

## 1200V Ultrafast Power Rectifier

### FEATURES

- Ultrafast, Soft Recovery characteristics
- High junction temperature up to 175°C
- Negligible leakage sustain the high operation temperature
- Planar passivated for voltage ruggedness and reliability
- 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
- Compliant to RoHS Directive 2011/65/EU and in accordance to WEEE 2002/96/EC
- Halogen-free according to IEC 61249-2-21 definition


**TO-220AC**


### TYPICAL APPLICATIONS

The UGA8120 is an ideal solution for being used as freewheeling diodes, featuring extremely low peak recovery current to significantly reduce snubbing, and lowering switching losses in IGBT / MOSFET.

It is especially suited for heavy duty applications with demanding long term reliability such as inverters, uninterrupted power supplies, motor drives and other mission-critical systems, where high frequency and high efficiency is being needed.

Another competitive advantage of this device is the negligible leakage for use in high temperature environment.

### MECHANICAL DATA

**Case:** TO-220AC

Molding compound, UL flammability classification rating 94V-0

Base P/N with suffix "G" on packing code - green compound (halogen-free)

Base P/N with prefix "H" on packing code - AEC-Q101 qualified

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

Meet JESD 201 class 1A whisker test

with prefix "H" on packing code meet JESD 201 class 2 whisker test

**Polarity:** As marked

**Mounting torque:** 0.56 Nm maximum

**Weight:** 1.85g (approximately)

MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS (T <sub>A</sub> =25°C unless otherwise noted)				
PARAMETER	SYMBOL	UGA8120		UNIT
Maximum repetitive peak reverse voltage	V <sub>RRM</sub>	1200		V
Maximum average forward rectified current	I <sub>F(AV)</sub>	8		A
Non-repetitive peak forward surge current 8.3ms single sine-wave	I <sub>FSM</sub>	80		A
Maximum instantaneous forward voltage (Note 1) I <sub>F</sub> = 8 A	V <sub>F</sub>	2.8		V
Maximum reverse current @ Rated VR T <sub>J</sub> =25 °C T <sub>J</sub> =125 °C	I <sub>R</sub>	TYP	MAX	μA
		1	5	
		5	100	
Reverse Recovery Time T <sub>J</sub> =25 °C, I <sub>F</sub> =0.5A, I <sub>R</sub> =1A, I <sub>RR</sub> =0.25A T <sub>J</sub> =25 °C, I <sub>F</sub> =1A, di <sub>F</sub> /dt= -100A/μs, V <sub>R</sub> =30V	t <sub>rr</sub>	TYP	MAX	ns
		35	50	
		50	70	
Reverse Recovery Charges T <sub>J</sub> =25 °C, I <sub>F</sub> =8A, di <sub>F</sub> /dt= -200A/μs, V <sub>R</sub> =400V T <sub>J</sub> =125 °C, I <sub>F</sub> =8A, di <sub>F</sub> /dt= -200A/μs, V <sub>R</sub> =400V	Q <sub>rr</sub>	TYP	MAX	nC
		165	-	
		I <sub>RM</sub>	11	16
Typical thermal resistance	R <sub>θJC</sub>	2.3		°C/W
Operating junction temperature range	T <sub>J</sub>	- 55 to +175		°C
Storage temperature range	T <sub>STG</sub>	- 55 to +175		°C

Note 1: Pulse test with PW=300μs, 1% duty cycle

ORDERING INFORMATION					
PART NO.	AEC-Q101 QUALIFIED	PACKING CODE	GREEN COMPOUND CODE	PACKAGE	PACKING
UGA8120	Prefix "H"	C0	Suffix "G"	TO-220AC	50 / Tube

EXAMPLE					
PREFERRED P/N	PART NO.	AEC-Q101 QUALIFIED	PACKING CODE	GREEN COMPOUND CODE	DESCRIPTION
UGA8120 C0	UGA8120		C0		
UGA8120 C0G	UGA8120		C0	G	Green compound
UGA8120HC0	UGA8120	H	C0		AEC-Q101 qualified

## RATINGS AND CHARACTERISTICS CURVES

(TA=25°C unless otherwise noted)

