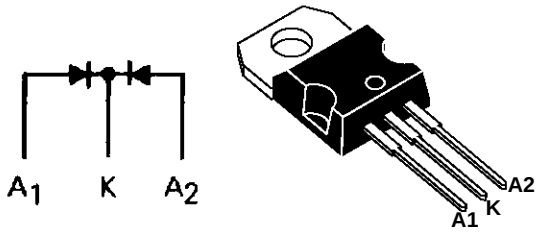
SGS-THOMSON MICROELECTRONICS

BYT 16P-200 → 400

FAST RECOVERY RECTIFIER DIODES

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

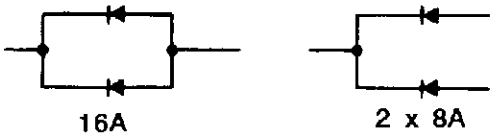
Cathode connected to case



TO220AB
(Plastic)

SUITABLE APPLICATIONS

- The BYT 16 P can be used:



ABSOLUTE MAXIMUM RATINGS (limiting values)

Symbol	Parameter		Value	Unit
I_{FRM}	Repetive Peak Forward Current	$t_p \leq 10\mu s$	130	A
$I_{F\ (RMS)}$	RMS Forward Current		30	A
$I_{F\ (AV)}$	Average Forward Current	$T_{case} = 100°C$ $\delta = 0.5$	16	A
I_{FSM}	Surge non Repetitive Forward Current	$t_p = 10ms$ Sinusoidal	100	A
P	Power Dissipation	$T_{case} = 100°C$	25	W
T_{stg} T_j	Storage and Junction Temperature Range		- 40 to + 150 - 40 to + 150	°C

Symbol	Parameter	BYT 16P-			Unit
		200	300	300	
V_{RRM}	Repetitive Peak Reverse Voltage	200	300	400	V
V_{RSM}	Non Repetitive Peak Reverse Voltage	220	330	440	V

THERMAL RESISTANCE

Symbol	Test Conditions		Value	Unit
$R_{th\ (j-c)}$	Junction-case	per leg total	3.75 2	°C/W
$R_{th\ (c)}$	Coupling		0.25	°C/W

ELECTRICAL CHARACTERISTICS

STATIC CHARACTERISTICS

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
I_R	T_j = 25°C	$V_R = V_{RRM}$			15	µA
	T_j = 100°C				2.5	mA
V_F	T_j = 25°C	I_F = 8A			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			75	ns
		I_F = 0.5A	I_R = 1A	I_{rr} = 0.25A			35	

TURN-OFF SWITCHING CHARACTERISTICS (Without Series Inductance)

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
t_{IRM}	dI_F/dt = - 32A/µs	V_{CC} = 200 V I_F = 8A $L_p \leq 0.05\mu H$ T_j = 100°C See figure 11			75	ns
	dI_F/dt = - 64A/µs			50		
I_{RM}	dI_F/dt = - 32A/µs				2.2	A
	dI_F/dt = - 64A/µs			2.8		

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 = - 8A/µs	V_{CC} = 120V L_p = 9µH	$I_F = I_{F(AV)}$ See note See figure 12		3.3		

Note : Applicable to BYT 16P-400 only

To evaluate the conduction losses use the following equations:

$V_F = 1.1 + 0.024\ I_F$

$P = 1.1 \times I_{F(AV)} + 0.024\ I_F{}^2{}_{(RMS)}$ (1 leg)

$P = 1.1 \times IF_{(AV)} + 0.012\ IF^2{}_{(RMS)}$ (2 legs)

