

# KA2807

## Ground Fault Circuit Interrupter

### Description

The KA2807 is an IC for ground fault circuit interrupters which are intended to provide an electrical shock hazard protection from line to ground fault currents on grounded circuits of 120 V supplies.

### Features

- Full Advantage of the UL943
- Built-In Voltage Regulator
- Sense Coil Ratio – 1000:1
- GND/Neutral Coil Ratio – 200:1
- Trip Time in Normal Fault and Grounded Neutral Fault is 18 ms Typ
- Wide Operating Temperature Range
- Excellent ESD Characteristic
- 1 mA Output Current Pulse to Trigger SCR
- Available in 8 Pin SOIC and 8 Pin MSOP
- Pb-Free Device



**ON Semiconductor®**

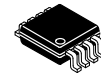
[www.onsemi.com](http://www.onsemi.com)

### RELATED STANDARDS

UL943

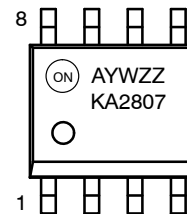


**SOIC8  
CASE 751EB**

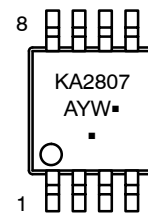


**Micro8  
CASE 846A**

### MARKING DIAGRAMS



SOIC8



Micro8

KA2807 = Specific Device Code  
A = Assembly Location  
Y = Year  
W = Work Week  
ZZ = Assembly LOT Code  
▪ = Pb-Free Package  
(Note: Microdot may be in either location)

### ORDERING INFORMATION

Device	Package	Shipping†
KA2807DTF	SOIC (Pb-Free)	2,500 / Tape & Reel
KA2807MUX	Micro8 (Pb-Free)	4,000 / Tape & Reel

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specification Brochure, BRD8011/D.

# KA2807

## PIN ASSIGNMENT

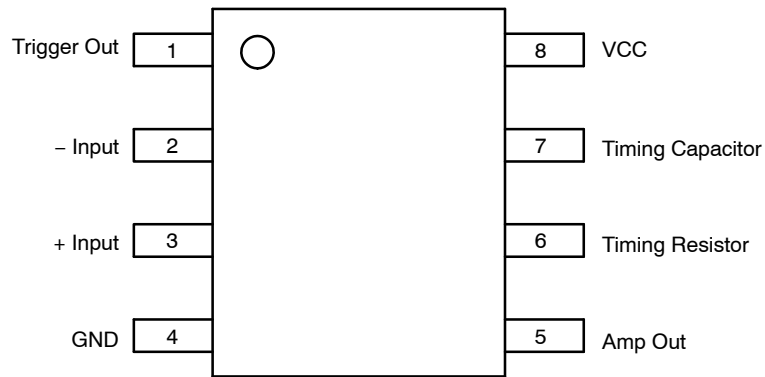


Figure 1. Pin Out KA2807 in 8-pin SOP or MSOP (Top View)

