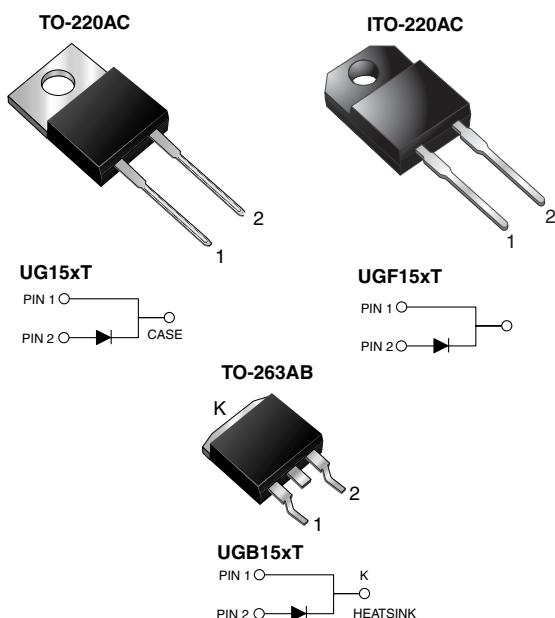




UG(F,B)15HT & UG(F,B)15JT

Vishay General Semiconductor

High Voltage Ultrafast Rectifier



FEATURES

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



RoHS
COMPLIANT

TYPICAL APPLICATIONS

For use in high voltage, high frequency power factor correctors, switching mode power supplies, freewheeling diodes and secondary dc-to-dc rectification application.

PRIMARY CHARACTERISTICS

$I_{F(AV)}$	15 A
V_{RRM}	500 V, 600 V
I_{FSM}	135 A
t_{rr}	35 ns
V_F	1.5 V
$T_J \text{ max.}$	150 °C

MECHANICAL DATA

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

Epoxy meets UL 94V-0 flammability rating

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

E3 suffix for consumer 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

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

PARAMETER	SYMBOL	UG15HT	UG15JT	UNIT
Maximum repetitive peak reverse voltage	V_{RRM}	500	600	V
Maximum working reverse voltage	V_{RWM}	400	480	V
Maximum RMS voltage	V_{RMS}	350	420	V
Maximum DC blocking voltage	V_{DC}	500	600	V
Maximum average forward rectified current (Fig. 1)	$I_{F(AV)}$	15		A
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I_{FSM}	135		A
Operating junction and storage temperature range	T_J, T_{STG}	- 55 to + 150		°C
Isolation voltage (ITO-220AC only) from terminal to heatsink $t = 1 \text{ min}$	V_{AC}	1500		V

UG(F,B)15HT & UG(F,B)15JT

Vishay General Semiconductor



ELECTRICAL CHARACTERISTICS ($T_C = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)					
PARAMETER	TEST CONDITIONS		SYMBOL	UG15HT	UG15JT
Maximum instantaneous forward voltage ⁽¹⁾	$I_F = 15\text{ A}$	$T_J = 25\text{ }^{\circ}\text{C}$ $T_J = 125\text{ }^{\circ}\text{C}$	V_F	1.75 1.50	V
Maximum DC reverse current at V_{RWM}		$T_J = 25\text{ }^{\circ}\text{C}$ $T_J = 125\text{ }^{\circ}\text{C}$	I_R	30 4.0	μA mA
Maximum reverse recovery time	$I_F = 0.5\text{ A}$, $I_R = 1.0\text{ A}$, $I_{rr} = 0.25\text{ A}$		t_{rr}	35	ns
Maximum reverse recovery time	$I_F = 1.0\text{ A}$, $dI/dt = 50\text{ A}/\mu\text{s}$, $V_R = 30\text{ V}$, $I_{rr} = 0.1\text{ I}_{RM}$		t_{rr}	50	ns
Typical softness factor (t_b/t_a)	$I_F = 15\text{ A}$, $dI/dt = 240\text{ A}/\mu\text{s}$, $V_R = 400\text{ V}$, $I_{rr} = 0.1\text{ I}_{RM}$		S	0.9	-
Maximum reverse recovery current	$I_F = 15\text{ A}$, $dI/dt = 120\text{ A}/\mu\text{s}$, $V_R = 400\text{ V}$, $T_C = 125\text{ }^{\circ}\text{C}$		I_{RM}	9.0	A
Peak forward recovery time	$I_F = 15\text{ A}$, $dI/dt = 120\text{ A}/\mu\text{s}$, $V_F = 1.1 \times V_{F\text{ max.}}$		t_{fr}	500	ns

THERMAL CHARACTERISTICS ($T_C = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)					
PARAMETER	SYMBOL	UG15	UGF15	UGB15	UNIT
Typical thermal resistance from junction to case	$R_{\theta JC}$	1.5	3.0	1.5	$^{\circ}\text{C}/\text{W}$

Note:

