

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
$T_J \text{ MAX}$	175	°C
Package	SOD-128	
Configuration	Single die	



SOD-128



ABSOLUTE MAXIMUM RATINGS (T _A = 25°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 = 8.3ms	I _{FSM}	50		A
	t = 1.0ms		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	°C/W
Junction-to-ambient thermal resistance	$R_{\theta JA}$	70	°C/W
Junction-to-case thermal resistance	$R_{\theta JC}$	15	°C/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:

- Pulse test with $PW = 0.3\text{ms}$
- 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:

- "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

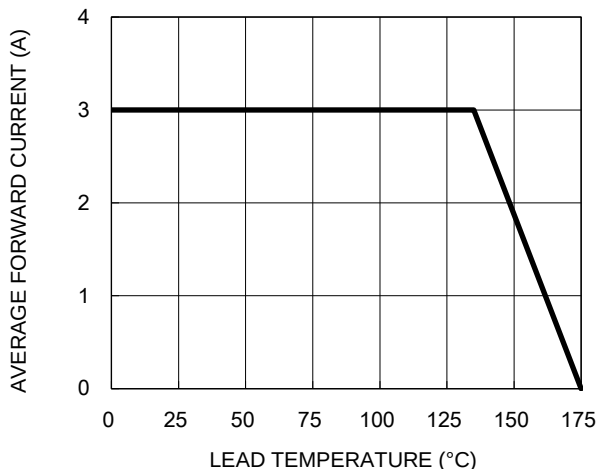


Fig.2 Typical Junction Capacitance

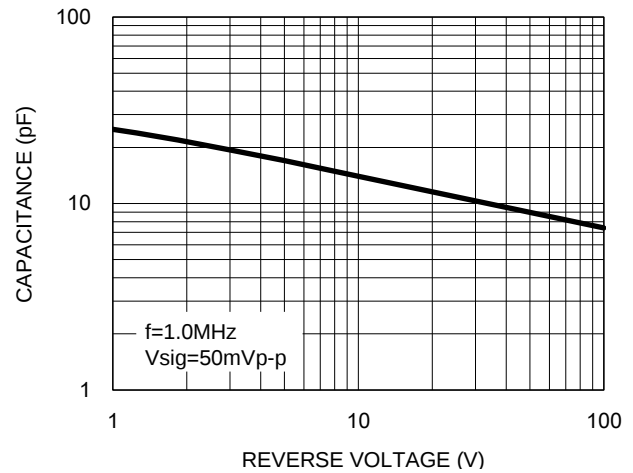


Fig.3 Typical Reverse Characteristics

