BYT60P-1000
BYT261PIV-1000

FAST RECOVERY RECTIFIER DIODES

MAJOR PRODUCT CHARACTERISTICS

$I_{F(AV)}$	2 x 60 A
V_{RRM}	1000 V
V_F (max)	1.8 V
trr (max)	70 ns

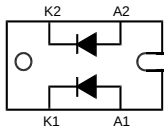
FEATURES AND BENEFITS

- VERY LOW REVERSE RECOVERY TIME
- VERY LOW SWITCHING LOSSES
- LOW NOISE TURN-OFF SWITCHING
- INSULATED PACKAGE: ISOTOP
  Insulation voltage: 2500 V_{RMS}
  Capacitance = 45 pF
  Inductance < 5 nH

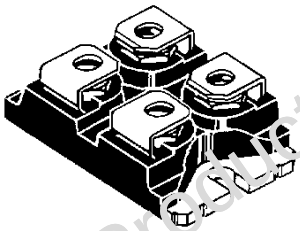
DESCRIPTION

Dual or high single voltage rectifier devices suited for Switch Mode Power Supplies and other power converters.

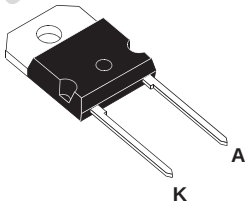
These devices are packaged in ISOTOP or in SOD93.



BYT261PIV-1000



ISOTOP™
(Plastic)



SOD93
(Plastic)

ABSOLUTE RATINGS (limiting values, per diode)

Symbol	Parameter			Value	Unit
V_{RRM}	Repetitive peak reverse voltage			1000	V
I_{FRM}	Repetitive peak forward current	tp=5 µs F=1kHz		1000	A
$I_{F(RMS)}$	RMS forward current	ISOTOP		140	A
		SOD93		100	
$I_{F(AV)}$	Average forward current δ = 0.5	Tc = 50°C	ISOTOP	60	A
		Tc = 60°C	SOD93	60	
I_{FSM}	Surge non repetitive forward current	tp = 10 ms Sinusoidal		400	A
T_{stg}	Storage temperature range			- 40 to + 150	°C
Tj	Maximum operating junction temperature			150	°C

TM: ISOTOP is a registered trademark of STMicroelectronics.

THERMAL RESISTANCES

Symbol	Parameter			Value	Unit
$R_{th(j-c)}$	Junction to case	ISOTOP	Per diode Total	0.8 0.45	°C/W
		SOD93	Total	0.7	
$R_{th(c)}$			Coupling	0.1	°C/W

When the diodes 1 and 2 are used simultaneously :
Δ Tj(diode 1) = P(diode) x $R_{th(j-c)}$ (Per diode) + P(diode 2) x $R_{th(c)}$

STATIC ELECTRICAL CHARACTERISTICS (per diode)

Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
V_F *	Forward voltage drop	Tj = 25°C	I_F = 60 A			1.9	V
		Tj = 100°C				1.8	
I_R **	Reverse leakage current	Tj = 25°C	$V_R = V_{RRM}$			100	µA
		Tj = 100°C				6	mA

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

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

RECOVERY CHARACTERISTICS (per diode)

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
t_{rr}	Tj = 25°C	I_F = 1A V_R = 30V dI_F/dt = - 15A/µs			170	ns
		I_F = 0.5A I_R = 1A I_{rr} = 0.25A			70	

TURN-OFF SWITCHING CHARACTERISTICS

Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
t_{IRM}	Maximum reverse recovery time	dI_F/dt = - 240 A/µs	V_{CC} = 200 V I_F = 60 A $L_p \leq$ 0.05 µH Tj = 100°C (see fig. 13)			200	ns
		dI_F/dt = - 480 A/µs			120		
I_{RM}	Maximum reverse recovery current	dI_F/dt = - 240 A/µs				40	A
		dI_F/dt = - 480 A/µs			44		
$C = \frac{V_{RP}}{V_{CC}}$	Turn-off overvoltage coefficient	Tj = 100°C V_{CC} = 200V $I_F = I_{F(AV)}$ dI_F/dt = - 60A/µs L_p = 2.5µH (see fig. 14)			3.3	4.5	/

Fig. 1-1: Average forward power dissipation versus average forward current (per diode, ISOTOP).