## BLOCK DIAGRAM

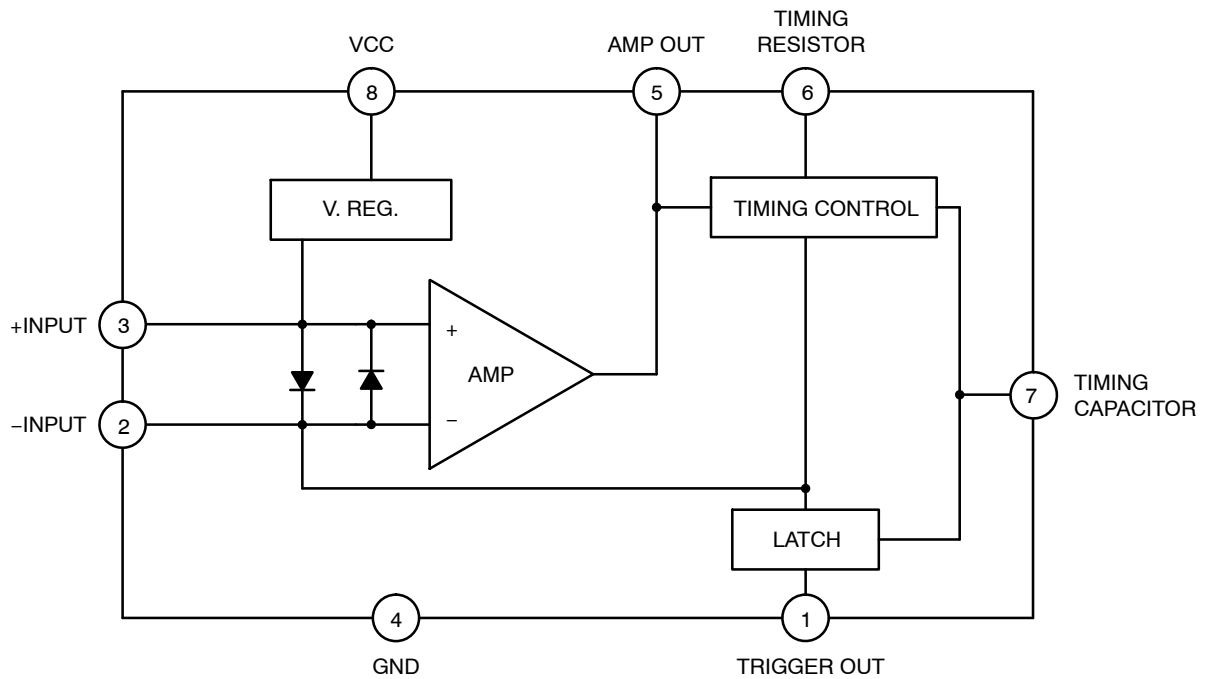


Figure 2. KA2807 Block Diagram

**ABSOLUTE MAXIMUM RATINGS**

Symbol	Parameter	Min	Max	Unit
I <sub>CC</sub>	Supply Current	-	+19	mA
P <sub>D</sub>	Power Dissipation SOIC-8 MSOP-8	- -	0.41 0.3	W
T <sub>OPR</sub>	Operating Temperature Range	-40	+70	°C
T <sub>STG</sub>	Storage Temperature Range	-55	+150	°C

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

**ELECTRICAL CHARACTERISTICS**

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V <sub>REG</sub>	Shunt Regulator Voltage	Pin 8, S1: 2, S2: OFF	23	26	29	V
V <sub>REF</sub>	Amplifier Reference Voltage	Pin 3, S1: 2, S2: OFF	9.5	10.5	11.5	V
V <sub>OH</sub>	Amplifier High Output Voltage	Pin 5, S1: 3, S2: ON Sig: 800 Hz, 3.0 V <sub>P-P</sub> Sinusoidal wave	17	19	21	V
V <sub>OL</sub>	Amplifier Low Output Voltage	Pin 5, S1: 3, S2: ON Sig: 800 Hz, 3.0 V <sub>P-P</sub> Sinusoidal wave	1.5	2.5	3.5	V
I <sub>SEN</sub>	Amplifier Sensitivity Current	Pin 2, S1: 3, S2: ON Sig: 800 Hz, 1.0 V <sub>P-P</sub> ~ 2.5 V <sub>P-P</sub> Sinusoidal wave	3.5	5	6.5	μArms
V <sub>ON(LATCH)</sub>	Latch On Voltage	Pin 7, S1: 3, S2: ON Sig: 800 Hz, 3.0 V <sub>P-P</sub> Sinusoidal wave	16.5	17.5	19.5	V
I <sub>TR</sub>	SCR Trigger Current	Pin 1, S1: 3, S2: ON Sig: 800 Hz, 3.0 V <sub>P-P</sub> Sinusoidal wave	0.5	1	2.0	mA
V <sub>S 1</sub>	Output Low Voltage	Pin 1, S1: 2, S2: OFF	-	100	240	mA
Z <sub>O</sub>	Output Impedance	Pin 1, S1: 2, S2: OFF	-	100	250	Ω
I <sub>SINK</sub>	Output Sink Current	Pin 1, S1: 2, S2: OFF	2.0	6.0	-	mA

