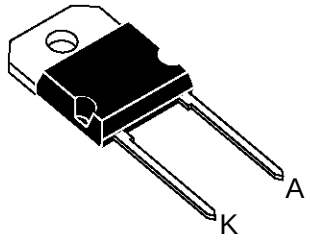
SGS-THOMSON MICROELECTRONICS

BYT 60P-200→400

FAST RECOVERY RECTIFIER DIODES

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

Cathode connected to case



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}	Repetitive Peak Forward Current	$t_p \leq 10\mu s$	800	A
$I_{F\ (RMS)}$	RMS Forward Current		100	A
$I_{F\ (AV)}$	Average Forward Current	$T_c = 70°C$ $\delta = 0.5$	60	A
I_{FSM}	Surge non Repetitive Forward Current	$t_p = 10ms$ Sinusoidal	550	A
P	Power Dissipation	$T_c = 70°C$	100	W
T_{stg} T_j	Storage and Junction Temperature Range		- 40 to + 150 - 40 to + 150	°C

Symbol	Parameter	BYT 60P-			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	0.8	°C/W

ELECTRICAL CHARACTERISTICS

STATIC CHARACTERISTICS

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
I_R	T_j = 25°C	$V_R = V_{RRM}$			60	µA
	T_j = 100°C				10	mA
V_F	T_j = 25°C	I_F = 60A			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 = - 240A/µs	V_{CC} = 200 V I_F = 60A $L_p \leq 0.05\mu H$ T_j = 100°C See Figure 11			75	ns
	dI_F/dt = - 480A/µs			50		
I_{RM}	dI_F/dt = - 240A/µs				18	A
	dI_F/dt = - 480A/µs			24		

TURN-OFF OVERVOLTAGE COEFFICIENT - (With Series Inductance)

Symbol	Test Conditions			Min.	Typ.	Max.	Unit
$C = \frac{V_{RP}}{V_{CC}}$	T_j = 100°C dI_F/dt = - 60A/µs	V_{CC} = 120V L_p = 1.3 µH	$I_F = I_{F(AV)}$ See note See figure 12		3.3		

Note: Applicable to BYT 60P-400 only

To evaluate the conduction losses use the following equations:

$V_F = 1.1 + 0.0045\ I_F$ $\qquad P = 1.1 \times I_{F(AV)} + 0.0045\ I_F{}^2{}_{(RMS)}$

Figure 1. Low frequency power losses versus average current.

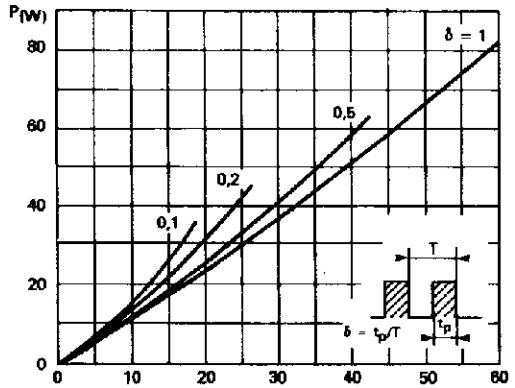


Figure 2. Peak current versus form factor.

