

3A, 200V Surface Mount Ultra Fast Rectifier

FEATURES

- AEC-Q101 qualified
- Glass passivated junction chip
- Ideal for automated placement
- Low profile package
- Ultra fast recovery time for high efficiency
- RoHS Compliant
- Halogen-free according to IEC 61249-2-21

KEY PARAMETERS		
PARAMETER	VALUE	UNIT
$I_{F(AV)}$	3	A
V_{RRM}	200	V
I_{FSM}	132	A
$T_{J\ MAX}$	175	°C
Package	SOD-128	
Configuration	Single die	

APPLICATIONS

- High frequency rectification
- Freewheeling application
- Switching mode converters and inverters in automotive



SOD-128

MECHANICAL DATA

- Case: SOD-128
- Molding compound meets UL 94V-0 flammability rating
- Moisture sensitivity level: level 1, per J-STD-020
- Terminal: Mattle tin plated leads, solderable per J-STD-002
- Meet JESD 201 class 2 whisker test
- Polarity: As marked
- Weight: 0.027 g (approximately)

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise noted)			
PARAMETER	SYMBOL	ESH3DFSH	UNIT
Marking code on the device		H3DFSH	
Repetitive peak reverse voltage	V_{RRM}	200	V
Reverse voltage, total rms value	$V_{R(RMS)}$	140	V
Forward current	$I_{F(AV)}$	3	A
Surge peak forward current single half sine-wave superimposed on rated load	I_{FSM}	8.3 ms at $T_A = 25^\circ\text{C}$	132
		1.0 ms at $T_A = 25^\circ\text{C}$	224
Junction temperature	T_J	- 55 to +175	°C
Storage temperature	T_{STG}	- 55 to +175	°C

THERMAL PERFORMANCE			
PARAMETER	SYMBOL	TYP	UNIT
Junction-to-lead thermal resistance	$R_{\theta JL}$	12	°C/W
Junction-to-ambient thermal resistance	$R_{\theta JA}$	65	°C/W
Junction-to-case thermal resistance	$R_{\theta JC}$	11	°C/W

Thermal Performance Note: Units mounted on recommended PCB (5mm x 5mm Cu pad test board)

ELECTRICAL SPECIFICATIONS ($T_A = 25^\circ\text{C}$ unless otherwise noted)					
PARAMETER	CONDITIONS	SYMBOL	TYP	MAX	UNIT
Forward voltage ⁽¹⁾	$I_F = 1.5\text{A}, T_J = 25^\circ\text{C}$	V_F	0.83	-	V
	$I_F = 3.0\text{A}, T_J = 25^\circ\text{C}$		0.85	0.95	V
	$I_F = 1.5\text{A}, T_J = 125^\circ\text{C}$		0.66	-	V
	$I_F = 3.0\text{A}, T_J = 125^\circ\text{C}$		0.74	0.85	V
Reverse current @ rated V_R ⁽²⁾	$T_J = 25^\circ\text{C}$	I_R	-	5	μA
	$T_J = 125^\circ\text{C}$		-	60	μA
Junction capacitance	1 MHz, $V_R = 4.0\text{V}$	C_J	42	-	pF
Reverse recovery time	$I_F = 0.5\text{A}, I_R = 1.0\text{A}$ $I_{RR} = 0.25\text{A}$	t_{rr}	-	25	ns

Notes:

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

ORDERING INFORMATION		
ORDERING CODE	PACKAGE	PACKING
ESH3DFSH MWG	SOD-128	3,500 / 7" Plastic reel
ESH3DFSH MXG	SOD-128	14,000 / 13" Plastic reel