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

# KA2807

## TEST CIRCUIT

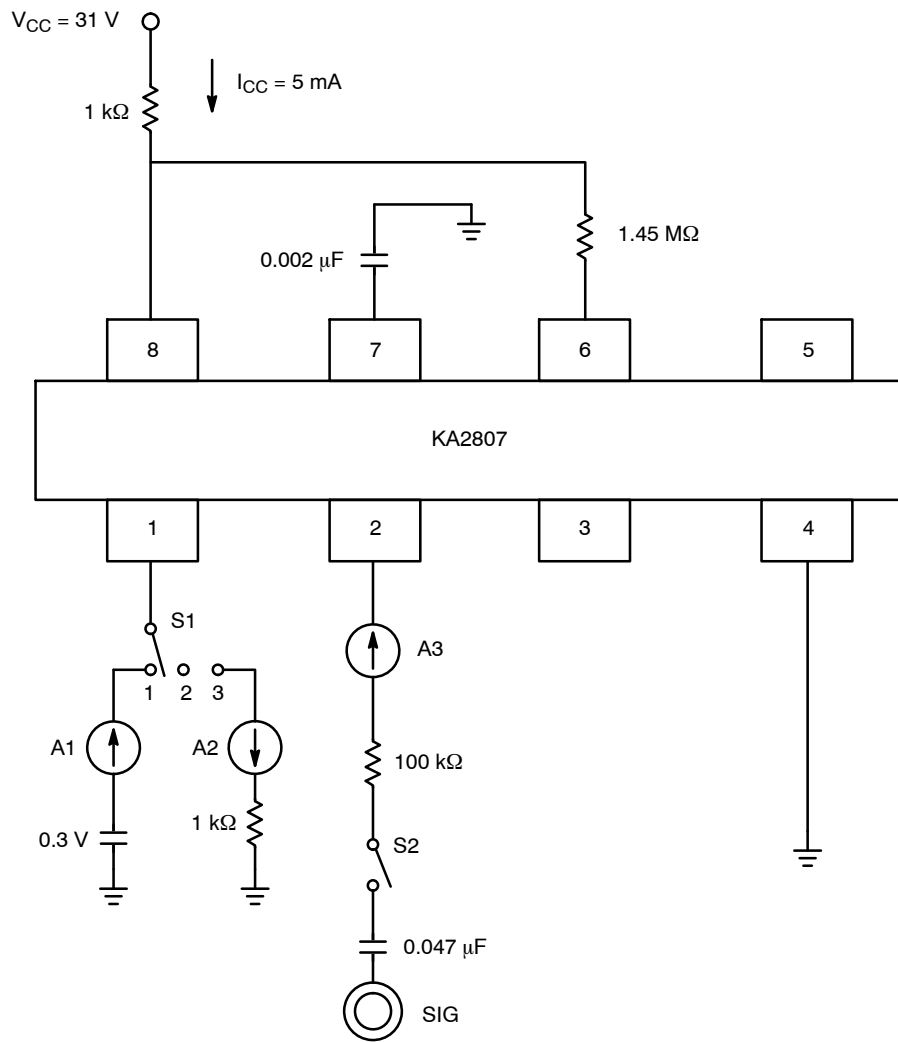


Figure 3. KA2807 Test Circuit

# MECHANICAL CASE OUTLINE

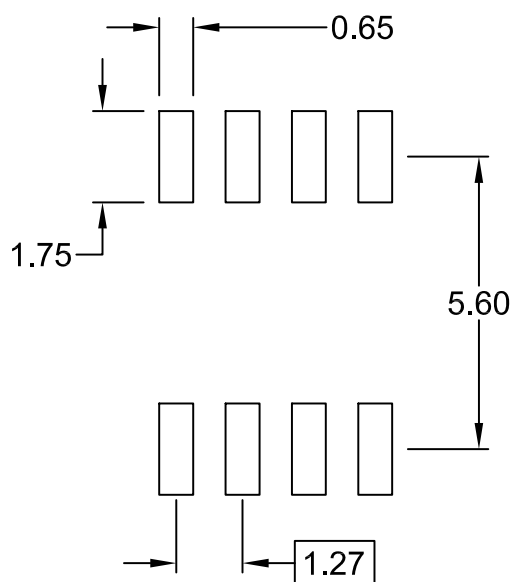
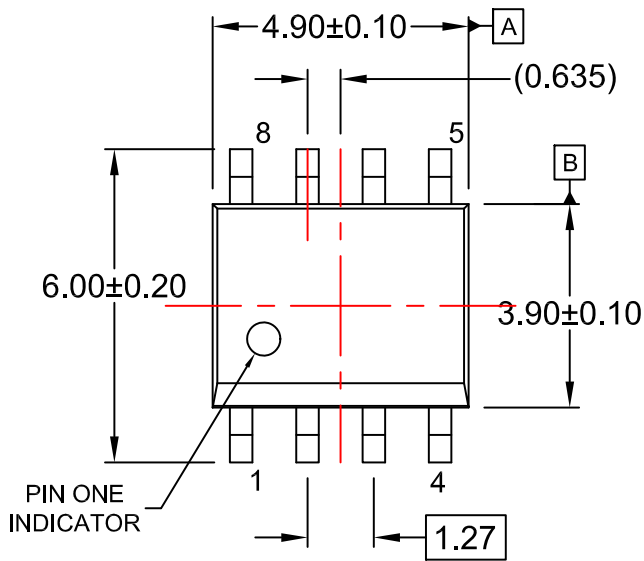
