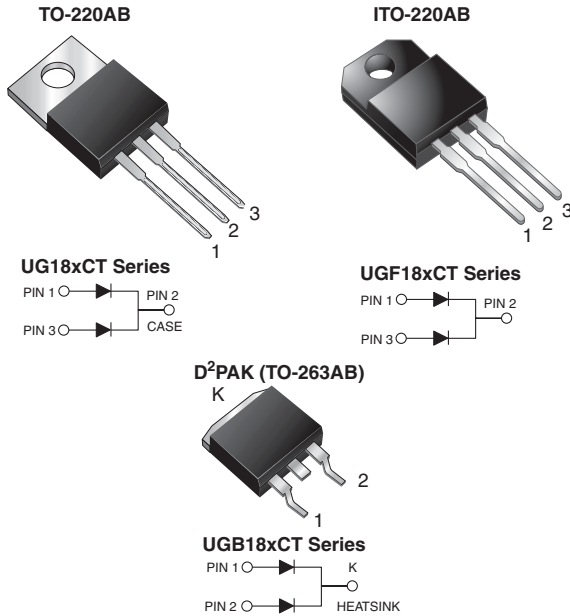




**THE DATASHEET OF
UGB18DCT-E3/81**



Dual Common Cathode Ultrafast Plastic Rectifier



FEATURES

- Power pack
- Glass passivated pellet 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-020, LF maximum peak of 245 °C (for TO-263AB package)
- Solder dip 275 °C max., 10 s per JESD 22-B106 (for TO-220AB and ITO-220AB package)
- AEC-Q101 qualified available
 - Automotive ordering code: base P/NHE3 (for ITO-220AB and D²PAK (TO-263AB package))
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912



RoHS
COMPLIANT

TYPICAL APPLICATIONS

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

DESIGN SUPPORT TOOLS AVAILABLE



3D Models

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	18 A
V_{RRM}	50 V to 200 V
I_{FSM}	175A
t_{rr}	20 ns
V_F	0.95 V
T_J max.	150 °C
Package	TO-220AB, ITO-220AB, D ² PAK (TO-263AB)
Circuit configuration	Common cathode

MECHANICAL DATA

Case: TO-220AB, ITO-220AB, D²PAK (TO-263AB)

Molding compound meets UL 94V-0 flammability rating Base P/N-E3 - RoHS-compliant, commercial grade Base P/NHE3_X - RoHS-compliant and AEC-Q101 qualified (“_X” denotes revision code e.g. A, B,...)

Terminals: matte tin plated leads, solderable per J-STD-002 and JESD22-B102

E3 suffix meets JESD 201 class 1A whisker test, HE3 suffix meets JESD 201 class 2 whisker test

Polarity: as marked

Mounting Torque: 10 in-lbs maximum

MAXIMUM RATINGS ($T_C = 25\text{ °C}$ unless otherwise noted)						
PARAMETER	SYMBOL	UG18ACT	UG18BCT	UG18CCT	UG18DCT	UNIT
Max. repetitive peak reverse voltage	V_{RRM}	50	100	150	200	V
Max. RMS voltage	V_{RMS}	35	70	105	140	V
Max. DC blocking voltage	V_{DC}	50	100	150	200	V
Max. average forward rectified current at $T_C = 105\text{ °C}$	$I_{F(AV)}$	18				A
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode	I_{FSM}	175				A
Operating junction and storage temperature range	T_J, T_{STG}	-65 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	UG18ACT	UG18BCT	UG18CCT	UG18DCT	UNIT
Max. instantaneous forward voltage per diode ⁽¹⁾	9.0 A	$T_J = 100\text{ }^\circ\text{C}$	V_F	1.1			V	
	20 A			1.2				
	5.0 A			0.95				
Max. DC reverse current at rated DC blocking voltage per diode	$T_A = 25\text{ }^\circ\text{C}$		I_R	10			μA	
	$T_A = 100\text{ }^\circ\text{C}$			300				
Max. 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}	20			ns	
Max. reverse recovery time per diode	$I_F = 9.0\text{ A}, V_R = 30\text{ V},$ $di/dt = 50\text{ A}/\mu\text{s},$ $I_{rr} = 10\% I_{RM}$	$T_J = 25\text{ }^\circ\text{C}$	t_{rr}	30			ns	
		$T_J = 100\text{ }^\circ\text{C}$		50				
Max. stored charge per diode	$I_F = 9.0\text{ A}, V_R = 30\text{ V},$ $di/dt = 50\text{ A}/\mu\text{s},$ $I_{rr} = 10\% I_{RM}$	$T_J = 25\text{ }^\circ\text{C}$	Q_{rr}	20			nC	
		$T_J = 100\text{ }^\circ\text{C}$		45				
Typical junction capacitance per diode	at 4.0 V, 1 MHz		C_J	30			pF	

