BYT 30P- 400
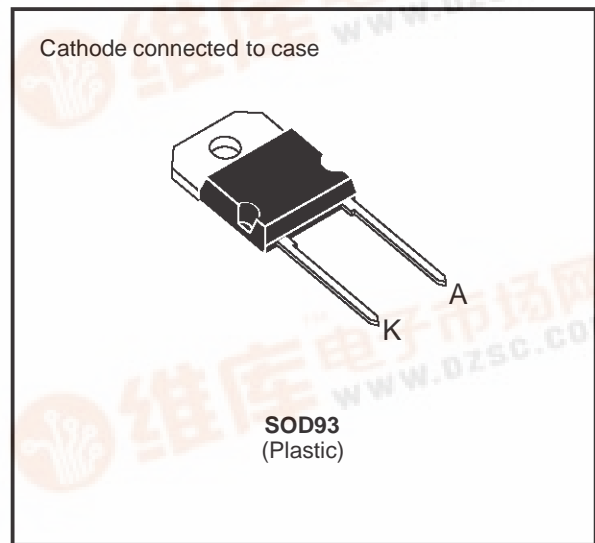
FAST RECOVERY RECTIFIER DIODES

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

Cathode connected to case

A

K

SOD93
(Plastic)

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}	Repetive 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	$T_c = 100°C$ $\delta = 0.5$	30	A
I_{FSM}	Surge non Repetitive Forward Current	$t_p = 10ms$ Sinusoidal	350	A
P	Power Dissipation	$T_c = 100°C$	50	W
T_{stg} T_j	Storage and Junction Temperature Range		- 40 to + 150 - 40 to + 150	°C

Symbol	Parameter	Value	Unit
V_{RRM}	Repetitive Peak Reverse Voltage	400	V
V_{RSM}	Non Repetitive Peak Reverse Voltage	440	V

THERMAL RESISTANCE

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

October 1999 Ed : 1A

ELECTRICAL CHARACTERISTICS

STATIC CHARACTERISTICS

Synbol	Test Conditions		Min.	Typ.	Max.	Unit
I_R	$T_j = 25°C$	$V_R = V_{RRM}$			35	μA
	$T_j = 100°C$				6	mA
V_F	$T_j = 25°C$	$I_F = 30A$			1.5	V
	$T_j = 100°C$				1.4	

RECOVERY CHARACTERISTICS

Symbol	Test Conditions				Min.	Typ.	Max.	Unit
t_{rr}	$T_j = 25°C$	$I_F = 1A$	$di_F/dt = - 15A/μs$	$V_R = 30V$			100	ns
		$I_F = 0.5A$	$I_R = 1A$	$I_{rr} = 0.25A$			50	

TURN-OFF SWITCHING CHARACTERISTICS (Without Series Inductance)

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
t_{IRM}	$di_F/dt = - 120A/μs$	$V_{CC} = 200 V$ $I_F = 30A$ $L_p \leq 0.05μH$ $T_j = 100°C$ See figure 11			75	ns
	$di_F/dt = - 240A/μs$			50		
I_{RM}	$di_F/dt = -120A/μs$				9	A
	$di_F/dt = - 240A/μs$			12		

TURN-OFF OVERVOLTAGE COEFFICIENT (With Series Inductance)

Symbol	Test Conditions			Min.	Typ.	Max.	Unit
$C = \dfrac{V_{RP}}{V_{CC}}$	$T_j = 100°C$ $di_F/dt = - 30A/μs$	$V_{CC} = 60V$ $L_p = 1μH$	$I_F = I_{F (AV)}$ See figure 12		3.3		

To evaluate the conduction losses use the following equations:

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

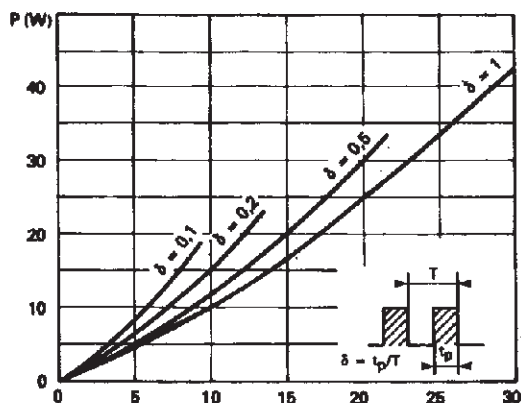**Figure 1. Low frequency power losses versus average current**

