

## 3A, 45V - 60V Trench Schottky Surface Mount Rectifier

### FEATURES

- AEC-Q101 qualified
- Patented Trench Schottky technology
- Excellent high temperature stability
- Low forward voltage
- Lower power loss/ high efficiency
- High forward surge capability
- Moisture sensitivity level: level 1, per J-STD-020
- RoHS Compliant
- Halogen-free according to IEC 61249-2-21

### APPLICATIONS

- Low voltage, high freq. inverter
- DC/DC converter
- Freewheeling diodes
- Reverse battery protection
- Car lighting

### MECHANICAL DATA

- Case: SOD-123HE
- 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: 0.022g (approximately)

KEY PARAMETERS		
PARAMETER	VALUE	UNIT
$I_F$	3	A
$V_{RRM}$	45 - 60	V
$I_{FSM}$	60	A
$T_{J\ MAX}$	150	°C
Package	SOD-123HE	
Configuration	Single die	



SOD-123HE



ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)				
PARAMETER	SYMBOL	TSSE3H45H	TSSE3H60H	UNIT
Marking code on the device		E3H45	E3H60	
Repetitive peak reverse voltage	$V_{RRM}$	45	60	V
Reverse voltage, total rms value	$V_{R(RMS)}$	32	42	V
Forward current	$I_F$	3		A
Peak forward surge current, 8.3ms single half sine-wave superimposed on rated load	$I_{FSM}$	60		A
Junction temperature	$T_J$	- 55 to +150		°C
Storage temperature	$T_{STG}$	- 55 to +150		°C

<b>THERMAL PERFORMANCE</b>			
<b>PARAMETER</b>	<b>SYMBOL</b>	<b>TYP</b>	<b>UNIT</b>
Junction-to-lead thermal resistance	$R_{\theta JL}$	20	$^{\circ}\text{C/W}$

<b>ELECTRICAL SPECIFICATIONS</b> ( $T_A = 25^{\circ}\text{C}$ unless otherwise noted)						
<b>PARAMETER</b>		<b>CONDITIONS</b>	<b>SYMBOL</b>	<b>TYP</b>	<b>MAX</b>	<b>UNIT</b>
Forward voltage <sup>(1)</sup>	TSSE3H45H	$I_F = 3\text{A}, T_J = 25^{\circ}\text{C}$	$V_F$	0.47	0.57	V
		$I_F = 3\text{A}, T_J = 125^{\circ}\text{C}$		0.40	0.50	V
	TSSE3H60H	$I_F = 3\text{A}, T_J = 25^{\circ}\text{C}$		0.50	0.60	V
		$I_F = 3\text{A}, T_J = 125^{\circ}\text{C}$		0.43	0.53	V
Reverse current @ rated $V_R$ <sup>(2)</sup>		$T_J = 25^{\circ}\text{C}$	$I_R$	-	100	$\mu\text{A}$
		$T_J = 125^{\circ}\text{C}$		-	25	mA

**Notes:**

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

<b>ORDERING INFORMATION</b>		
<b>ORDERING CODE</b> <sup>(1)</sup>	<b>PACKAGE</b>	<b>PACKING</b>
TSSE3HxH	SOD-123HE	10,000 / Tape & Reel

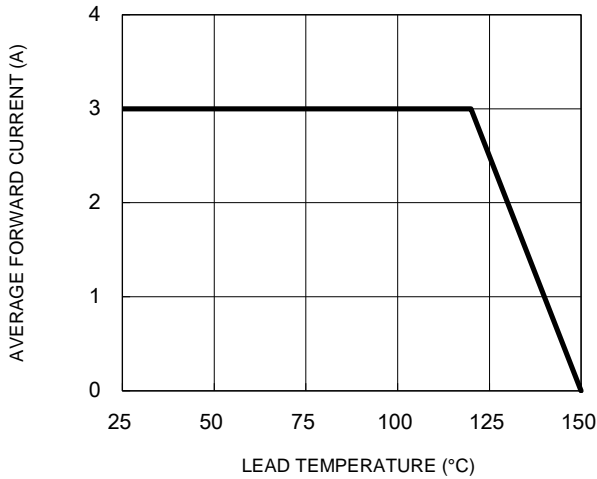
**Notes:**

1. "x" defines voltage from 45V(TSSE3H45H) to 60V(TSSE3H60H)

