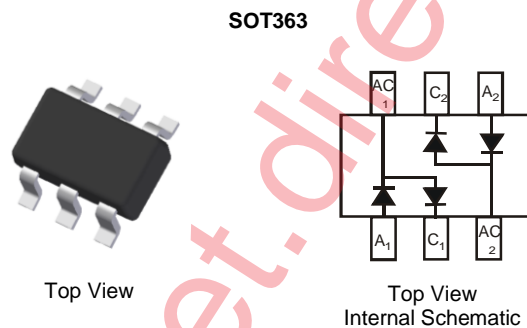


## Features

- Fast Switching Speed
- High Reverse Breakdown Voltage
- Low Leakage Current
- Low Capacitance
- Two "BAV99" Circuits In One Package
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**
- **PPAP Capable (Note 4)**

## Mechanical Data

- Case: SOT363
- Case Material: Molded Plastic, "Green" Molding Compound; UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish Annealed over Alloy 42 Leadframe; (Lead-Free Plating). Solderable per MIL-STD-202, Method 208 (3)
- Polarity: See Diagram
- Weight: 0.006 grams (Approximate)

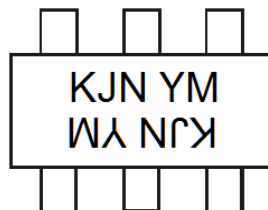


## Ordering Information (Notes 4 & 5)

| Part Number  | Qualification | Case   | Packaging          |
|--------------|---------------|--------|--------------------|
| BAV99HDWQ-13 | Automotive    | SOT363 | 10,000/Tape & Reel |

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
  2. See [http://www.diodes.com/quality/lead\\_free.html](http://www.diodes.com/quality/lead_free.html) for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
  3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
  4. Automotive products are AEC-Q101 qualified and are PPAP capable. Refer to [http://www.diodes.com/product\\_compliance\\_definitions.html](http://www.diodes.com/product_compliance_definitions.html).
  5. For packaging details, go to our website at <http://www.diodes.com/products/packages.html>.

## Marking Information



KJN = Product Type Marking Code  
 YM = Date Code Marking  
 Y = Year (ex: C = 2015)  
 M = Month (ex: 9 = September)

### Date Code Key

| Year | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
|------|------|------|------|------|------|------|------|------|
| Code | C    | D    | E    | F    | G    | H    | I    | J    |

| Month | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Code  | 1   | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | O   | N   | D   |

**Maximum Ratings** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

| Characteristic                            | Symbol              | Value       | Unit |
|---|---------------------|-------------|------|
| Peak Repetitive Reverse Voltage           | V <sub>RRM</sub>    | 100         | V    |
| Working Peak Reverse Voltage              | V <sub>RWM</sub>    |             |      |
| DC Blocking Voltage                       | V <sub>R</sub>      |             |      |
| RMS Reverse Voltage                       | V <sub>R(RMS)</sub> | 71          | V    |
| Forward Continuous Current (Note 6)       | I <sub>FM</sub>     | 200         | mA   |
| Repetitive Peak Forward Current           | I <sub>FRM</sub>    | 500         | mA   |
| Non-Repetitive Peak Forward Surge Current | I <sub>FSM</sub>    | @ t = 1.0µs | 4    |
|   |                     | @ t = 1.0ms | 1.0  |
|   |                     | @ t = 1.0s  | 0.5  |

**Thermal Characteristics**

| Characteristic                                       | Symbol                            | Value       | Unit |
|--|-----------------------------------|-------------|------|
| Power Dissipation (Note 6)                           | P <sub>D</sub>                    | 250         | mW   |
| Thermal Resistance Junction to Ambient Air (Note 6)  | R <sub>θJA</sub>                  | 500         | °C/W |
| Thermal Resistance Junction to Solder Point (Note 7) | R <sub>θJSP</sub>                 | 260         | °C/W |
| Operating and Storage Temperature Range              | T <sub>J</sub> , T <sub>STG</sub> | -65 to +150 | °C   |