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

ORDERING INFORMATION (Example)					
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
TO-220AC	UG15JT-E3/45	1.85	45	50/tube	Tube
ITO-220AC	UGF15JT-E3/45	1.98	45	50/tube	Tube
TO-263AB	UGB15JT-E3/45	1.35	45	50/tube	Tube
TO-263AB	UGB15JT-E3/81	1.35	81	800/reel	Tape and reel
TO-220AC	UG15JT-E3/45 ⁽¹⁾	1.85	45	50/tube	Tube
ITO-220AC	UGF15JT-E3/45 ⁽¹⁾	1.98	45	50/tube	Tube
TO-263AB	UGB15JT-E3/45 ⁽¹⁾	1.35	45	50/tube	Tube
TO-263AB	UGB15JT-E3/81 ⁽¹⁾	1.35	81	800/reel	Tape and reel

Note:

(1) Automotive grade AEC-Q101 qualified



RATINGS AND CHARACTERISTICS CURVES

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

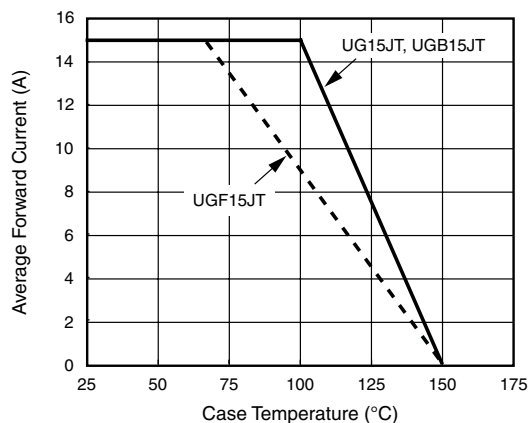


Figure 1. Forward Current Derating Curve

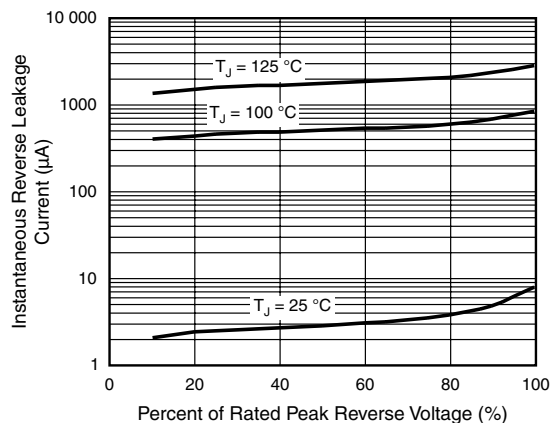


Figure 4. Typical Reverse Leakage Characteristics

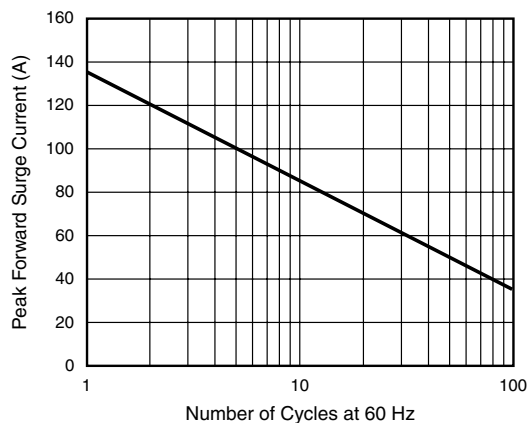


Figure 2. Maximum Non-Repetitive Peak Forward Surge Current

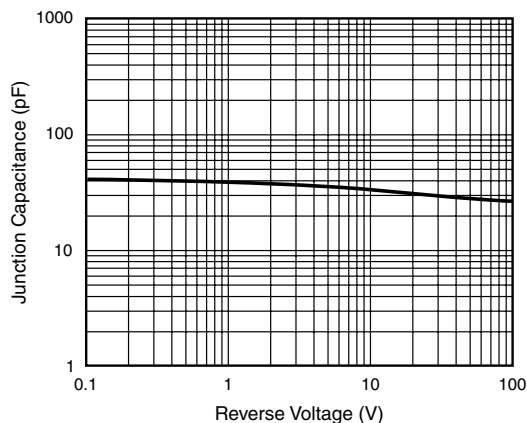


Figure 5. Typical Junction Capacitance

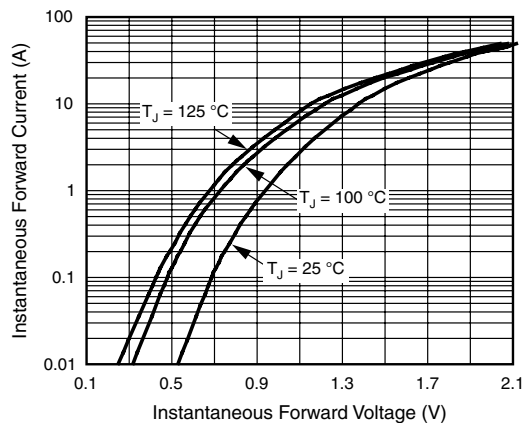


Figure 3. Typical Instantaneous Forward Characteristics

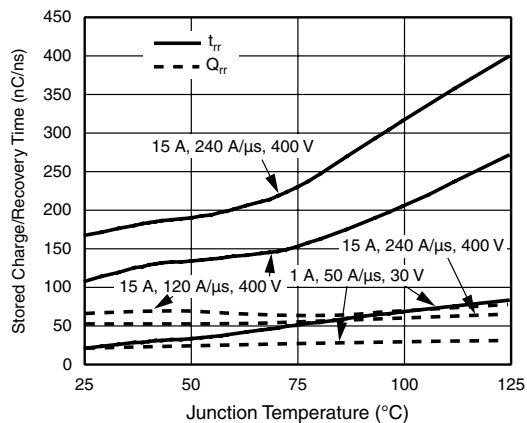


