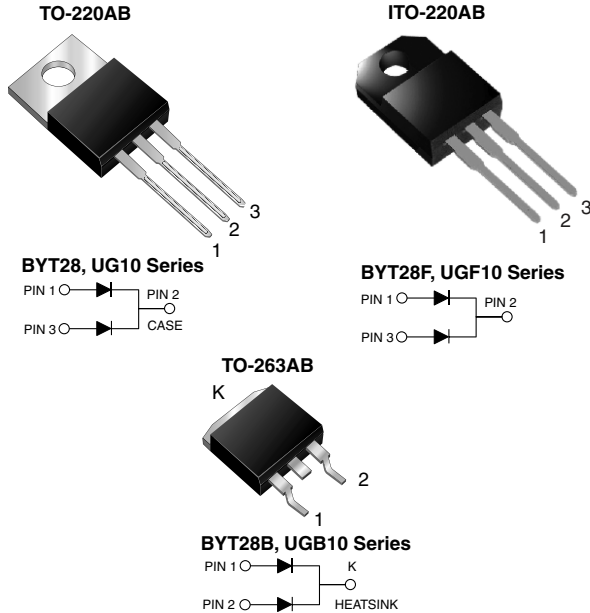


Dual Common-Cathode Ultrafast Soft Recovery Rectifier



FEATURES

- Glass passivated chip junction
- Ultrafast recovery time
- Low switching losses, high efficiency
- Low forward voltage drop
- High forward surge capability
- Meets MSL level 1, per J-STD-020C, LF maximum peak of 245 °C (for TO-263AB package)
- Solder dip 260 °C, 40 s (for TO-220AB and ITO-220AB package)
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC



TYPICAL APPLICATIONS

For use in high frequency rectifier of switching mode power supplies, inverters, freewheeling diodes, dc-to-dc converters, and other power switching application.

MECHANICAL DATA

Case: TO-220AB, ITO-220AB, TO-263AB

Epoxy meets UL 94V-0 flammability rating

Terminals: Matte tin plated leads, solderable per J-STD-002B and JESD22-B102D

E3 suffix for commercial grade, meets JESD 201 class 1A whisker test, HE3 suffix for high reliability grade (AEC Q101 qualified), meets JESD 201 class 2 whisker test

Polarity: As marked

Mounting Torque: 10 in-lbs maximum

PRIMARY CHARACTERISTICS

$I_{F(AV)}$	5 A x 2
V_{RRM}	300 V, 400 V
I_{FSM}	60 A
t_{rr}	35 ns
V_F	1.05 V
$T_J \text{ max.}$	150 °C

MAXIMUM RATINGS ($T_C = 25 \text{ °C}$ unless otherwise noted)

PARAMETER	SYMBOL	BYT28-300 UG10FCT	BYT28-400 UG10GCT	UNIT
Maximum repetitive peak reverse voltage	V_{RRM}	300	400	V
Maximum working reverse voltage	V_{RWM}	300	400	V
Maximum RMS voltage	V_{RMS}	210	280	
Maximum DC blocking voltage	V_{DC}	300	400	V
Maximum average forward rectified current at $T_C = 100 \text{ °C}$ total device per diode	$I_{F(AV)}$	10 5.0		A
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode	I_{FSM}	60		A
Operating junction and storage temperature range	T_J, T_{STG}	- 40 to + 150		°C
Isolation voltage (ITO-220AB only) from terminal to heatsink $t = 1 \text{ min}$	V_{AC}	1500		V

ELECTRICAL CHARACTERISTICS ($T_C = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)					
PARAMETER	TEST CONDITIONS		SYMBOL	VALUE	UNIT
Maximum instantaneous forward voltage per diode ⁽¹⁾	$I_F = 5\text{ A}$, $I_F = 10\text{ A}$ $I_F = 5\text{ A}$	$T_J = 25\text{ }^{\circ}\text{C}$ $T_J = 25\text{ }^{\circ}\text{C}$ $T_J = 150\text{ }^{\circ}\text{C}$	V_F	1.30 1.40 1.05	V
Maximum reverse current per diode at V_{RRM}		$T_J = 25\text{ }^{\circ}\text{C}$ $T_J = 100\text{ }^{\circ}\text{C}$	I_R	10 200	μA
Maximum reverse recovery time per diode	$I_F = 0.5\text{ A}$, $I_R = 1.0\text{ A}$, $I_{rr} = 0.25\text{ A}$		t_{rr}	35	ns
Maximum reverse recovery time per diode	$I_F = 1.0\text{ A}$, $dI/dt = 100\text{ A}/\mu\text{s}$, $V_R = 30\text{ V}$, $I_{rr} = 0.1\text{ }I_{RM}$		t_{rr}	50	ns
Maximum reverse recovery current per diode	$I_F = 5\text{ A}$, $dI/dt = 50\text{ A}/\mu\text{s}$, $V_R = 30\text{ V}$, $T_C = 100\text{ }^{\circ}\text{C}$		I_{RM}	3.0	A
Maximum stored charge per diode	$I_F = 2\text{ A}$, $dI/dt = 20\text{ A}/\mu\text{s}$, $V_R = 30\text{ V}$, $I_{rr} = 0.1\text{ }I_{RM}$		Q_{rr}	50	nC

