

## Features

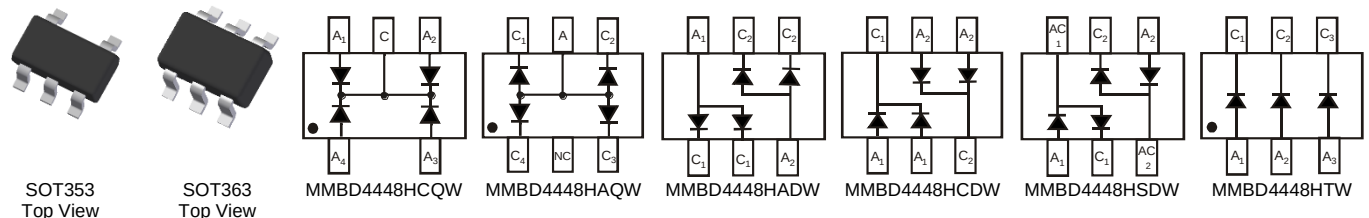
- Fast Switching Speed
- Low Forward Voltage: Maximum of 0.72V at 5mA
- Low Reverse Current: Maximum of 100nA at 70V
- Fast Reverse Recovery: Maximum of 4ns
- Low Capacitance: Maximum of 3.5pF
- Small Surface-Mount Package
- For General-Purpose Switching Applications
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **The MMBD4448HADWQ is suitable for automotive applications requiring specific change control; this part is AEC-Q101 qualified, PPAP capable, and manufactured in IATF16949 certified facilities.**

<https://www.diodes.com/quality/product-definitions/>

## Mechanical Data

- Package: SOT353 or SOT363
- Package 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 <sup>e3</sup>
- Orientation: See Diagrams Below
- Weight: 0.006 grams (Approximate)

SOT353/SOT363

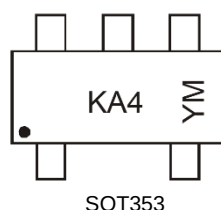


## Ordering Information (Note 4)

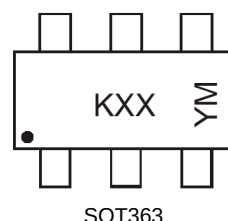
| Part Number       | Package | Packing |             |
|-------------------|---------|---------|-------------|
|                   |         | Qty.    | Carrier     |
| MMBD4448HADW-7-F  | SOT363  | 3000    | Tape & Reel |
| MMBD4448HADWQ-7-F | SOT363  | 3000    | Tape & Reel |
| MMBD4448HAQW-7-F  | SOT363  | 3000    | Tape & Reel |
| MMBD4448HCDW-7-F  | SOT363  | 3000    | Tape & Reel |
| MMBD4448HCQW-7-F  | SOT353  | 3000    | Tape & Reel |
| MMBD4448HSDW-7-F  | SOT363  | 3000    | Tape & Reel |
| MMBD4448HTW-7-F   | SOT363  | 3000    | Tape & Reel |

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
  2. See <https://www.diodes.com/quality/lead-free/> 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. For packaging details, go to our website at <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

## Marking Information

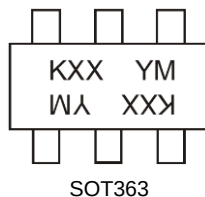


KA4 = Product Type Marking Code  
KA4 = MMBD4448HCQW  
YM = Date Code Marking  
Y = Year (ex: K = 2023); A Bar on Top of the "Y" Denotes AT Sites  
M = Month (ex: 9 = September)



KXX = Product Type Marking Code,  
ex: KA5 = MMBD4448HAQW  
KAA = MMBD4448HTW  
YM = Date Code Marking  
Y = Year (ex: K = 2023); A Bar on Top of the "Y" Denotes AT Sites  
M = Month (ex: 9 = September)

## Marking Information (continued)



KXX = Product Type Marking Code,

ex: KA6 = MMBD4448HADW

KA7 = MMBD4448HCDW

KAB = MMBD4448HSDW

YM = Date Code Marking

Y = Year (ex: K = 2023); A Bar on Top of the "Y" Denotes AT Sites

M = Month (ex: 9 = September)

