



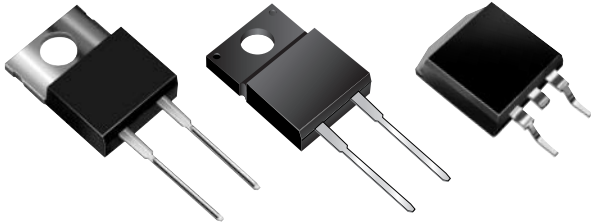
# UG12JT, UGF12JT, UGB12JT Series

New Product

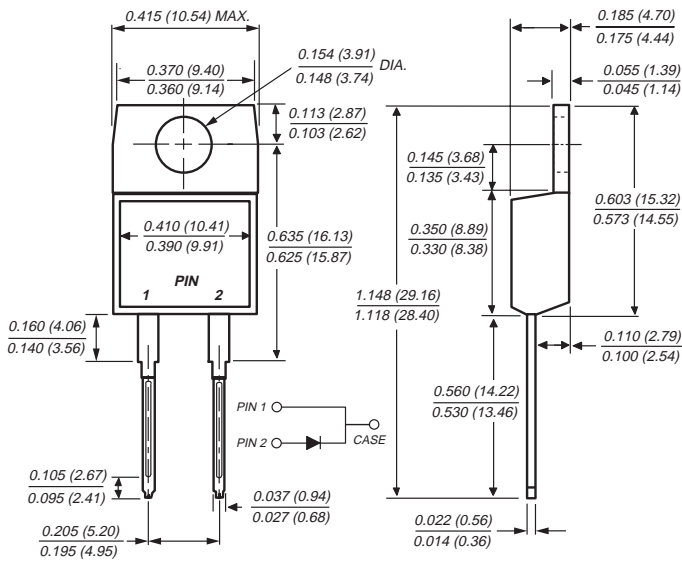
Vishay Semiconductors  
formerly General Semiconductor

## Ultrafast Rectifiers

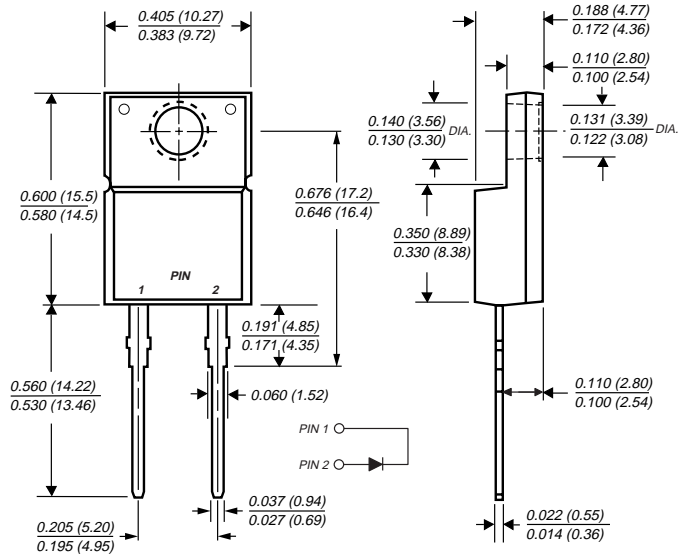
Reverse Voltage 500 to 600V  
Forward Current 12A  
Reverse Recovery Time 30ns



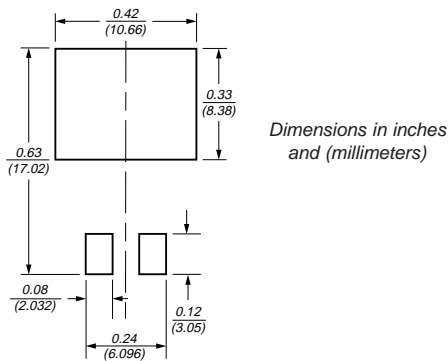
### TO-220AC (UG12 Series)



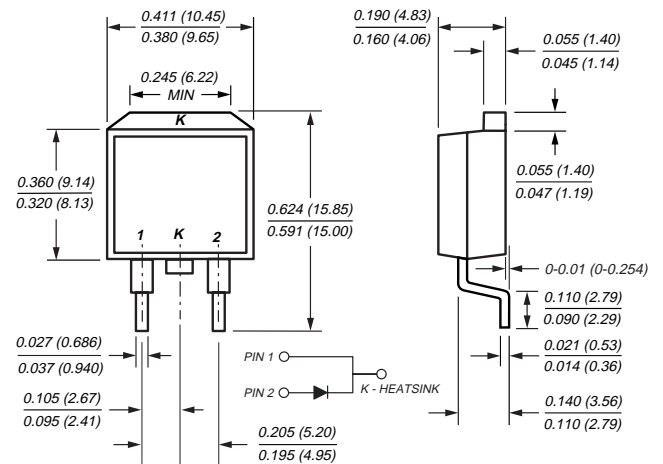
### ITO-220AC (UGF12 Series)