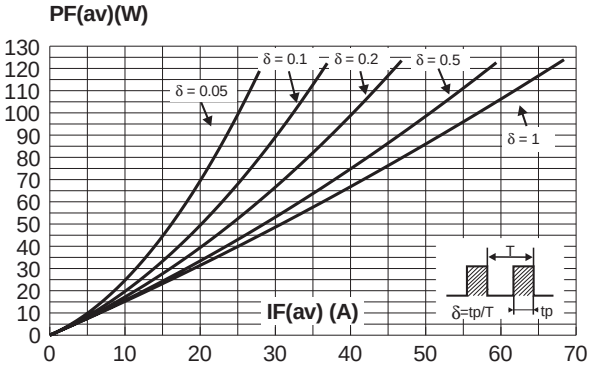


Fig. 1-2: Average forward power dissipation versus average forward current (SOD93).

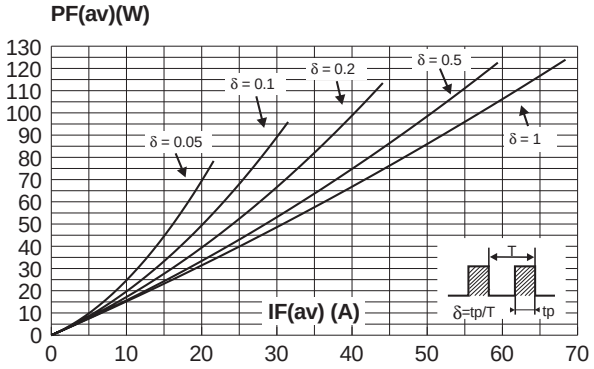


Fig. 2-1: Peak current versus form factor (per diode, ISOTOP).

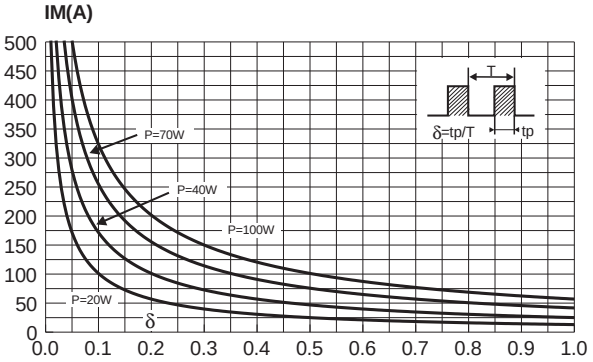


Fig. 2-2: Peak current versus form factor (SOD93).

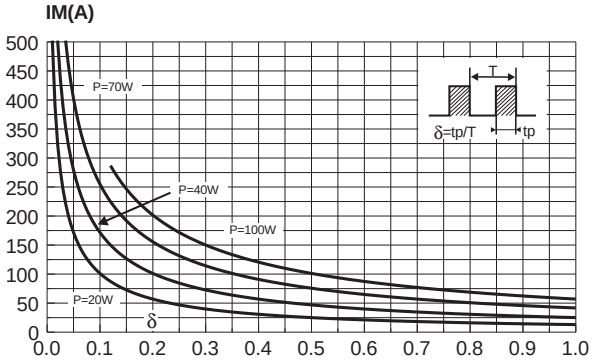


Fig. 3: Average forward current versus ambient temperature (δ=0.5, per diode for ISOTOP).

