

## 15A, 1200V High Efficient Rectifier

### FEATURES

- AEC-Q101 qualified available
- High junction temperature up to 175°C
- Negligible leakage sustain the high operation temperature
- Very low stored charge and its soft recovery minimize ringing and electrical noise to reduce power loss in associated MOSFET or IGBT
- High capability for high di/dt operation.
- High surge current capability
- RoHS Compliant
- Halogen-free according to IEC 61249-2-21

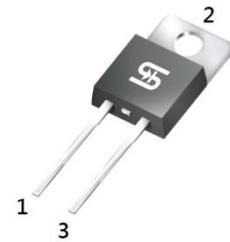
### APPLICATIONS

- DC to DC converter
- Switching mode converters and inverters
- Freewheeling application

### MECHANICAL DATA

- Case: TO-220AC
- Molding compound meets UL 94V-0 flammability rating
- Terminal: Matte tin plated leads, solderable per J-STD-002
- Mounting torque: 0.56 N·m maximum
- Meet JESD 201 class 2 whisker test
- Polarity: As marked
- Weight: 1.70g (approximately)

| KEY PARAMETERS |            |      |
|----------------|------------|------|
| PARAMETER      | VALUE      | UNIT |
| $I_F$          | 15         | A    |
| $V_{RRM}$      | 1200       | V    |
| $I_{FSM}$      | 200        | A    |
| $T_{JMAX}$     | 175        | °C   |
| Package        | TO-220AC   |      |
| Configuration  | Single die |      |



**TO-220AC**



| ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)       |              |             |      |
|---|--------------|-------------|------|
| PARAMETER   | SYMBOL       | UGA15120    | UNIT |
| Marking code on the device  |              | UGA15120    |      |
| Repetitive peak reverse voltage   | $V_{RRM}$    | 1200        | V    |
| Reverse voltage, total rms value  | $V_{R(RMS)}$ | 840         | V    |
| Forward current   | $I_F$        | 15          | A    |
| Surge peak forward current 8.3ms single half sine wave superimposed on rated load | $I_{FSM}$    | 200         | A    |
| Junction temperature  | $T_J$        | -55 to +175 | °C   |
| Storage temperature   | $T_{STG}$    | -55 to +175 | °C   |

| <b>THERMAL PERFORMANCE</b>  |                 |            |             |
|-----------------------------|-----------------|------------|-------------|
| <b>PARAMETER</b>            | <b>SYMBOL</b>   | <b>TYP</b> | <b>UNIT</b> |
| Junction-to-case resistance | $R_{\theta JC}$ | 2          | °C/W        |

| <b>ELECTRICAL SPECIFICATIONS</b> ( $T_A = 25^\circ\text{C}$ unless otherwise noted) |   |               |            |            |               |
|---|---|---------------|------------|------------|---------------|
| <b>PARAMETER</b>  | <b>CONDITIONS</b>   | <b>SYMBOL</b> | <b>TYP</b> | <b>MAX</b> | <b>UNIT</b>   |
| Forward voltage <sup>(1)</sup>  | $I_F = 15\text{A}, T_J = 25^\circ\text{C}$  | $V_F$         | -          | 2.9        | V             |
| Reverse current @ rated $V_R$ <sup>(2)</sup>  | $T_J = 25^\circ\text{C}$  | $I_R$         | 1          | 5          | $\mu\text{A}$ |
|   | $T_J = 125^\circ\text{C}$   |               | 5          | 100        | $\mu\text{A}$ |
| Reverse recovery time   | $I_F = 0.5\text{A}, I_R = 1.0\text{A}$<br>$I_{rr} = 0.25\text{A}$                                     | $t_{rr}$      | 48         | 58         | ns            |
|   | $I_F = 1\text{A}, dI_F/dt = -100\text{A}/\mu\text{s}$ ,<br>$V_R = 30\text{V}, T_J = 25^\circ\text{C}$ | $t_{rr}$      | -          | 65         | ns            |

**Notes:**

1. Pulse test with PW = 0.3ms
2. Pulse test with PW = 30ms

| <b>ORDERING INFORMATION</b>         |                |                |
|-------------------------------------|----------------|----------------|
| <b>ORDERING CODE</b> <sup>(1)</sup> | <b>PACKAGE</b> | <b>PACKING</b> |
| UGA15120                            | TO-220AC       | 50 / Tube      |
| UGA15120H                           | TO-220AC       | 50 / Tube      |