Notes

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

THERMAL CHARACTERISTICS ($T_C = 25\text{ }^\circ\text{C}$ unless otherwise noted)					
PARAMETER	SYMBOL	UG18	UGF18	UGB18	UNIT
Typical thermal resistance from junction to case per diode	$R_{\theta JC}$	4.0	6.0	4.0	$^\circ\text{C}/\text{W}$

ORDERING INFORMATION (EXAMPLE)					
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
TO-220AB	UG18DCT-E3/45	1.85	45	50/tube	Tube
ITO-220AB	UGF18DCT-E3/45	2.00	45	50/tube	Tube
TO-263AB	UGB18DCT-E3/45	1.35	45	50/tube	Tube
TO-263AB	UGB18DCT-E3/81	1.35	81	800/reel	Tape and reel
ITO-220AB	UGF18DCTHE3_A/P ⁽¹⁾	2.00	P	50/tube	Tube
TO-263AB	UGB18DCTHE3_A/P ⁽¹⁾	1.35	P	50/tube	Tube
TO-263AB	UGB18DCTHE3_A/I ⁽¹⁾	1.35	I	800/reel	Tape and reel

Note

⁽¹⁾ AEC-Q101 qualified, available in ITO-220AB and TO-263AB package



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

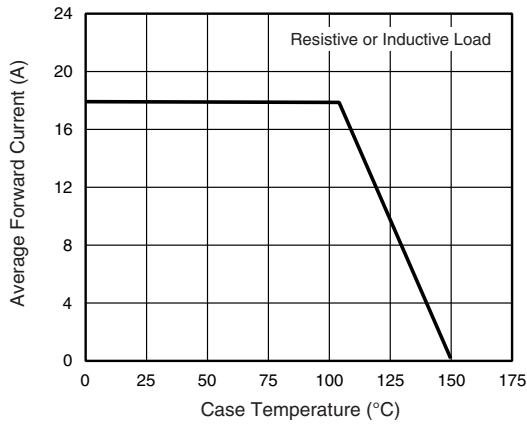


Fig. 1 - Forward Current Derating Curve

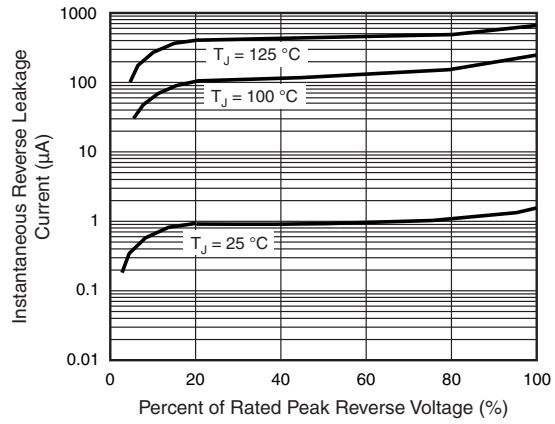


Fig. 4 - Typical Reverse Leakage Characteristics Per Diode

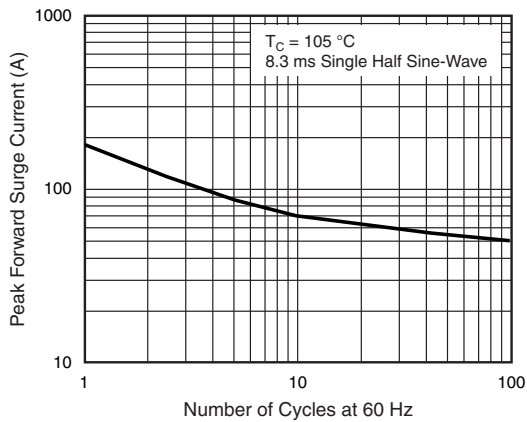


Fig. 2 - Max. Non-Repetitive Peak Forward Surge Current Per Diode

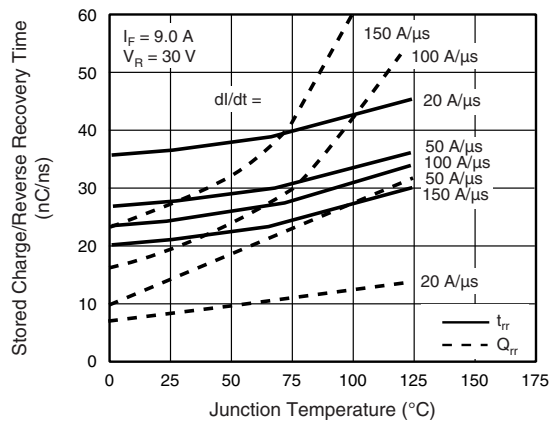


Fig. 5 - Reverse Switching Characteristics Per Diode

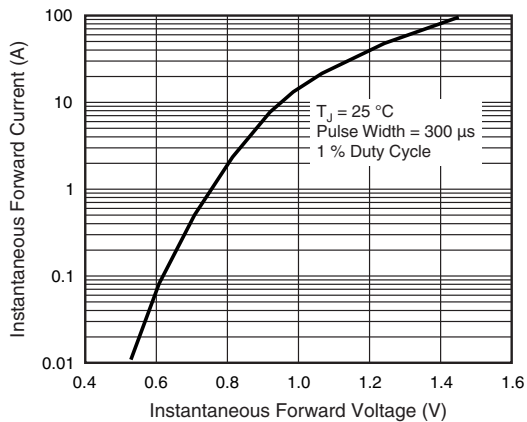


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

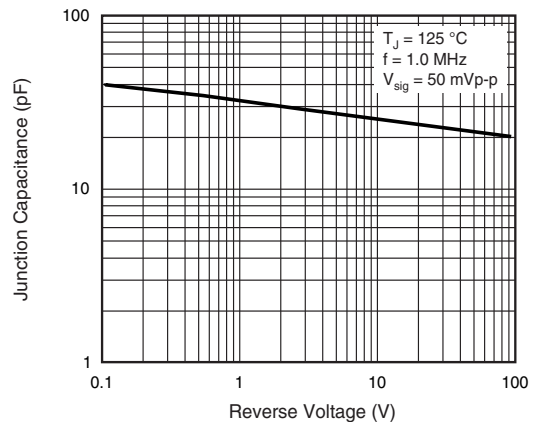
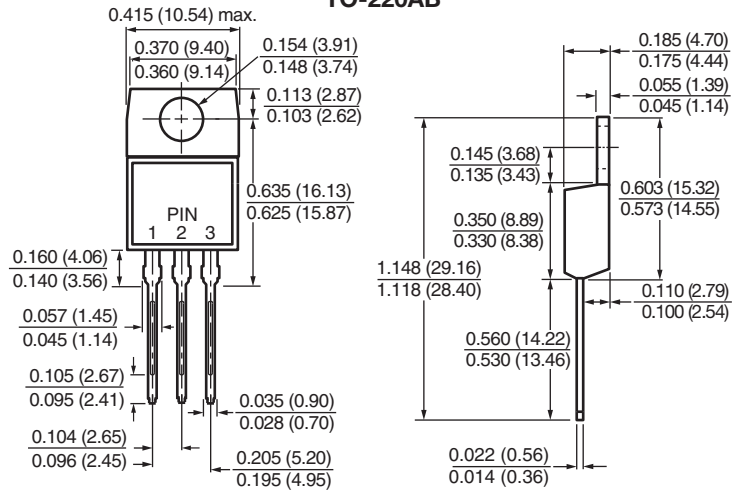