### Mounting Pad Layout TO-263AB



### TO-263AB (UGB12 Series)



## Features

- Plastic package has Underwriters Laboratories Flammability Classification 94V-0
- Ideally suited for freewheeling diode and power factor correction applications
- Soft recovery characteristics
- Excellent high temperature switching
- Optimized to reduce switching losses
- Glass passivated chip junction

## Mechanical Data

**Case:** JEDEC TO-220AC, ITO-220AC & TO-263AB molded plastic body

**Terminals:** Plated leads, solderable per MIL-STD-750, Method 2026

High temperature soldering in accordance with CECC 802 / Reflow guaranteed

**Polarity:** As marked

**Mounting Position:** Any

**Mounting Torque:** 10 in-lbs maximum

**Weight:** 0.08 oz., 2.24 g

# UG12JT, UGF12JT, UGB12JT Series



Vishay Semiconductors  
formerly General Semiconductor

## Maximum Ratings (T<sub>C</sub> = 25°C unless otherwise noted)

Parameter	Symbol	UG12HT	UG12JT	Unit
Maximum repetitive peak reverse voltage	V <sub>RRM</sub>	500	600	V
Maximum working reverse voltage	V <sub>RWM</sub>	400	480	V
Maximum RMS voltage	V <sub>RMS</sub>	350	420	V
Maximum DC blocking voltage	V <sub>DC</sub>	500	600	V
Maximum average forward rectified current	I <sub>F(AV)</sub>	12		A
Peak forward surge current 8.3ms single half sine-wave superimposed on rated load (JEDEC Method)	I <sub>FSM</sub>	135		A
Operating junction and storage temperature range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150		°C
RMS Isolation voltage (UGF types only) from terminals to heatsink with t = 1.0 second, RH ≤ 30%	V <sub>ISOL</sub>	4500 <sup>(1)</sup> 3500 <sup>(2)</sup> 1500 <sup>(3)</sup>		V

## Electrical Characteristics (T<sub>C</sub> = 25°C unless otherwise noted)

Parameter	Symbol	UG12HT	UG12JT	Unit
Maximum instantaneous forward voltage <sup>(4)</sup> I <sub>F</sub> = 12A, T <sub>J</sub> = 25°C I <sub>F</sub> = 12A, T <sub>J</sub> = 125°C	V <sub>F</sub>	1.75 1.50		V
Maximum DC reverse current at V <sub>RWM</sub> T <sub>J</sub> = 25°C T <sub>J</sub> = 100°C T <sub>J</sub> = 125°C	I <sub>R</sub>	30 800 4.0		μA μA mA
Maximum reverse recovery time at I <sub>F</sub> = 0.5A, I <sub>R</sub> = 1.0A, I <sub>rr</sub> = 0.25A	t <sub>rr</sub>	30		ns
Maximum reverse recovery time at I <sub>F</sub> = 1.0A, di/dt = 50A/μs, V <sub>R</sub> = 30V, I <sub>rr</sub> = 0.1 I <sub>RM</sub>	t <sub>rr</sub>	50		ns
Typical softness factor (t <sub>b</sub> /t <sub>a</sub> ) I <sub>F</sub> = 12A, di/dt = 240A/μs, V <sub>R</sub> = 400V, I <sub>rr</sub> = 0.1 I <sub>RM</sub>	S	0.9		—
Maximum reverse recovery current at I <sub>F</sub> = 12A, di/dt = 96A/μs, V <sub>R</sub> = 400V, T <sub>C</sub> = 125°C	I <sub>RM</sub>	7.5		A
Peak forward recovery time at I <sub>F</sub> = 12A, di/dt = 96A/μs, V <sub>F</sub> = 1.1V	t <sub>fr</sub>	500		ns

## Thermal Characteristics (T<sub>C</sub> = 25°C unless otherwise noted)

Parameter	Symbol	UG12	UGF12	UGB12	Unit
Typical thermal resistance from junction to case	R <sub>θJC</sub>	1.73	3.04	1.73	°C/W

- Notes:** (1) Clip mounting (on case), where lead does not overlap heatsink with 0.110" offset  
(2) Clip mounting (on case), where leads do overlap heatsink  
(3) Screw mounting with 4-40 screw, where washer diameter is ≤ 4.9 mm (0.19")  
(4) Pulse test: 300μs pulse width, 1% duty cycle