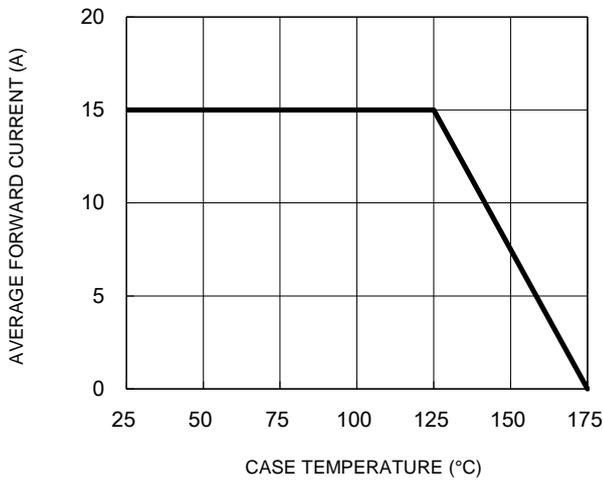
**Notes:**

1. "H" means AEC-Q101 qualified

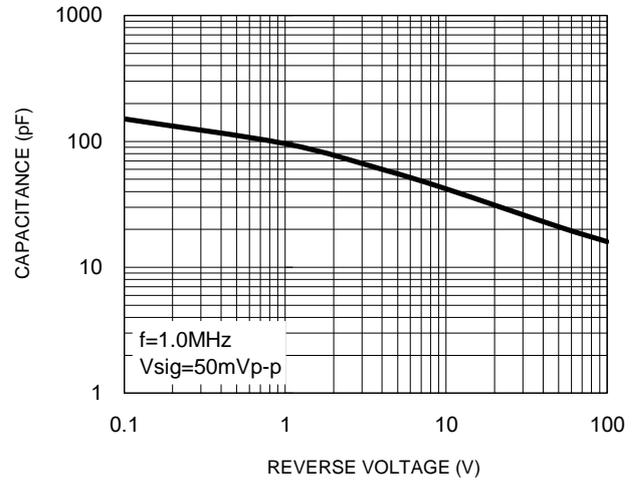
**CHARACTERISTICS CURVES**

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

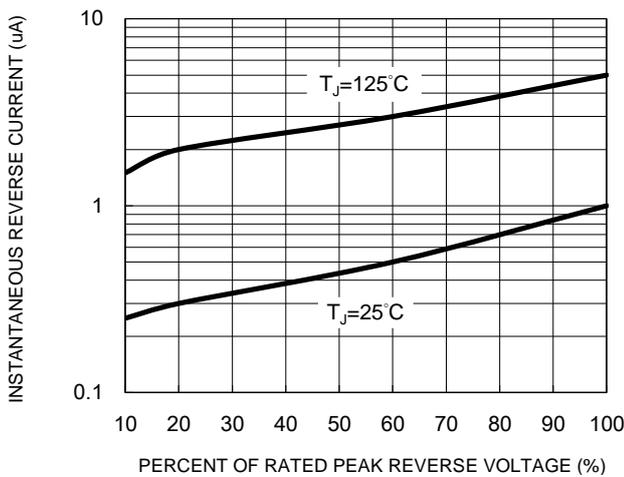
**Fig.1 Forward Current Derating Curve**