### Date Code Key

| Year | 2000 | - | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 |
|------|------|---|------|------|------|------|------|------|------|------|------|------|
| Code | L    | - | K    | L    | M    | N    | P    | R    | S    | T    | U    | V    |

| 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 |
|-------------------------------------------|---------------------|-------|------|
| Non-Repetitive Peak Reverse Voltage       | V <sub>RM</sub>     | 100   | V    |
| Peak Repetitive Reverse Voltage           | V <sub>RRM</sub>    | 80    | V    |
| Working Peak Reverse Voltage              | V <sub>RWM</sub>    |       |      |
| DC Blocking Voltage                       | V <sub>R</sub>      |       |      |
| RMS Reverse Voltage                       | V <sub>R(RMS)</sub> | 57    | V    |
| Forward Continuous Current (Note 5)       | I <sub>FM</sub>     | 500   | mA   |
| Non-Repetitive Peak Forward Surge Current | I <sub>FSM</sub>    | 4.0   | A    |
|                                           |                     | 1.0   |      |

## Thermal Characteristics

| Characteristic                                      | Symbol                            | Value       | Unit |
|-----------------------------------------------------|-----------------------------------|-------------|------|
| Power Dissipation (Note 5)                          | P <sub>D</sub>                    | 200         | mW   |
| Thermal Resistance Junction to Ambient Air (Note 5) | R <sub>θJA</sub>                  | 625         | °C/W |
| Operating and Storage Temperature Range             | T <sub>J</sub> , T <sub>STG</sub> | -55 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 6) | V <sub>(BR)R</sub> | 80   | —     | V    | I <sub>R</sub> = 100μA                        |
| Forward Voltage                    | V <sub>F</sub>     | 0.62 | 0.72  | V    | I <sub>F</sub> = 5.0mA                        |
|                                    |                    | —    | 0.855 |      | I <sub>F</sub> = 10mA                         |
|                                    |                    | —    | 1.0   |      | I <sub>F</sub> = 100mA                        |
|                                    |                    | —    | 1.25  |      | I <sub>F</sub> = 150mA                        |
| Reverse Current (Note 6)           | I <sub>R</sub>     | —    | 100   | nA   | V <sub>R</sub> = 70V                          |
|                                    |                    | —    | 50    | μA   | V <sub>R</sub> = 75V, T <sub>J</sub> = +150°C |
|                                    |                    | —    | 30    | μA   | V <sub>R</sub> = 25V, T <sub>J</sub> = +150°C |
|                                    |                    | —    | 25    | nA   | V <sub>R</sub> = 20V                          |
| Total Capacitance                  | C <sub>T</sub>     | —    | 3.5   | pF   | V <sub>R</sub> = 6V, f = 1.0MHz               |
| Reverse Recovery Time              | t <sub>rr</sub>    | —    | 4.0   | ns   | V <sub>R</sub> = 6V, I <sub>F</sub> = 5mA     |

Notes: 5. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch; pad layout as shown on Diodes Incorporated's suggested pad layout, which can be found on our website at <http://www.diodes.com/package-outlines.html>.  
6. Short duration pulse test used to minimize self-heating effect.

