

3A, 400V - 600V ESD Capability Rectifier

FEATURES

- AEC-Q101 qualified
- High ESD capability
- Glass passivated chip junction
- Low forward voltage drop
- Ideal for automated placement
- Moisture sensitivity level: level 1, per J-STD-020
- RoHS Compliant
- Halogen-free

APPLICATIONS

- General purpose
- Polarity protection

MECHANICAL DATA

- Case: SOD-128
- 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: Indicated by cathode band
- Weight: 0.028g (approximately)

KEY PARAMETERS		
PARAMETER	VALUE	UNIT
I_F	3	A
V_{RRM}	400 - 600	V
I_{FSM}	50	A
$T_{J\ MAX}$	175	°C
Package	SOD-128	
Configuration	Single die	


SOD-128


ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise noted)				
PARAMETER	SYMBOL	TSD3GFSH	TSD3JFSH	UNIT
Marking code on the device		D3GFS	D3JFS	
Repetitive peak reverse voltage	V_{RRM}	400	600	V
Reverse voltage, total rms value	$V_{R(RMS)}$	280	420	V
Forward current	I_F	3		A
Surge peak forward current single half sine-wave superimposed on rated load	$t = 8.3\text{ms}$	50		A
	$t = 1.0\text{ms}$	145		
Junction temperature	T_J	-40 to +175		°C
Storage temperature	T_{STG}	-55 to +175		°C

THERMAL PERFORMANCE			
PARAMETER	SYMBOL	TYP	UNIT
Junction-to-lead thermal resistance	$R_{\theta JL}$	15	$^{\circ}\text{C}/\text{W}$
Junction-to-ambient thermal resistance	$R_{\theta JA}$	70	$^{\circ}\text{C}/\text{W}$
Junction-to-case thermal resistance	$R_{\theta JC}$	15	$^{\circ}\text{C}/\text{W}$

Thermal Performance Note: Units mounted on 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	0.90	-	V
	$I_F = 3.0\text{A}, T_J = 25^{\circ}\text{C}$		0.96	1.1	V
	$I_F = 1.5\text{A}, T_J = 125^{\circ}\text{C}$		0.78	-	V
	$I_F = 3.0\text{A}, T_J = 125^{\circ}\text{C}$		0.85	-	V
Reverse current @ rated V_R ⁽²⁾	$T_J = 25^{\circ}\text{C}$	I_R	-	1	μA
	$T_J = 125^{\circ}\text{C}$		6	-	μA
Junction capacitance	1MHz, $V_R = 4.0\text{V}$	C_J	18	-	pF

Notes:

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

IMMUNITY TO ELECTRICAL STATIC DISCHARGE TO THE FOLLOWING STANDARDS ($T_A = 25^{\circ}\text{C}$ unless otherwise noted)					
STANDARD	TEST TYPE	TEST CONDITIONS	SYMBOL	CLASS	VALUE
AEC-Q101-001	Human body mode	$C=100\text{pF}, R=1.5\text{k}\Omega$	V_c	H3B	$\geq 8\text{kV}$
IEC 61000-4-2	Contact mode	$C=150\text{pF}, R=330\Omega$		x	$\geq 10\text{kV}$
	Air-discharge mode	$C=150\text{pF}, R=330\Omega$		4	$\geq 15\text{kV}$
ISO 10605	Contact mode	$C=330\text{pF}, R=330\Omega$		L4	$\geq 15\text{kV}$

ORDERING INFORMATION		
ORDERING CODE⁽¹⁾	PACKAGE	PACKING
TSD3xFSH	SOD-128	14,000/ Tape & Reel

Notes:

1. "x" defines voltage from 400V(TSD3GFSH) to 600V(TSD3JFSH)

