Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

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Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832
Email & Skype: info@chipsmall.com Web: www.chipsmall.com
Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China

BYT60P-400
BYT260PIV-400 / BYT261PIV-400

FAST RECOVERY RECTIFIER DIODES

MAIN PRODUCT CHARACTERISTICS

$I_{F(AV)}$	2 x 60 A
V_{RRM}	400 V
V_F (max)	1.4 V
trr (max)	50 ns

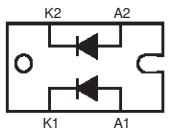
FEATURES AND BENEFITS

- 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

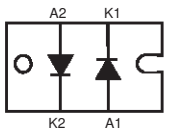
DESCRIPTION

These rectifier devices are suited for free-wheeling function in converters and motor control circuits.

Packaged in ISOTOP or SOD93, they are intended for use in Switch Mode Power Supplies.



BYT261PIV-400



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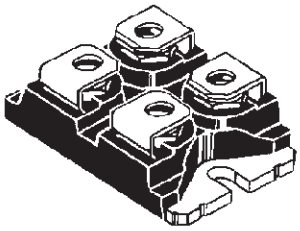
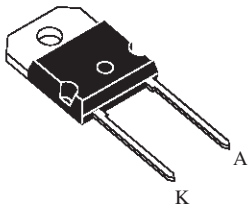


ISOTOP™
(Plastic)



SOD93
(Plastic)

ABSOLUTE RATINGS (limiting values, per diode)

Symbol	Parameter			Value	Unit
V_{RRM}	Repetitive peak reverse voltage			400	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 = 70°C	ISOTOP	60	A
		Tc = 80°C	SOD93		
I_{FSM}	Surge non repetitive forward current tp = 10 ms Sinusoidal	ISOTOP		600	A
		SOD93		550	
T_{stg}	Storage temperature range			- 40 to + 150	°C
Tj	Maximum operating junction temperature			150	°C

TM: ISOTOP is a registered trademark of STMicroelectronics.

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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			1.5	V
		Tj = 100°C				1.4	
I_R **	Reverse leakage current	Tj = 25°C	$V_R = V_{RRM}$			60	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:
$P = 1.1 \times I_{F(AV)} + 0.0045\ I^2_{F(RMS)}$

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			100	ns
		I_F = 0.5A I_R = 1A I_{rr} = 0.25A			50	

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 ® 0.05 µH Tj = 100°C (see fig. 13)			75	ns
		dI_F/dt = - 480 A/µs			50		
I_{RM}	Maximum reverse recovery current	dI_F/dt = - 240 A/µs				18	A
		dI_F/dt = - 480 A/µs			24		
$C = \frac{V_{RP}}{V_{CC}}$	Turn-off overvoltage coefficient	Tj = 100°C V_{CC} = 120V $I_F = I_{F(AV)}$ dI_F/dt = - 60A/µs L_p = 0.8µH (see fig. 14)			3.3	4	/

