40 to + 150	°C	

Symbol	Parameter	BYT 30P-			Unit
		200	300	400	
$V_{RRM}$	Repetitive Peak Reverse Voltage	200	300	400	V
$V_{RSM}$	Non Repetitive Peak Reverse Voltage	220	330	440	V

**THERMAL RESISTANCE**

Symbol	Parameter	Value	Unit
$R_{th(j-c)}$	Junction-case	1	°C/W

**ELECTRICAL CHARACTERISTICS**

**STATIC CHARACTERISTICS**

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
I <sub>R</sub>	T <sub>j</sub> = 25°C	V <sub>R</sub> = V <sub>RRM</sub>			35	μA
	T <sub>j</sub> = 100°C				6	mA
V <sub>F</sub>	T <sub>j</sub> = 25°C	I <sub>F</sub> = 30A			1.5	V
	T <sub>j</sub> = 100°C				1.4	

**RECOVERY CHARACTERISTICS**

Symbol	Test Conditions			Min.	Typ.	Max.	Unit
t <sub>rr</sub>	T <sub>j</sub> = 25°C	I <sub>F</sub> = 1A	di <sub>F</sub> /dt = - 15A/μs			100	ns
		I <sub>F</sub> = 0.5A	I <sub>R</sub> = 1A			I <sub>rr</sub> = 0.25A	

**TURN-OFF SWITCHING CHARACTERISTICS (Without Series Inductance)**

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
t <sub>IRM</sub>	di <sub>F</sub> /dt = - 120A/μs	V <sub>CC</sub> = 200 V I <sub>F</sub> = 30A L <sub>p</sub> ≤ 0.05μH T <sub>j</sub> = 100°C See figure 11			75	ns
	di <sub>F</sub> /dt = - 240A/μs			50		
I <sub>RM</sub>	di <sub>F</sub> /dt = -120A/μs				9	A
	di <sub>F</sub> /dt = - 240A/μs			12		

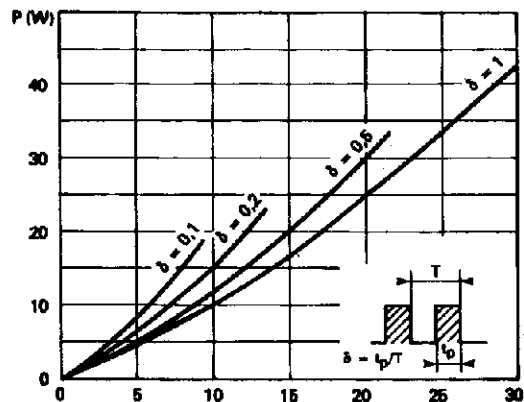
**TURN-OFF OVERVOLTAGE COEFFICIENT (With Series Inductance)**

Symbol	Test Conditions			Min.	Typ.	Max.	Unit
$C = \frac{V_{RP}}{V_{CC}}$	T <sub>j</sub> = 100°C di <sub>F</sub> /dt = - 30A/μs	V <sub>CC</sub> = 60V L <sub>p</sub> = 1μH	I <sub>F</sub> = I <sub>F(AV)</sub> See figure 12		3.3		

To evaluate the conduction losses use the following equations:

$$V_F = 1.1 + 0.0095 I_F \quad P = 1.1 \times I_{F(AV)} + 0.0095 I_F^2(RMS)$$

**Figure 1. Low frequency power losses versus average current**



**Figure 2. Peak current versus form factor**

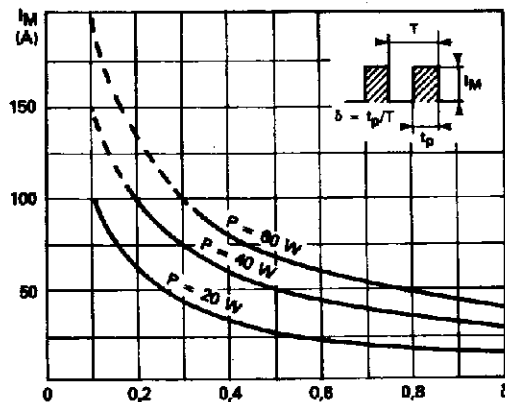


Figure 3. Non repetitive peak surge current versus overload duration

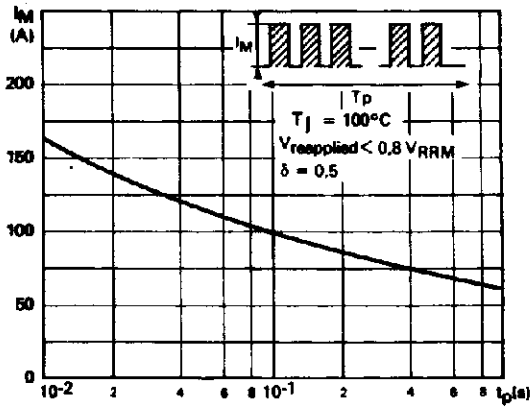


Figure 4. Thermal impedance versus pulse width

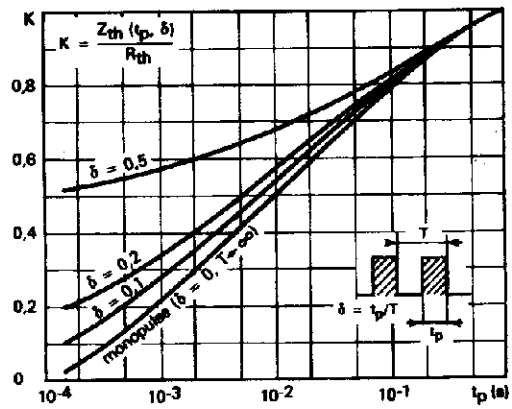


Figure 5. Voltage drop versus forward current

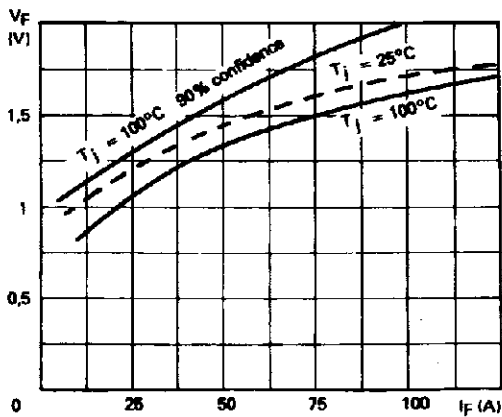


Figure 6. Recovery charge versus di\_F/dt

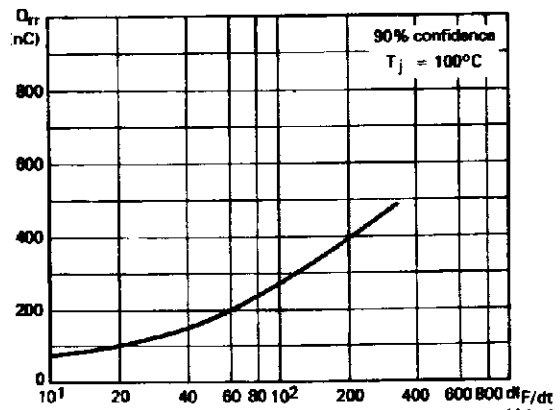


Figure 7. Recovery time versus di\_F/dt

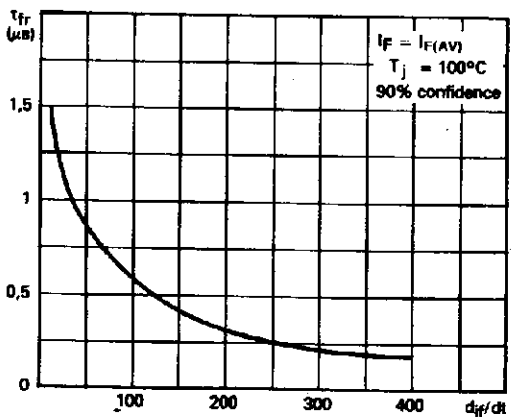


Figure 8. Peak reverse current versus di\_F/dt

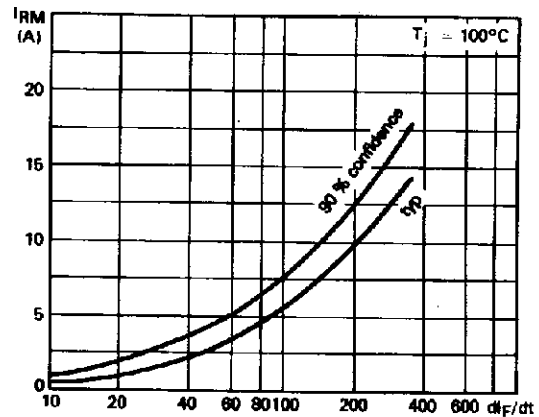


Figure 9. Peak forward voltage versus  $di_F/dt$ .