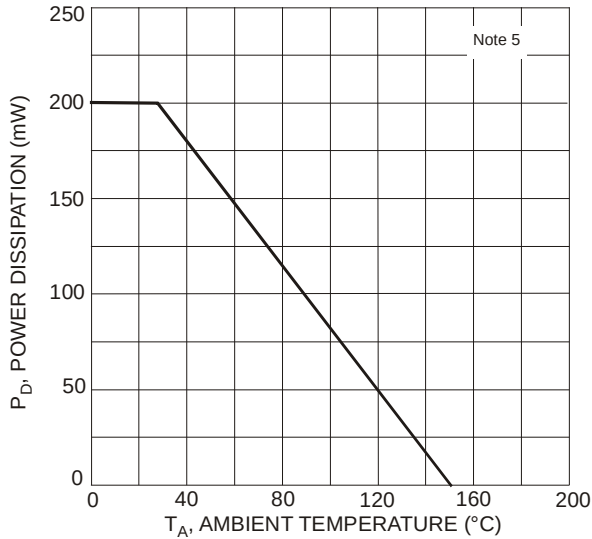


Figure 1 Power Derating Curve, Total Package

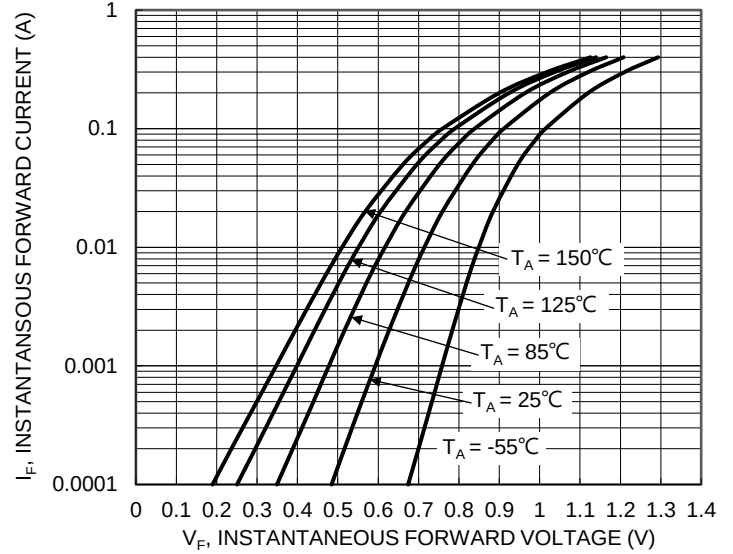


Figure 2 Typical Forward Characteristics, per Element

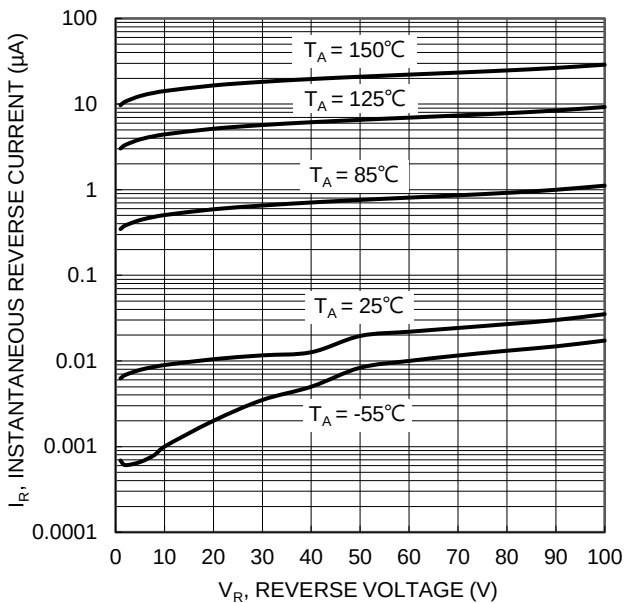


Figure 3 Typical Reverse Characteristics, per Element

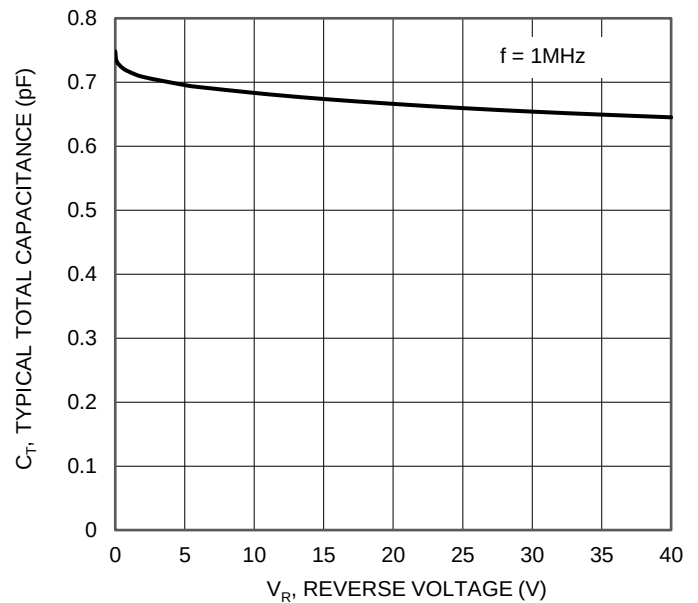
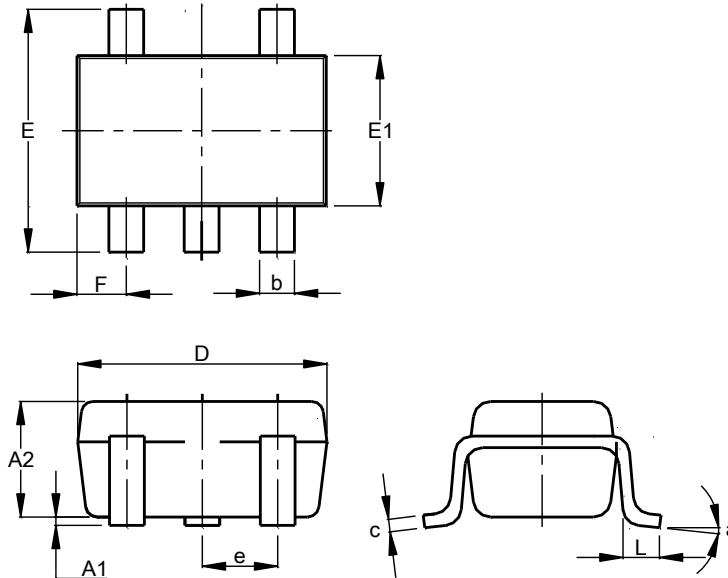