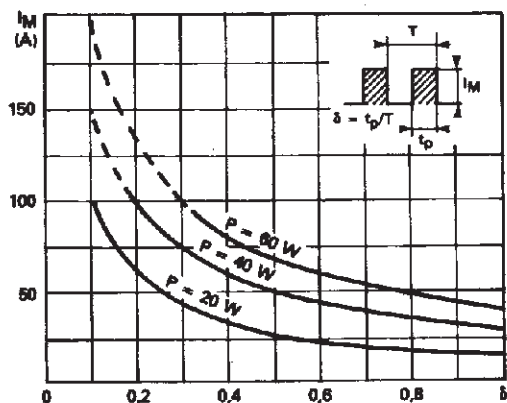**Figure 2. Peak current versus form factor**

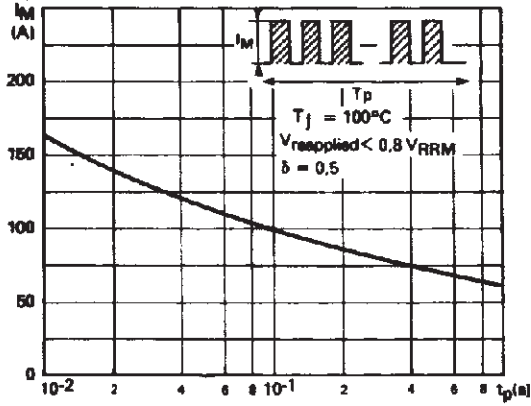**Figure 3. Non repetitive peak surge current versus overload duration**
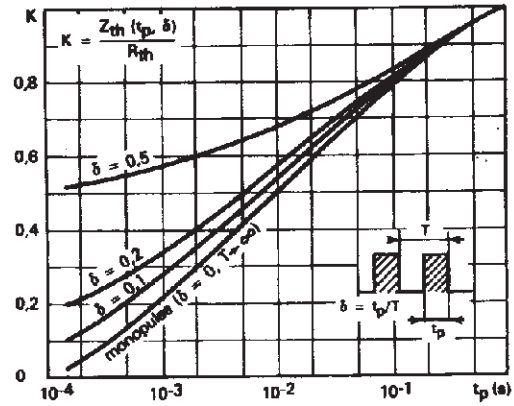

Figure 4. Thermal impedance versus pulse width
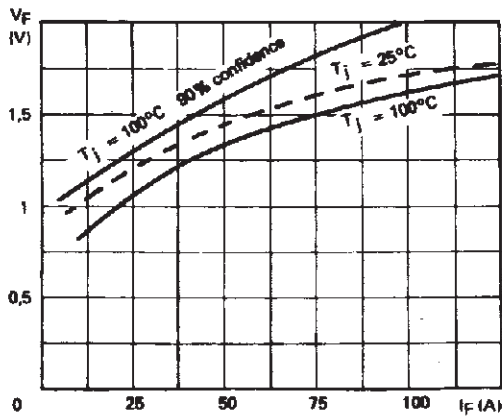

Figure 5. Voltage drop versus forward current
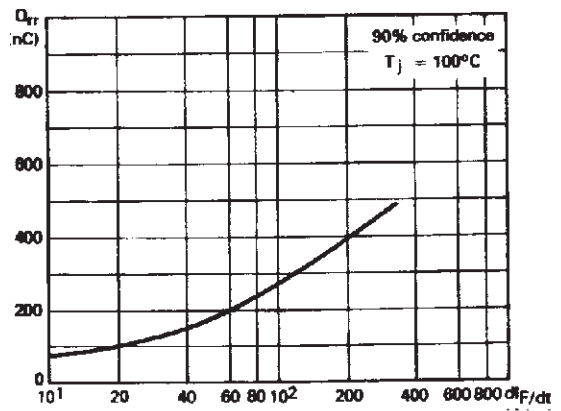

Figure 6. Recovery charge versus di_F/d_t-

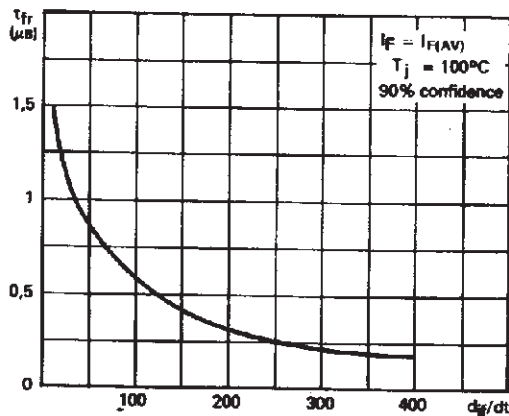**Figure 7. Recovery time versus di_F/d_t-**