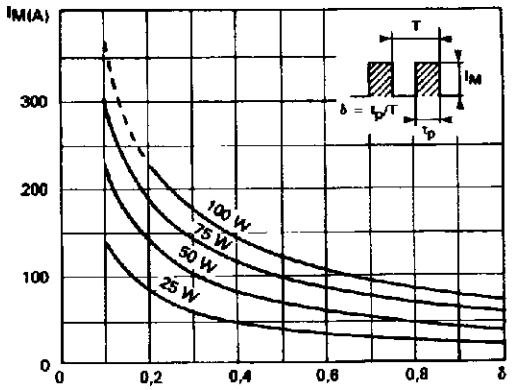


Figure 3. Non repetitive peak surge current versus overload duration

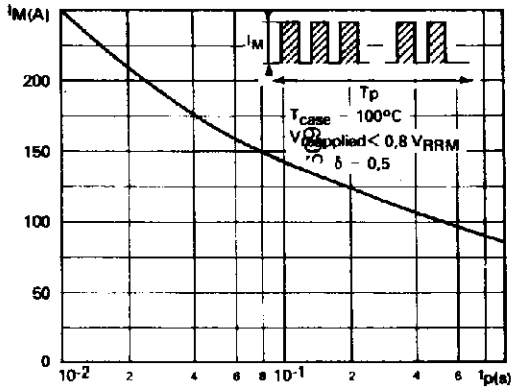


Figure 4. Thermal impedance versus pulse width.

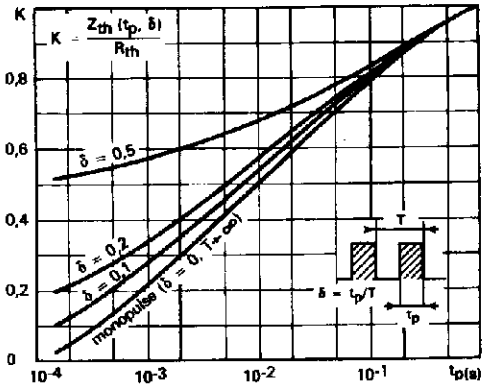


Figure 5. Voltage drop versus forward current.

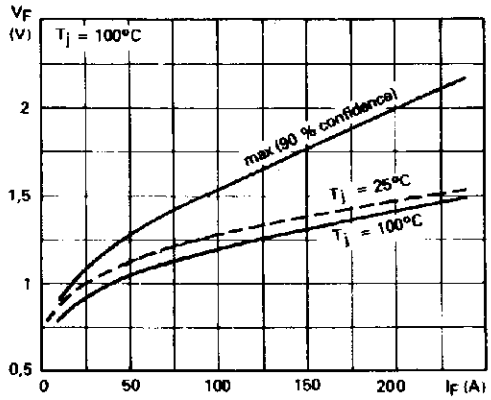


Figure 6. Recovery charge versus dI_F/dt.

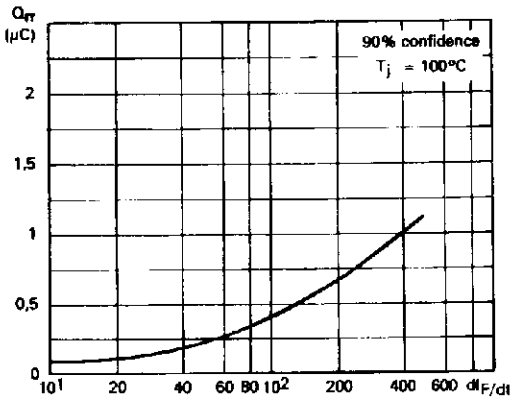


Figure 7. Recovery time versus dI_F/dt.

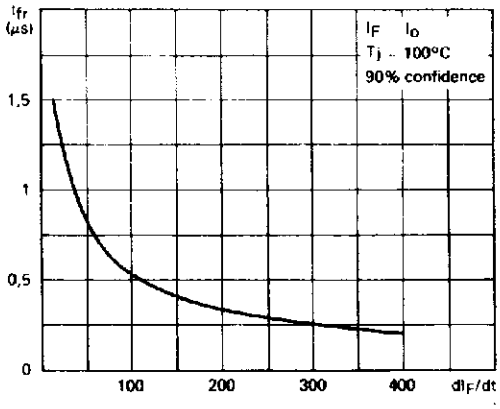


Figure 8. Peak reverse current versus dI_F/dt.