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

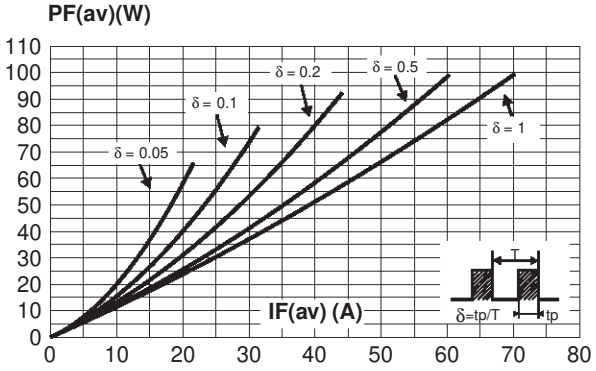


Fig. 2: Peak current versus form factor (per diode, for **ISOTOP).**

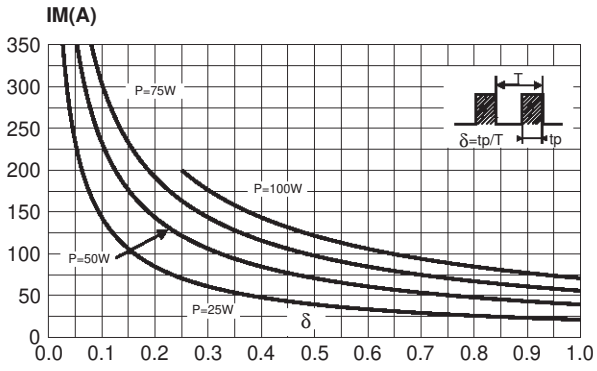


Fig. 3: Average forward current versus ambient temperature (δ=0.5, per diode for ISOTOP).

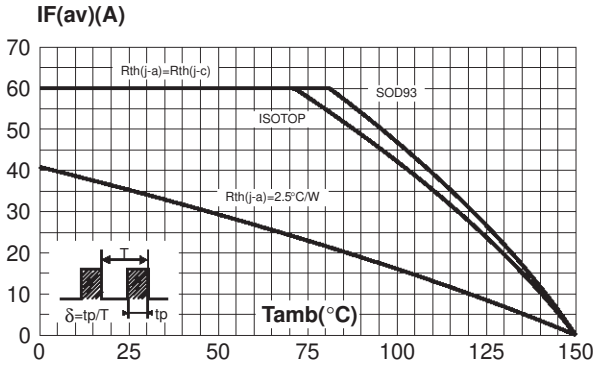


Fig. 4-1: Non repetitive surge peak forward current versus overload duration (SOD93).

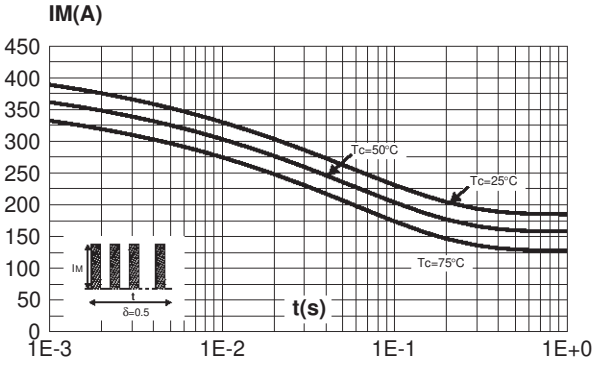


Fig. 4-2: Non repetitive surge peak forward current versus overload duration (per diode, for ISOTOP).

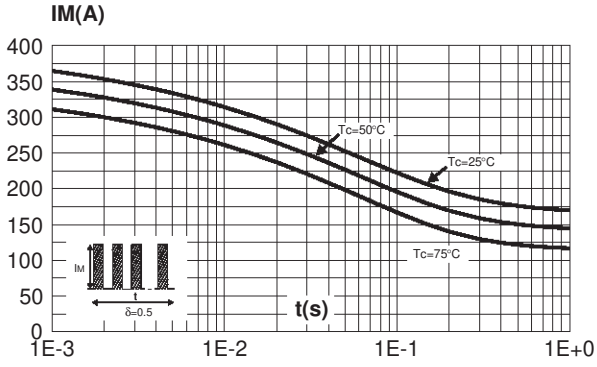


Fig. 5-1: Relative variation of thermal impedance junction to case versus pulse duration (per diode for ISOTOP).

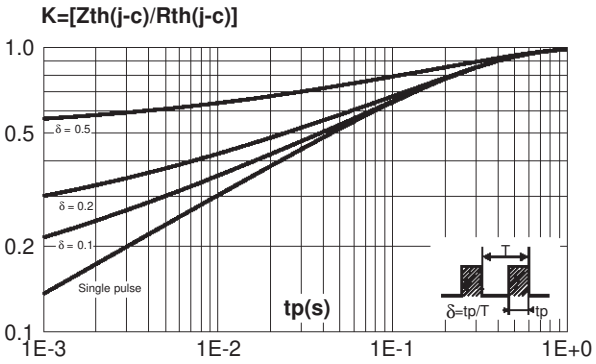


Fig. 5-2: Relative variation of thermal impedance junction to case versus pulse duration (SOD93).

