BYT03-400

HIGH EFFICIENCY ULTRAFAST DIODE

MAIN PRODUCT CHARACTERISTICS

$I_{F(AV)}$	3 A
V_{RRM}	400 V
T_j (max)	150°C
V_F (max)	1.4 V
trr (max)	25 ns

DO-201AD
BYT03-400

FEATURES AND BENEFITS

- Very low conduction losses
- Negligible switching losses
- Low forward & reverse recovery times

DESCRIPTION

The BYT03-400 which is using ST's 400V planar technology, is specially suited for switching mode base drive & transistor circuits.

The device, which is available in axial (DO-201AD) package, is also intended for use as a free wheeling diode in power supplies and other power switching applications.

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter			Value	Unit
V_{RRM}	Repetive peak reverse voltage			400	V
$I_{F(AV)}$	Average forward current	Tl = 55°C	δ = 0.5	3	A
I_{FSM}	Surge non repetitive forward current	tp = 10ms Sinusoidal		60	A
T_{stg}	Storage temperature range			- 65 to +150	°C
T_j	Maximum operating junction temperature			150	°C

THERMAL PARAMETERS

Symbol	Parameter	Value	Unit
$R_{th(j-a)}$	Junction to ambient*	20	°C/W

* On infinite heatsink with 10mm lead length.

STATIC ELECTRICAL CHARACTERISTICS

Symbol	Parameters	Test Conditions		Min.	Typ.	Max.	Unit
I_R*	Reverse leakage current	T_j = 25°C	$V_R = V_{RRM}$			20	µA
		T_j = 100°C			0.2	0.5	mA
V_F**	Forward voltage drop	T_j = 25°C	I_F = 3A			1.5	V
		T_j = 100°C			1.0	1.4	

Pulse test: * tp = 5ms, δ < 2%

** tp = 380µs, δ < 2%

To evaluate the maximum conduction losses use the following equation:

$P = 1.1 \times I_{F(AV)} + 0.08\ I_F{}^2{}_{(RMS)}$

DYNAMIC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
trr	Reverse recovery time	T_j = 25°C	I_F = 0.5A I_R = 1A I_{rr} = 0.25A		16	25	ns
			I_F = 1A dI_F/dt = - 15A/µs V_R = 30V			55	
tfr	Forward recovery time	T_j = 25°C	I_F = 3A dI_F/dt = 50A/µs VFR = 1.1 x $V_F$max		75		ns
V_{FP}	Forward recovery voltage	T_j = 25°C	I_F = 3A dI_F/dt = 50A/µs		7.0		V

Fig. 1: Average forward power dissipation versus average forward current.

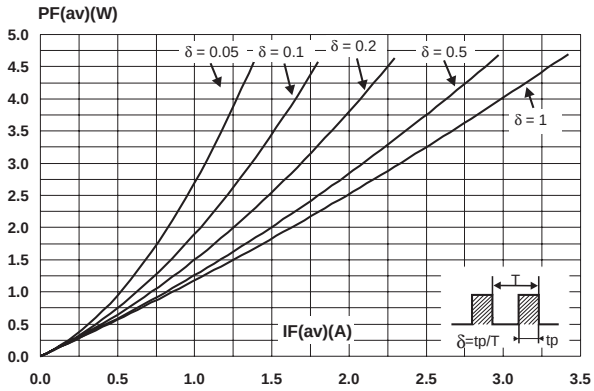


Fig. 2: Average forward current versus ambient temperature (δ = 0.5)

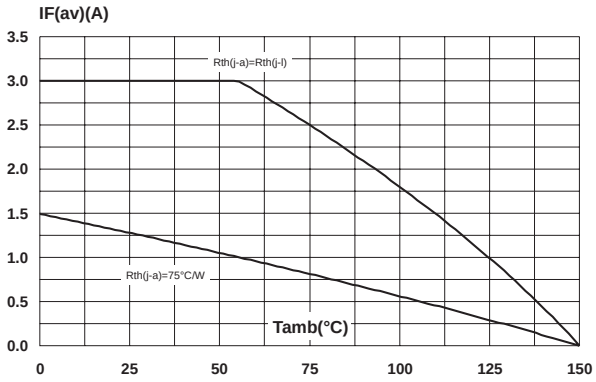


Fig. 3: Thermal resistance versus lead length.