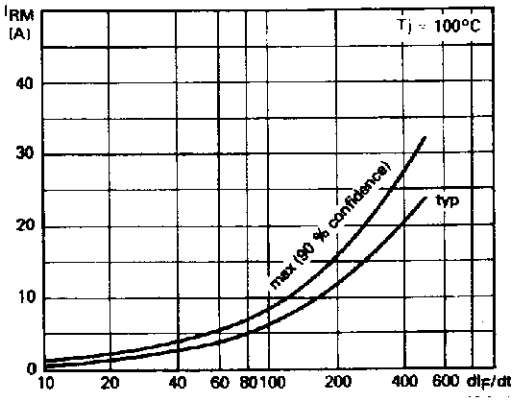


Figure 9. Peak forward voltage versus di_F/dt.

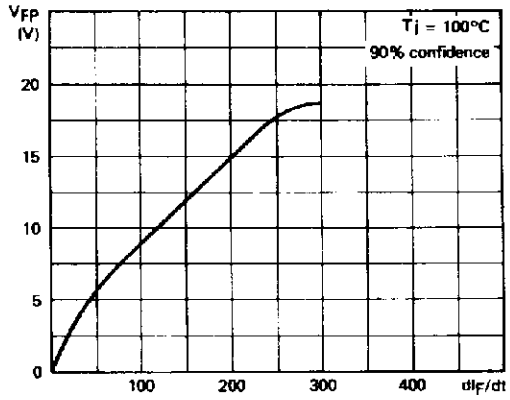


Figure 10. Dynamic parameters versus junction temperature.

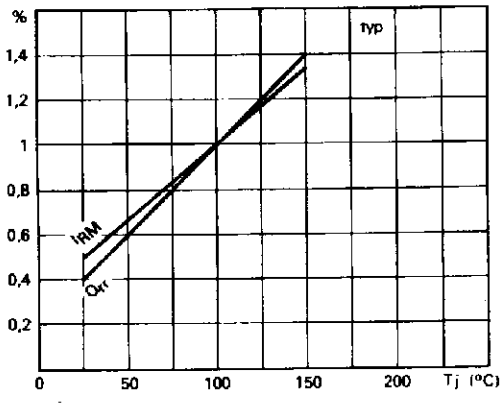


Figure 11. Turn-off switching characteristics (without series inductance).

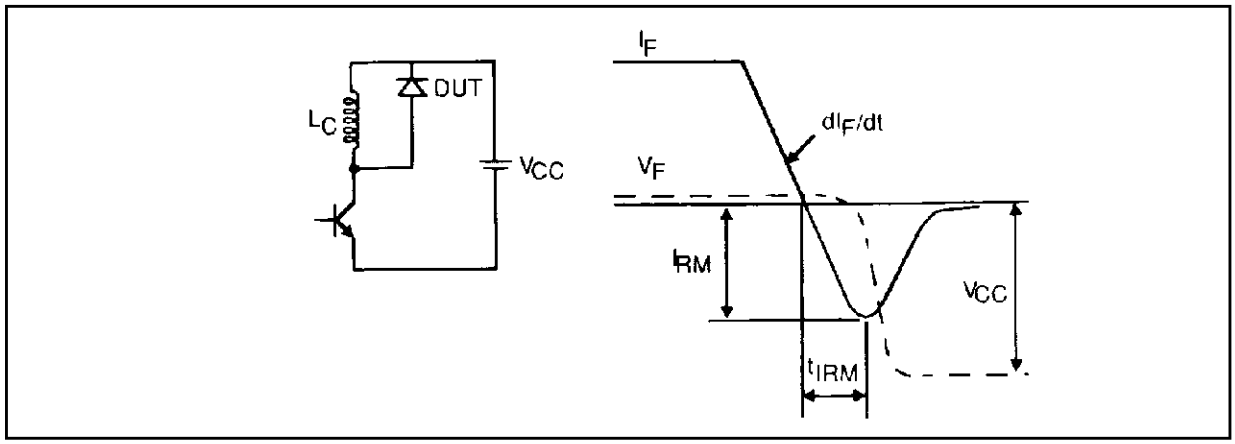
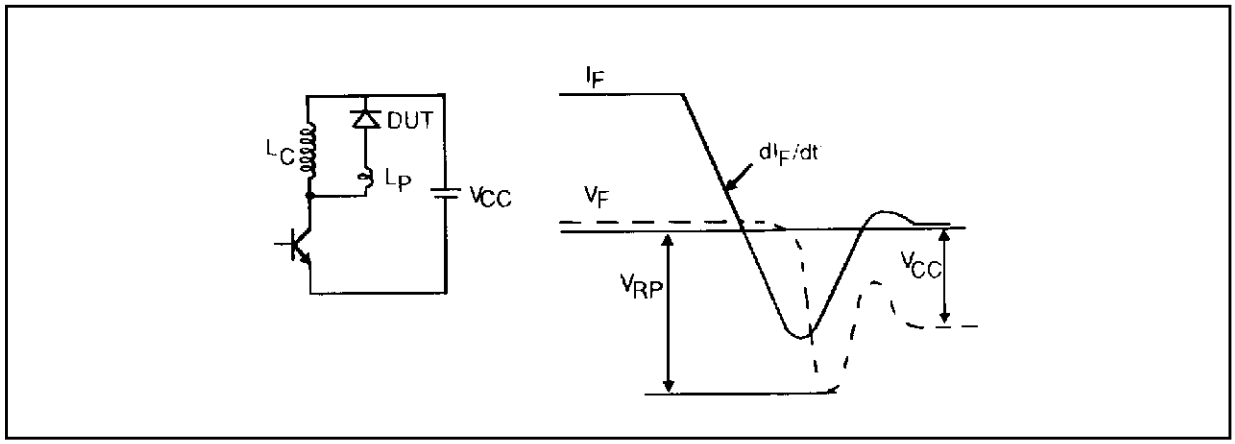


