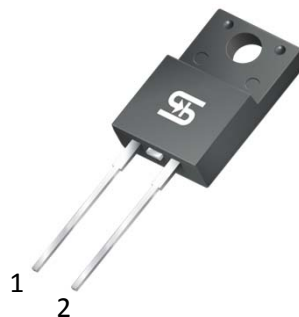


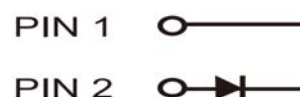
## 12A, 600V Isolated Ultrafast Rectifier

### FEATURES

- Especially suited as boost diode on continuous mode power factor correctors
- Ideal solution for hard switching condition
- High capability for high di/dt operation. Downsizing of mosfet and heatsink.
- High surge current capability
- High operation temperature to  $T_J$  175°C
- Compliant to RoHS Directive 2011/65/EU and in accordance to WEEE 2002/96/EC
- Halogen-free according to IEC 61249-2-21
- AEC-Q101 qualified (Green compound not involved)



**ITO-220AC**



### DESCRIPTION

Especially suited as free wheeling or boost diode in continuous mode power factor correctors and other power switching applications. The low stored charge and ultrafast soft recovery minimizes ringing and electrical noise in power switching circuits. The family drastically cuts losses in the associated MOSFET when run at high  $d_{IF}/dt$ .

### MECHANICAL DATA

**Case:** ITO-220AC

Molding compound, UL flammability classification rating 94V-0

Part no. with suffix "H" means AEC-Q101 qualified

Packing code with suffix "G" means green compound (halogen-free)

**Terminal:** Matte tin plated leads, solderable per JESD22-B102

Meet JESD 201 class 2 whisker test

**Polarity:** As marked

**Mounting torque:** 0.56 Nm max.

**Weight:** 1.7 g (approximately)

| MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS ( $T_A=25^\circ\text{C}$ unless otherwise noted)  |                 |              |     |                    |
|--|-----------------|--------------|-----|--------------------|
| PARAMETER  | SYMBOL          | UGF12JD      |     | UNIT               |
| Maximum repetitive peak reverse voltage  | $V_{RRM}$       | 600          |     | V                  |
| Maximum RMS voltage  | $V_{RMS}$       | 420          |     | V                  |
| Maximum DC blocking voltage  | $V_{DC}$        | 600          |     | V                  |
| Maximum average forward rectified current  | $I_{F(AV)}$     | 12           |     | A                  |
| Peak forward surge current, 8.3 ms single half sine-wave superimposed on rated load  | $I_{FSM}$       | 100          |     | A                  |
| Maximum instantaneous forward voltage (Note 1)<br>$I_F=12A$  | $V_F$           | TYP          | MAX | V                  |
|  |                 | 3.1          | -   |                    |
| Maximum reverse current @ rated $V_R$<br>$T_J=25^\circ\text{C}$<br>$T_J=125^\circ\text{C}$   | $I_R$           | 0.5          |     | $\mu\text{A}$      |
|  |                 | 100          |     |                    |
| Reverse recovery time<br>$I_F=0.5A, I_R=1A, I_{RR}=0.25A, T_J=25^\circ\text{C}$<br>$I_F=1A, dI_F/dt=-50A/\mu\text{s}, V_R=30V, T_J=25^\circ\text{C}$ | $t_{rr}$        | TYP          | MAX | ns                 |
|  |                 | 13           | 25  |                    |
|  |                 | -            | 45  |                    |
| Reverse recovery charges<br>$I_F=12A, dI_F/dt=-200A/\mu\text{s}, V_R=400V, T_J=125^\circ\text{C}$  | $Q_{rr}$        | TYP          | MAX | nC                 |
|  |                 | 90           | -   |                    |
|  |                 | $I_{RM}$     | 3.8 |                    |
| Typical thermal resistance   | $R_{\theta JC}$ | 2.4          |     | $^\circ\text{C/W}$ |
| Operating junction temperature range   | $T_J$           | - 55 to +175 |     | $^\circ\text{C}$   |
| Storage temperature range  | $T_{STG}$       | - 55 to +175 |     | $^\circ\text{C}$   |

Note 1: Pulse test with  $PW=300\mu\text{s}$ , 1% duty cycle

| ORDERING INFORMATION |                 |              |                     |           |           |
|----------------------|-----------------|--------------|---------------------|-----------|-----------|
| PART NO.             | PART NO. SUFFIX | PACKING CODE | PACKING CODE SUFFIX | PACKAGE   | PACKING   |
| UGF12JD              | H               | C0           | G                   | ITO-220AC | 50 / Tube |

| EXAMPLE     |          |                 |              |                     |                    |
|-------------|----------|-----------------|--------------|---------------------|--------------------|
| EXAMPLE P/N | PART NO. | PART NO. SUFFIX | PACKING CODE | PACKING CODE SUFFIX | DESCRIPTION        |
| UGF12JDHC0  | UGF12JD  | H               | C0           |                     | AEC-Q101 qualified |

