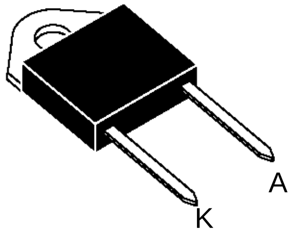
SGS-THOMSON
MICROELECTRONICS

BYT 30PI-200 → 400

FAST RECOVERY RECTIFIER DIODES

- VERY LOW REVERSE RECOVERY TIME
- VERY LOW SWITCHING LOSSES
- LOW NOISE TURN-OFF SWITCHING
- INSULATED: Capacitance 15pF

Insulating voltage 2500 V_{RMS}



Isolated
DOP3I
(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	$t_p \le 10\mu s$	500	A
$I_{F\ (RMS)}$	RMS Forward Current		50	A
$I_{F\ (AV)}$	Average Forward Current	$T_c = 60°C$ $\delta = 0.5$	30	A
I_{FSM}	Surge non Repetitive Forward Current	$t_p = 10ms$ Sinusoidal	350	A
P	Power Dissipation	$T_c = 60°C$	50	W
T_{stg} T_j	Storage and Junction Temperature Range		- 40 to + 150 - 40 to + 150	°C

Symbol	Parameter	BYT 30PI-			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	1.8	°C/W

ELECTRICAL CHARACTERISTICS

STATIC CHARACTERISTICS

Symbol	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 $L_p \leq 0.05$µH 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
$C = \frac{V_{RP}}{V_{CC}}$	T_j = 100°C V_{CC} = 60V $I_F = I_{F\,(AV)}$ See note di_F/dt = - 30A/µs L_p = 1µH See figure 12		3.3		

To evaluate the conduction losses use the following equations:

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

Figure 1. Low frequency power losses versus average current

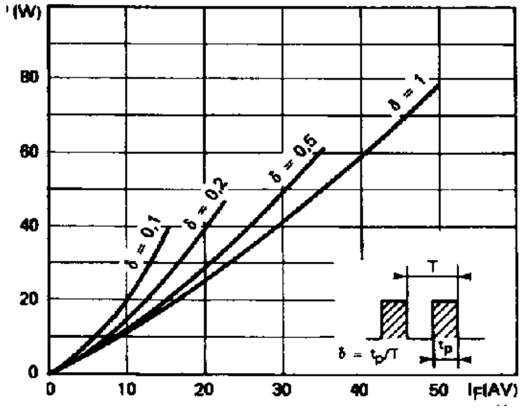


Figure 2. Peak current versus form factor

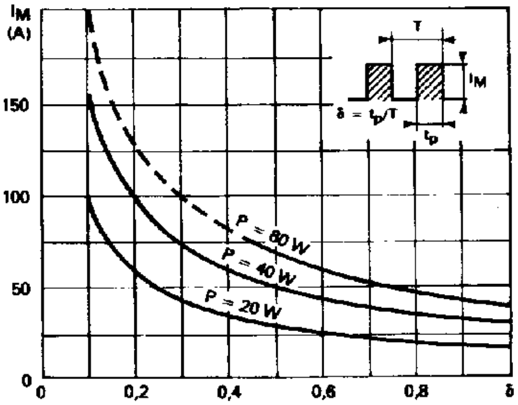


Figure 3. Non repetitive peak surge current versus overload duration

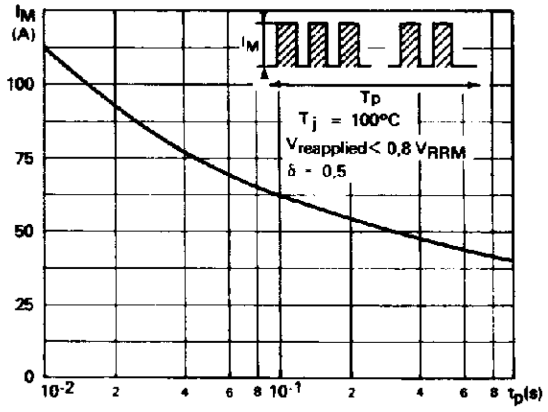


Figure 4. Thermal impedance versus pulse width

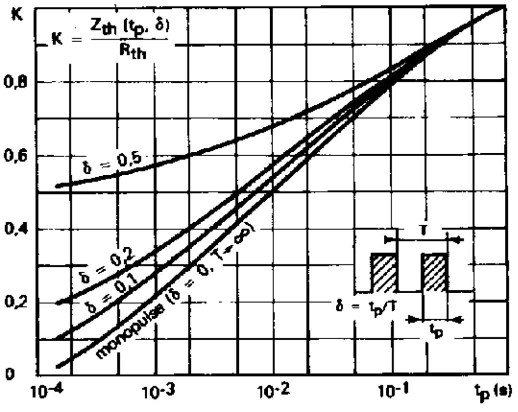


Figure 5. Voltage drop versus forward current

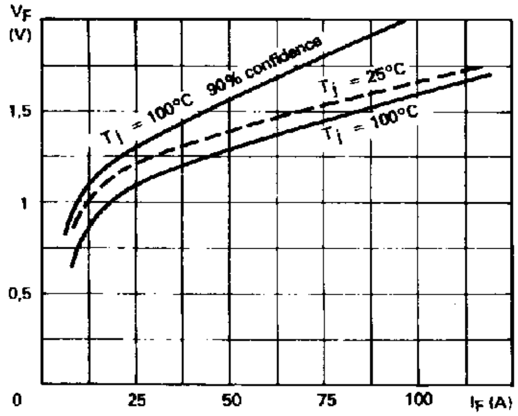


Figure 6. Recovery charge versus di_F/d_t.

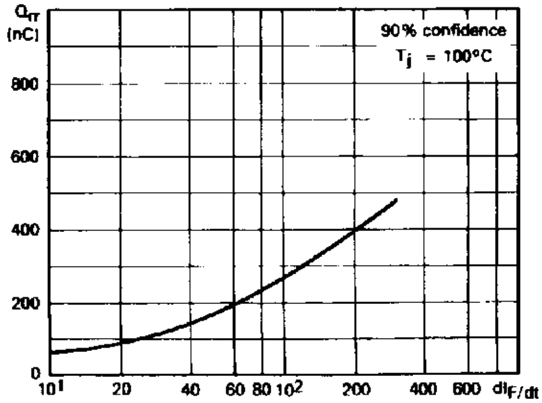


Figure 7. Recovery time versus di_F/d_t.

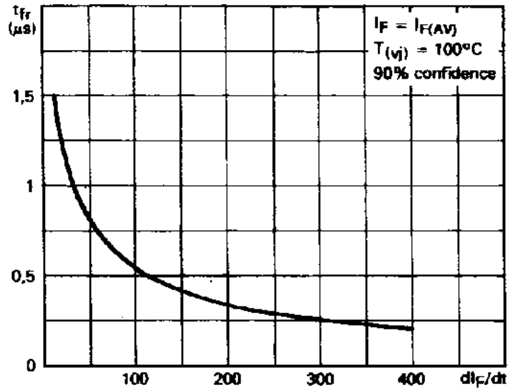


Figure 8. Peak reverse current versus di_F/d_t.

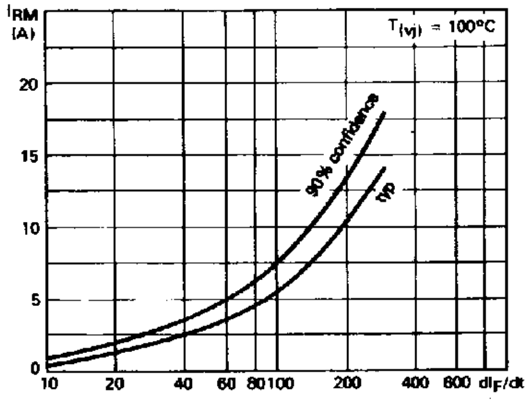


Figure 9. Peak forward voltage versus di_F/dt.

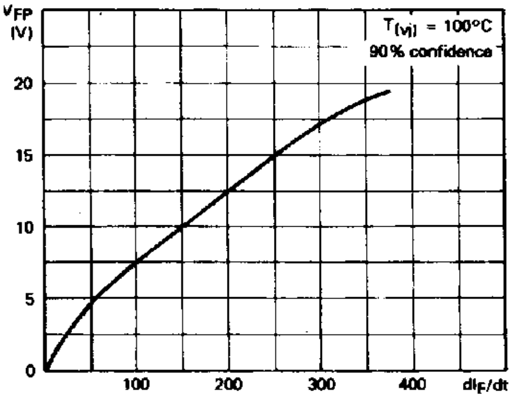


Figure 10. Dynamic parameters versus junction temperature.

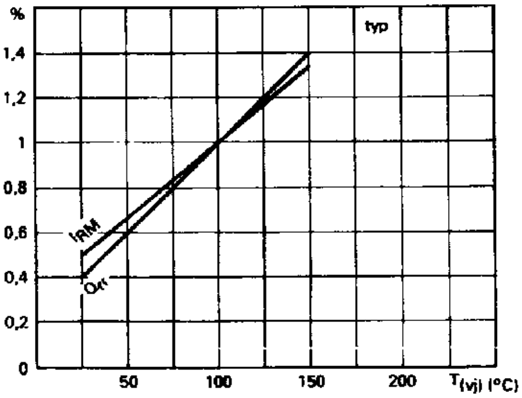


Figure 11. Turn-off switching characteristics (without series inductance).