Note:(1) Pulse test: 300 μs pulse width, 1 % duty cycle

THERMAL CHARACTERISTICS ($T_C = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)					
PARAMETER	SYMBOL	BYT28 UG10	BYT28F UGF10	BYT28B UGB10	UNIT
Typical thermal resistance junction to case per diode	$R_{\theta JC}$	4.5	6.7	4.5	$^{\circ}\text{C}/\text{W}$

ORDERING INFORMATION (Example)					
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
TO-220AB	BYT28-400-E3/45	1.80	45	50/tube	Tube
ITO-220AB	BYT28F-400-E3/45	1.95	45	50/tube	Tube
TO-263AB	BYT28B-400-E3/45	1.77	45	50/tube	Tube
TO-263AB	BYT28B-400-E3/81	1.77	81	800/reel	Tape reel
TO-220AB	BYT28-400HE3/45 ⁽¹⁾	1.80	45	50/tube	Tube
ITO-220AB	BYT28F-400HE3/45 ⁽¹⁾	1.95	45	50/tube	Tube
TO-263AB	BYT28B-400HE3/45 ⁽¹⁾	1.77	45	50/tube	Tube
TO-263AB	BYT28B-400HE3/81 ⁽¹⁾	1.77	81	800/reel	Tape reel

Note:

(1) Automotive grade AEC Q101 qualified



RATINGS AND CHARACTERISTICS CURVES

($T_A = 25^\circ\text{C}$ unless otherwise noted)