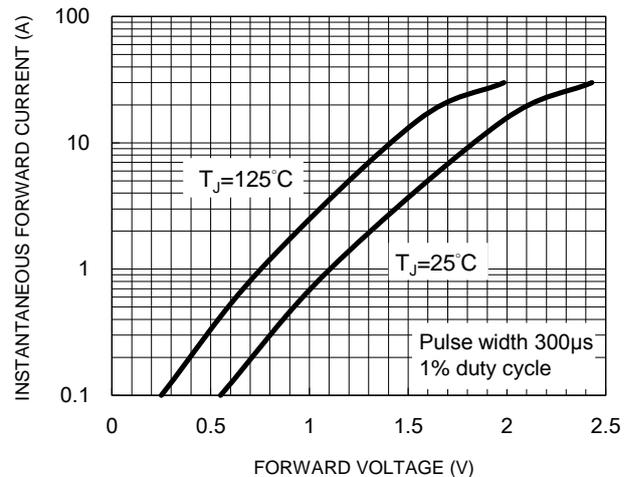
**Fig.2 Typical Junction Capacitance**



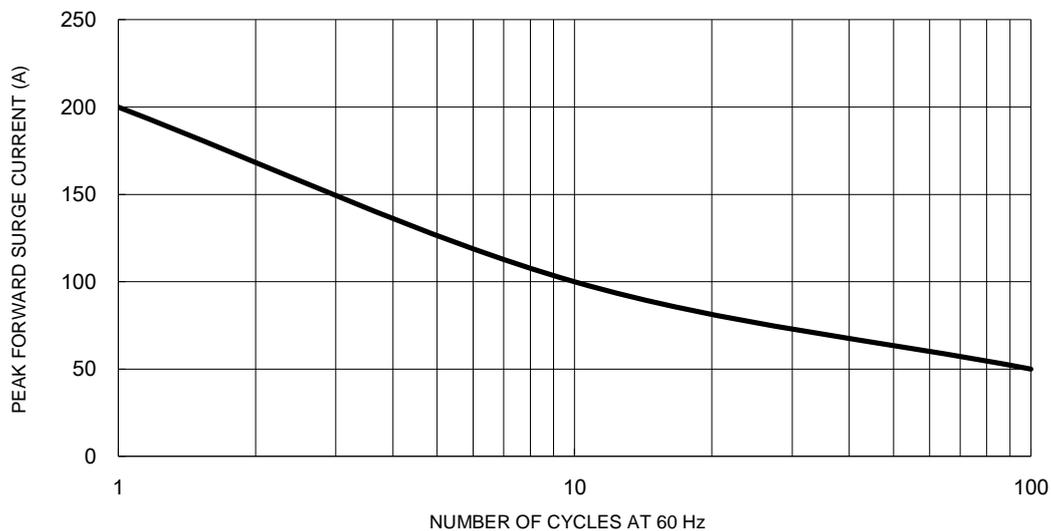
**Fig.3 Typical Reverse Characteristics**



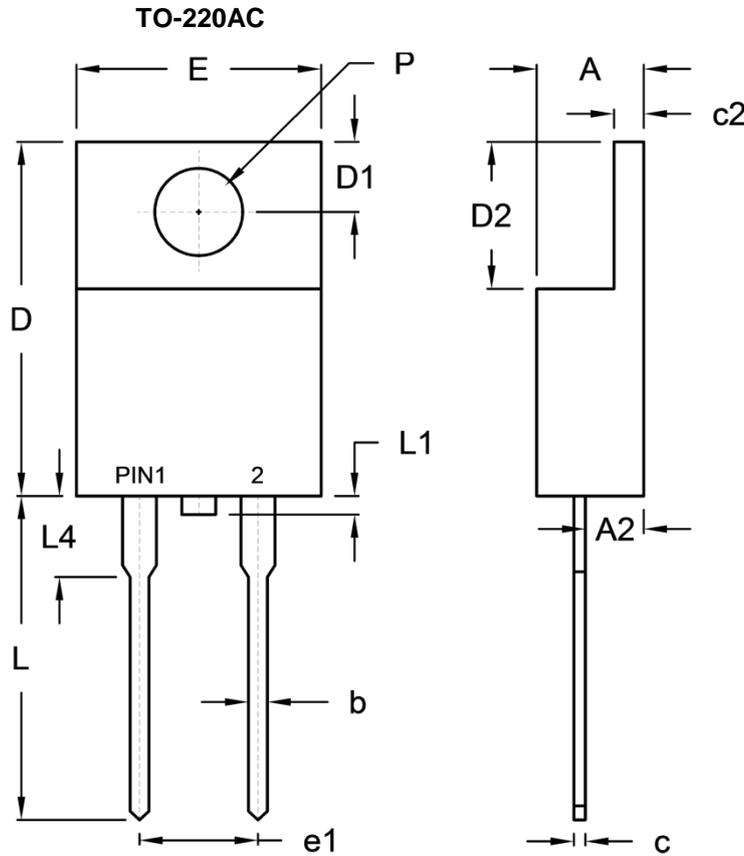
**Fig.4 Typical Forward Characteristics**



**Fig.5 Maximum Non-Repetitive Forward Surge Current**



**PACKAGE OUTLINE DIMENSIONS**



| DIM. | Unit (mm) |       | Unit (inch) |       |
|------|-----------|-------|-------------|-------|
|      | Min.      | Max.  | Min.        | Max.  |
| A    | 4.42      | 4.76  | 0.174       | 0.187 |
| A2   | 2.20      | 2.80  | 0.087       | 0.110 |
| b    | 0.68      | 0.94  | 0.027       | 0.037 |
| c    | 0.35      | 0.64  | 0.014       | 0.025 |
| c2   | 1.14      | 1.40  | 0.045       | 0.055 |
| D    | 14.60     | 16.00 | 0.575       | 0.630 |
| D1   | 2.62      | 3.44  | 0.103       | 0.135 |
| D2   | 5.84      | 6.86  | 0.230       | 0.270 |
| E    | -         | 10.50 | -           | 0.413 |
| e1   | 4.95      | 5.20  | 0.195       | 0.205 |
| L    | 13.19     | 14.79 | 0.519       | 0.582 |
| L1   | 0.00      | 1.60  | 0.000       | 0.063 |
| L4   | 2.80      | 4.20  | 0.110       | 0.165 |
| P    | 3.54      | 4.00  | 0.139       | 0.157 |

**MARKING DIAGRAM**



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

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