

Dual Common-Cathode Ultrafast Plastic Rectifier



UGE18XCT Series
PIN 1 → PIN 2
PIN 3 → CASE

FEATURES

- Glass passivated chip junction
- Ultrafast recovery time
- Low switching losses, high efficiency
- Low leakage current
- High forward surge capability
- Solder dip 275 °C max. 10 s, per JESD 22-B106
- 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.

MECHANICAL DATA

Case: TO-220AB

Molding compound meets UL 94 V-0 flammability rating
Base P/N-E3 - RoHS-compliant, commercial grade

Terminals: Matte tin plated leads, solderable per J-STD-002 and JESD 22-B102

E3 suffix meets JESD 201 class 1A whisker test

Polarity: As marked

Mounting Torque: 10 in-lbs maximum

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	18 A
V_{RRM}	50 V to 200 V
I_{FSM}	175 A
t_{rr}	20 ns
V_F	0.95 V
T_J max.	150 °C

MAXIMUM RATINGS ($T_A = 25$ °C unless otherwise noted)						
PARAMETER	SYMBOL	UGE18ACT	UGE18BCT	UGE18CCT	UGE18DCT	UNIT
Maximum repetitive peak reverse voltage	V_{RRM}	50	100	150	200	V
Maximum RMS voltage	V_{RMS}	35	70	105	140	V
Maximum DC blocking voltage	V_{DC}	50	100	150	200	V
Maximum average forward rectified current at $T_C = 105$ °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 and storage temperature range	T_J, T_{STG}	- 65 to + 150				°C

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted)										
PARAMETER	TEST CONDITIONS		SYMBOL	UGE18ACT	UGE18BCT	UGE18CCT	UGE18DCT	UNIT		
Maximum instantaneous forward voltage per diode	9.0 A	$T_A = 25^\circ\text{C}$	V_F ⁽¹⁾	1.1		V		V		
	20.0 A			1.2						
	5.0 A	$T_J = 100^\circ\text{C}$		0.95						
Maximum DC reverse current at rated DC blocking voltage per diode		$T_A = 25^\circ\text{C}$	I_R ⁽²⁾	10		μA		μA		
		$T_A = 100^\circ\text{C}$		300						
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}		20		ns		ns		
Typical reverse recovery time per diode	$I_F = 9.0 \text{ A}, V_R = 30 \text{ V}, \frac{dI}{dt} = 50 \text{ A}/\mu\text{s}, I_{rr} = 10\% I_{RM}$	$T_J = 25^\circ\text{C}$	t_{rr}	30		ns		ns		
		$T_J = 100^\circ\text{C}$		50						
Typical stored charge per diode	$I_F = 9.0 \text{ A}, V_R = 30 \text{ V}, \frac{dI}{dt} = 50 \text{ A}/\mu\text{s}, I_{rr} = 10\% I_{RM}$	$T_J = 25^\circ\text{C}$	Q_{rr}	20		nC		nC		
		$T_J = 100^\circ\text{C}$		45						
Typical junction capacitance per diode	4.0 V, 1 MHz	C_J		30		pF		pF		

Notes

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

(2) Pulse test: Pulse width $\leq 40 \text{ ms}$

THERMAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted)							
PARAMETER	SYMBOL	UGE18ACT	UGE18BCT	UGE18CCT	UGE18DCT	UNIT	
Typical thermal resistance	per diode	$R_{\theta JC}$	4.0		$^\circ\text{C}/\text{W}$		$^\circ\text{C}/\text{W}$
	per device	$R_{\theta JA}$ ⁽¹⁾	50				

Note

(1) The heat generated must be less than the thermal conductivity from junction-to-ambient: $dP_D/dT_J < 1/R_{\theta JA}$

ORDERING INFORMATION (Example)					
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
TO-220AB	UGE18DCT-E3/45	1.92	45	50/tube	Tube