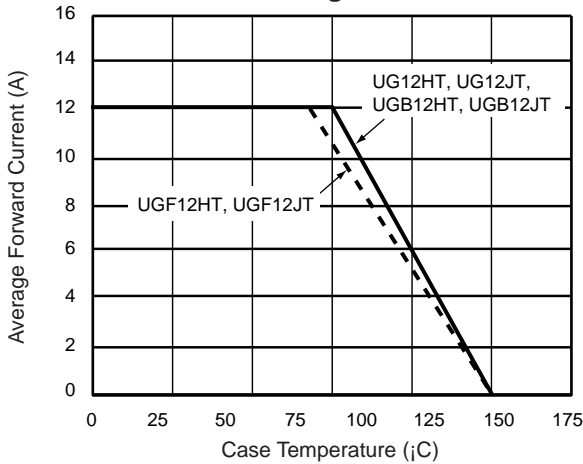
## Ordering Information

Product	Case	Package Code	Package Option
UG12HT & UG12JT	TO-220AC	45	Anti-Static tube, 50/tube, 2K/carton
UGF12HT & UGF12JT	ITO-220AC	45	Anti-Static tube, 50/tube, 2K/carton
UGB12HT & UGB12JT	TO-263AB	31	13" reel, 800/reel, 4.8K/carton
		45	Anti-Static tube, 50/tube, 2K/carton
		81	Anti-Static 13" reel, 800/reel, 4.8K/carton

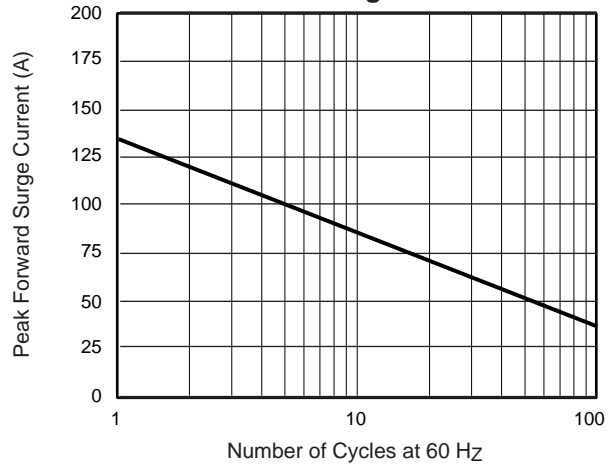


## Ratings and Characteristic Curves ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

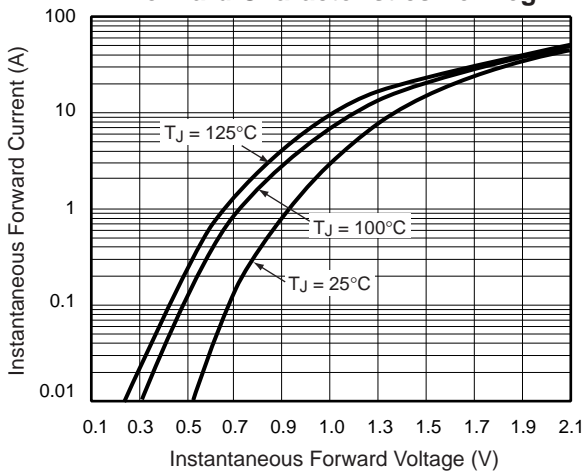
**Fig. 1 – Forward Current Derating Curve**



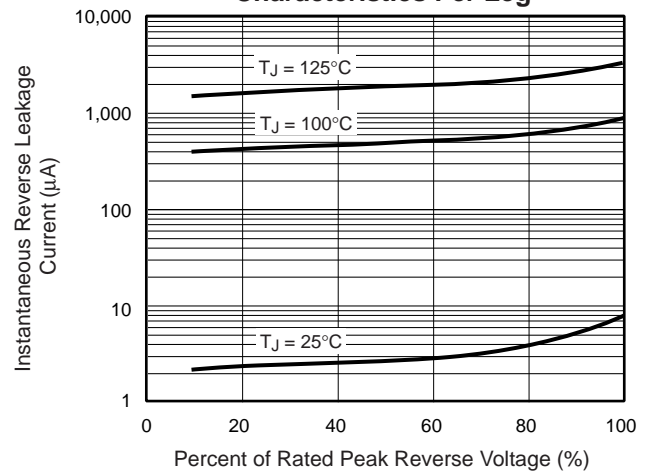
**Fig. 2 – Maximum Non-Repetitive Peak Forward Surge Current**



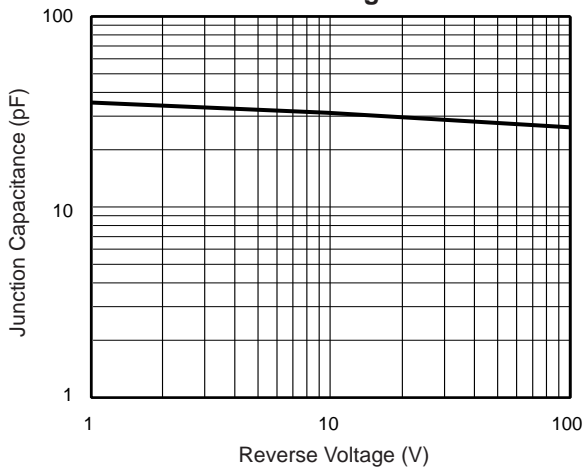
**Fig. 3 – Typical Instantaneous Forward Characteristics Per Leg**



**Fig. 4 – Typical Reverse Leakage Characteristics Per Leg**



**Fig. 5 – Typical Junction Capacitance Per Leg**



**Fig. 6 – Reverse Switching Characteristics Per Leg**