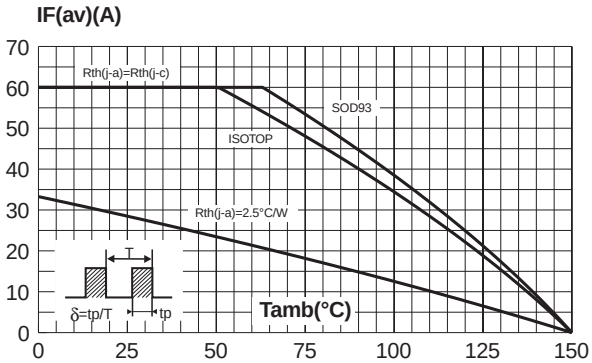


Fig. 4-1: Non repetitive surge peak forward current versus overload duration (SOD93).

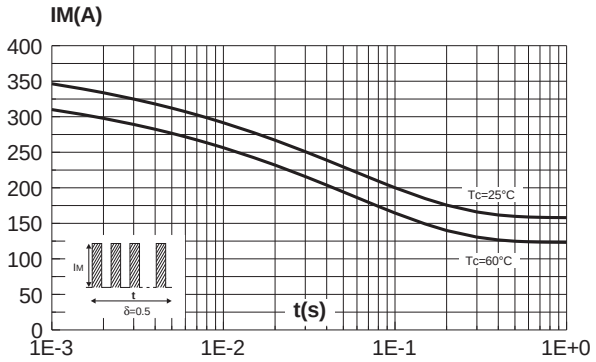


Fig. 4-2: Non repetitive surge peak forward current versus overload duration (per diode, ISOTOP).

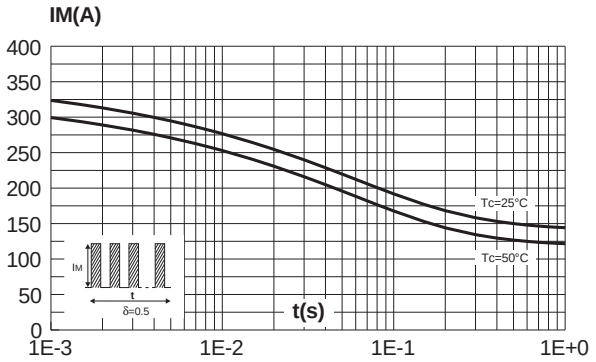


Fig. 5-1: Relative variation of thermal impedance junction to case versus pulse duration (per diode, ISOTOP).

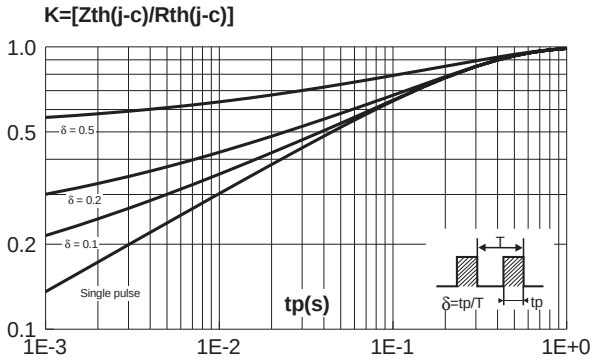


Fig. 5-2: Relative variation of thermal impedance junction to case versus pulse duration (SOD93).

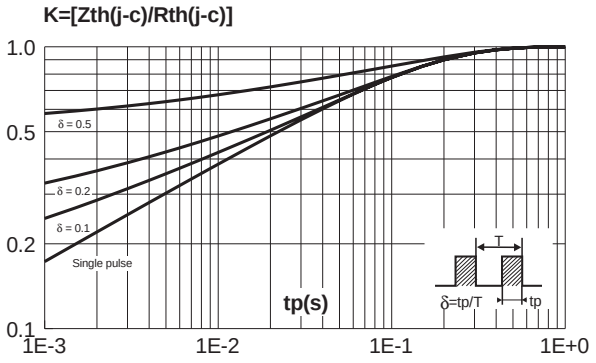


Fig. 6: Forward voltage drop versus forward current (maximum values, per diode for ISOTOP).