CHARACTERISTICS CURVES

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

Fig.1 Forward Current Derating Curve

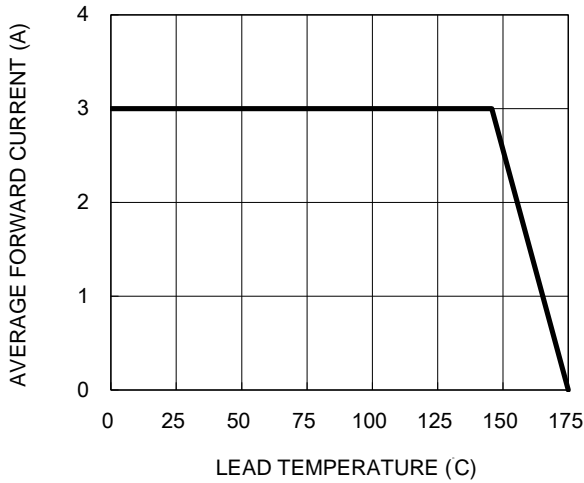


Fig.2 Typical Junction Capacitance

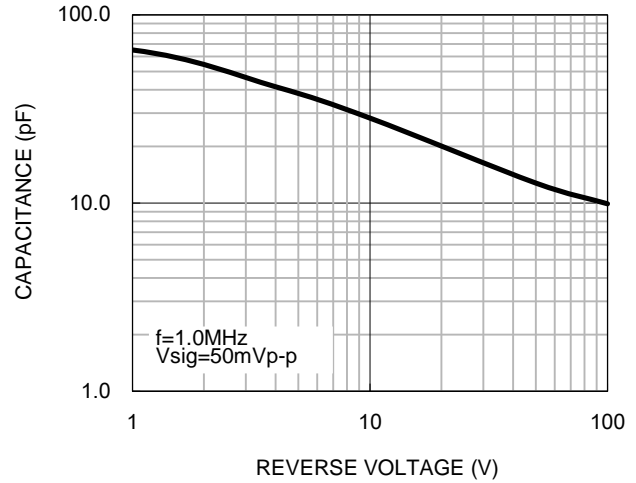


Fig.3 Typical Reverse Characteristics

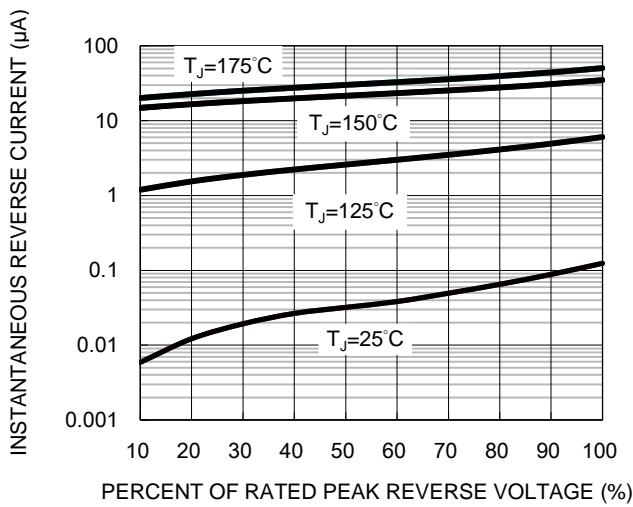


Fig.4 Typical Forward Characteristics

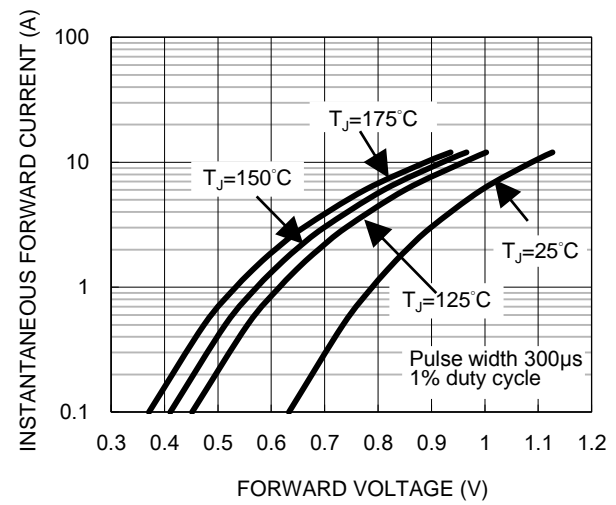
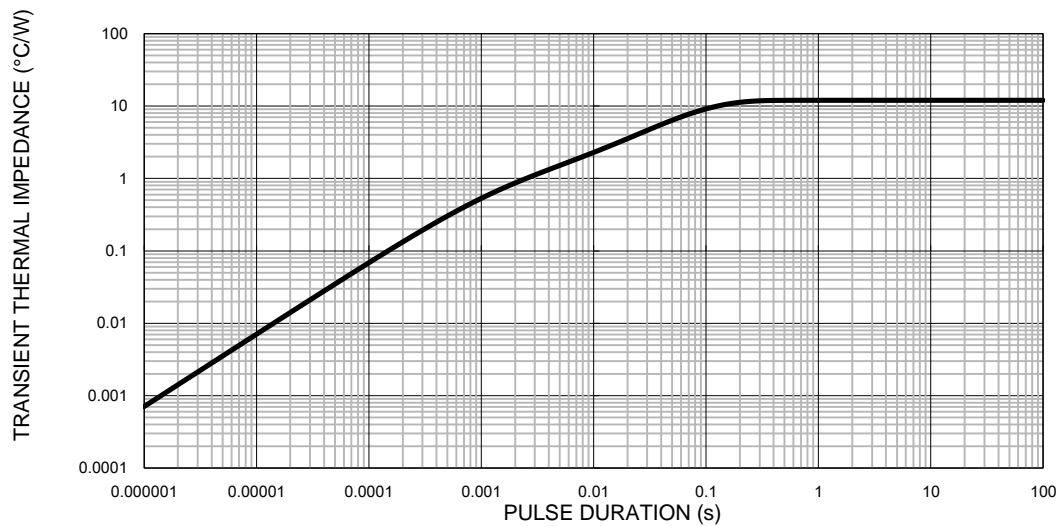
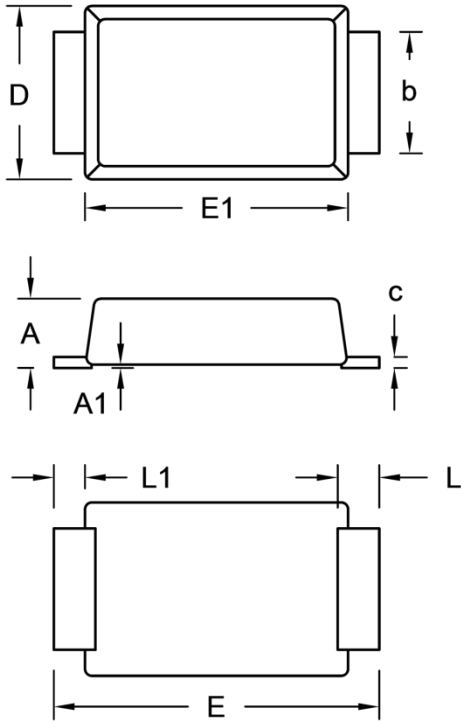


Fig.5 Typical Transient Thermal Impedance



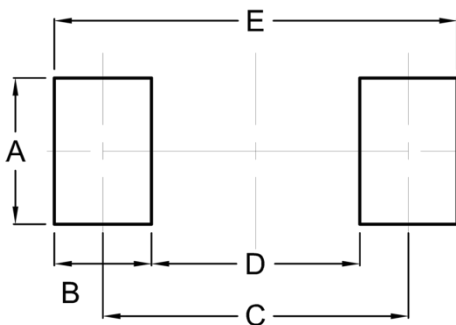
PACKAGE OUTLINE DIMENSIONS (Unit: Millimeters)

SOD-128



DIM.	Unit (mm)		Unit (inch)	
	Min.	Max.	Min.	Max.
A	0.90	1.10	0.035	0.043
A1	0.00	0.10	0.000	0.004
b	1.60	1.90	0.063	0.075
c	0.10	0.22	0.004	0.009
D	2.30	2.70	0.091	0.106
E	4.40	5.00	0.173	0.197
E1	3.60	4.00	0.142	0.157
L	0.40	0.80	0.016	0.031
L1	0.30	0.60	0.012	0.024

SUGGESTED PAD LAYOUT



Symbol	Unit (mm)	Unit (inch)
A	2.10	0.083
B	1.40	0.055
C	4.40	0.173
D	3.00	0.118
E	5.80	0.228

MARKING DIAGRAM



P/N = Marking Code
 YW = Date Code
 F = Factory Code

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