Fig. 6 - Typical Junction Capacitance Per Diode

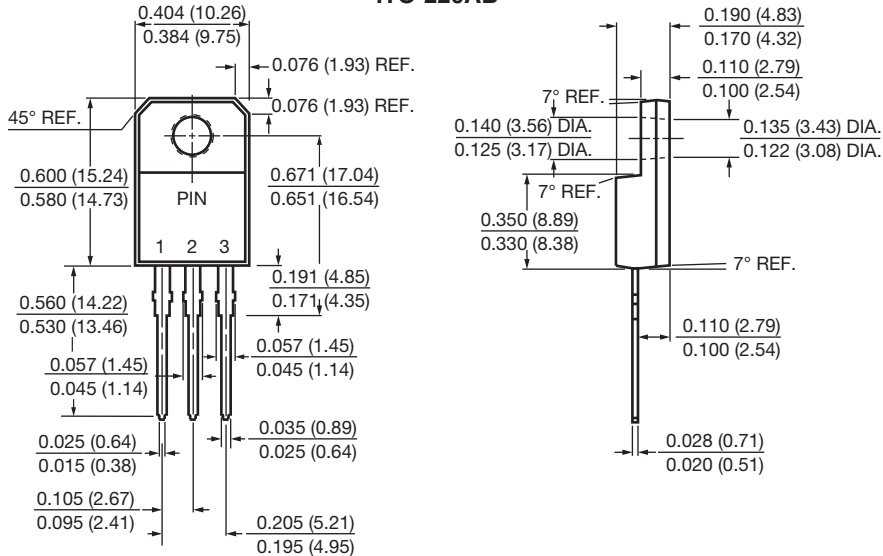


PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

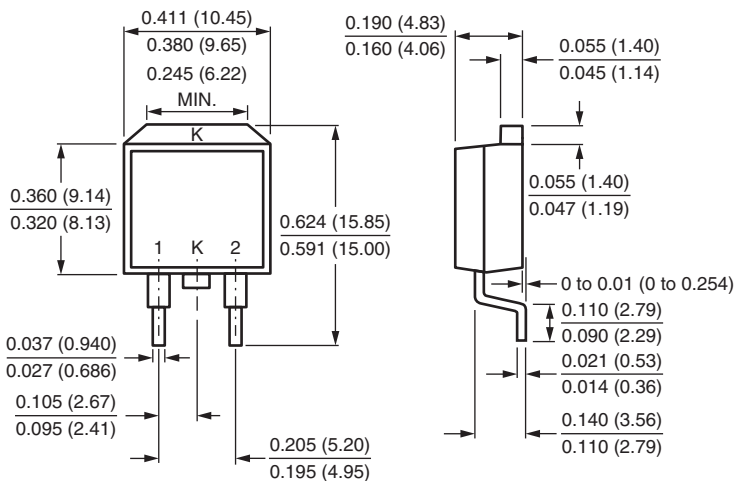
TO-220AB



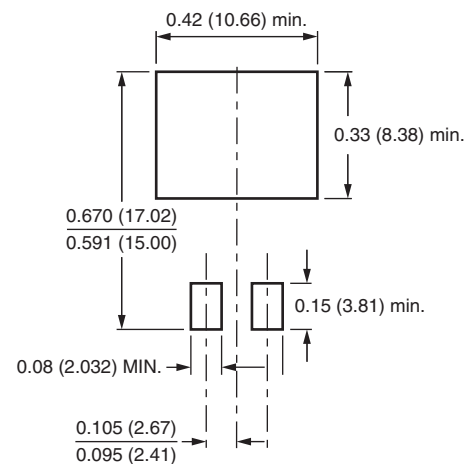
ITO-220AB



D²PAK (TO-263AB)



Mounting Pad Layout





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