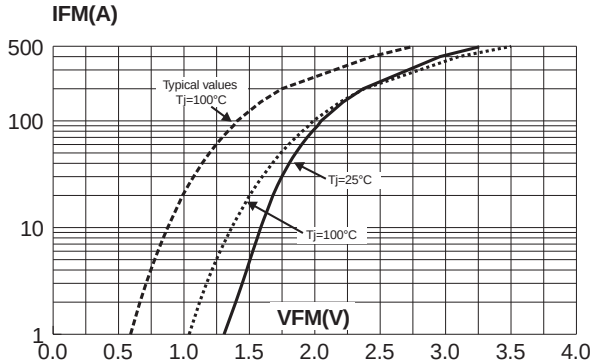


Fig. 7: Junction capacitance versus reverse voltage applied (typical values, per diode for ISOTOP).

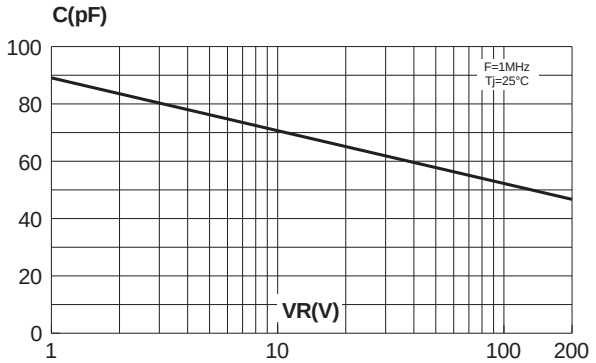


Fig. 8: Recovery charges versus dI_F/dt (per diode for ISOTOP).

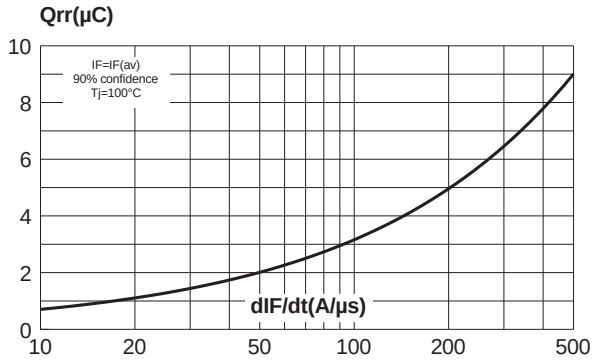


Fig. 9: Recovery current versus dI_F/dt (per diode for ISOTOP).

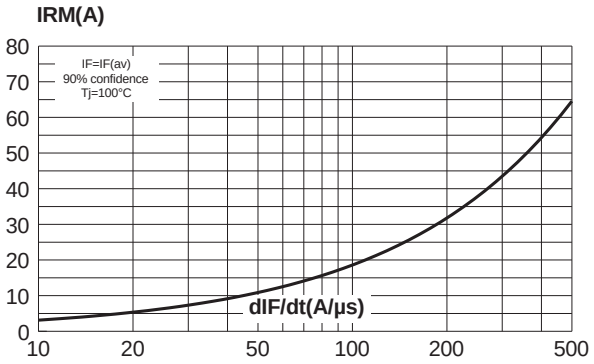


Fig. 10: Transient peak forward voltage versus dI_F/dt (per diode for ISOTOP).

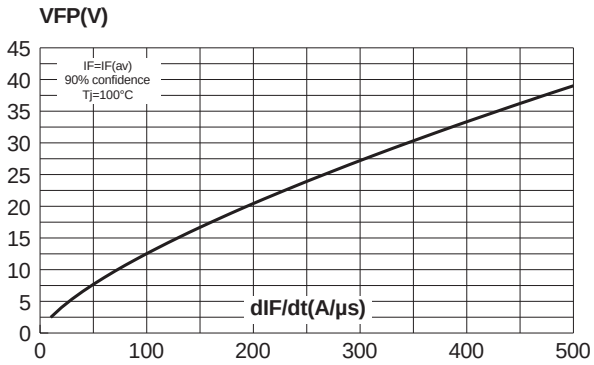


Fig. 11: Forward recovery time versus dI_F/dt (per diode for ISOTOP).

