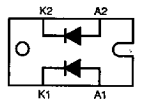
SGS-THOMSON MICROELECTRONICS

BYT260PI(V)-800
BYT261PI(V)-800

FAST RECOVERY RECTIFIER DIODES

FEATURES

- VERY LOW REVERSE RECOVERY TIME
- VERY LOW SWITCHING LOSSES
- LOW NOISE TURN-OFF SWITCHING
- INSULATED PACKAGE :
  Insulating voltage = 2500 V_{RMS}
  Capacitance = 45 pF



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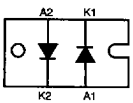

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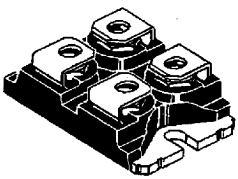

ISOTOP ®
(Plastic)
Screw version (*)

DESCRIPTION

Dual high voltage rectifiers ranging from 600V to 800V suited for Switch Mode Power Supplies and other power converters.
The devices are packaged in ISOTOP.

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter			Value	Unit
I_{FRM}	Repetitive peak forward current	tp ≤ 10µs		750	A
$I_{F(RMS)}$	RMS forward current		Per diode	140	A
$I_{F(AV)}$	Average forward current	Tc=60°C δ = 0.5	Per diode	60	A
I_{FSM}	Surge non repetitive forward current	tp=10ms sinusoidal	Per diode	400	A
Tstg Tj	Storage and junction temperature range			- 40 to + 150 - 40 to + 150	°C °C

Symbol	Parameter	BYT260PI(V)- / BYT261PI(V)-		Unit
		600	800	
V_{RRM}	Repetitive peak reverse voltage	600	800	V

* : Tin plated Fast-on version is also available (without V suffix).

TM : ISOTOP is a trademark of SGS-THOMSON Microelectronics.

THERMAL RESISTANCE

Symbol	Parameter		Value	Unit
Rth (j-c)	Junction to case	Per diode	0.7	°C/W
		Total	0.4	
Rth (c)	Coupling		0.1	°C/W

When the diodes 1 and 2 are used simultaneously :
Δ Tj(diode 1) = P(diode) x Rth(Per diode) + P(diode 2) x Rth(c)

ELECTRICAL CHARACTERISTICS (Per diode)
STATIC CHARACTERISTICS

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
V_F *	T_j = 25°C	I_F = 60 A			1.9	V
	T_j = 100°C				1.8	
I_R **	T_j = 25°C	$V_R = V_{RRM}$			100	µA
	T_j = 100°C				6	mA

Pulse test : * tp = 380 µs, duty cycle < 2 %
** tp = 5 ms, duty cycle < 2 %

RECOVERY CHARACTERISTICS

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
trr	T_j = 25°C	I_F = 0.5A Irr = 0.25A I_R = 1A			65	ns
		I_F = 1A dI_F/dt = -15A/µs V_R = 30V			135	

TURN-OFF SWITCHING CHARACTERISTICS (Without serie inductance)

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
t_{IRM}	dI_F/dt = -240A/µs	V_{CC} = 200V I_F = 60A Lp ≤ 0.05µH T_j = 100°C see fig. 11			160	ns
	dI_F/dt = -480A/µs			100		
I_{RM}	dI_F/dt = -240A/µs				30	A
	dI_F/dt = -480A/µs			38		

TURN-OFF OVERVOLTAGE COEFFICIENT (With serie inductance)

Symbol	Test Conditions	Min.	Typ.	Max.	Unit
$C = \frac{V_{RP}}{V_{CC}}$	T_j = 100°C V_{CC} = 150V $I_F = I_{F(AV)}$ dI_F/dt = -60A/µs Lp = 2µH see fig.12		3.3	4	/

To evaluate the conduction losses use the following equation :
$P = 1.47 \times I_{F(AV)} + 0.005 \times I_F{}^2{}_{(RMS)}$

Fig.1 : Low frequency power losses versus average current.

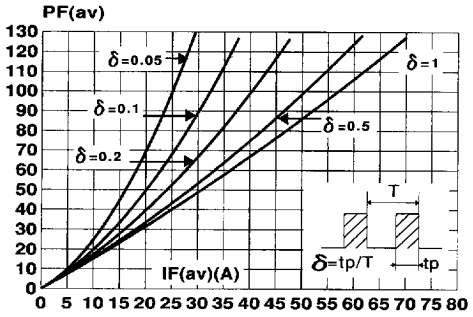

Fig.2 : Peak current versus form factor.

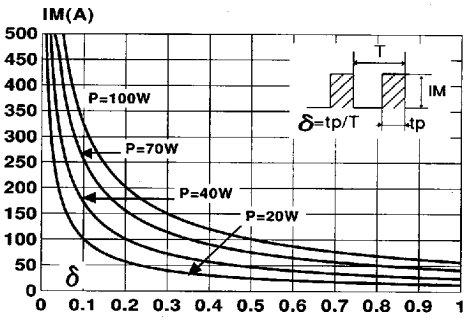

Fig.3 : Non repetitive peak surge current versus overload duration.