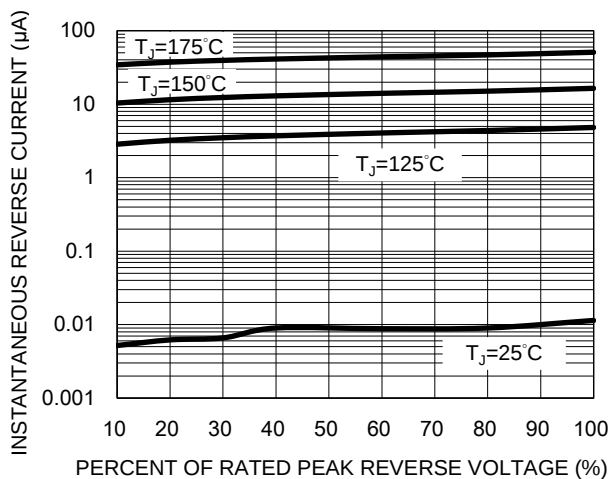


Fig.4 Typical Forward Characteristics

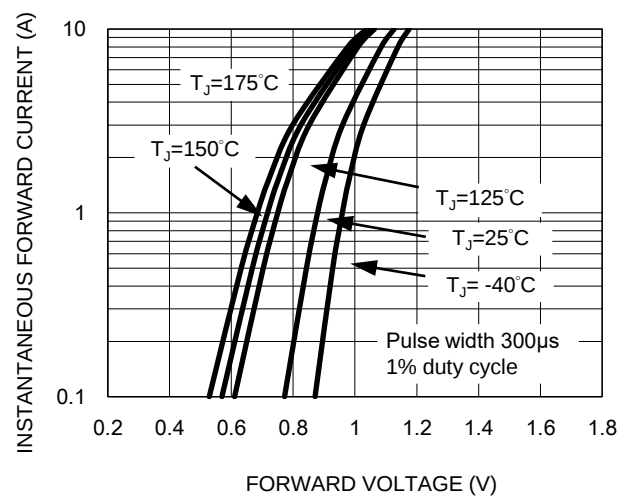
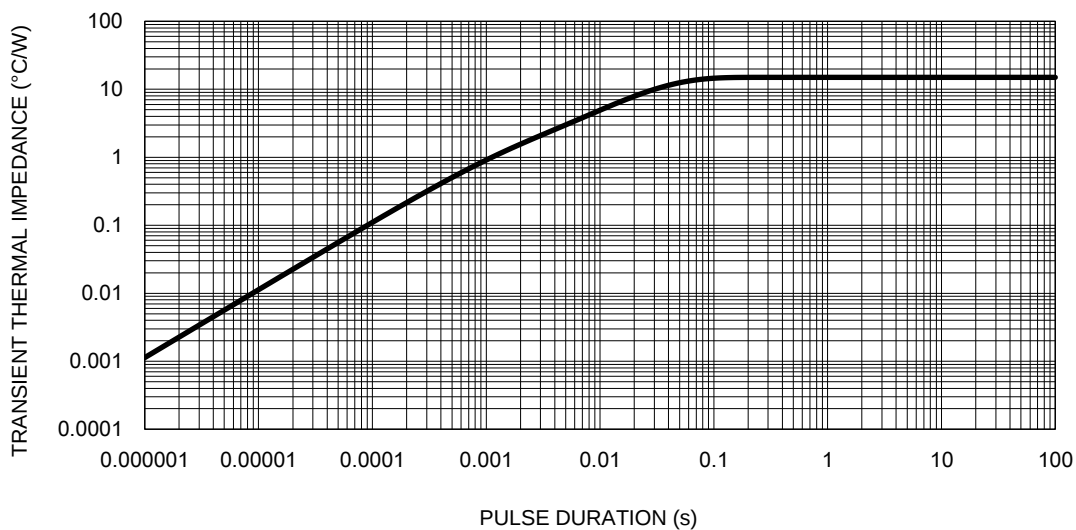
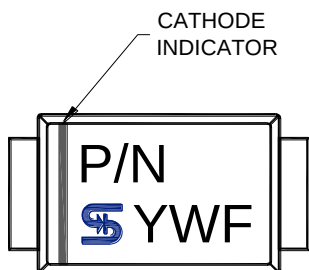
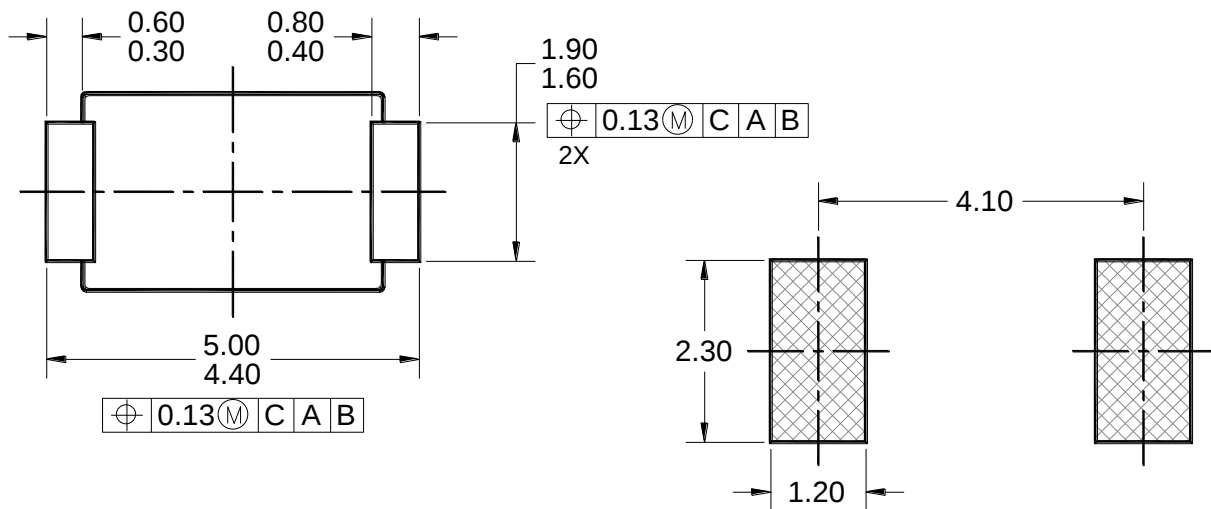
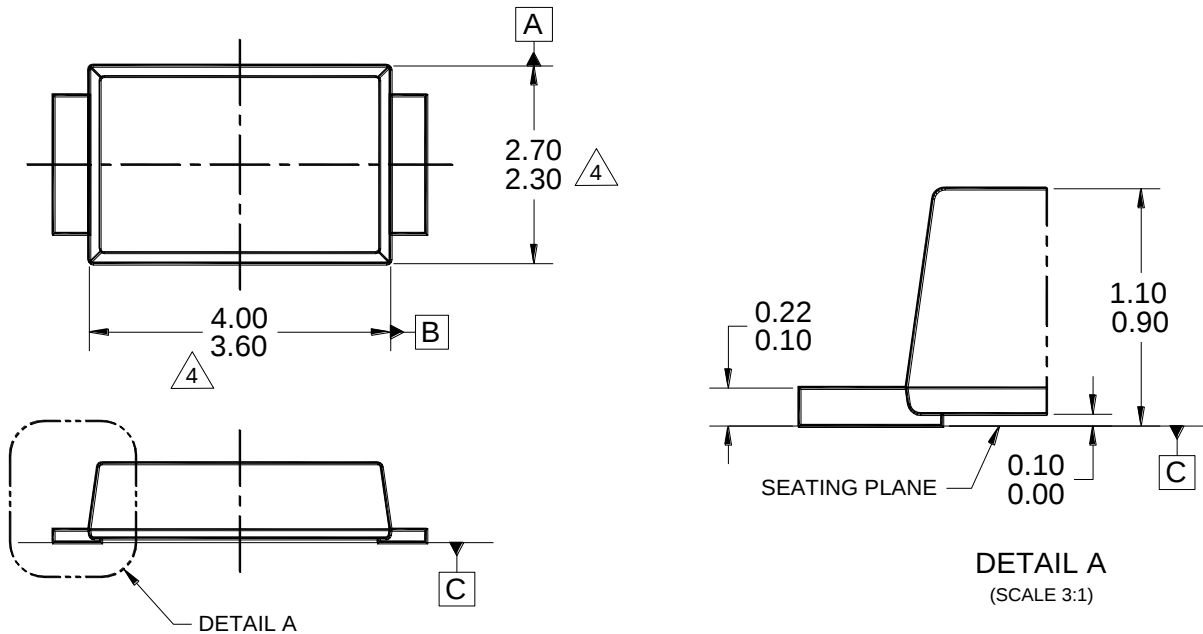


Fig.5 Typical Transient Thermal Impedance



PACKAGE OUTLINE DIMENSIONS

SOD-128



MARKING DIAGRAM

P/N = MARKING CODE
YWF = DATE CODE
F = FACTORY CODE

NOTES: UNLESS OTHERWISE SPECIFIED

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

Notice

Specifications of the products displayed herein are subject to change without notice. TSC or anyone on its behalf, assumes no responsibility or liability for any errors or inaccuracies.

Purchasers are solely responsible for the choice, selection, and use of TSC products and TSC assumes no liability for application assistance or the design of Purchasers' products.

Information contained herein is intended to provide a product description only. No license, express or implied, to any intellectual property rights is granted by this document. Except as provided in TSC's terms and conditions of sale for such products, TSC assumes no liability whatsoever, and disclaims any express or implied warranty, relating to sale and/or use of TSC products including liability or warranties relating to fitness for a particular purpose, merchantability, or infringement of any patent, copyright, or other intellectual property right.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications. Customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify TSC for any damages resulting from such improper use or sale.