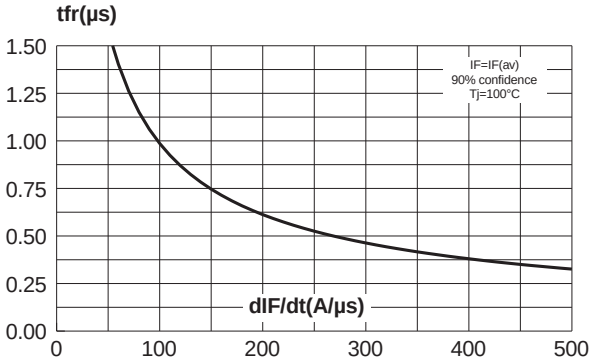


Fig. 12: Dynamic parameters versus junction temperature.

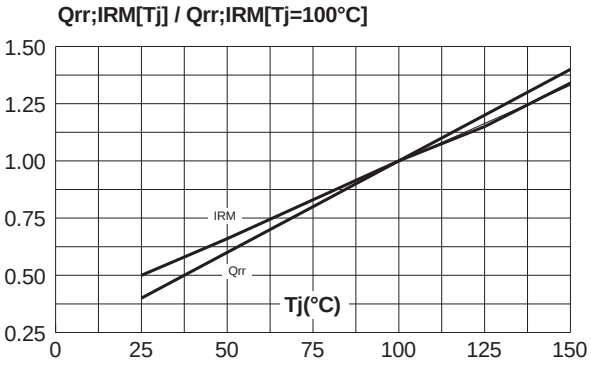


Fig. 13: Turn-off switching characteristics (without serie inductance).

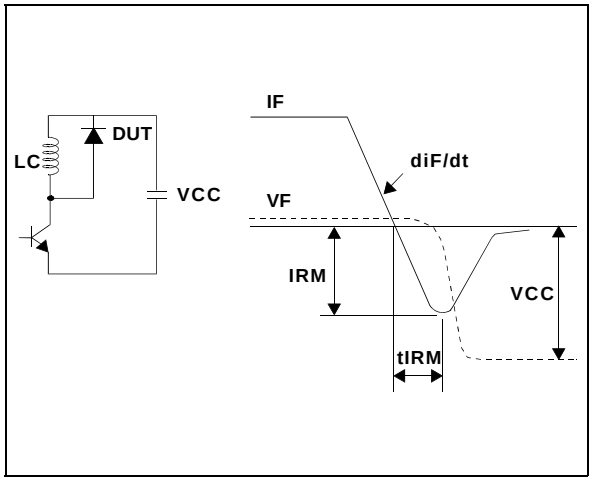
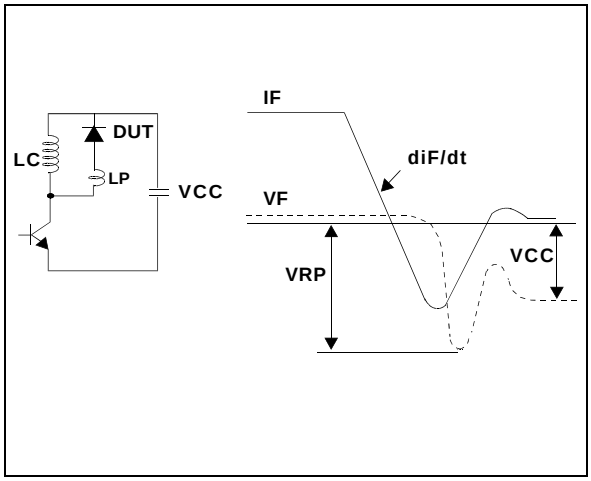
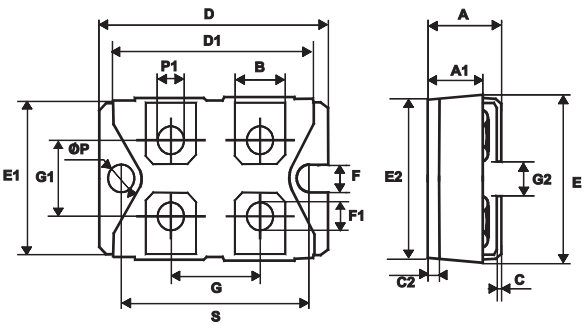