FIG. 1- FORWARD CURRENT DERATING CURVE

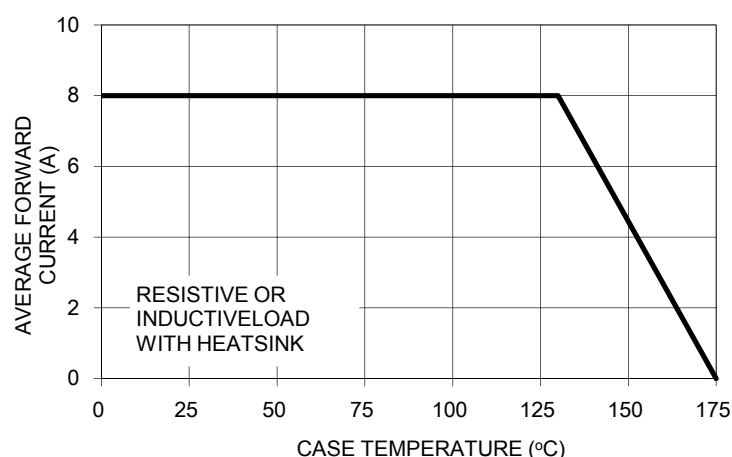


FIG. 2- MAXIMUM NON-REPETITIVE FORWARD SURGE CURRENT

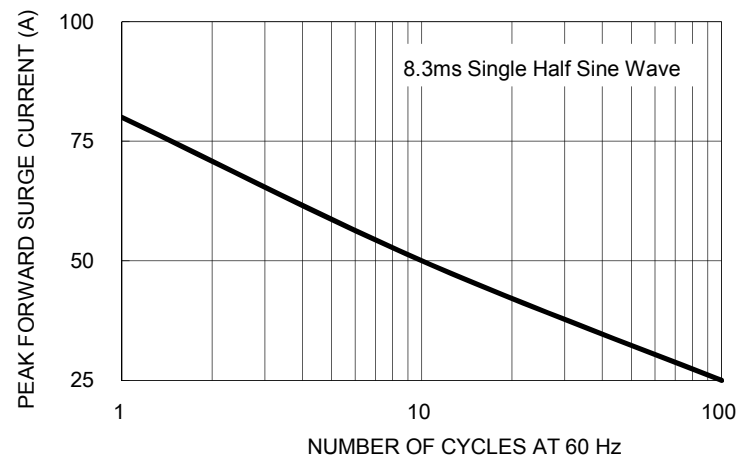


FIG. 3- TYPICAL INSTANTANEOUS FORWARD CHARACTERISTICS

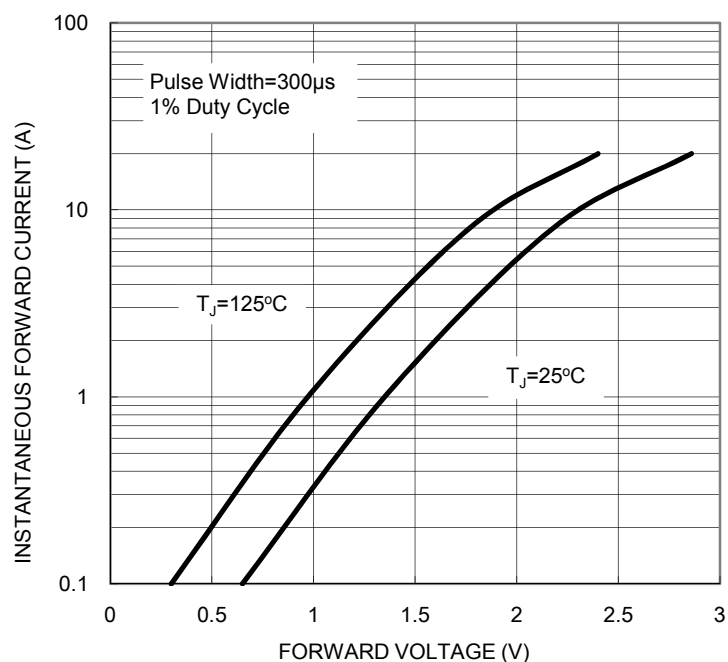


FIG. 4- TYPICAL REVERSE CHARACTERISTICS

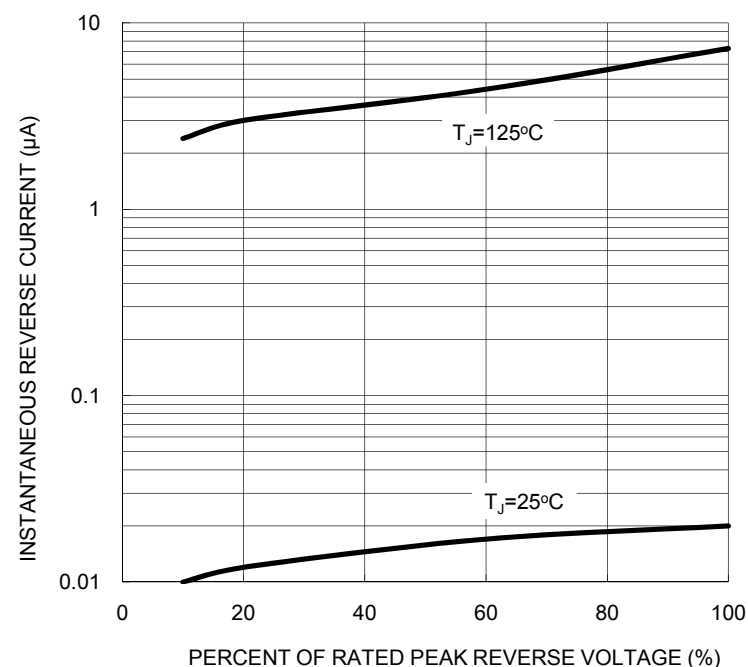
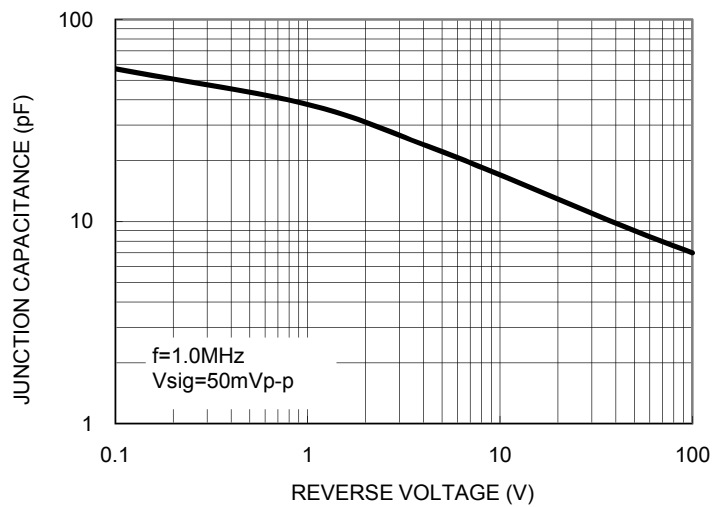
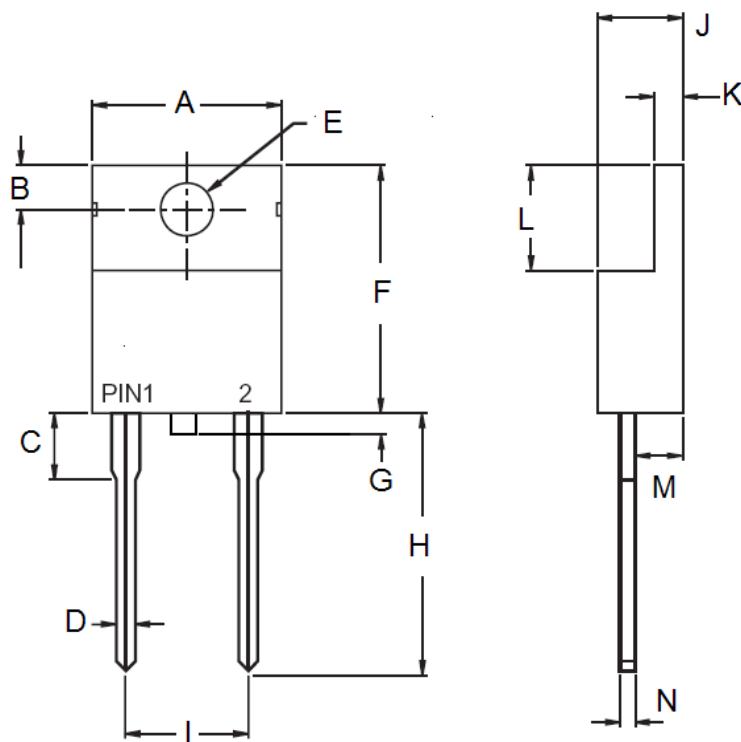


FIG. 5- TYPICAL JUNCTION CAPACITANCE

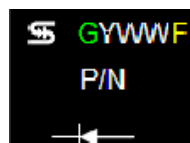


PACKAGE OUTLINE DIMENSIONS  
TO-220AC



DIM.	Unit (mm)		Unit (inch)	
	Min	Max	Min	Max
A	-	10.50	-	0.413
B	2.62	3.44	0.103	0.135
C	2.80	4.20	0.110	0.165
D	0.68	0.94	0.027	0.037
E	3.54	4.00	0.139	0.157
F	14.60	16.00	0.575	0.630
G	0.00	1.60	0.000	0.063
H	13.19	14.79	0.519	0.582
I	4.95	5.20	0.195	0.205
J	4.42	4.76	0.174	0.187
K	1.14	1.40	0.045	0.055
L	5.84	6.86	0.230	0.270
M	2.20	2.80	0.087	0.110
N	0.35	0.64	0.014	0.025

MARKING DIAGRAM



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

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