

12A, 600V Ultra Fast Rectifier

FEATURES

- AEC-Q101 qualified available
- High capability for high di/dt operation.
- High surge current capability
- High operation temperature to T_J 175°C
- UL Recognized File # E-326243
- RoHS Compliant
- Halogen-free according to IEC 61249-2-21

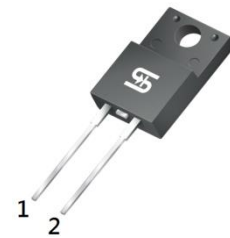
APPLICATIONS

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

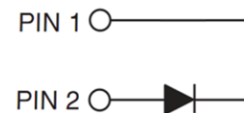
MECHANICAL DATA

- Case: ITO-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	12	A
V_{RRM}	600	V
I_{FSM}	100	A
T_{JMAX}	175	°C
Package	ITO-220AC	
Configuration	Single die	



ITO-220AC



ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise noted)			
PARAMETER	SYMBOL	UGF12JD	UNIT
Marking code on the device		UGF12JD	
Repetitive peak revers voltage	V_{RRM}	600	V
Reverse voltage total rms value	$V_{R(RMS)}$	420	V
Forward current	I_F	12	A
Surge peak forward current, 8.3ms single half sine wave superimposed on rated load	I_{FSM}	100	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	$R_{\theta JC}$	2.4	°C/W

ELECTRICAL SPECIFICATIONS ($T_A = 25^\circ\text{C}$ unless otherwise noted)					
PARAMETER	CONDITIONS	SYMBOL	TYP	MAX	UNIT
Forward voltage ⁽¹⁾	$I_F = 12\text{A}, T_J = 25^\circ\text{C}$	V_F	3.1	-	V
Reverse current @ rated V_R ⁽²⁾	$T_J = 25^\circ\text{C}$	I_R	-	0.5	μA
	$T_J = 125^\circ\text{C}$		-	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}	13	25	ns
	$I_F = 1\text{A}, V_R = 30\text{V}, dl_F/dt = -50\text{A}/\mu\text{s}$	t_{rr}	-	45	ns
Reverse recovery charges	$I_F = 12\text{A}, V_R = 400\text{V}, dl_F/dt = -200\text{A}/\mu\text{s}, T_J = 125^\circ\text{C}$	Q_{rr}	90	-	nC
		I_{RM}	3.8	4.6	A

Notes:

1. Pulse test with $PW = 0.3\text{ms}$
2. Pulse test with $PW = 30\text{ms}$

ORDERING INFORMATION		
ORDERING CODE⁽¹⁾	PACKAGE	PACKING
UGF12JD	ITO-220AC	50 / Tube
UGF12JDH	ITO-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