Fig. 14: Turn-off switching characteristics (with serie inductance).



PACKAGE MECHANICAL DATA

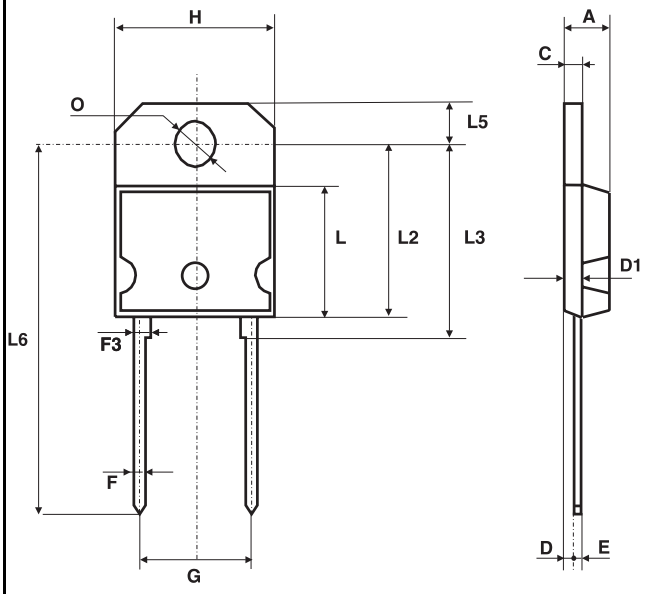
ISOTOP



REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	11.80	12.20	0.465	0.480
A1	8.90	9.10	0.350	0.358
B	7.8	8.20	0.307	0.323
C	0.75	0.85	0.030	0.033
C2	1.95	2.05	0.077	0.081
D	37.80	38.20	1.488	1.504
D1	31.50	31.70	1.240	1.248
E	25.15	25.50	0.990	1.004
E1	23.85	24.15	0.939	0.951
E2	24.80 typ.		0.976 typ.	
G	14.90	15.10	0.587	0.594
G1	12.60	12.80	0.496	0.504
G2	3.50	4.30	0.138	0.169
F	4.10	4.30	0.161	0.169
F1	4.60	5.00	0.181	0.197
P	4.00	4.30	0.157	0.69
P1	4.00	4.40	0.157	0.173
S	30.10	30.30	1.185	1.193

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

Ordering type	Marking	Package	Weight	Base qty	Delivery mode
BYT60P-1000	BYT60P-1000	SOD93	3.79 g.	30	Tube
BYT261PIV-1000	BYT261PIV-1000	ISOTOP	28 g. (without screws)	10	Tube

- Cooling method: by conduction (C)
- Recommended torque value (ISOTOP): 1.3 N.m (MAX 1.5 N.m) for the 6 x M4 screws. (2 x M4 screws recommended for mounting the package on the heatsink and the 4 screws given with the screw version).The screws supplied with the package are adapted for mounting on a board (or other types of terminals) with a thickness of 0.6 mm min and 2.2 mm max.
- Recommended torque value (SOD93): 0.8 N.m.
- Maximum torque value (SOD93): 1.0 N.m.
- Epoxy meets UL94,V0