Figure 1. Low frequency power losses versus average current

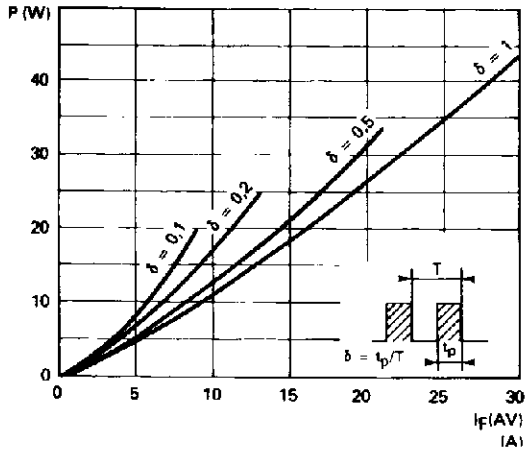


Figure 2. Peak current versus form factor

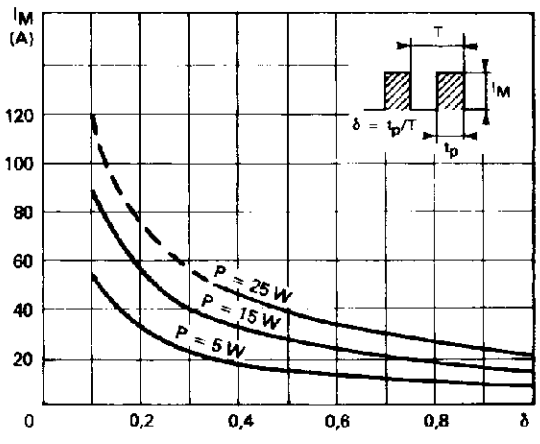


Figure 3. Non repetitive peak surge current versus overload duration

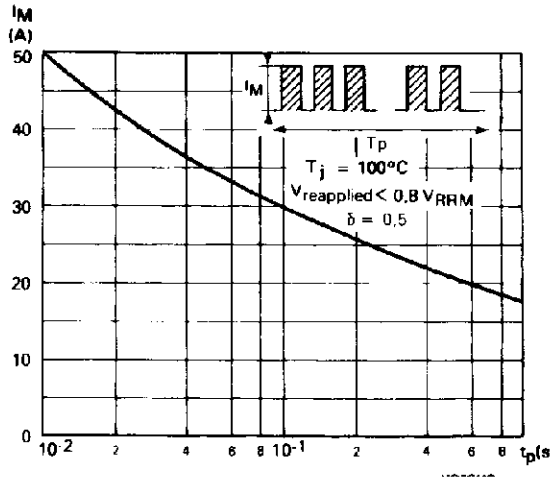


Figure 4. Thermal impedance versus pulse width

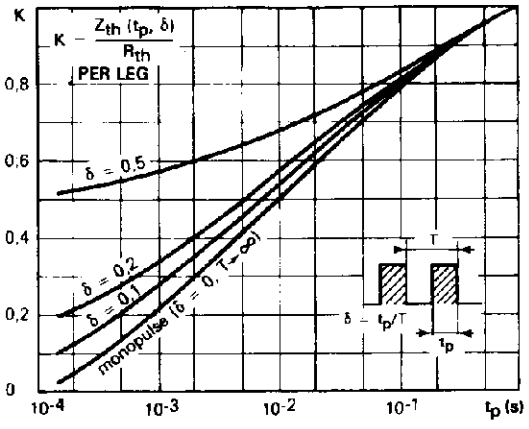


Figure 5. Voltage drop versus forward current

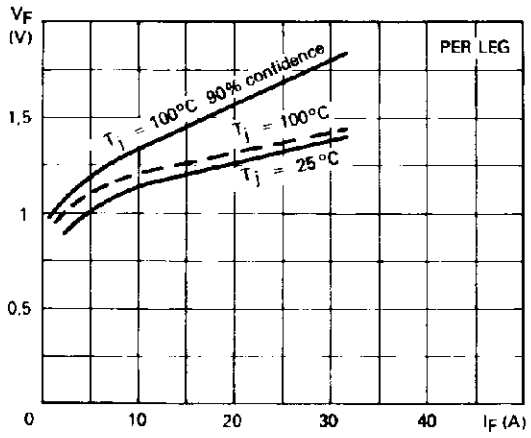


Figure 6. Recovery charge versus di_F/dt