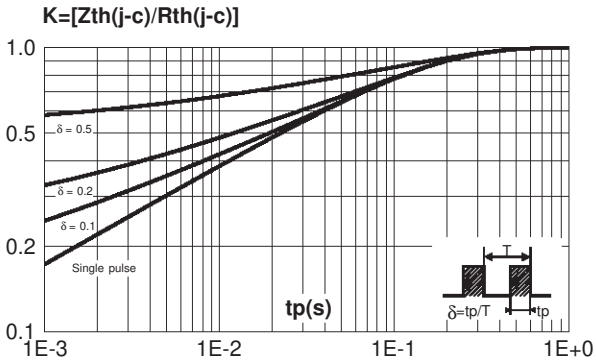


Fig. 6: Forward voltage drop versus forward current (maximum values, per diode for ISOTOP).

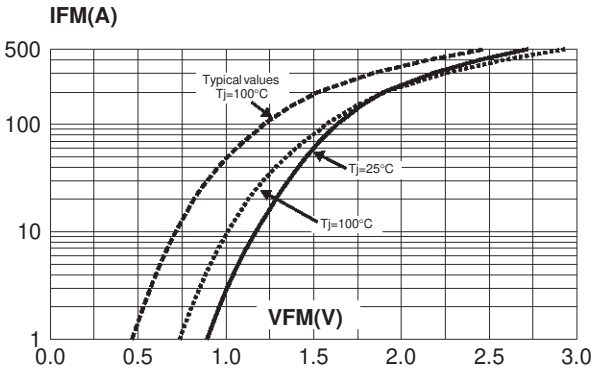


Fig. 7: Junction capacitance versus reverse voltage applied (typical values, per diode for ISOTOP).

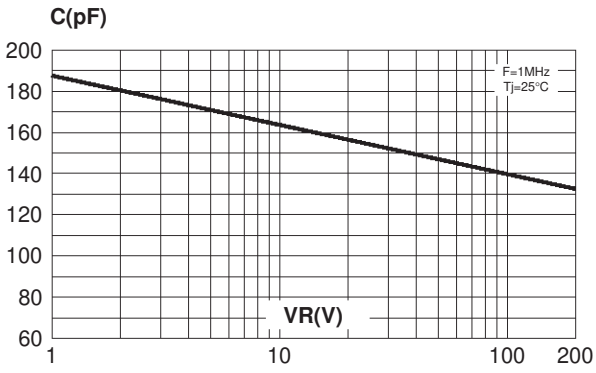


Fig. 8: Recovery charges versus dI_F/dt (per diode for ISOTOP).

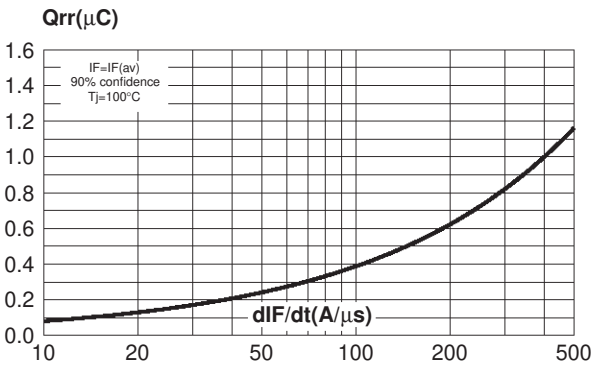


Fig. 9: Recovery current versus dI_F/dt (per diode for ISOTOP).

