

8A, 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

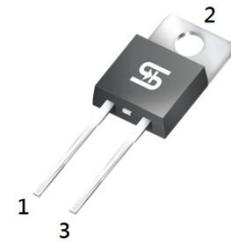
APPLICATIONS

- 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: 1.85g (approximately)

| KEY PARAMETERS | | |
|----------------|------------|------|
| PARAMETER | VALUE | UNIT |
| I_F | 8 | A |
| V_{RRM} | 1200 | V |
| I_{FSM} | 80 | 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 | UGA8120 | UNIT |
| Marking code on the device | | UGA8120 | |
| Repetitive peak reverse voltage | V_{RRM} | 1200 | V |
| Reverse voltage, total rms value | $V_{R(RMS)}$ | 840 | V |
| Forward current | I_F | 8 | A |
| Surge peak forward current 8.3ms single half sine wave superimposed on rated load | I_{FSM} | 80 | A |
| Junction temperature | T_J | -55 to +175 | °C |
| Storage temperature | T_{STG} | -55 to +175 | °C |

| THERMAL PERFORMANCE | | | |
|-----------------------------|-----------------|------------|-------------|
| PARAMETER | SYMBOL | TYP | UNIT |
| Junction-to-case resistance | $R_{\theta JC}$ | 2.3 | °C/W |

| ELECTRICAL SPECIFICATIONS ($T_A = 25^\circ\text{C}$ unless otherwise noted) | | | | | |
|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|---------------|------------|------------|---------------|
| PARAMETER | CONDITIONS | SYMBOL | TYP | MAX | UNIT |
| Forward voltage ⁽¹⁾ | $I_F = 8\text{A}, T_J = 25^\circ\text{C}$ | V_F | - | 2.8 | V |
| Reverse current @ rated V_R ⁽²⁾ | $T_J = 25^\circ\text{C}$ | I_R | 1 | 5 | μA |
| | $T_J = 125^\circ\text{C}$ | | 5 | 100 | μA |
| Reverse recovery time | $I_F = 0.5\text{A}, I_R = 1.0\text{A}$ $I_{rr} = 0.25\text{A}$ | t_{rr} | 35 | 50 | ns |
| | $I_F = 1\text{A}, dI_F/dt = -100\text{A}/\mu\text{s}$, $V_R = 30\text{V}, T_J = 25^\circ\text{C}$ | t_{rr} | 50 | 70 | ns |
| Reverse recovery charges | $I_F = 8\text{A}, dI_F/dt = -200\text{A}/\mu\text{s}$, $V_R = 400\text{V}, T_J = 25^\circ\text{C}$ | Q_{rr} | 165 | - | nC |
| | $I_F = 8\text{A}, dI_F/dt = -200\text{A}/\mu\text{s}$, $V_R = 400\text{V}, T_J = 125^\circ\text{C}$ | I_{RM} | 11 | 16 | A |

Notes:

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

| ORDERING INFORMATION | | |
|------------------------------------|----------------|----------------|
| ORDERING CODE⁽¹⁾ | PACKAGE | PACKING |
| UGA8120 | TO-220AC | 50 / Tube |
| UGA8120H | 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