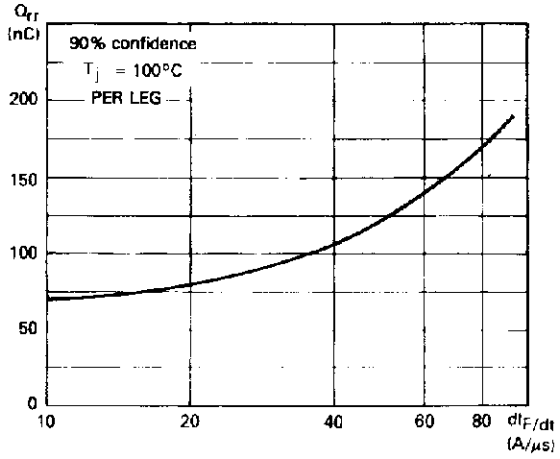


Figure 7. Recovery time versus di_F/dt

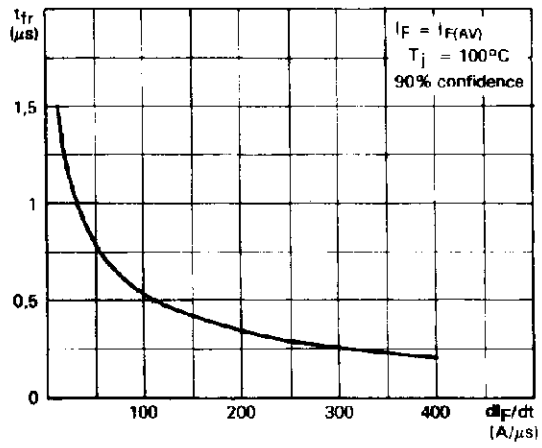


Figure 8. Peak reverse current versus di_F/dt

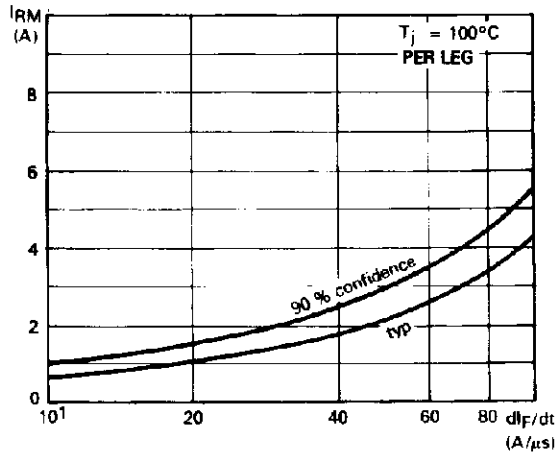


Figure 9. Peak forward voltage versus di_F/dt.

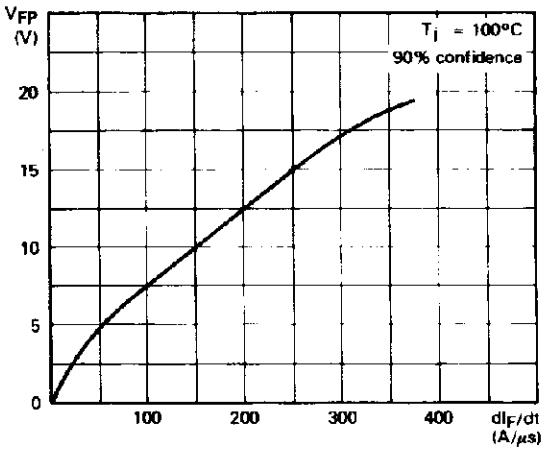


Figure 10. Dynamic parameters versus junction temperature.

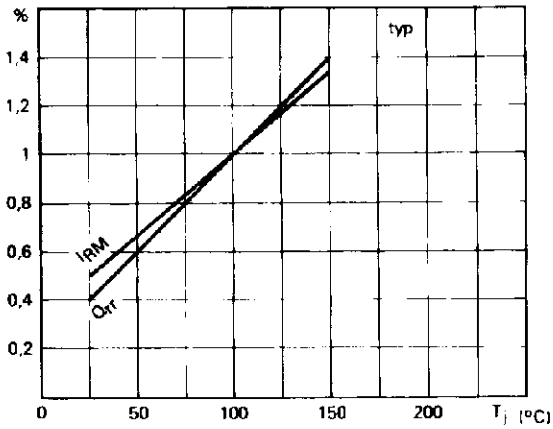


Figure 11. Turn-off switching characteristics (without series inductance).