Figure 8. Peak reverse current versus di_F/d_t-
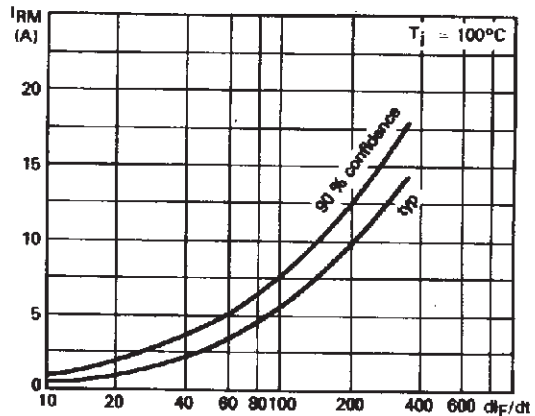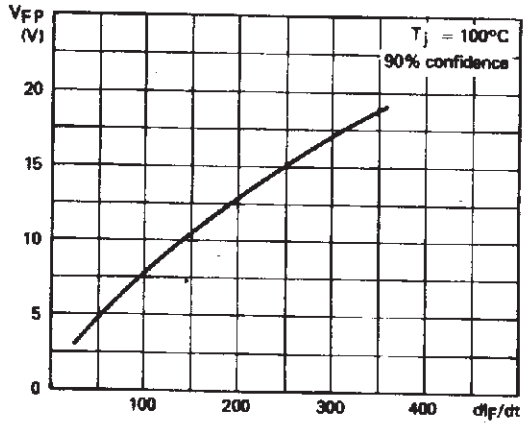
Figure 9. Peak forward voltage versus di_F/dt.

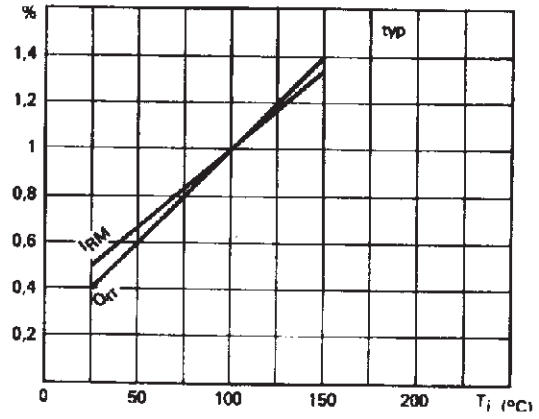**Figure 10. Dynamic parameters versus junction temperature.**