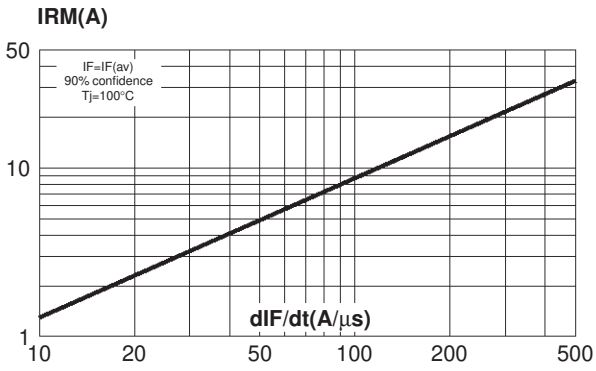


Fig. 10: Transient peak forward voltage versus dI_F/dt (per diode for ISOTOP).

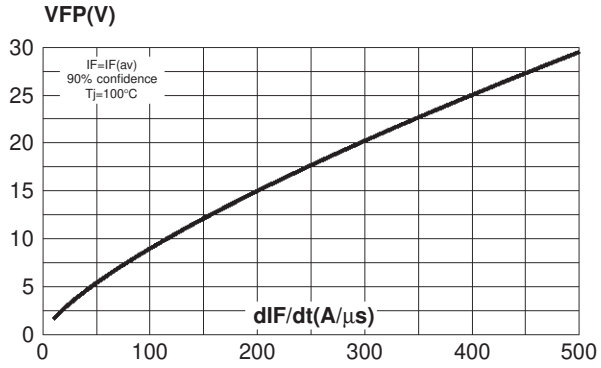


Fig. 11: Forward recovery time versus dI_F/dt (per diode for ISOTOP).

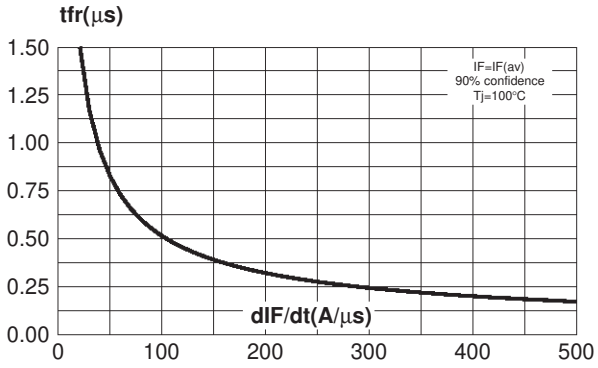


Fig. 12: Dynamic parameters versus junction temperature.

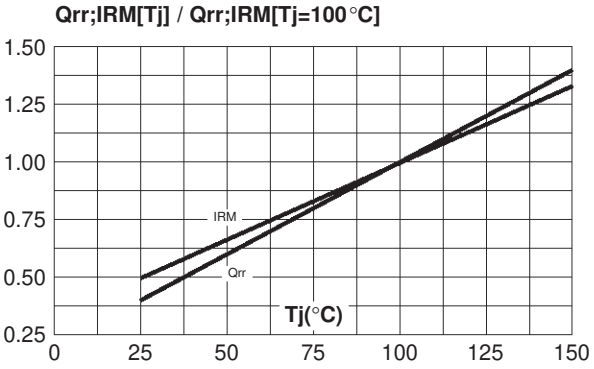


Fig. 13: Turn-off switching characteristics (without serie inductance).