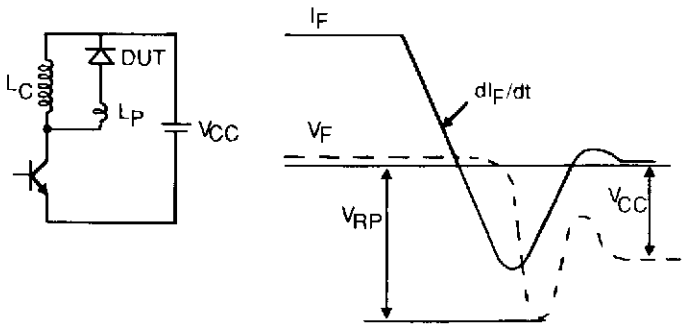
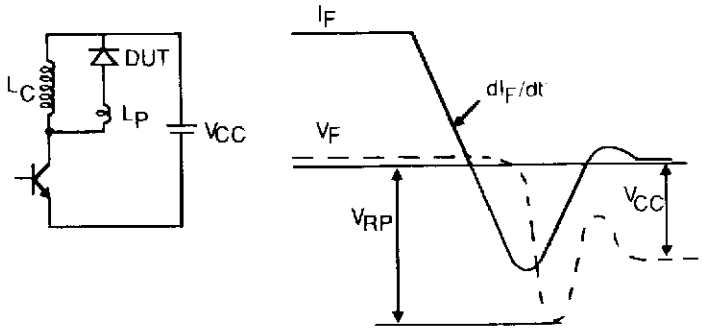
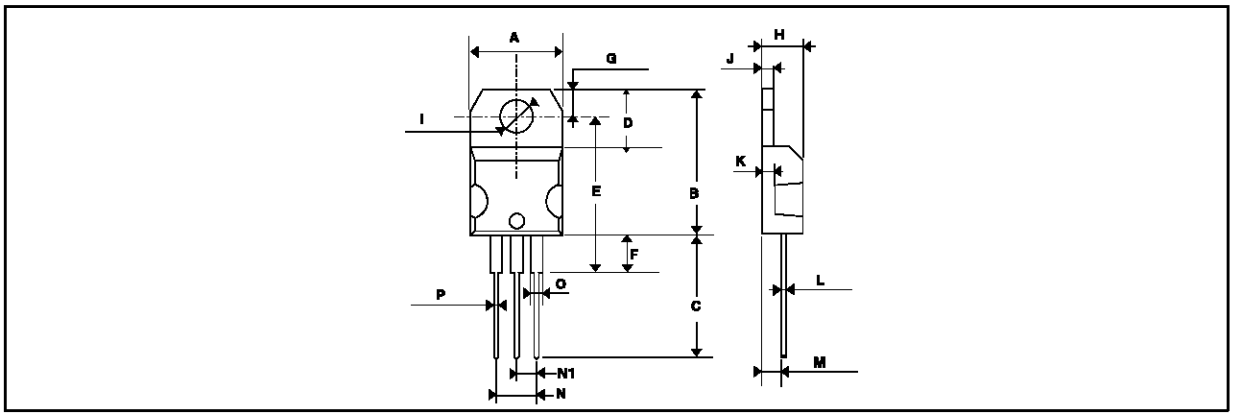


Figure 11 : Turn-off switching characteristics (without series inductance).

Figure 12. Turn-off switching characteristics (without series inductance)



PACKAGE MECHANICAL DATA :
TO 220 AB Plastic



REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	10.0	10.4	0.393	0.409
B	15.2	15.9	0.598	0.626
C	13	14	0.511	0.551
D	6.2	6.6	0.244	0.260
E	16.4 typ.		0.645 typ.	
F	3.5	4.2	0.137	0.165
G	2.65	2.95	0.104	0.116
H	4.4	4.6	0.173	0.181
I	3.75	3.85	0.147	0.151
J	1.23	1.32	0.048	0.051
K	1.27 typ.		0.050 typ.	
L	0.49	0.70	0.019	0.027
M	2.4	2.72	0.094	0.107
N	4.95	5.15	0.194	0.203
N1	2.40	2.70	0.094	0.106
O	1.14	1.70	0.044	0.067
P	0.61	0.88	0.024	0.034

Cooling method: by conduction (method C)
Marking: type number
Weight: 2.47g