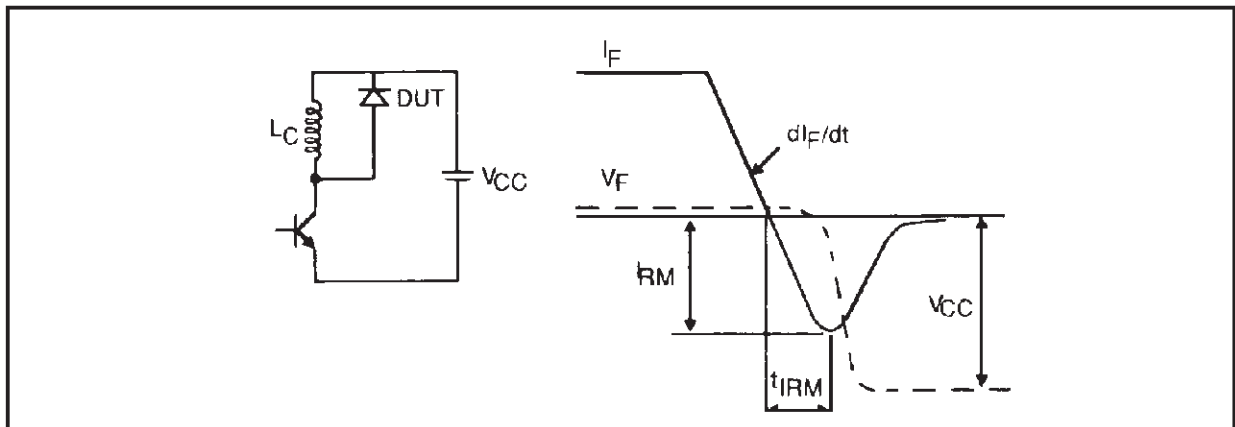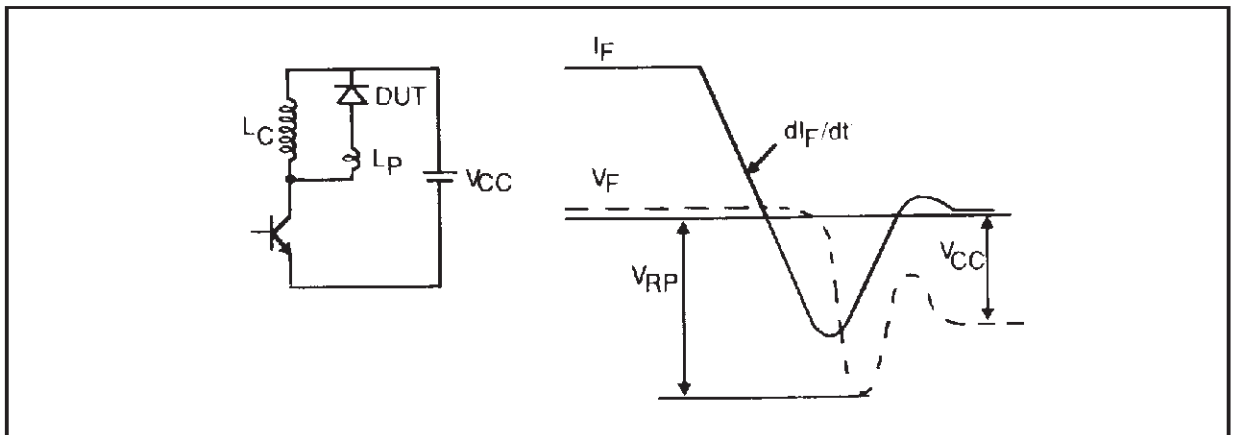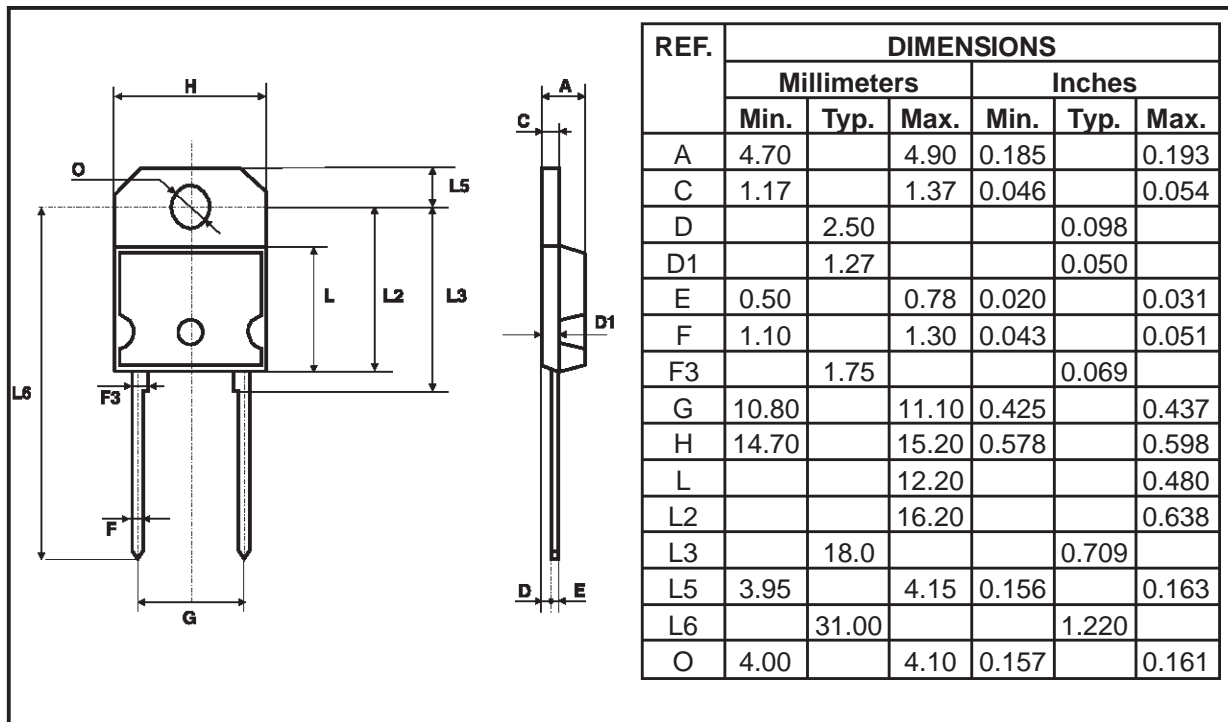**Figure 11. Turn-off switching characteristics (without series inductance).**

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

PACKAGE MECHANICAL DATA :
SOD93 Plastic

REF.	DIMENSIONS					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.70		4.90	0.185		0.193
C	1.17		1.37	0.046		0.054
D		2.50			0.098	
D1		1.27			0.050	
E	0.50		0.78	0.020		0.031
F	1.10		1.30	0.043		0.051
F3		1.75			0.069	
G	10.80		11.10	0.425		0.437
H	14.70		15.20	0.578		0.598
L			12.20			0.480
L2			16.20			0.638
L3		18.0			0.709	
L5	3.95		4.15	0.156		0.163
L6		31.00			1.220	
O	4.00		4.10	0.157		0.161

- **Marking**: type number
- Cooling method: by conduction (method C)
- Weight: 3.79g
- Recommended torque value: 80cm. N
- Maximum torque value: 100cm. N