**Electrical Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

| Characteristic                     | Symbol             | Min | Max   | Unit | Test Condition  |
|------------------------------------|--------------------|-----|-------|------|---|
| Reverse Breakdown Voltage (Note 8) | V <sub>(BR)R</sub> | 100 | —     | V    | I <sub>R</sub> = 2.5µA  |
| Forward Voltage                    | V <sub>F</sub>     | —   | 0.715 | V    | I <sub>F</sub> = 1.0mA  |
|                                    |                    | —   | 0.855 |      | I <sub>F</sub> = 10mA   |
|                                    |                    | —   | 1.0   |      | I <sub>F</sub> = 50mA   |
|                                    |                    | —   | 1.25  |      | I <sub>F</sub> = 150mA  |
| Reverse Current (Note 8)           | I <sub>R</sub>     | —   | 0.5   | µA   | V <sub>R</sub> = 80V  |
|                                    |                    | —   | 50    |      | V <sub>R</sub> = 80V, T <sub>J</sub> = +150°C   |
|                                    |                    | —   | 30    | nA   | V <sub>R</sub> = 25V, T <sub>J</sub> = +150°C   |
|                                    |                    | —   | 30    |      | V <sub>R</sub> = 25V  |
| Total Capacitance                  | C <sub>T</sub>     | —   | 1.5   | pF   | V <sub>R</sub> = 0, f = 1.0MHz  |
| Reverse Recovery Time              | t <sub>RR</sub>    | —   | 4.0   | ns   | I <sub>F</sub> = I <sub>R</sub> = 10mA,<br>I <sub>RR</sub> = 0.1 x I <sub>R</sub> , R <sub>L</sub> = 100Ω |
| Forward Recovery Voltage           | V <sub>FR</sub>    | —   | 1.75  | V    | I <sub>F</sub> = 10mA, t <sub>R</sub> = 20ns  |

- Notes:
6. Part mounted on FR-4 PC board with recommended pad layout, which can be found on our website at <http://www.diodes.com/package-outlines.html>.
  7. Soldering points at pins AC1, AC2 and C1, C2.
  8. Short duration pulse test used to minimize self-heating effect.