## PACKAGE DIMENSIONS

ON Semiconductor®

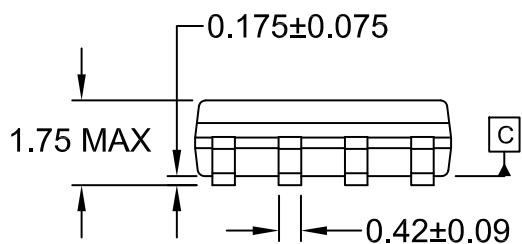


SOIC8  
CASE 751EB  
ISSUE A

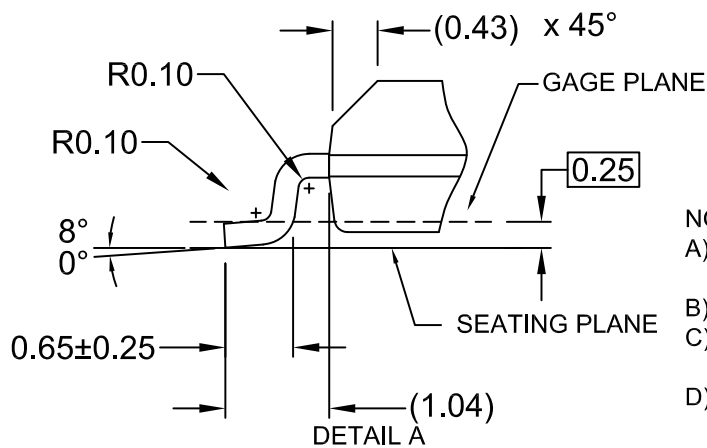
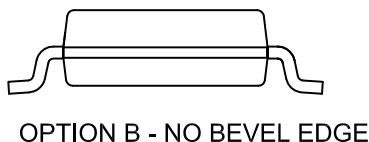
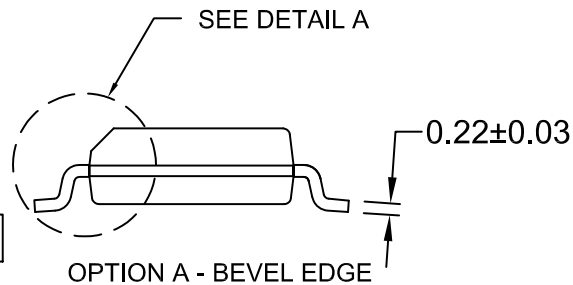
DATE 24 AUG 2017