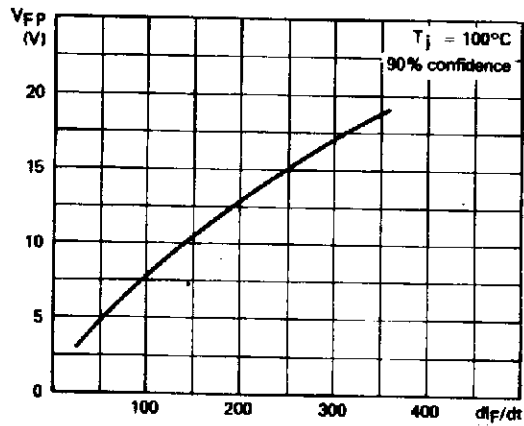


Figure 10. Dynamic parameters versus junction temperature.

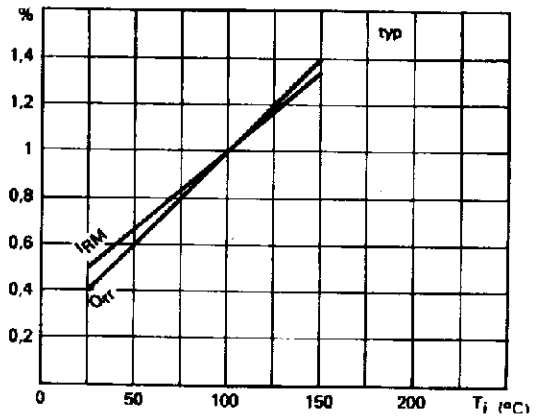


Figure 11. Turn-off switching characteristics (without series inductance).