CHARACTERISTICS CURVES

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

Fig.1 Forward Current Derating Curve

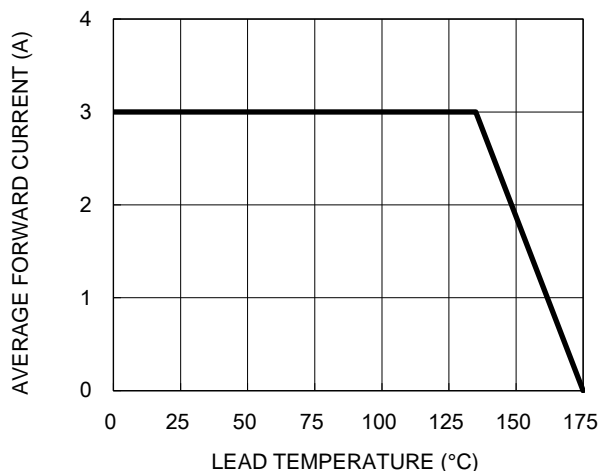


Fig.2 Typical Junction Capacitance

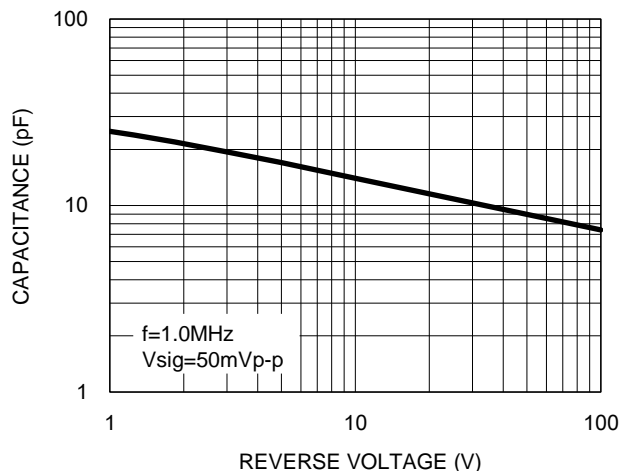


Fig.3 Typical Reverse Characteristics

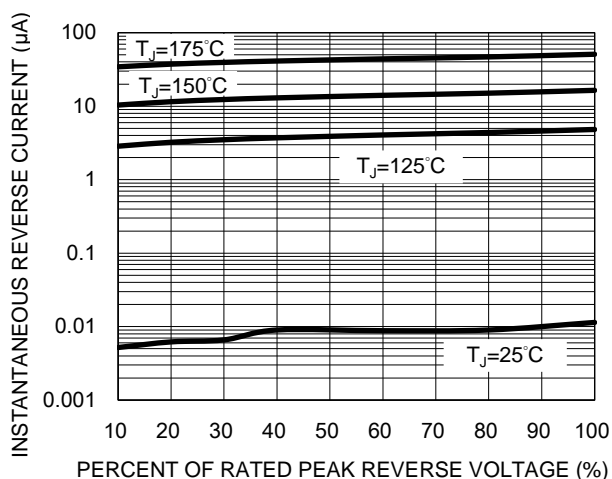


Fig.4 Typical Forward Characteristics

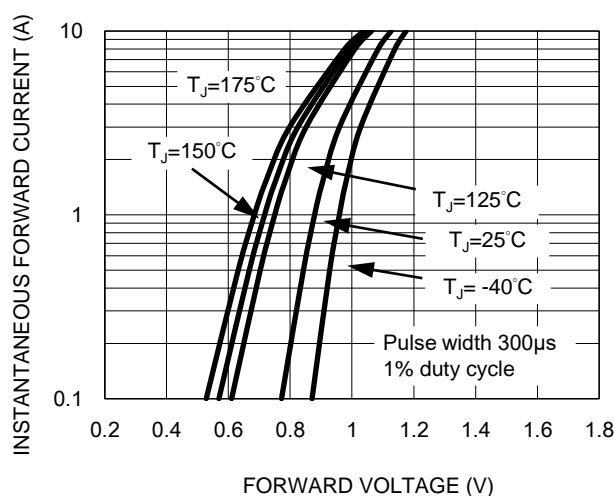
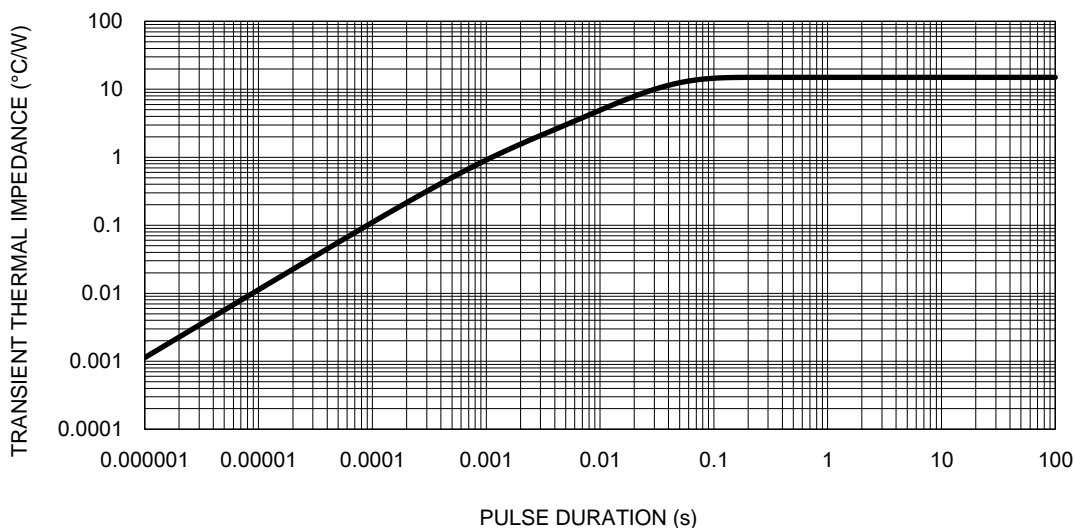
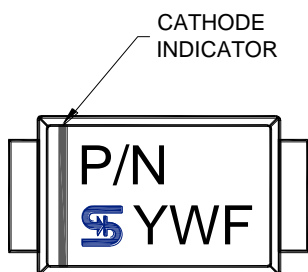
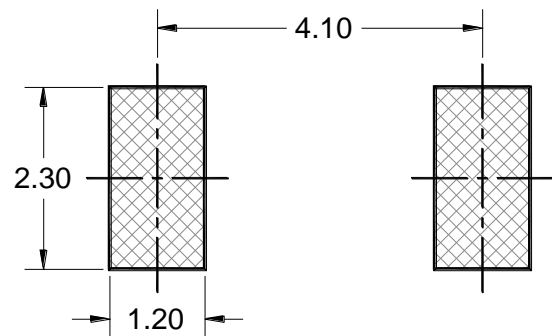
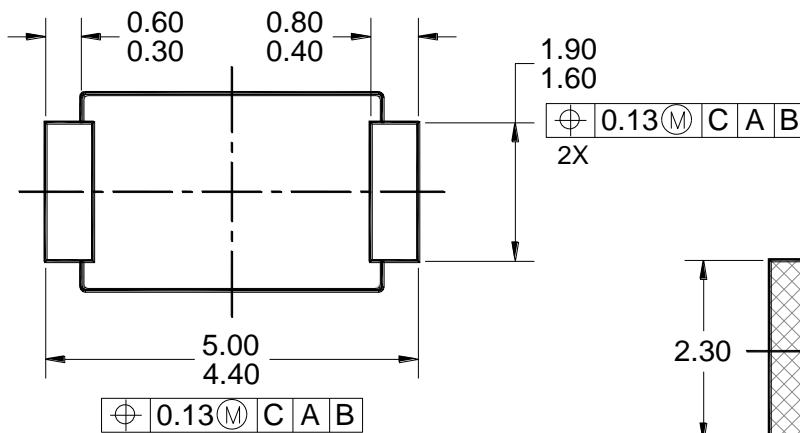