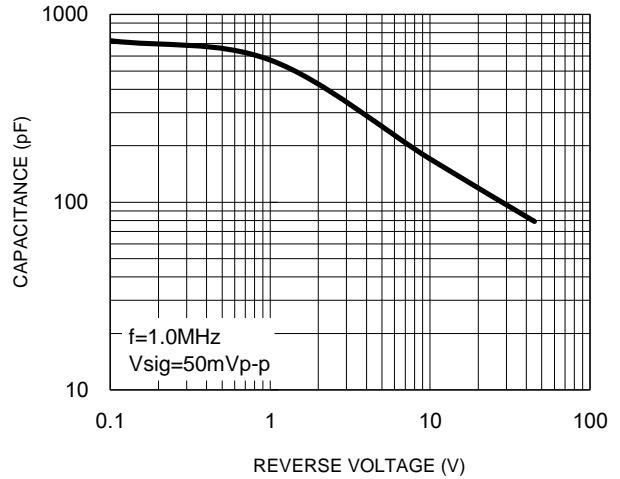
**CHARACTERISTICS CURVES**

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

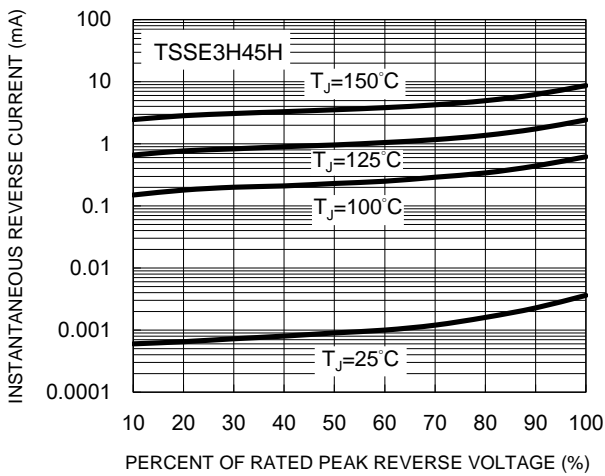
**Fig.1 Forward Current Derating Curve**



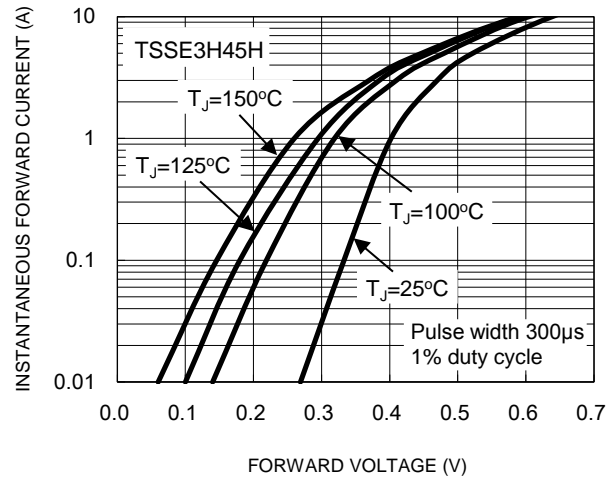
**Fig.2 Typical Junction Capacitance**



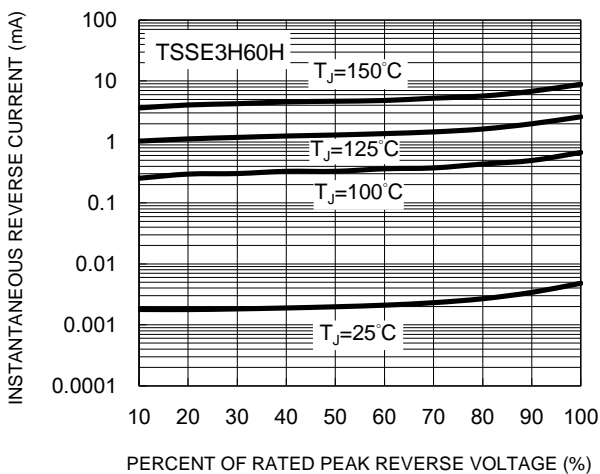
**Fig.3 Typical Reverse Characteristics**