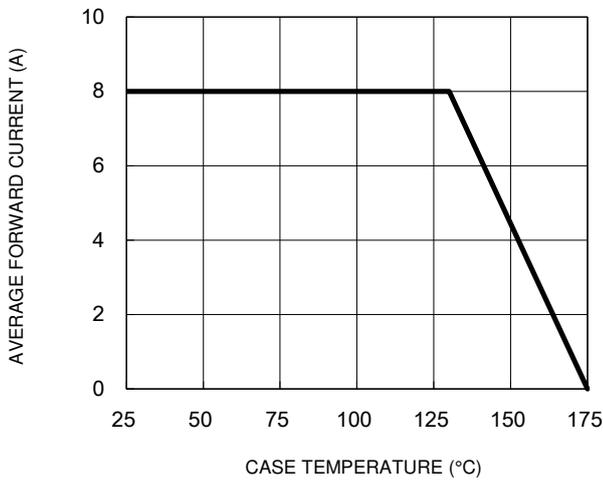


Fig.2 Typical Junction Capacitance

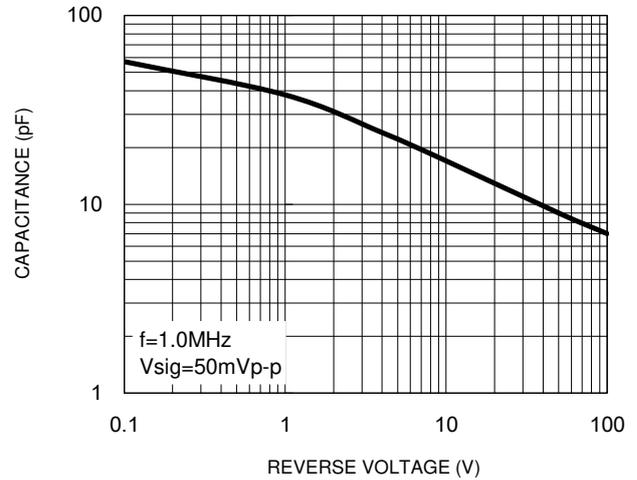


Fig.3 Typical Reverse Characteristics

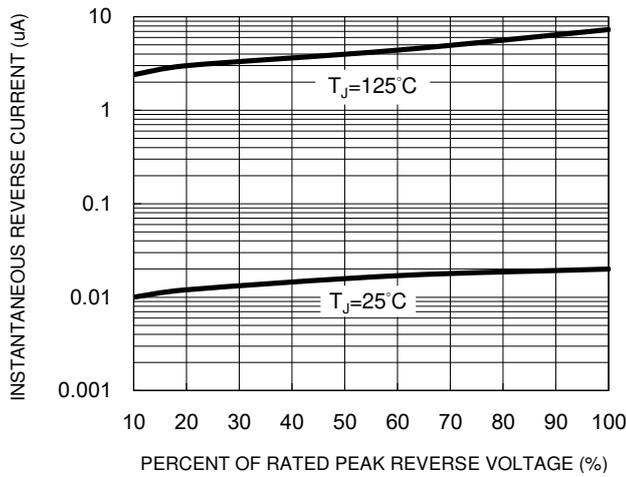


Fig.4 Typical Forward Characteristics

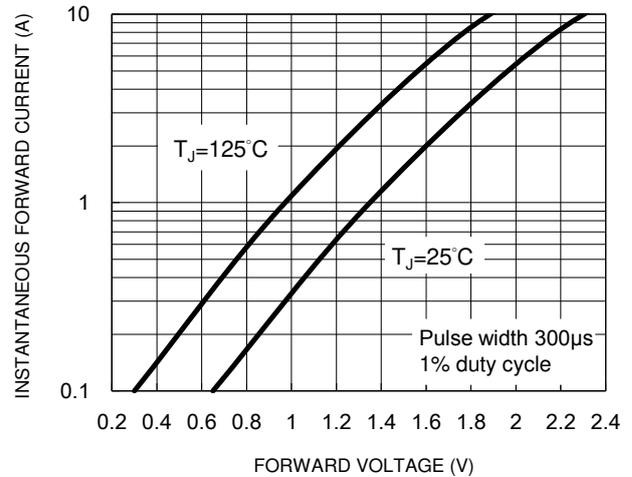
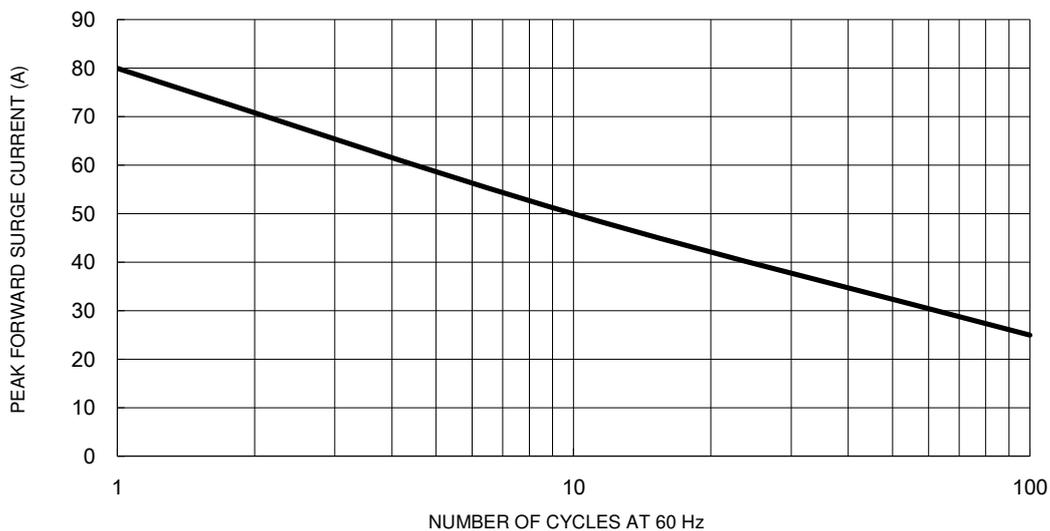
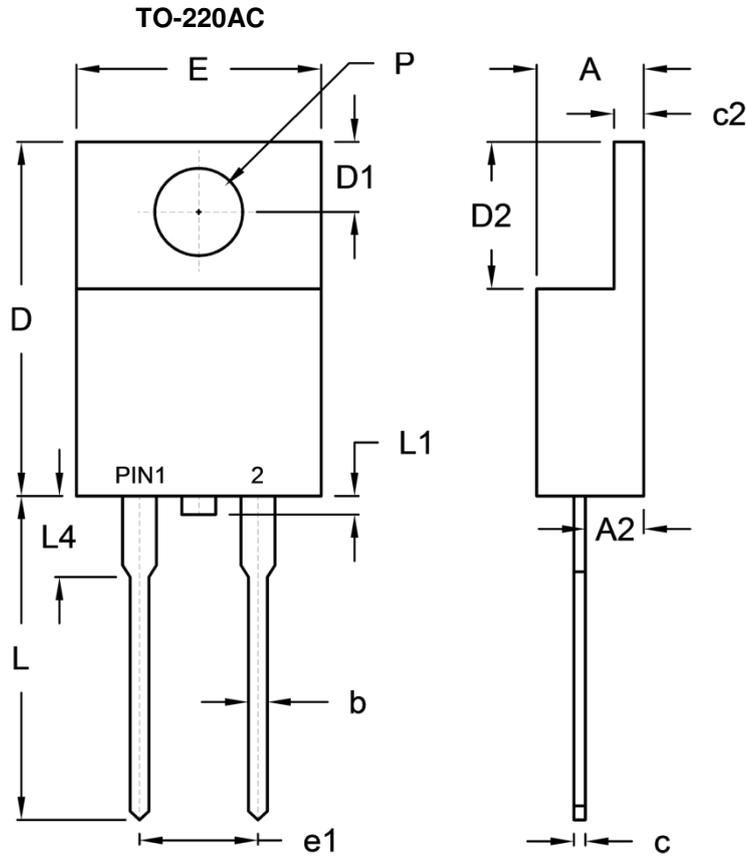


Fig.5 Maximum Non-Repetitive Forward Surge Current



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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