⊕ 0.25 (M) C B A



⌒ 0.10



SCALE: 2:1

NOTES:

- A) THIS PACKAGE CONFORMS TO JEDEC MS-012, VARIATION AA.
- B) ALL DIMENSIONS ARE IN MILLIMETERS.
- C) DIMENSIONS DO NOT INCLUDE MOLD FLASH OR BURRS.
- D) LANDPATTERN STANDARD: SOIC127P600X175-8M

DOCUMENT NUMBER:	98AON13735G	Electronic versions are uncontrolled except when accessed directly from the Document Repository. Printed versions are uncontrolled except when stamped "CONTROLLED COPY" in red.
DESCRIPTION:	SOIC8	PAGE 1 OF 1

ON Semiconductor and ON are trademarks of Semiconductor Components Industries, LLC dba ON Semiconductor or its subsidiaries in the United States and/or other countries. ON Semiconductor reserves the right to make changes without further notice to any products herein. ON Semiconductor makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does ON Semiconductor assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. ON Semiconductor does not convey any license under its patent rights nor the rights of others.

# MECHANICAL CASE OUTLINE PACKAGE DIMENSIONS

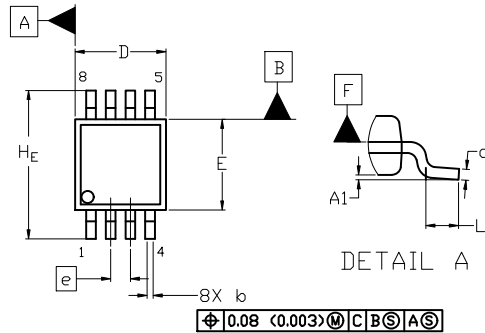
ON Semiconductor®



SCALE 2:1

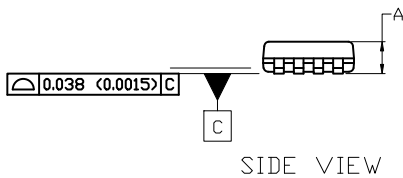
## Micro8 CASE 846A-02 ISSUE K

DATE 16 JUL 2020

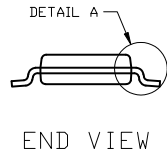


TOP VIEW

NOTE 3



SIDE VIEW



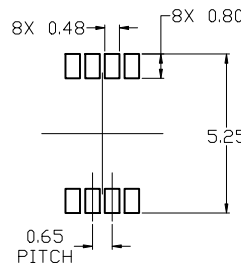
END VIEW

**NOTES:**

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 2009.
2. CONTROLLING DIMENSION: MILLIMETERS
3. DIMENSION *b* DOES NOT INCLUDE DAMBAR PROTRUSION. ALLOWABLE PROTRUSION SHALL BE 0.10 mm IN EXCESS OF MAXIMUM MATERIAL CONDITION.
4. DIMENSIONS *D* AND *E* DO NOT INCLUDE MOLD FLASH, PROTRUSION OR GATE BURRS. MOLD FLASH, PROTRUSIONS, OR GATE BURRS SHALL NOT EXCEED 0.15 mm PER SIDE. DIMENSION *E* DOES NOT INCLUDE INTERLEAD FLASH OR PROTRUSION. INTERLEAD FLASH OR PROTRUSION SHALL NOT EXCEED 0.25 mm PER SIDE. DIMENSIONS *D* AND *E* ARE DETERMINED AT DATUM *F*.
5. DATUMS *A* AND *B* ARE TO BE DETERMINED AT DATUM *F*.
6. *A1* IS DEFINED AS THE VERTICAL DISTANCE FROM THE SEATING PLANE TO THE LOWEST POINT ON THE PACKAGE BODY.