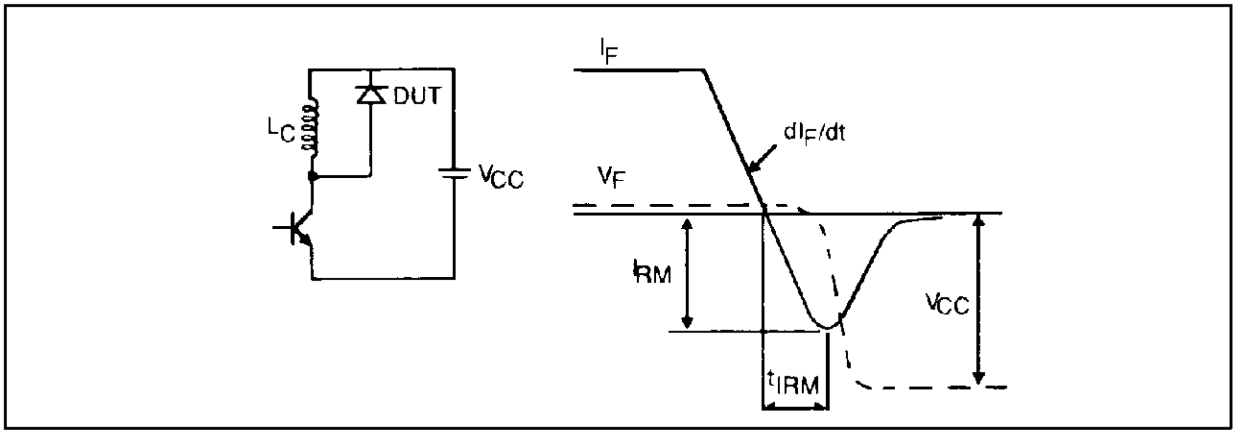
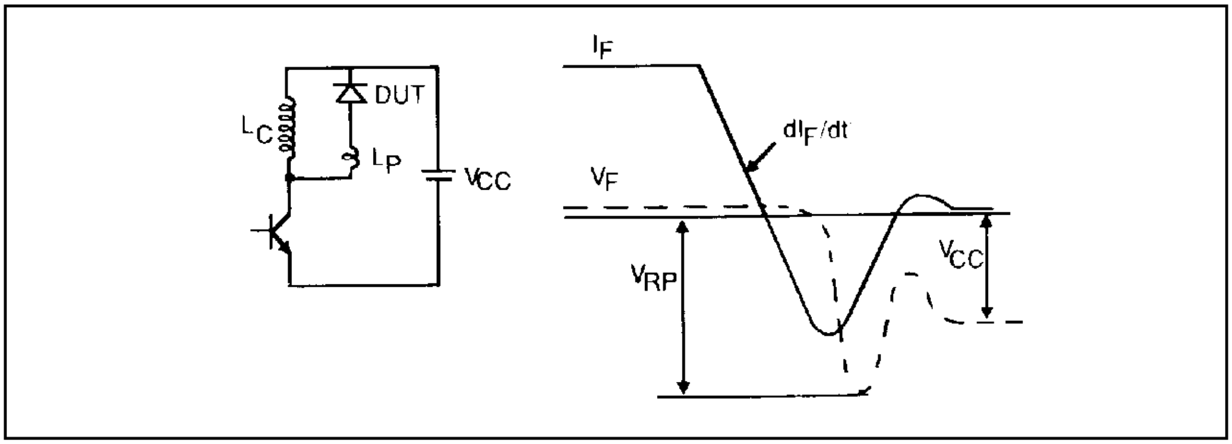
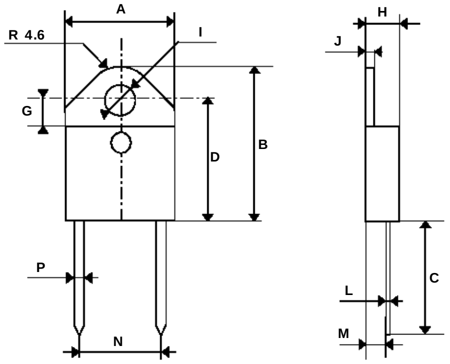


Figure 12. Turn-off switching characteristics (with series inductance)



PACKAGE MECHANICAL DATA :

Isolated DOP3I Plastic



REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	15.10	15.50	0.594	0.611
B	20.70	21.10	0.814	0.831
C	14.30	15.60	0.561	0.615
D	16.10	16.50	0.632	0.650
G	3.40	-	0.133	-
H	4.40	4.60	O.173	0.182
I	4.08	4.17	0.161	0.164
J	1.45	1.55	0.057	0.062
L	0.50	0.70	0.019	0.028
M	2.70	2.90	0.106	0.115
N	10.80	11.30	0.42	0.45
P	1.20	1.40	0.047	0.056

Cooling method: by conduction (method C)
Marking: type number
Weight: 2.42g
Recommended torque value: 80cm. N
Maximum torque value: 100cm. N

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