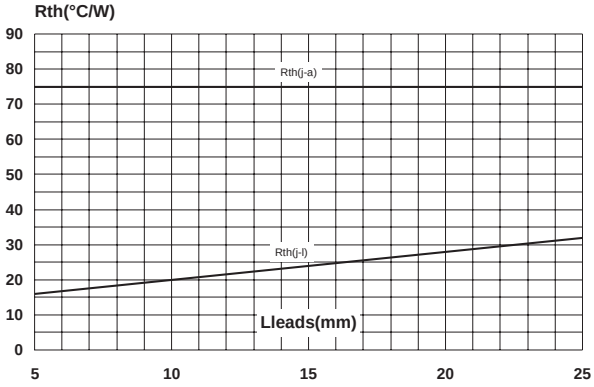


Fig. 4: Relative variation of thermal impedance junction ambient versus pulse duration (printed circuit board epoxy FR4, Lleads = 10mm).

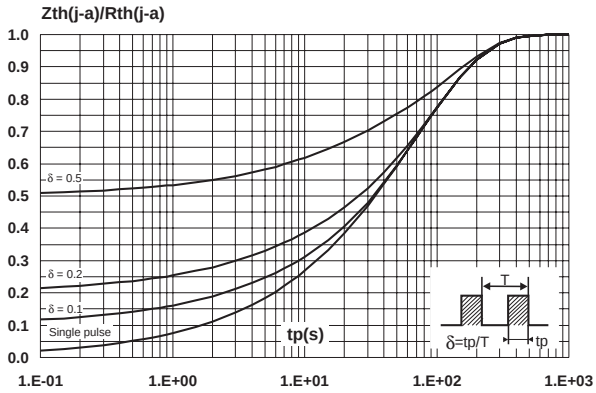


Fig. 5: Forward voltage drop versus forward current.

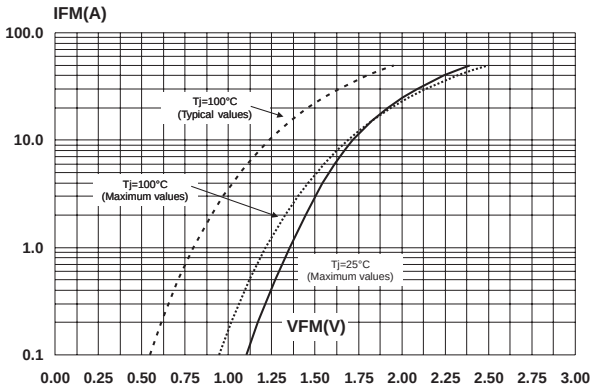


Fig. 6: Junction capacitance versus reverse voltage applied (typical values).

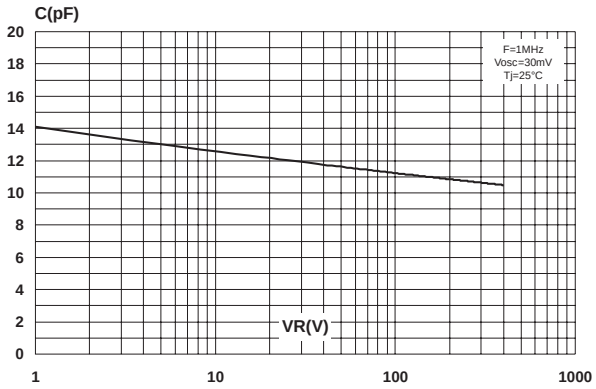


Fig. 7: Forward recovery time versus dIF/dt (90% confidence).

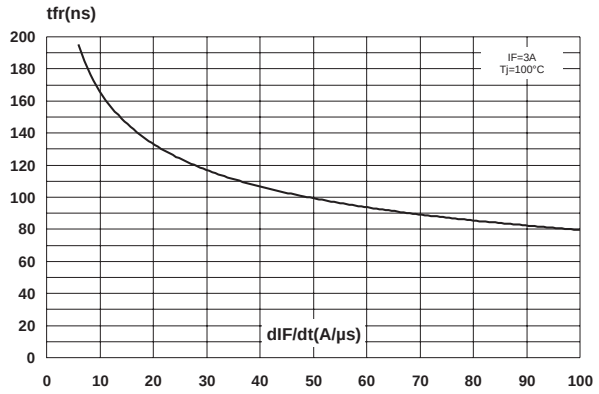


Fig. 8. Transient peak forward voltage versus dIF/dt (90% confidence).

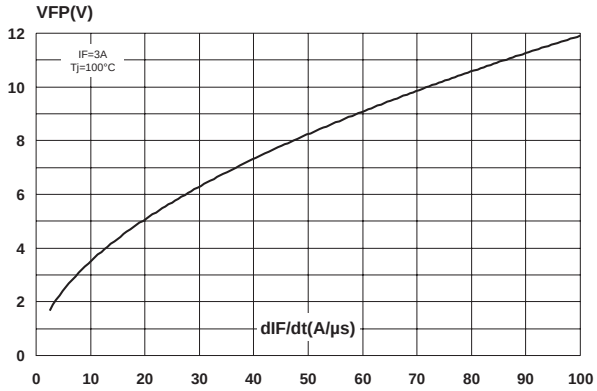


Fig. 9: Peak reverse recovery current versus dIF/dt (90% confidence).