Figure 12. Turn-off switching characteristics (with series inductance).



PACKAGE MECHANICAL DATA

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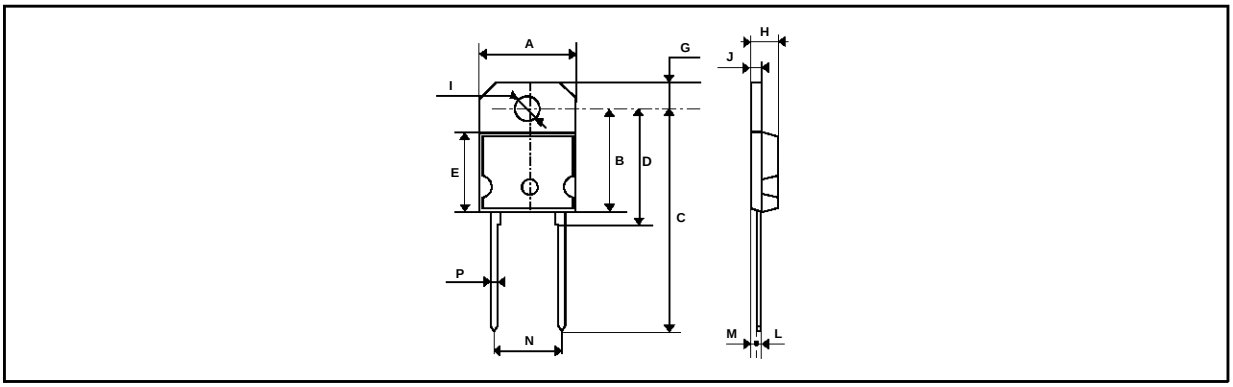

REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	14.7	15.2	0.578	0.596
B		16.2		0.637
C	31 typ		1.220 typ	
D	18 typ		0.708 typ	
E		12.2		0.480
G	3.95	4.15	0.155	0.163
H	4.7	4.9	0.185	0.193
I	4	4.1	0.157	0.161
J	1.17	1.37	0.046	0.054
L	0.5	0.78	0.019	0.030
M	2.5 typ		0.098 typ	
N	10.8	11.1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

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