

# 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



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### RELATED STANDARDS

UL943

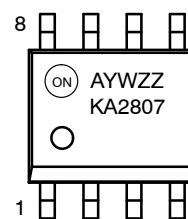


SOIC8  
CASE 751EB

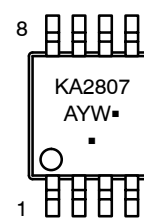


Micro8  
CASE 846A

### 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<br>(Pb-Free)   | 2,500 /<br>Tape & Reel |
| KA2807MUX | Micro8<br>(Pb-Free) | 4,000 /<br>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

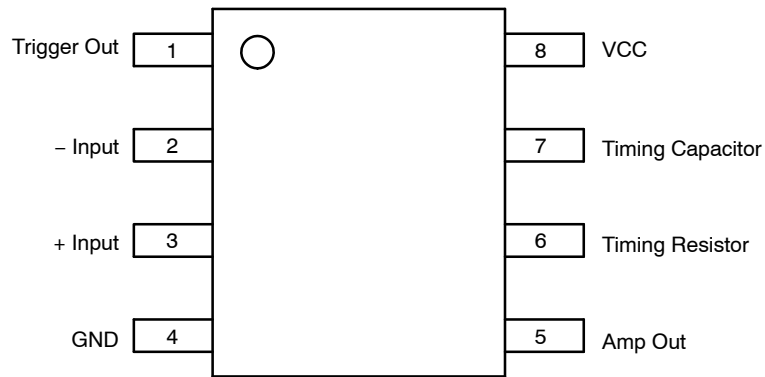


Figure 1. Pin Out KA2807 in 8-pin SOP or MSOP (Top View)