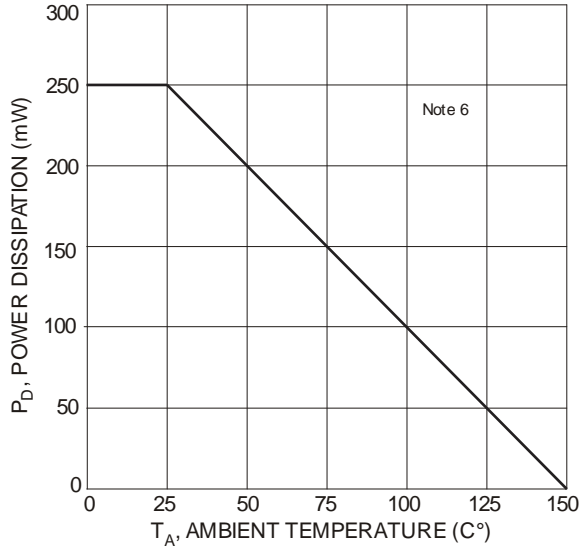


Fig. 1 Power Derating Curve, Total Package

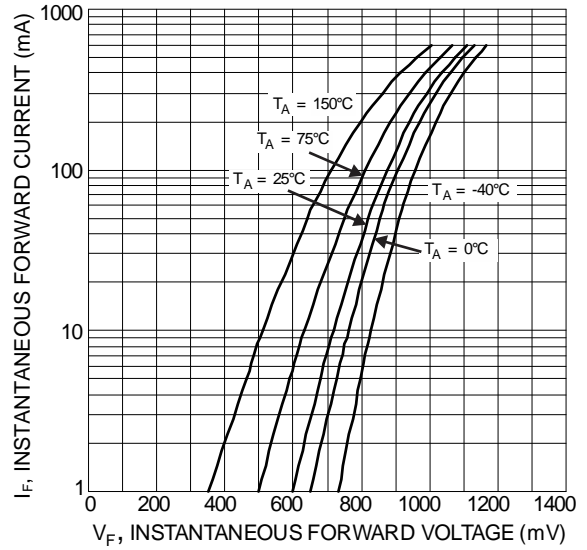


Fig. 2 Typical Forward Characteristics

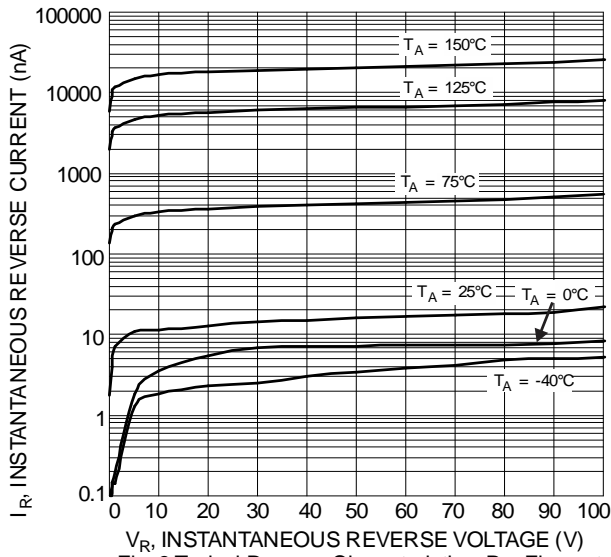


Fig. 3 Typical Reverse Characteristics, Per Element

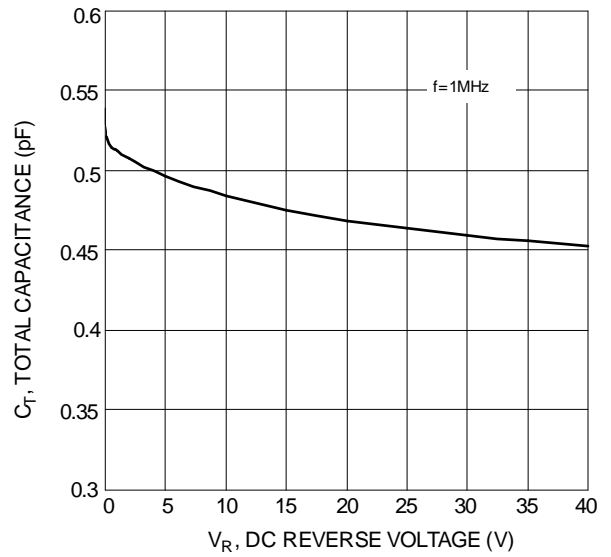
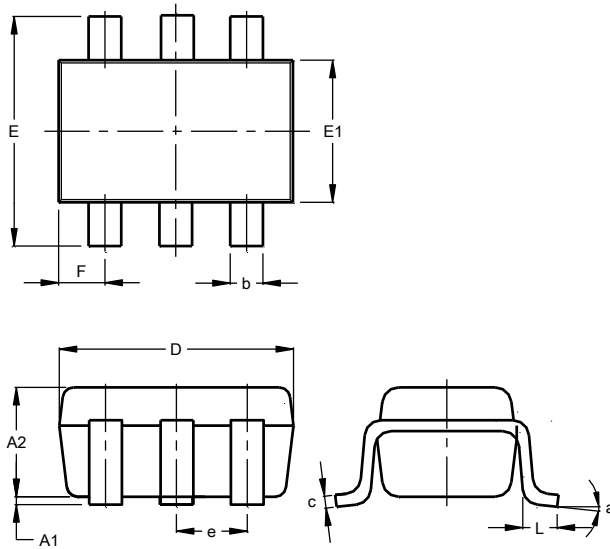


Fig. 4 Total Capacitance vs. Reverse Voltage, Per Element

## Package Outline Dimensions

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

### SOT363

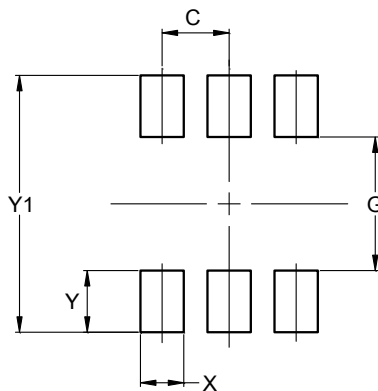


| SOT363               |           |      |       |
|----------------------|-----------|------|-------|
| Dim                  | Min       | Max  | Typ   |
| A1                   | 0.00      | 0.10 | 0.05  |
| A2                   | 0.90      | 1.00 | 1.00  |
| b                    | 0.10      | 0.30 | 0.25  |
| c                    | 0.10      | 0.22 | 0.11  |
| D                    | 1.80      | 2.20 | 2.15  |
| E                    | 2.00      | 2.20 | 2.10  |
| E1                   | 1.15      | 1.35 | 1.30  |
| e                    | 0.650 BSC |      |       |
| F                    | 0.40      | 0.45 | 0.425 |
| L                    | 0.25      | 0.40 | 0.30  |
| a                    | 0°        | 8°   | --    |
| All Dimensions in mm |           |      |       |

## Suggested Pad Layout

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

### SOT363



| Dimensions | Value (in mm) |
|------------|---------------|
| C          | 0.650         |
| G          | 1.300         |
| X          | 0.420         |
| Y          | 0.600         |
| Y1         | 2.500         |

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