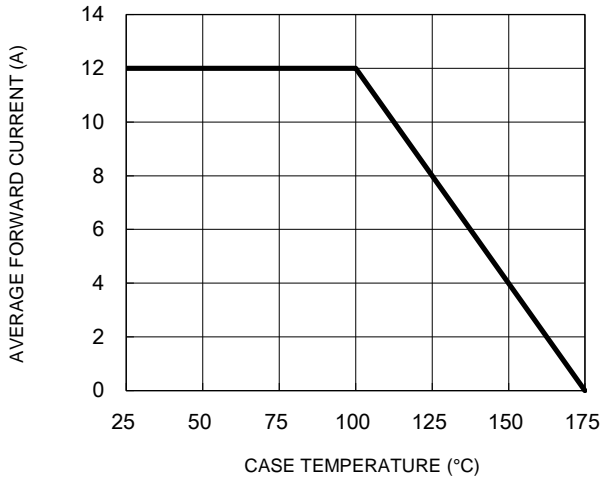


Fig.2 Typical Junction Capacitance

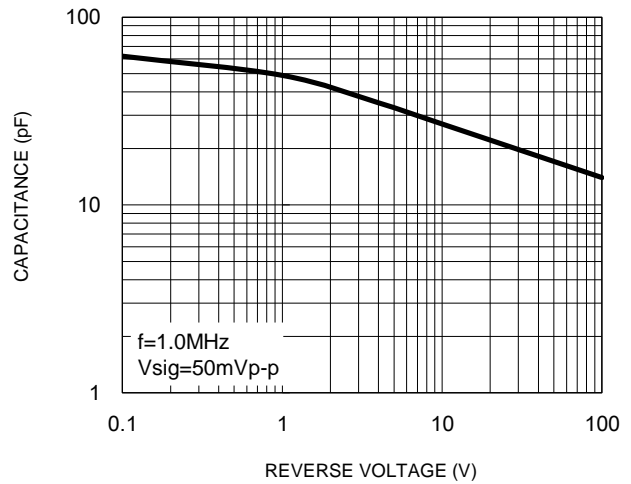


Fig.3 Typical Reverse Characteristics

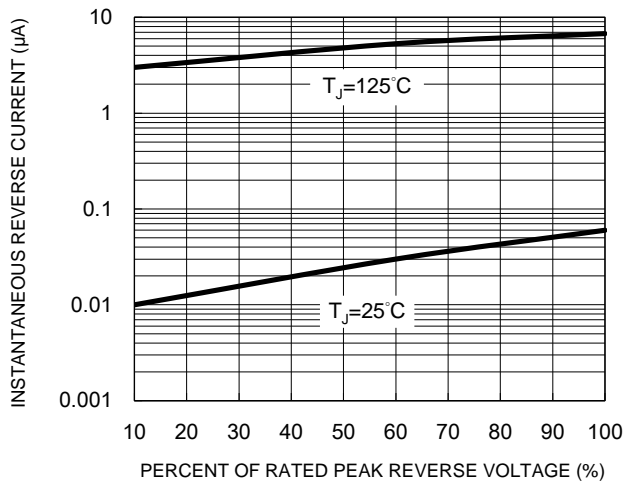


Fig.4 Typical Forward Characteristics

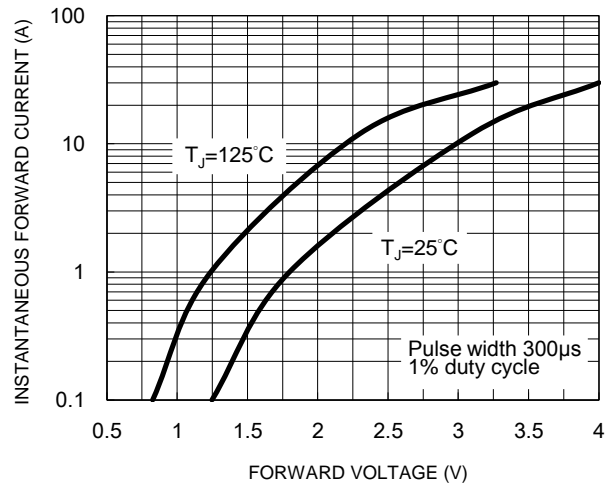
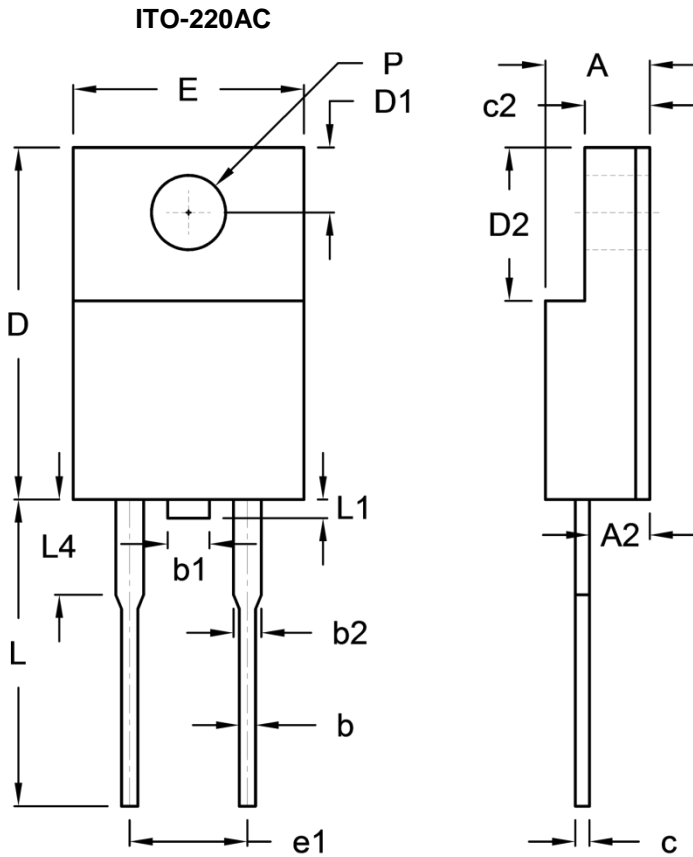


Fig.5 Maximum Non-Repetitive Forward Surge Current



PACKAGE OUTLINE DIMENSIONS



DIM.	Unit (mm)		Unit (inch)	
	Min.	Max.	Min.	Max.
A	4.30	4.70	0.169	0.185
A2	2.30	2.90	0.091	0.114
b	0.50	0.90	0.020	0.035
b1	-	1.80	-	0.071
b2	0.95	1.45	0.037	0.057
c	0.46	0.76	0.018	0.030
c2	2.50	3.10	0.098	0.114
D	14.80	15.50	0.583	0.610
D1	2.40	3.20	0.094	0.126
D2	6.30	6.90	0.248	0.272
E	9.60	10.30	0.378	0.406
e1	4.95	5.20	0.195	0.205
L	12.60	13.80	0.496	0.543
L1	0.00	1.60	0.000	0.063
L4	-	4.10	-	0.161
P	3.00	3.40	0.118	0.134

MARKING DIAGRAM



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

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