## BLOCK DIAGRAM

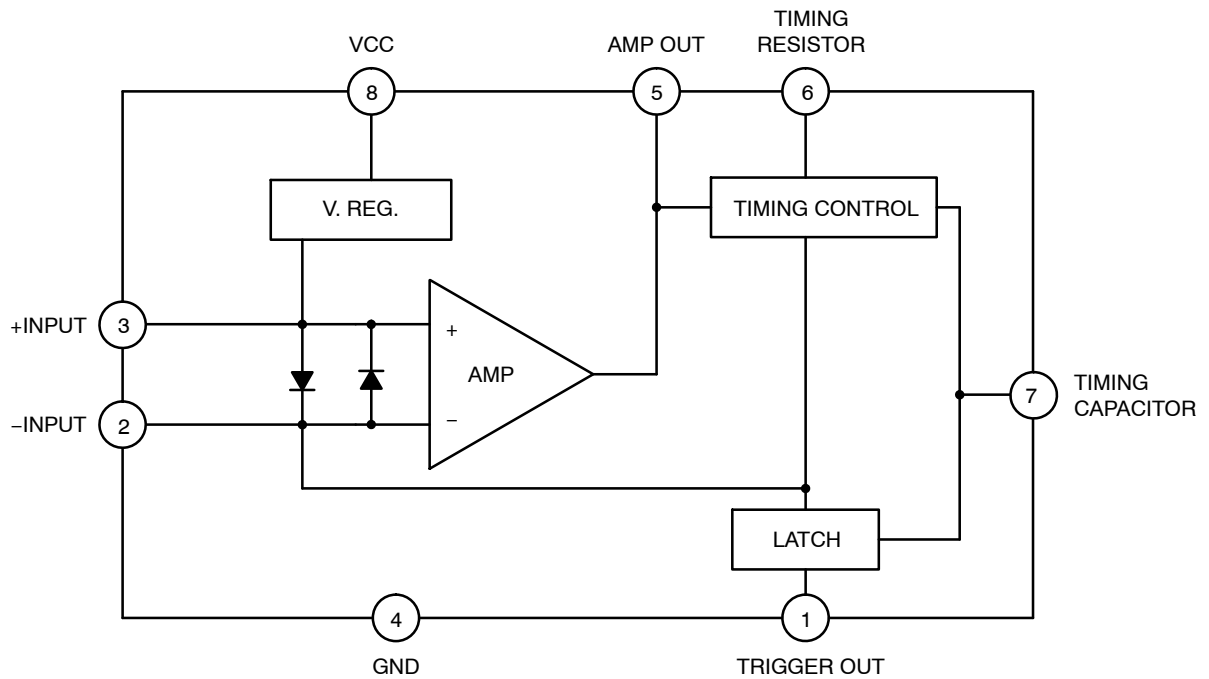


Figure 2. KA2807 Block Diagram

**ABSOLUTE MAXIMUM RATINGS**

| Symbol           | Parameter                             | Min    | Max         | Unit |
|------------------|---------------------------------------|--------|-------------|------|
| I <sub>CC</sub>  | Supply Current                        | -      | +19         | mA   |
| P <sub>D</sub>   | Power Dissipation<br>SOIC-8<br>MSOP-8 | -<br>- | 0.41<br>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<br>Sig: 800 Hz, 3.0 V <sub>P-P</sub><br>Sinusoidal wave                        | 17   | 19   | 21   | V     |
| V <sub>OL</sub>        | Amplifier Low Output Voltage  | Pin 5, S1: 3, S2: ON<br>Sig: 800 Hz, 3.0 V <sub>P-P</sub><br>Sinusoidal wave                        | 1.5  | 2.5  | 3.5  | V     |
| I <sub>SEN</sub>       | Amplifier Sensitivity Current | Pin 2, S1: 3, S2: ON<br>Sig: 800 Hz, 1.0 V <sub>P-P</sub> ~ 2.5 V <sub>P-P</sub><br>Sinusoidal wave | 3.5  | 5    | 6.5  | μArms |
| V <sub>ON(LATCH)</sub> | Latch On Voltage              | Pin 7, S1: 3, S2: ON<br>Sig: 800 Hz, 3.0 V <sub>P-P</sub><br>Sinusoidal wave                        | 16.5 | 17.5 | 19.5 | V     |
| I <sub>TR</sub>        | SCR Trigger Current           | Pin 1, S1: 3, S2: ON<br>Sig: 800 Hz, 3.0 V <sub>P-P</sub><br>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