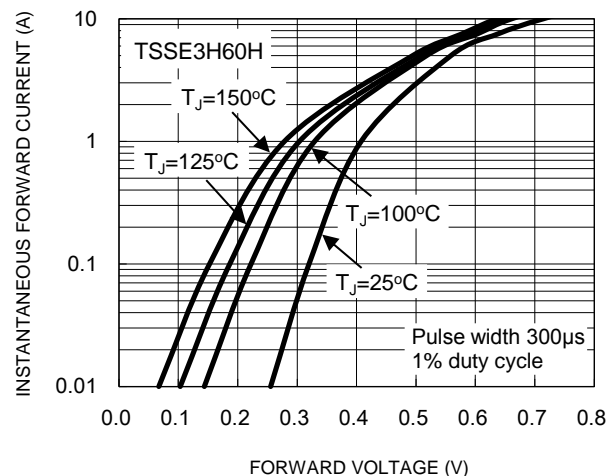
**Fig.4 Typical Forward Characteristics**



**Fig.5 Typical Reverse Characteristics**

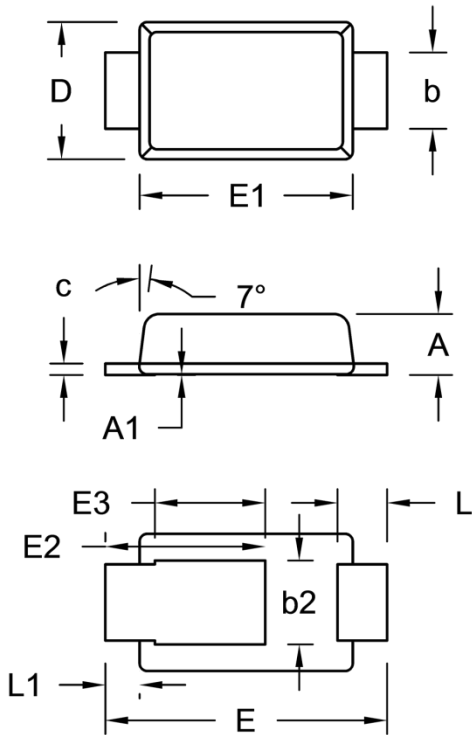


**Fig.6 Typical Forward Characteristics**



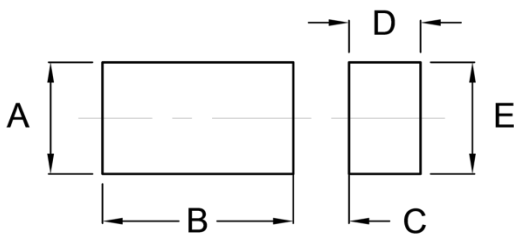
**PACKAGE OUTLINE DIMENSIONS**

SOD-123HE



DIM.	Unit (mm)		Unit (inch)	
	Min.	Max.	Min.	Max.
A	0.75	0.85	0.030	0.033
A1	0.00	0.02	0.000	0.001
b	0.85	1.15	0.033	0.045
b2	0.95	1.25	0.037	0.049
c	0.10	0.20	0.004	0.008
D	1.65	1.95	0.065	0.077
E	3.50	3.90	0.138	0.154
E1	2.60	3.00	0.102	0.118
E2	1.90	2.30	0.075	0.091
E3	1.35	1.55	0.053	0.061
L	0.55	0.75	0.022	0.030
L1	0.35	0.55	0.014	0.022

**SUGGESTED PAD LAYOUT**



Symbol	Unit (mm)	Unit (inch)
A	1.40	0.055
B	2.40	0.094
C	0.70	0.028
D	0.90	0.035
E	1.40	0.055

**MARKING DIAGRAM**



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

## **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.