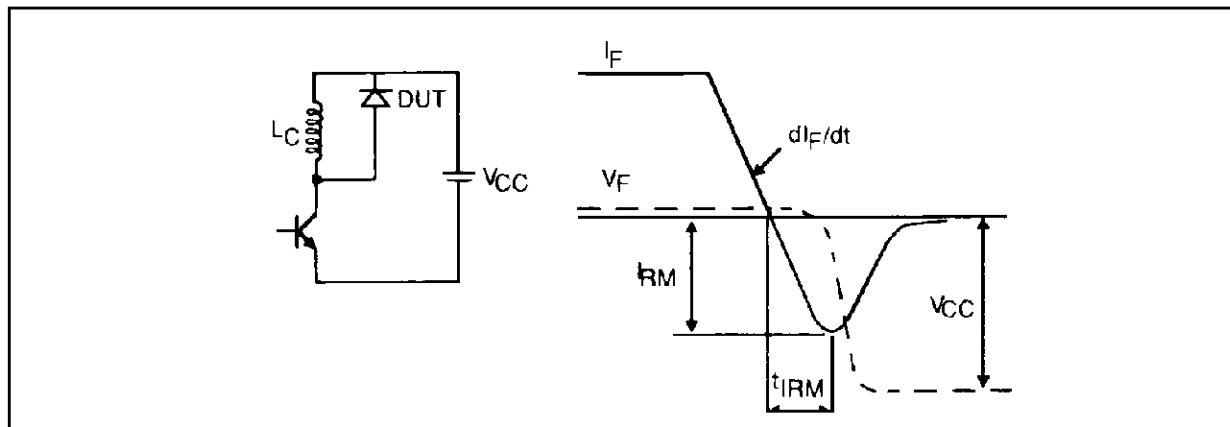
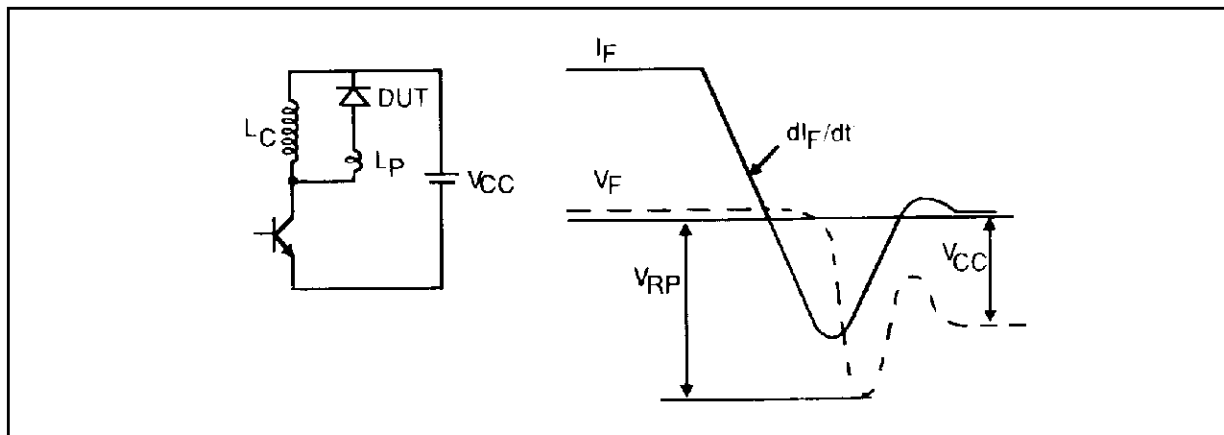
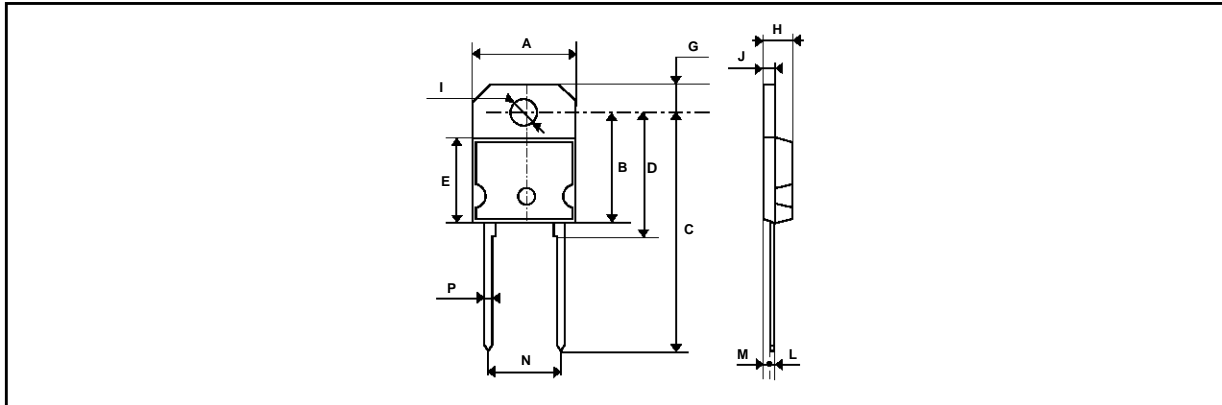


Figure 12. Turn-off switching characteristics (with series inductance)



**PACKAGE MECHANICAL DATA :**  
SOD93 Plastic



REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	14.7	15.2	0.578	0.596
B		16.2		0.637
C	31 typ		1.220 typ	
D	18 typ		0.708 typ	
E		12.2		0.480
G	3.95	4.15	0.155	0.163
H	4.7	4.9	0.185	0.193
I	4	4.1	0.157	0.161
J	1.17	1.37	0.046	0.054
L	0.5	0.78	0.019	0.030
M	2.5 typ		0.098 typ	
N	10.8	11.1	0.425	0.437
P	1.1	1.3	0.043	0.051

Cooling method: by conduction (method C)  
 Marking: type number  
 Weight: 4.3g  
 Recommended torque value: 80cm. N  
 Maximum torque value: 100cm. N

Information furnished is believed to be accurate and reliable. However, SGS-THOMSON Microelectronics 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 SGS-THOMSON Microelectronics. Specifications mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied. SGS-THOMSON Microelectronics products are not authorized for use as critical components in life support devices or systems without express written approval of SGS-THOMSON Microelectronics.

© 1994 SGS-THOMSON Microelectronics - Printed in Italy - All rights reserved.

SGS-THOMSON Microelectronics GROUP OF COMPANIES

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