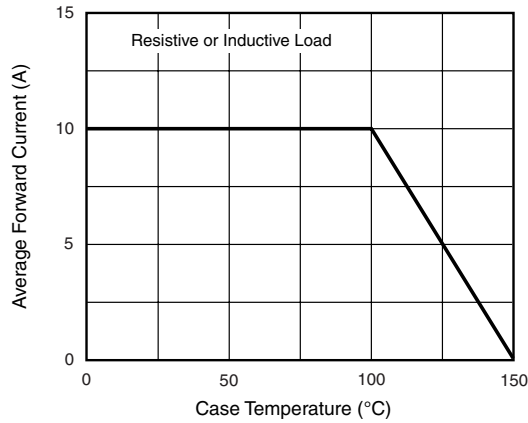


Figure 1. Forward Current Derating Curve

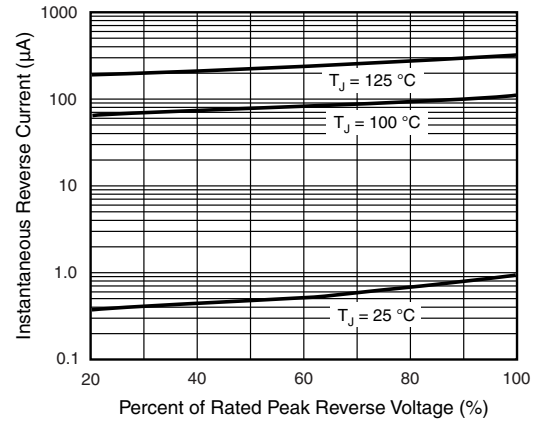


Figure 4. Typical Reverse Characteristics Per Diode

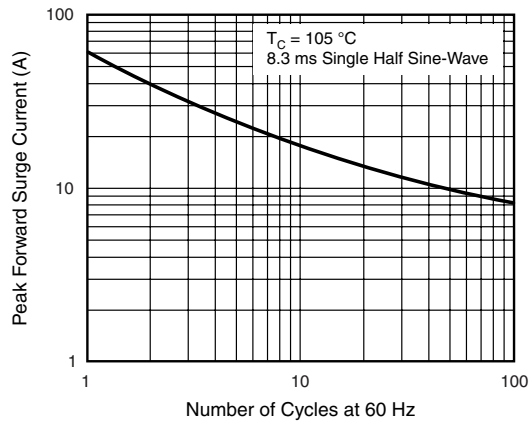


Figure 2. Maximum Non-Repetitive Peak Forward Surge Current Per Diode

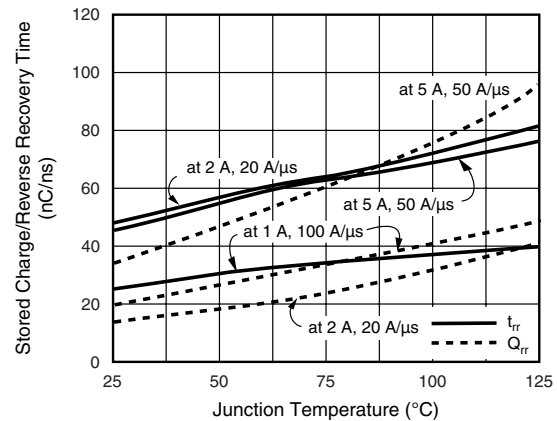


Figure 5. Reverse Switching Characteristics Per Diode

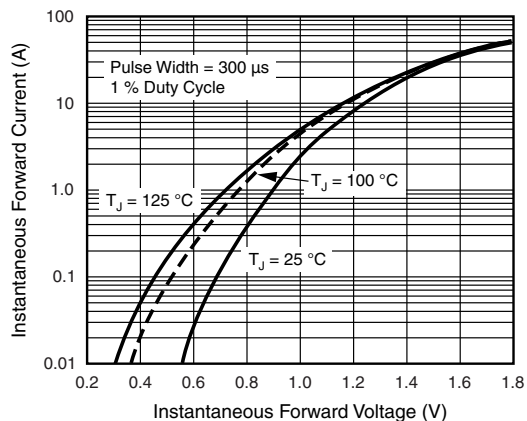


Figure 3. Typical Instantaneous Forward Characteristics Per Diode

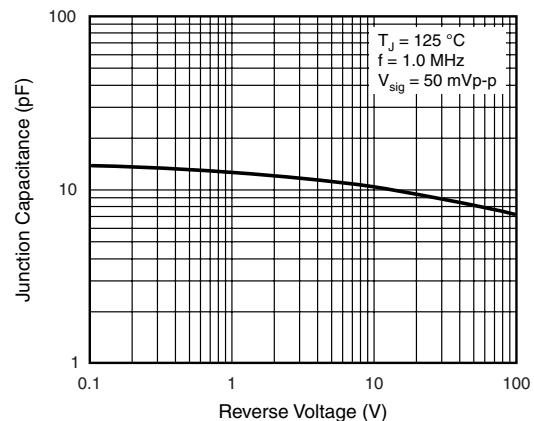


Figure 6. Typical Junction Capacitance Per Diode

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

Technical drawing of a 3-pin connector. The drawing shows a top view and a side view. The top view includes dimensions for the overall width (0.415 (10.54) MAX.), the distance between the pins (0.370 (9.40) and 0.360 (9.14)), the pin diameter (0.154 (3.91) and 0.148 (3.74)), the pin spacing (0.113 (2.87) and 0.103 (2.62)), and the pin length (0.635 (16.13) and 0.625 (15.87)). The side view shows the pin height (0.185 (4.70), 0.175 (4.44), 0.055 (1.39), and 0.045 (1.14)), the pin diameter (0.145 (3.68) and 0.135 (3.43)), the pin length (0.350 (8.89) and 0.330 (8.38)), the pin spacing (0.603 (15.32) and 0.573 (14.55)), the pin height (0.110 (2.79) and 0.100 (2.54)), the pin length (0.560 (14.22) and 0.530 (13.46)), the pin diameter (0.022 (0.56) and 0.014 (0.36)), and the pin length (0.105 (2.67), 0.095 (2.41), 0.104 (2.65), and 0.096 (2.45)). The bottom view shows the pin length (0.160 (4.06) and 0.140 (3.56)), the pin diameter (0.057 (1.45) and 0.045 (1.14)), the pin length (0.105 (2.67) and 0.095 (2.41)), the pin diameter (0.104 (2.65) and 0.096 (2.45)), the pin length (0.035 (0.90) and 0.028 (0.70)), the pin diameter (0.205 (5.20) and 0.195 (4.95)), and the pin length (0.022 (0.56) and 0.014 (0.36)).

[illegible][illegible]

Technical drawing of a rectangular plate with dimensions in inches and millimeters:

- Overall width: 0.42 (10.66) MIN.
- Overall height: 0.33 (8.38) MIN.
- Top edge thickness: 0.670 (17.02) and 0.591 (15.00)
- Bottom edge thickness: 0.15 (3.81) MIN.
- Left edge thickness: 0.08 (2.032) MIN.
- Right edge thickness: 0.105 (2.67) and 0.095 (2.41)



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