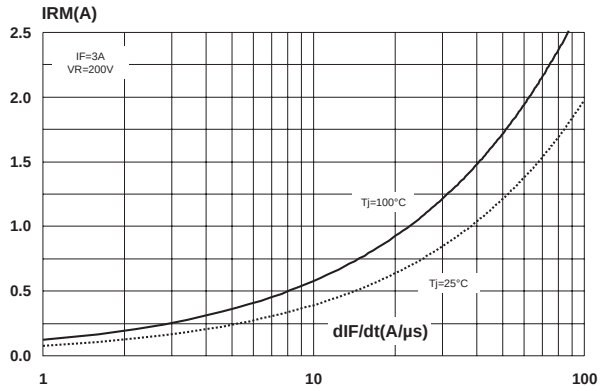


Fig. 10: Dynamic parameters versus junction temperature.

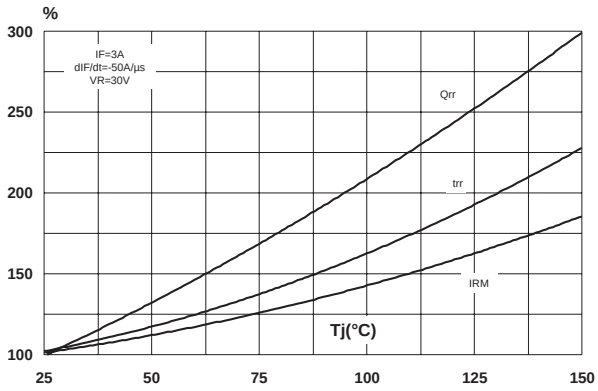
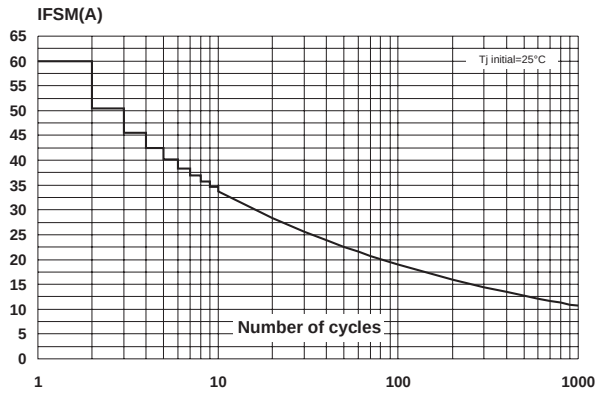
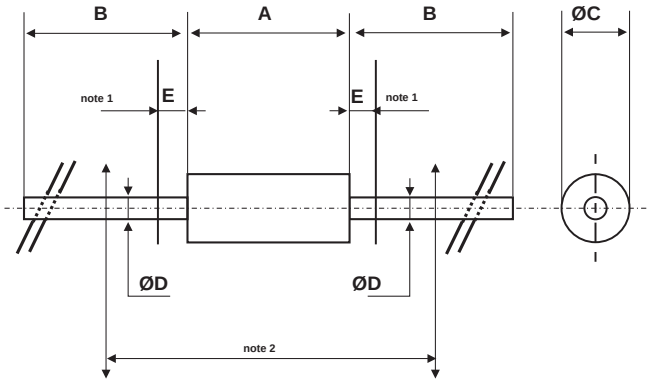


Fig. 11: Non repetitive surge peak current versus number of cycles.



PACKAGE MECHANICAL DATA

DO-201AD



REF.	DIMENSIONS				NOTES
	Millimeters		Inches		
	Min.	Max.	Min.	Max.	
A		9.50		0.374	1 - The lead diameter ∅ D is not controlled over zone E 2 - The minimum length which must stay straight between the right angles after bending is 0.59"(15 mm)
B	25.40		1.000		
C		5.30		0.209	
D		1.30		0.051	
E		1.25		0.049	

Ordering code	Marking	Package	Weight	Base qty	Delivery mode
BYT03-400	BYT03-400	DO-201AD	1.16 g	600	Ammopack
BYT03-400RL	BYT03-400	DO-201AD	1.16 g	1900	Tape & Reel

- Cooling method: by conduction (method A)
- Epoxy meets UL 94,V0
- Bending method: Application note AN1471.