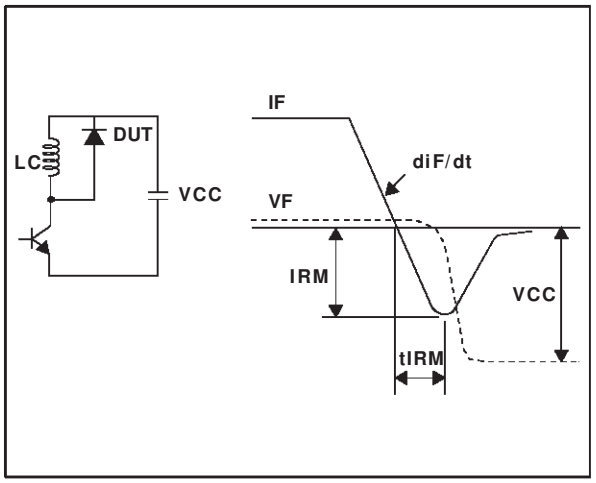
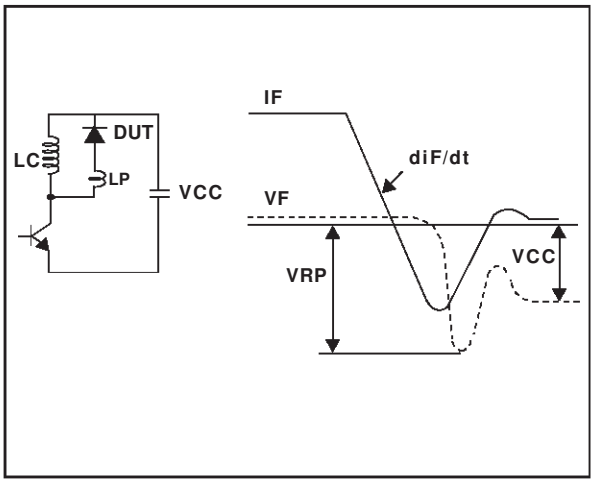
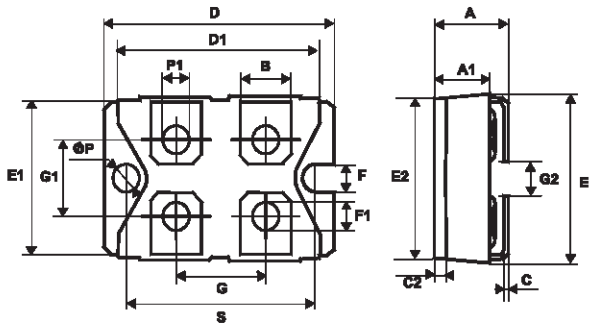


Fig. 14: Turn-off switching characteristics (with serie inductance).



PACKAGE MECHANICAL DATA

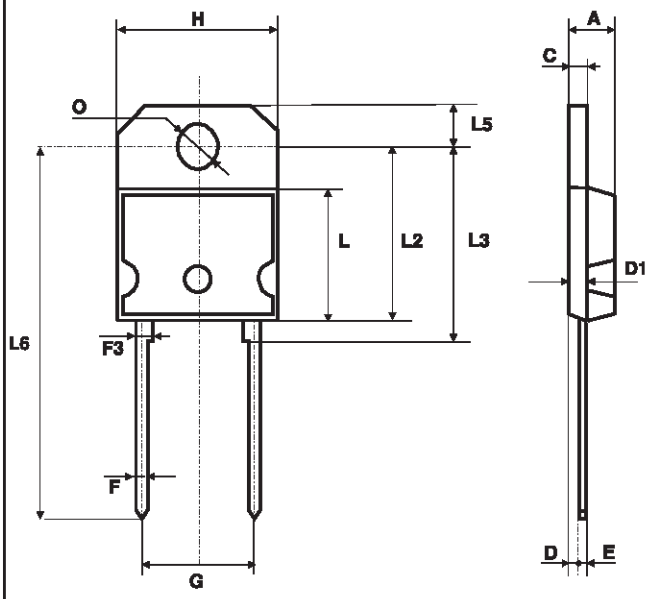
ISOTOP



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

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-400	BYT60P-400	SOD93	3.79 g.	30	Tube
BYT260PIV-400	BYT260PIV-400	ISOTOP	28 g. (without screws)	10	Tube
BYT261PIV-400	BYT261PIV-400	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