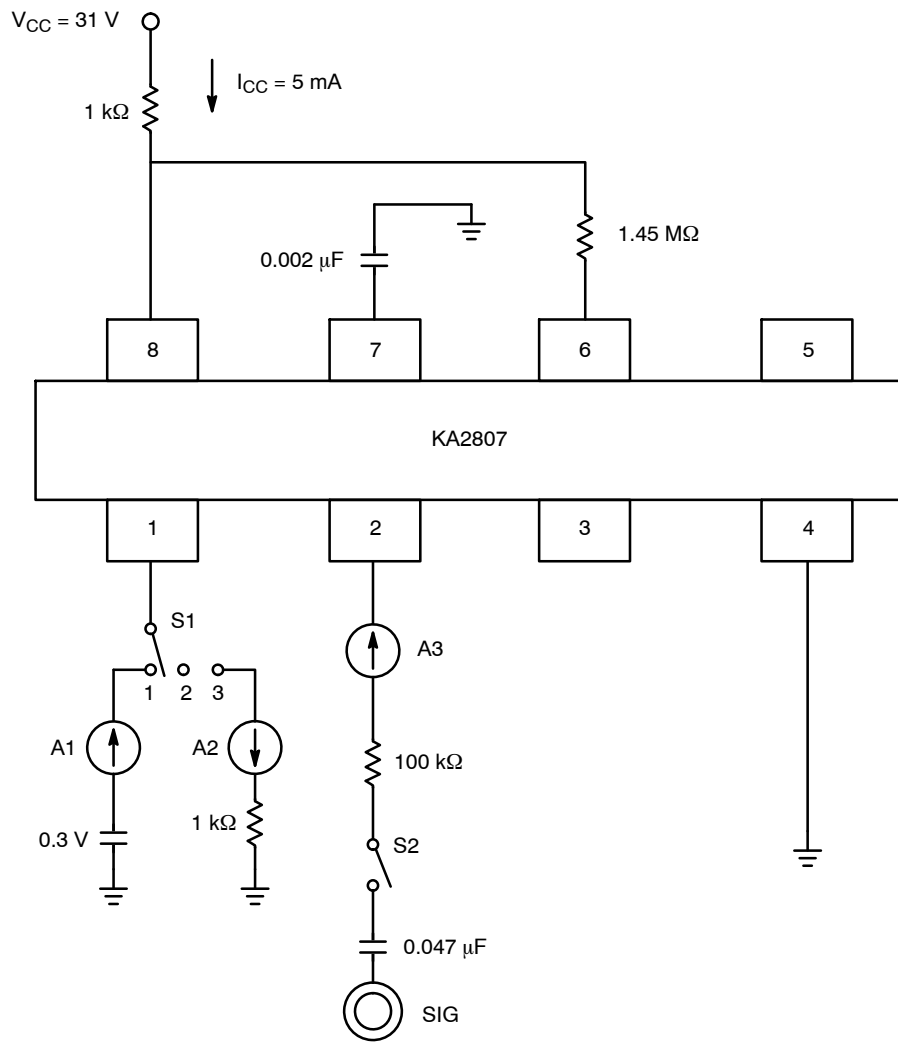


Figure 3. KA2807 Test Circuit

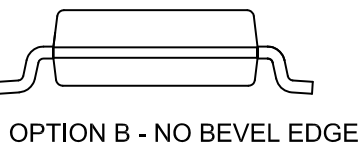
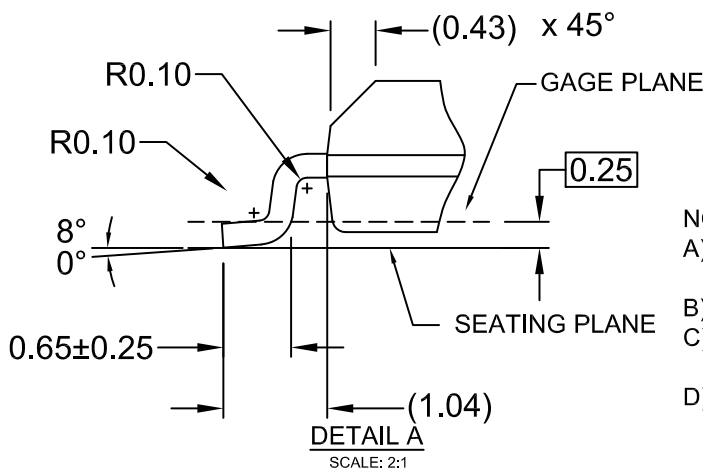
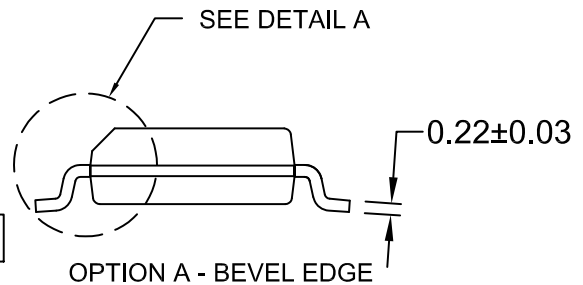
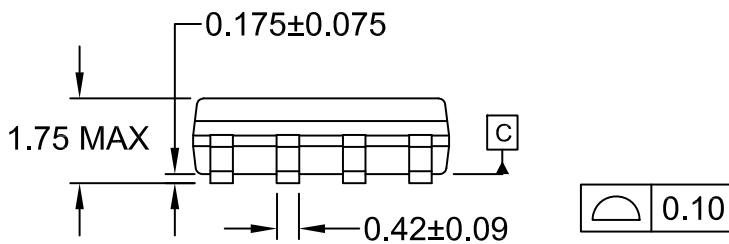
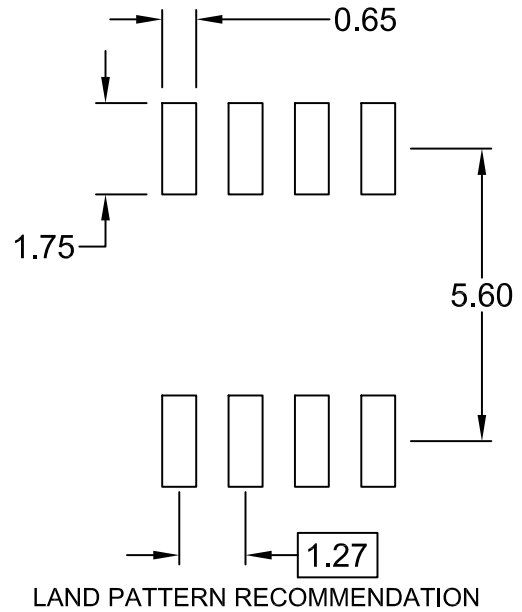
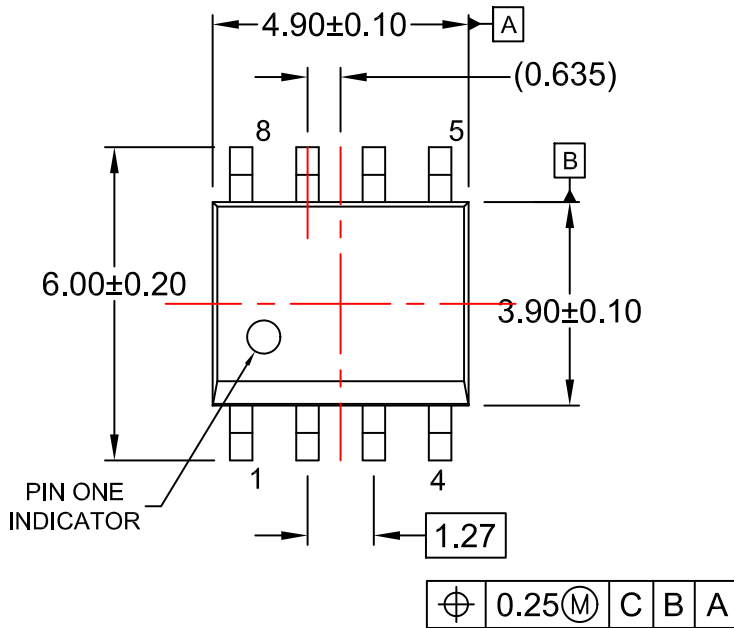
**MECHANICAL CASE OUTLINE**  
**PACKAGE DIMENSIONS**