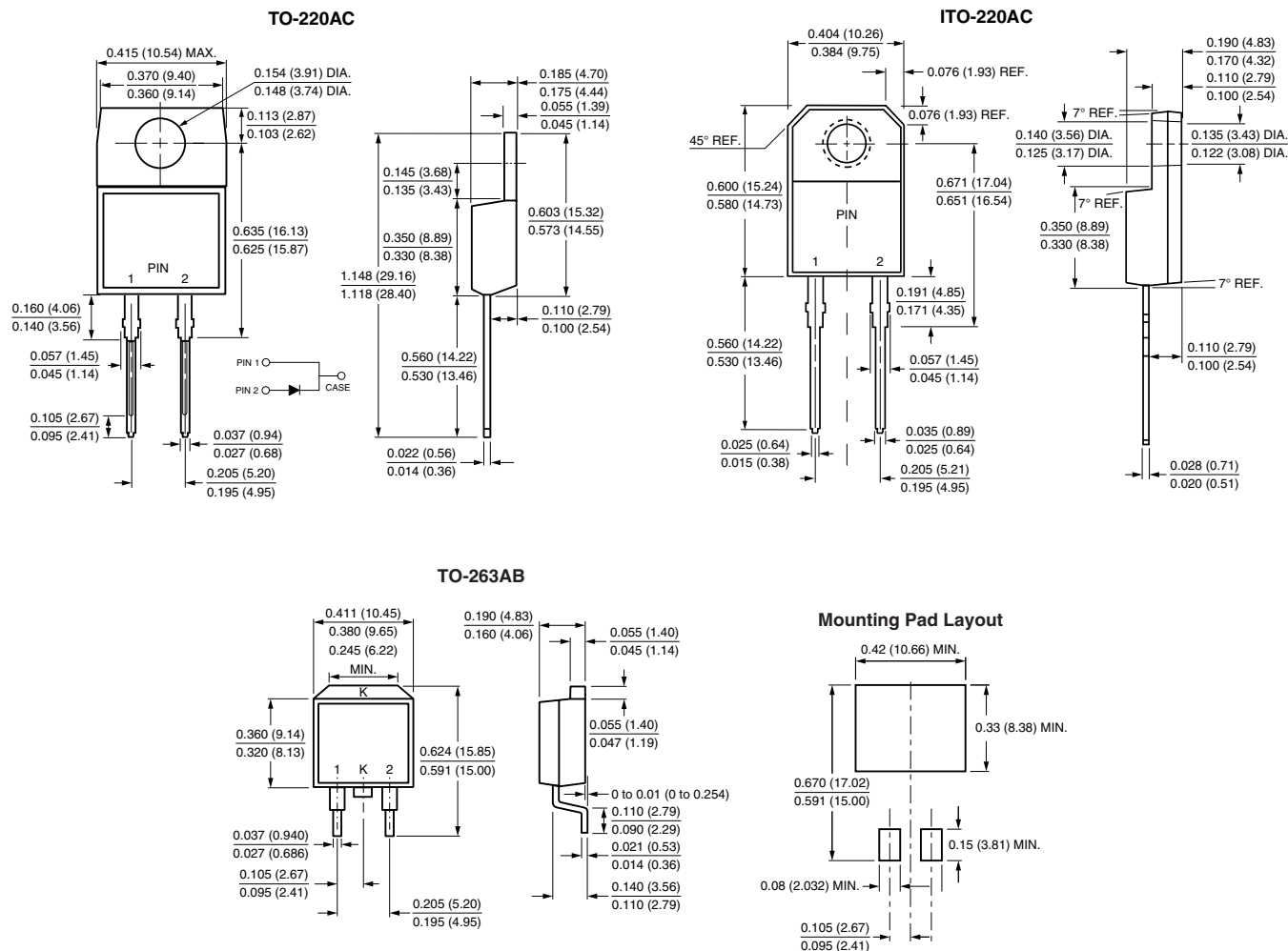
Figure 6. Reverse Switching Characteristics

UG(F,B)15HT & UG(F,B)15JT

Vishay General Semiconductor



PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





Disclaimer

All product specifications and data are subject to change without notice.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained herein or in any other disclosure relating to any product.

Vishay disclaims any and all liability arising out of the use or application of any product described herein or of any information provided herein to the maximum extent permitted by law. The product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein, which apply to these products.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications unless otherwise expressly indicated. Customers using or selling Vishay products not expressly indicated for use in such applications do so entirely at their own risk and agree to fully indemnify Vishay for any damages arising or resulting from such use or sale. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

Product names and markings noted herein may be trademarks of their respective owners.