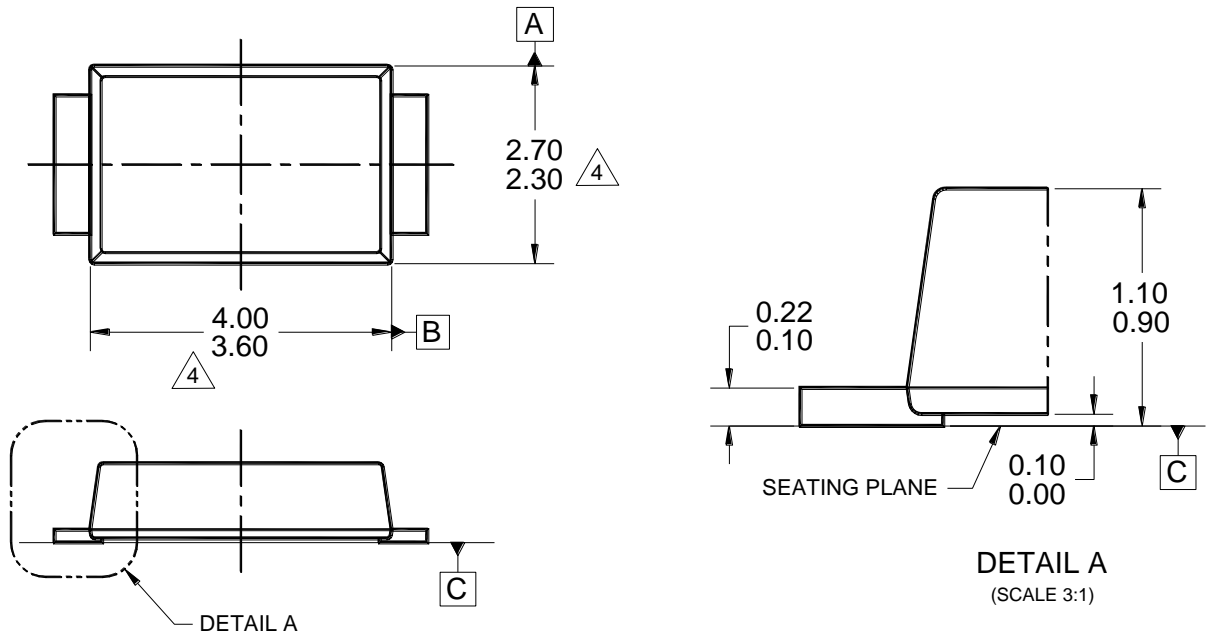


Fig.5 Typical Transient Thermal Impedance



PACKAGE OUTLINE DIMENSIONS

SOD-128



MARKING DIAGRAM

P/N = MARKING CODE
Y W = DATE CODE
F = FACTORY CODE

NOTES: UNLESS OTHERWISE SPECIFIED

1. ALL DIMENSIONS ARE IN MILLIMETERS.
2. DIMENSIONING AND TOLERANCING PER ASME Y14.5M-2009.
3. PACKAGE OUTLINE REFERENCE: JEDEC DO-221, VARIATION AD, ISSUE B.
4. MODIFIED PLASTIC BODY DIMENSIONS DO NOT INCLUDE MOLD FLASH.
5. DWG NO. REF: HQ2SD07-SOD128-039 REV A.

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