ON Semiconductor®



**SOIC8**  
**CASE 751EB**  
**ISSUE A**

DATE 24 AUG 2017



- 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

|                         |                    |  |
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| <b>DESCRIPTION:</b>     | <b>SOIC8</b>       | <b>PAGE 1 OF 1</b>   |

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# MECHANICAL CASE OUTLINE

## PACKAGE DIMENSIONS

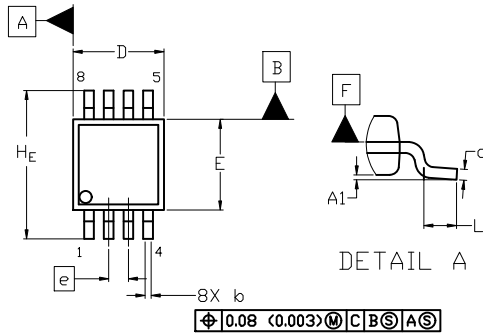
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SCALE 2:1

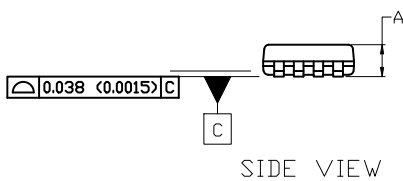
### Micro8 CASE 846A-02 ISSUE K

DATE 16 JUL 2020

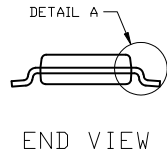


TOP VIEW

NOTE 3



SIDE VIEW



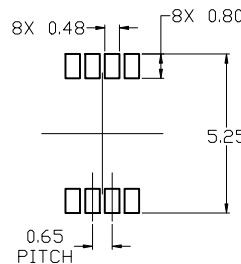
END VIEW

**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.

$\phi 0.08$  (0.003) M C B S A S

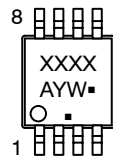
| DIM            | MILLIMETERS |      |      |
|----------------|-------------|------|------|
|                | MIN.        | NOM. | MAX. |
| A              | ---         | ---  | 1.10 |
| A1             | 0.05        | 0.08 | 0.15 |
| <i>b</i>       | 0.25        | 0.33 | 0.40 |
| <i>c</i>       |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

|                         |                    |  |
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