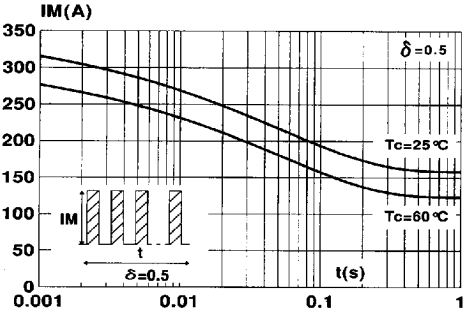

Fig.4 : Relative variation of thermal impedance junction to case versus pulse duration.

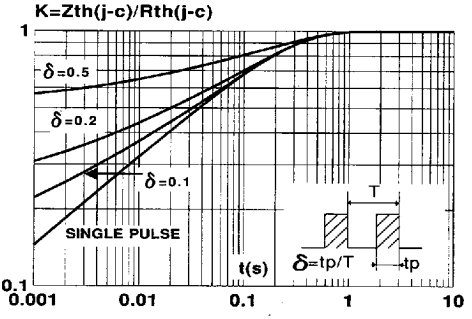

Fig.5 : Voltage drop versus forward current.

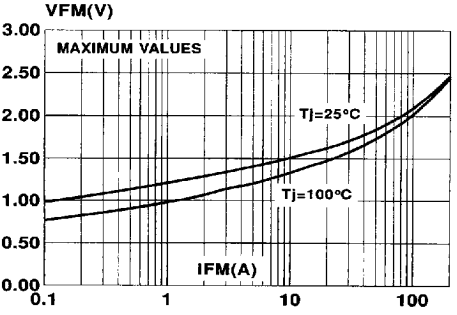

Fig.6 : Recovery charge versus dI_F/dt.

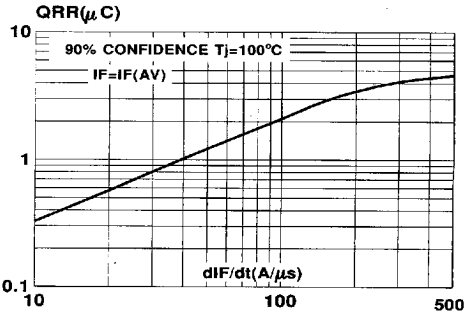

Fig.7 : Recovery time versus dI_F/dt.

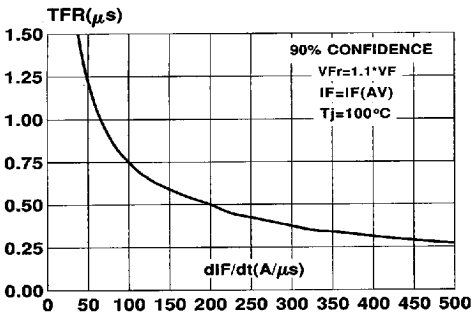

Fig.8 : Peak reverse current versus dIF/dt.

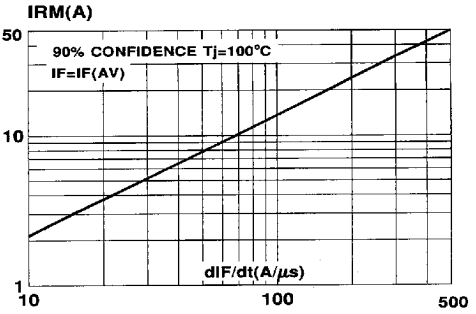

Fig.9 : Peak forward voltage versus dI_F/dt.

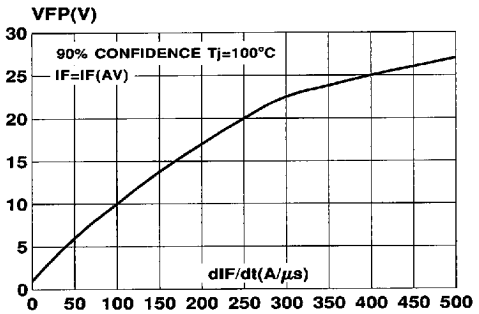

Fig.10 : Dynamic parameters versus junction temperature.

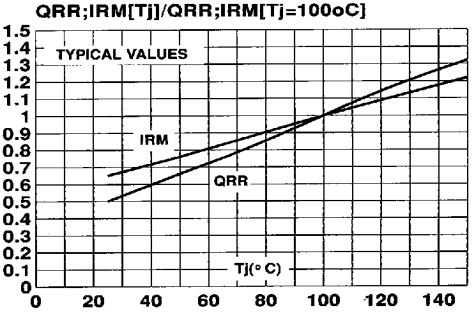

Fig.11 : TURN-OFF SWITCHING CHARACTERISTICS (Without serie inductance)

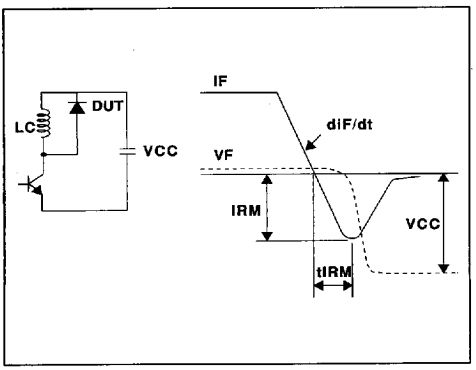

Fig.12 : TURN-OFF SWITCHING CHARACTERISTICS (With serie inductance)