RATINGS AND CHARACTERISTICS CURVES

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

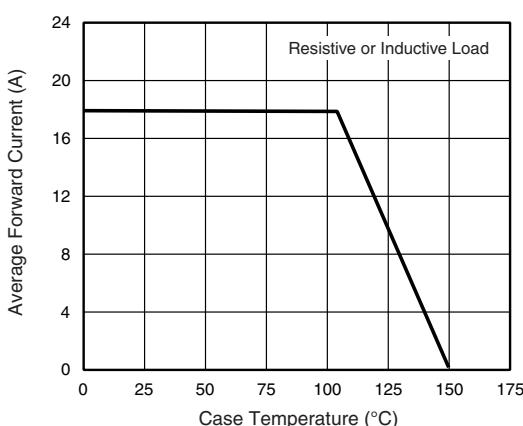


Fig. 1 - Forward Current Derating Curve

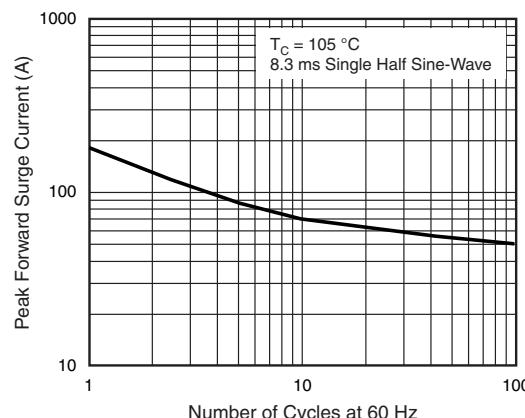


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current Per Diode

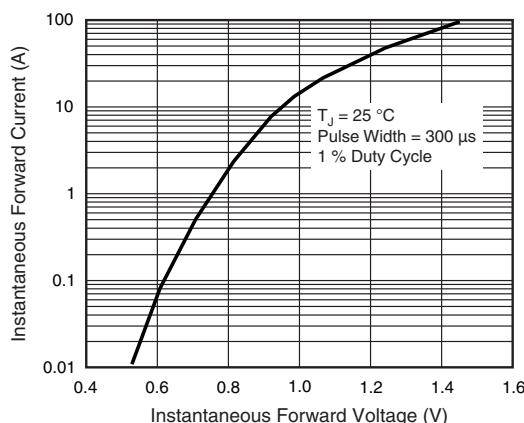


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

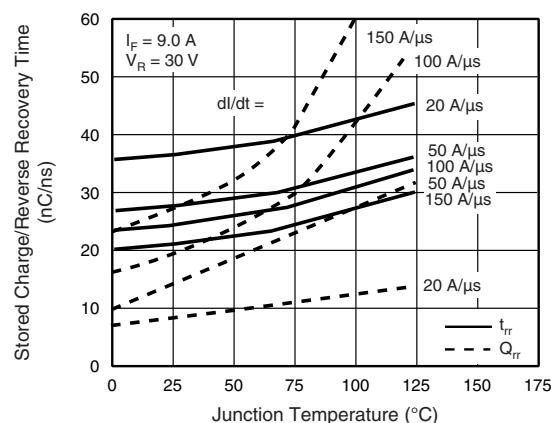


Fig. 5 - Reverse Switching Characteristics Per Diode

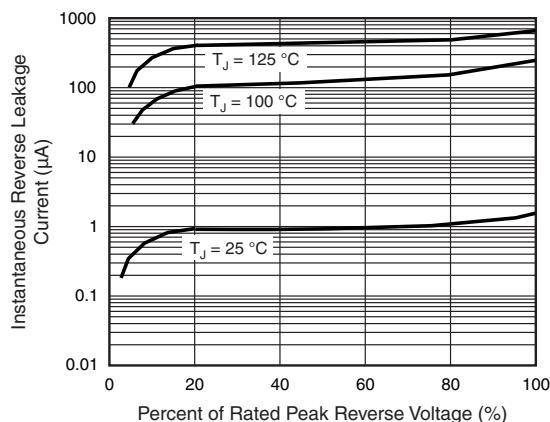


Fig. 4 - Typical Reverse Characteristics Per Diode

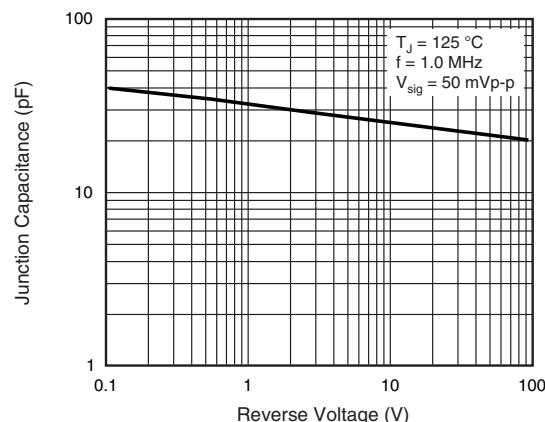
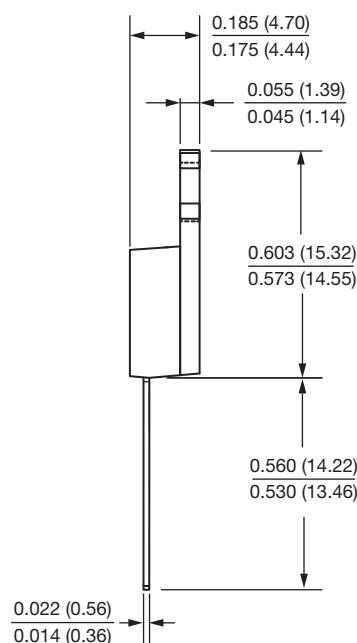
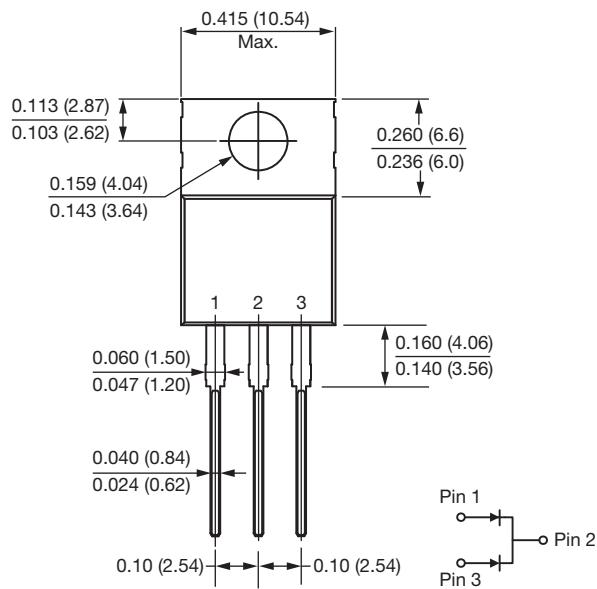


Fig. 6 - Typical Junction Capacitance Per Diode

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)



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