Figure 4 Typical Total Capacitance, per Element

## Package Outline Dimensions

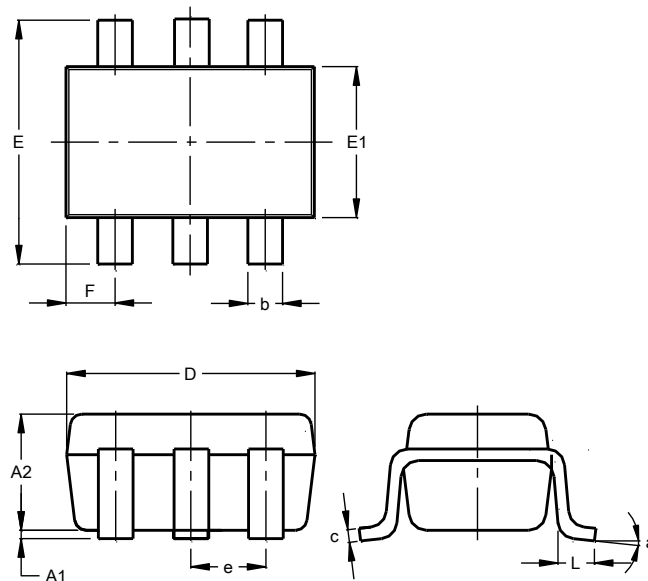
Please see <http://www.diodes.com/package-outlines.html> for the latest version.

**SOT353**



| SOT353               |           |      |       |
|----------------------|-----------|------|-------|
| Dim                  | Min       | Max  | Typ   |
| A1                   | 0.00      | 0.10 | 0.05  |
| A2                   | 0.90      | 1.00 | 0.95  |
| 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 |           |      |       |

**SOT363**

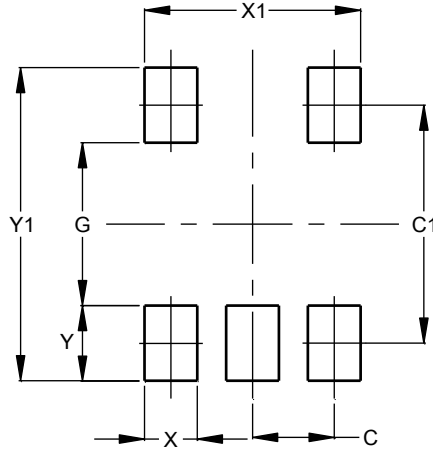


| SOT363               |           |      |       |
|----------------------|-----------|------|-------|
| Dim                  | Min       | Max  | Typ   |
| A1                   | 0.00      | 0.10 | 0.05  |
| A2                   | 0.90      | 1.00 | 0.95  |
| b                    | 0.10      | 0.30 | 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

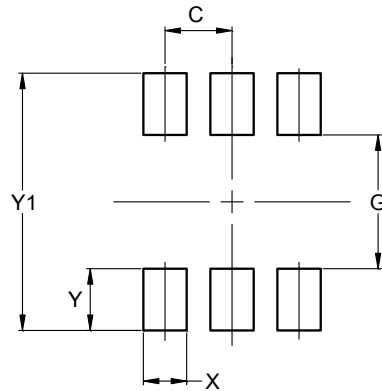
Please see <http://www.diodes.com/package-outlines.html> for the latest version.

**SOT353**



| Dimensions | Value (in mm) |
|------------|---------------|
| C          | 0.650         |
| C1         | 1.900         |
| G          | 1.300         |
| X          | 0.420         |
| X1         | 1.720         |
| Y          | 0.600         |
| Y1         | 2.500         |

**SOT363**



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

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