

20A, 600V High Efficient Surface Mount Rectifier

FEATURES

- AEC-Q101 qualified
- Lead for automated placement
- Low switching loss
- High surge current capability
- Moisture sensitivity level: level 1, per J-STD-020
- RoHS Compliant
- Halogen-free according to IEC 61249-2-21

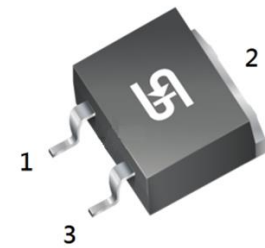
APPLICATIONS

- On Board Charger

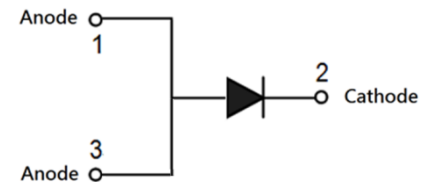
MECHANICAL DATA

- Case: D²PAK-D
- Molding compound meets UL 94V-0 flammability rating
- Terminal: Matte tin plated leads, solderable per J-STD-002
- Meet JESD 201 class 2 whisker test
- Polarity: As marked
- Weight: 1.40g

KEY PARAMETERS		
PARAMETER	VALUE	UNIT
I_F	20	A
V_{RRM}	600	V
I_{FSM}	150	A
$T_{J\ MAX}$	150	°C
Package	D ² PAK-D	



D²PAK-D



ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise noted)			
PARAMETER	SYMBOL	UGS20JH	UNIT
Marking code on the device		UGS20JH	
Repetitive peak reverse voltage	V_{RRM}	600	V
Reverse voltage, total rms value	$V_{R(RMS)}$	420	V
Forward current	I_F	20	A
Surge peak forward current, 1.0 ms single half sine-wave superimposed on rated load	I_{FSM}	270	A
Surge peak forward current, 8.3 ms single half sine-wave superimposed on rated load	I_{FSM}	150	A
Junction temperature	T_J	-55 to +150	°C
Storage temperature	T_{STG}	-55 to +150	°C

THERMAL PERFORMANCE

PARAMETER	SYMBOL	TYP	UNIT
Junction-to-lead thermal resistance	$R_{\theta JL}$	4	°C/W
Junction-to-ambient thermal resistance	$R_{\theta JA}$	11	°C/W
Junction-to-case thermal resistance	$R_{\theta JC}$	3	°C/W

Thermal Performance Note: Units mounted on heatsink 4"x 6"x 0.25" Al-plate

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

PARAMETER	CONDITIONS	SYMBOL	TYP	MAX	UNIT
Forward voltage ⁽¹⁾	$I_F = 10\text{A}, T_J = 25^\circ\text{C}$	V_F	1.37	-	V
	$I_F = 20\text{A}, T_J = 25^\circ\text{C}$		1.57	2.00	V
	$I_F = 10\text{A}, T_J = 125^\circ\text{C}$		1.07	-	V
	$I_F = 20\text{A}, T_J = 125^\circ\text{C}$		1.30	1.80	V
Reverse current @ rated V_R ⁽²⁾	$T_J = 25^\circ\text{C}$	I_R	-	1	μA
	$T_J = 125^\circ\text{C}$		-	100	μA
Junction capacitance	1MHz, $V_R = 4.0\text{V}$	C_J	94.5	-	pF
Reverse recovery time	$I_F = 0.5\text{A}, I_R = 1.0\text{A}$ $I_{rr} = 0.25\text{A}$	t_{rr}	-	50	ns
Reverse recovery current	$V_R = 400\text{V}, I_F = 6\text{A}$ $dI_F/dt = 200\text{A}/\mu\text{s}$	$I_{RM(REC)}$	4.6	-	A
Reverse recovery time		t_{rr}	69	-	ns
Reverse recovery charge		Q_{rr}	185	-	nC

Notes:

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

ORDERING INFORMATION

ORDERING CODE	PACKAGE	PACKING
UGS20JH	D ² PAK-D	800 / Tape & Reel

CHARACTERISTICS CURVES

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

Fig.1 Forward Current Derating Curve

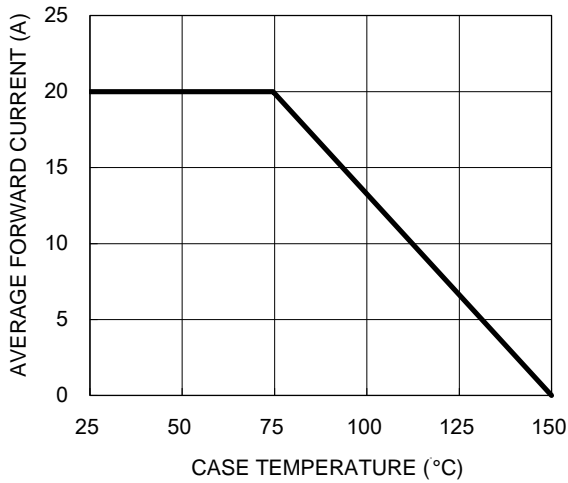


Fig.2 Typical Junction Capacitance

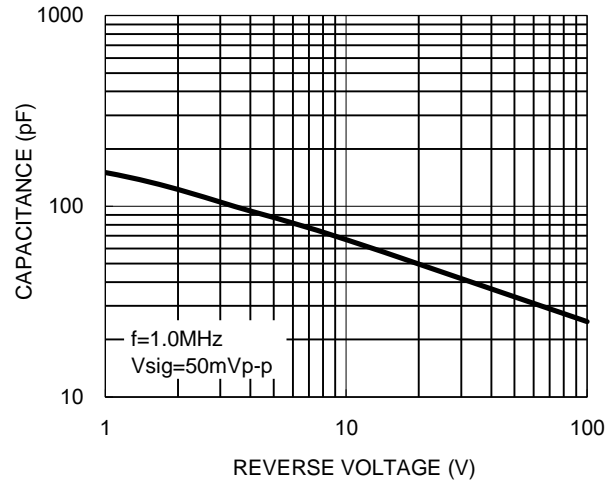


Fig.3 Typical Reverse Characteristics

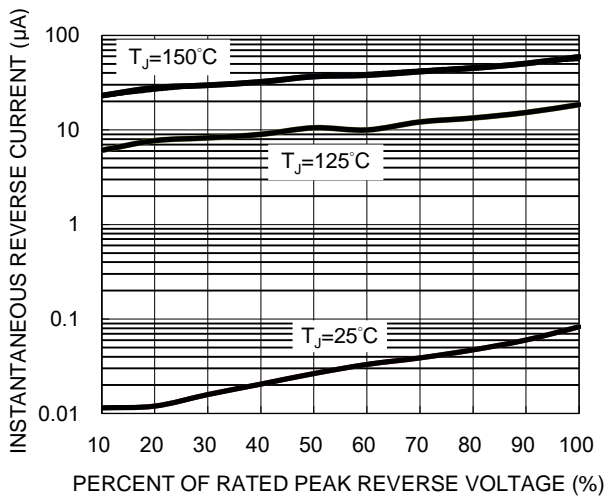


Fig.4 Typical Forward Characteristics

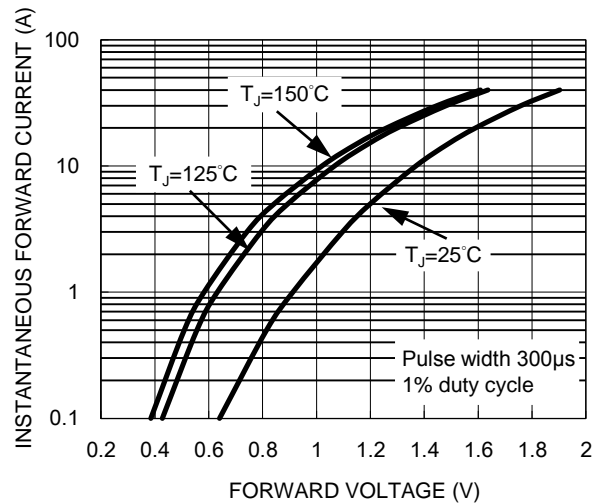
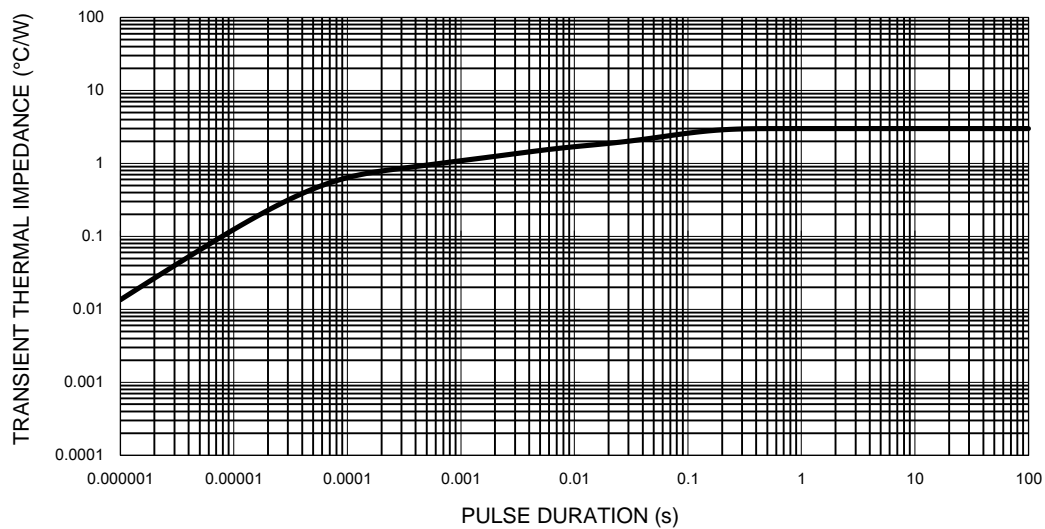
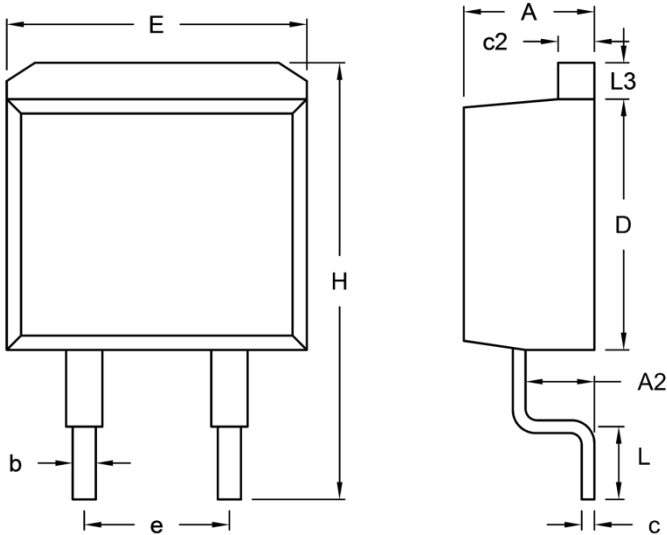


Fig.5 Typical Transient Thermal Impedance



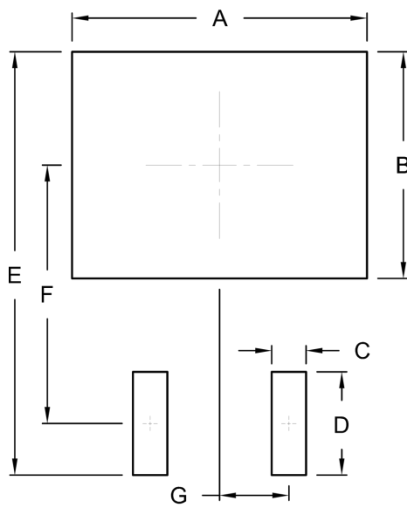
PACKAGE OUTLINE DIMENSIONS

D²PAK-D



DIM.	Unit (mm)		Unit (inch)	
	Min.	Max.	Min.	Max.
A	4.44	4.70	0.175	0.185
A2	2.03	2.79	0.080	0.110
b	0.68	0.94	0.027	0.037
c	0.36	0.53	0.014	0.021
c2	1.14	1.40	0.045	0.055
D	8.25	9.25	0.325	0.364
E	-	10.50	-	0.413
e	4.82	5.34	0.190	0.210
H	14.60	15.88	0.575	0.625
L	2.29	2.79	0.090	0.110
L3	1.14	1.40	0.045	0.055

SUGGESTED PAD LAYOUT

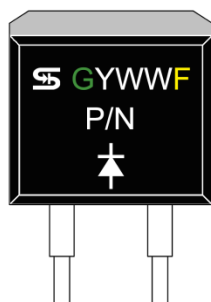


Symbol	Unit (mm)	Unit (inch)
A	10.80	0.425
B	8.30	0.327
C	1.26	0.050
D	3.78	0.149
E	15.50	0.610
F	9.46	0.372
G	2.54	0.100

Notes:

This recommended land pattern is for reference purposes only. Please consult your manufacturing group to ensure your PCB design guidelines are met.

MARKING DIAGRAM



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

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