**RATINGS AND CHARACTERISTICS CURVES**

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

FIG.1 FORWARD CURRENT DERATING CURVE

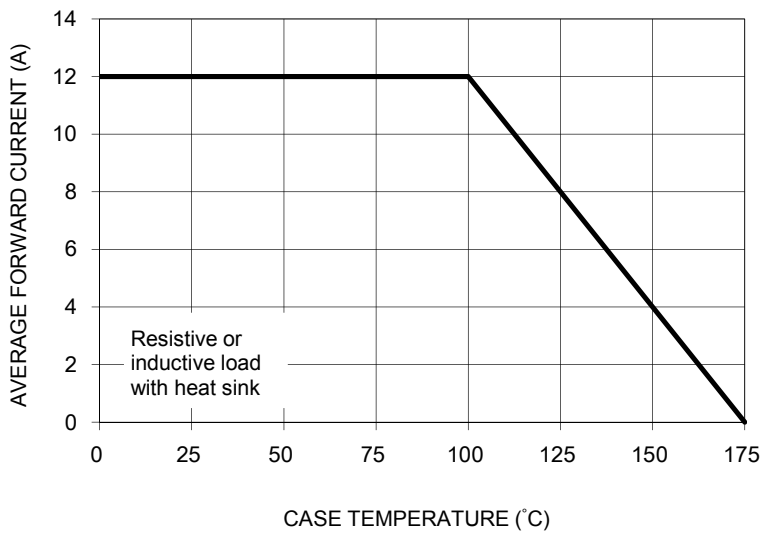


FIG. 2 TYPICAL REVERSE CHARACTERISTICS

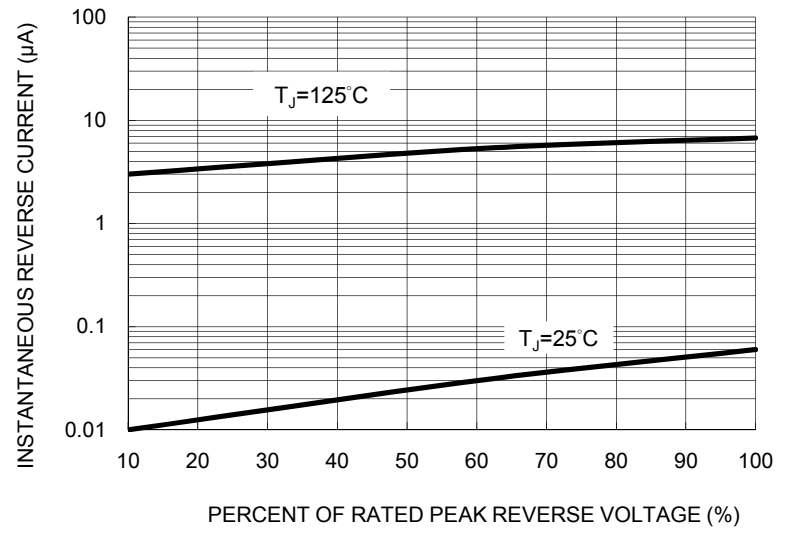


FIG. 3 MAXIMUM NON-REPETITIVE FORWARD SURGE CURRENT

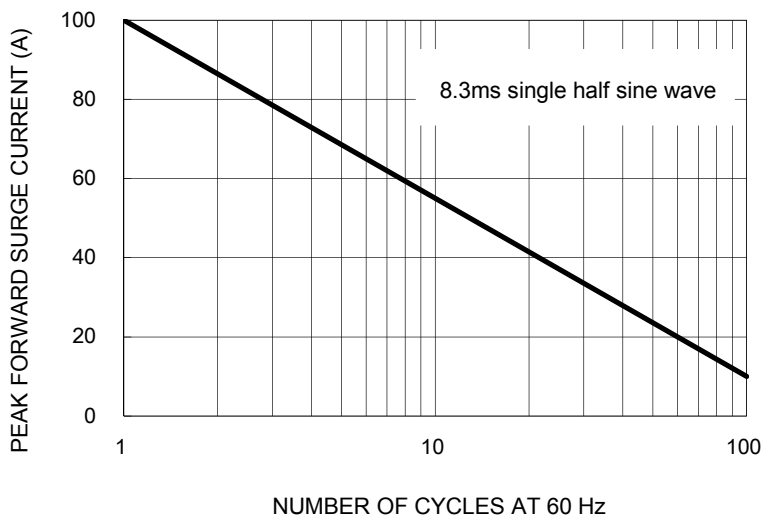


FIG. 4 TYPICAL FORWARD CHARACTERISTICS

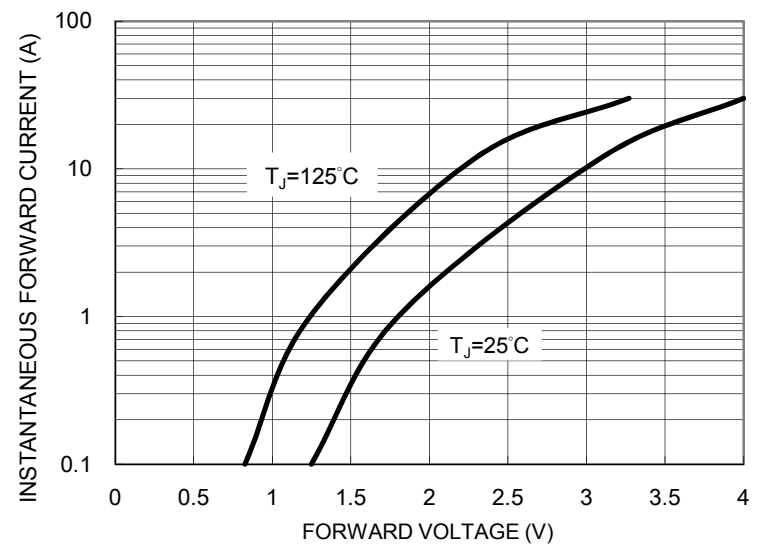
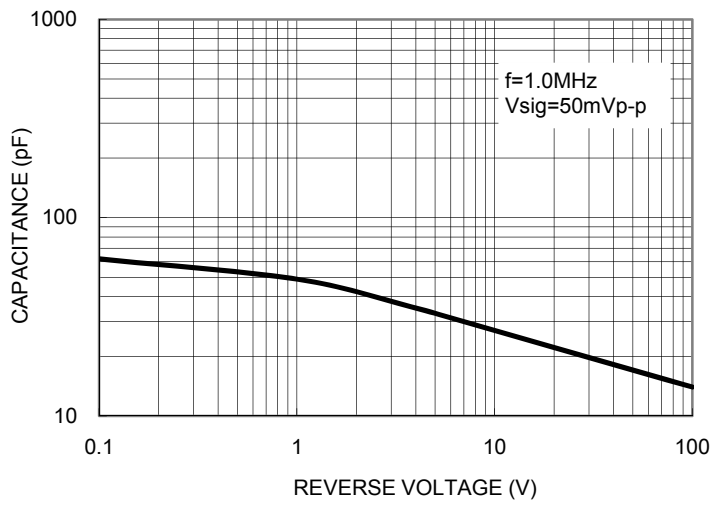
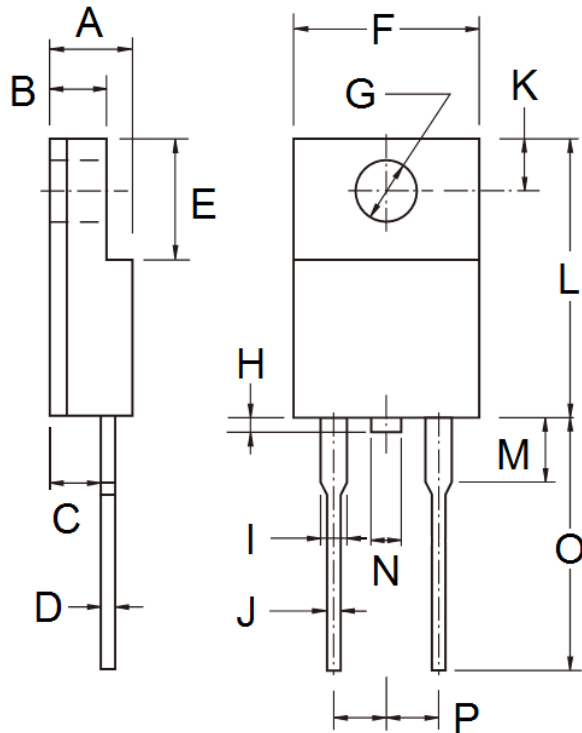


FIG. 5 TYPICAL JUNCTION CAPACITANCE



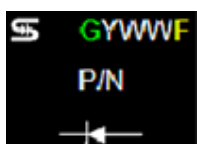
PACKAGE OUTLINE DIMENSIONS

ITO-220AC



| DIM. | Unit (mm) |       | Unit (inch) |       |
|------|-----------|-------|-------------|-------|
|      | Min       | Max   | Min         | Max   |
| A    | 4.30      | 4.70  | 0.169       | 0.185 |
| B    | 2.50      | 3.10  | 0.098       | 0.122 |
| C    | 2.30      | 2.90  | 0.091       | 0.114 |
| D    | 0.46      | 0.76  | 0.018       | 0.030 |
| E    | 6.30      | 6.90  | 0.248       | 0.272 |
| F    | 9.60      | 10.30 | 0.378       | 0.406 |
| G    | 3.00      | 3.40  | 0.118       | 0.134 |
| H    | 0.00      | 1.60  | 0.000       | 0.063 |
| I    | 0.95      | 1.45  | 0.037       | 0.057 |
| J    | 0.50      | 0.90  | 0.020       | 0.035 |
| K    | 2.40      | 3.20  | 0.094       | 0.126 |
| L    | 14.80     | 15.50 | 0.583       | 0.610 |
| M    | -         | 4.10  | -           | 0.161 |
| N    | -         | 1.80  | -           | 0.071 |
| O    | 12.60     | 13.80 | 0.496       | 0.543 |
| P    | 4.95      | 5.20  | 0.195       | 0.205 |

MARKING DIAGRAM



- P/N = Specific Device Code
- G = Green Compound
- YWW = Date Code
- F = Factory Code

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