⌀ 0.08 (0.003) M C B S A S

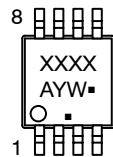
DIM	MILLIMETERS		
	MIN.	NOM.	MAX.
A	---	---	1.10
A1	0.05	0.08	0.15
<i>b</i>	0.25	0.33	0.40
<i>c</i>	0.13	0.18	0.23
<i>D</i>	2.90	3.00	3.10
<i>E</i>	2.90	3.00	3.10
<i>e</i>	0.65 BSC		
<i>H<sub>E</sub></i>	4.75	4.90	5.05
<i>L</i>	0.40	0.55	0.70



RECOMMENDED  
MOUNTING FOOTPRINT

For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERM/D.

### GENERIC MARKING DIAGRAM\*



- XXXX = Specific Device Code
- A = Assembly Location
- Y = Year
- W = Work Week
- = Pb-Free Package

(Note: Microdot may be in either location)

\*This information is generic. Please refer to device data sheet for actual part marking. Pb-Free indicator, "G" or microdot "▪", may or may not be present. Some products may not follow the Generic Marking.

**STYLE 1:**

1. SOURCE
2. SOURCE
3. SOURCE
4. GATE
5. DRAIN
6. DRAIN
7. DRAIN
8. DRAIN

**STYLE 2:**

1. SOURCE 1
2. GATE 1
3. SOURCE 2
4. GATE 2
5. DRAIN 2
6. DRAIN 2
7. DRAIN 1
8. DRAIN 1

**STYLE 3:**

1. N-SOURCE
2. N-GATE
3. P-SOURCE
4. P-GATE
5. P-DRAIN
6. P-DRAIN
7. N-DRAIN
8. N-DRAIN

<b>DOCUMENT NUMBER:</b>	<b>98ASB14087C</b>	Electronic versions are uncontrolled except when accessed directly from the Document Repository. Printed versions are uncontrolled except when stamped "CONTROLLED COPY" in red.
<b>DESCRIPTION:</b>	<b>MICRO8</b>	<b>PAGE 1 OF 1</b>

ON Semiconductor and ON are trademarks of Semiconductor Components Industries, LLC dba ON Semiconductor or its subsidiaries in the United States and/or other countries. ON Semiconductor reserves the right to make changes without further notice to any products herein. ON Semiconductor makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does ON Semiconductor assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. ON Semiconductor does not convey any license under its patent rights nor the rights of others.

**onsemi**, **Onsemi**, and other names, marks, and brands are registered and/or common law trademarks of Semiconductor Components Industries, LLC dba "**onsemi**" or its affiliates and/or subsidiaries in the United States and/or other countries. **onsemi** owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of **onsemi**'s product/patent coverage may be accessed at [www.onsemi.com/site/pdf/Patent-Marking.pdf](http://www.onsemi.com/site/pdf/Patent-Marking.pdf). **onsemi** reserves the right to make changes at any time to any products or information herein, without notice. The information herein is provided "as-is" and **onsemi** makes no warranty, representation or guarantee regarding the accuracy of the information, product features, availability, functionality, or suitability of its products for any particular purpose, nor does **onsemi** assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. Buyer is responsible for its products and applications using **onsemi** products, including compliance with all laws, regulations and safety requirements or standards, regardless of any support or applications information provided by **onsemi**. "Typical" parameters which may be provided in **onsemi** data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. **onsemi** does not convey any license under any of its intellectual property rights nor the rights of others. **onsemi** products are not designed, intended, or authorized for use as a critical component in life support systems or any FDA Class 3 medical devices or medical devices with a same or similar classification in a foreign jurisdiction or any devices intended for implantation in the human body. Should Buyer purchase or use **onsemi** products for any such unintended or unauthorized application, Buyer shall indemnify and hold **onsemi** and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that **onsemi** was negligent regarding the design or manufacture of the part. **onsemi** is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

## ADDITIONAL INFORMATION

### TECHNICAL PUBLICATIONS:

Technical Library: [www.onsemi.com/design/resources/technical-documentation](http://www.onsemi.com/design/resources/technical-documentation)  
onsemi Website: [www.onsemi.com](http://www.onsemi.com)

### ONLINE SUPPORT: [www.onsemi.com/support](http://www.onsemi.com/support)

For additional information, please contact your local Sales Representative at [www.onsemi.com/support/sales](http://www.onsemi.com/support/sales)