# SURFACE MOUNT SWITCHING DIODE ARRAY

NEW PRODUCT

## Features

- Fast Switching Speed
- Low Profile DFN Package (0.575mm typical thickness) is Much Thinner than Conventional SOT Style Packages
- Thermally Efficient DFN Package Features 500mW Power Dissipation Capability in a Compact 2.0 * 2.0mm Footprint
- Two “BAV99” Circuits In One Package
- **Lead Free/RoHS Compliant (Note 1)**
- **"Green" Device (Note 2)**

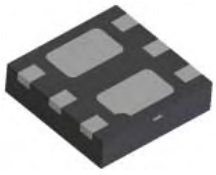
## Mechanical Data

- Case: DFN2020B-6
- Case Material: Molded Plastic, “Green” Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: NiPdAu over Copper leadframe (Lead Free Plating). Solderable per MIL-STD-202, Method 208
- Polarity: See Diagram
- Weight: 0.006 grams (approximate)

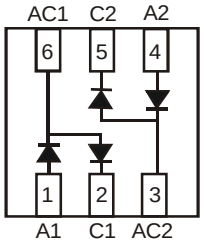
DFN2020B-6



Top View



Bottom View




Top View
Internal Schematic

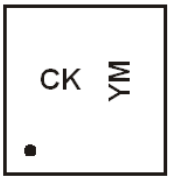
Pin 1 = A1 (anode 1, right below the notch indication)
Pin 2 = C1 (cathode 1)
Pin 3 = AC2 (internally connected to rectangular pad)
Pin 4 = A2 (anode 2)
Pin 5 = C2 (cathode 2)
Pin 6 = AC1 (internally connected to the pad with a notch)

## Ordering Information (Note 3)

| Part Number | Case | Packaging |
|---|---|---|
| BAV99BRLP-7 | DFN2020B-6 | 3000/Tape & Reel |

Notes: 1. No purposefully added lead.
2. Diodes Inc.'s "Green" policy can be found on our website at http://www.diodes.com.
3. For packaging details, go to our website at http://www.diodes.com.

## Marking Information




CK = Product Type Marking Code
YM = Date Code Marking
Y = Year (ex: Y = 2011)
M = Month (ex: 9 = September)

Date Code Key

| Year | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|---|---|---|
| Code | Y | Z | A | B | C | D | E |

| 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 |


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## Maximum Ratings @$T_A$ = 25°C unless otherwise specified

| Characteristic | | Symbol | Value | Unit |
|---|---|---|---|---|
| Non-Repetitive Peak Reverse Voltage | | $V_{RM}$ | 100 | V |
| Peak Repetitive Reverse Voltage<br>Working Peak Reverse Voltage<br>DC Blocking Voltage | | $V_{RRM}$<br>$V_{RWM}$<br>$V_R$ | 75 | V |
| RMS Reverse Voltage | | $V_{R(RMS)}$ | 53 | V |
| Forward Continuous Current (Note 4) | | $I_{FM}$ | 300 | mA |
| Non-Repetitive Peak Forward Surge Current | @ t = 1.0μs<br>@ t = 1.0ms<br>@ t = 1.0s | $I_{FSM}$ | 3.0<br>2.0<br>0.5 | A |

## Thermal Characteristics

| Characteristic | | Symbol | Value | Unit |
|---|---|---|---|---|
| Power Dissipation | (Note 4) | $P_D$ | 500 | mW |
| Thermal Resistance Junction to Ambient Air | (Note 4) | $R_{\theta JA}$ | 250 | °C/W |
| Operating and Storage Temperature Range | | $T_J$ , $T_{STG}$ | -65 to +150 | °C |

## Electrical Characteristics @$T_A$ = 25°C unless otherwise specified

| Characteristic | Symbol | Min | Max | Unit | Test Condition |
|---|---|---|---|---|---|
| Reverse Breakdown Voltage (Note 5) | $V_{(BR)R}$ | 75 | — | V | $I_R$ = 2.5μA |
| Forward Voltage | $V_F$ | — | 0.715<br>0.855<br>1.0<br>1.25 | V | $I_F$ = 1.0mA<br>$I_F$ = 10mA<br>$I_F$ = 50mA<br>$I_F$ = 150mA |
| Reverse Current (Note 5) | $I_R$ | — | 2.5<br>50<br>30<br>25 | μA<br>μA<br>μA<br>nA | $V_R$ = 75V<br>$V_R$ = 75V, $T_J$ = 150°C<br>$V_R$ = 20V, $T_J$ = 150°C<br>$V_R$ = 20V |
| Total Capacitance | $C_T$ | — | 2.0 | pF | $V_R$ = 0, f = 1.0MHz |
| Reverse Recovery Time | $t_{rr}$ | — | 4.0 | ns | $I_F$ = $I_R$ = 10mA,<br>$I_{rr}$ = 0.1 x $I_R$, $R_L$ = 100Ω |

Notes: 4. Device mounted on FR-4 PCB, on minimum recommended, 2oz copper pad layout.
5. Short duration pulse test used to minimize self-heating effect.


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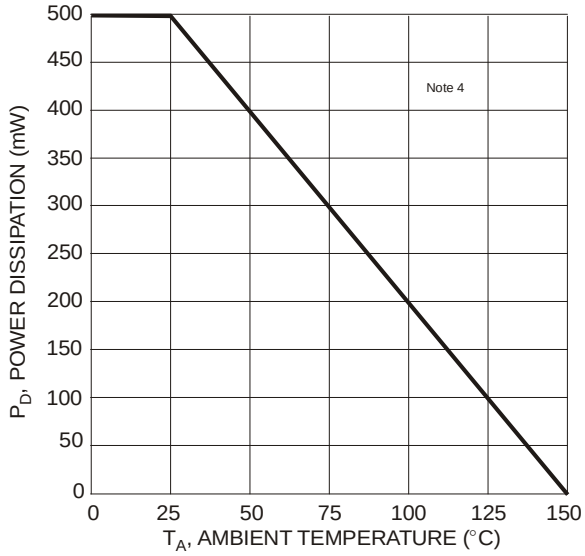



Fig. 1 Power Derating Curve, Total Package

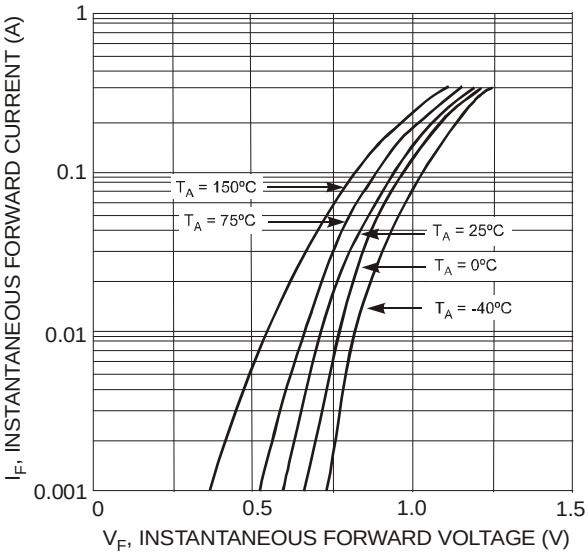



Fig. 2 Typical Forward Characteristics, Per Element

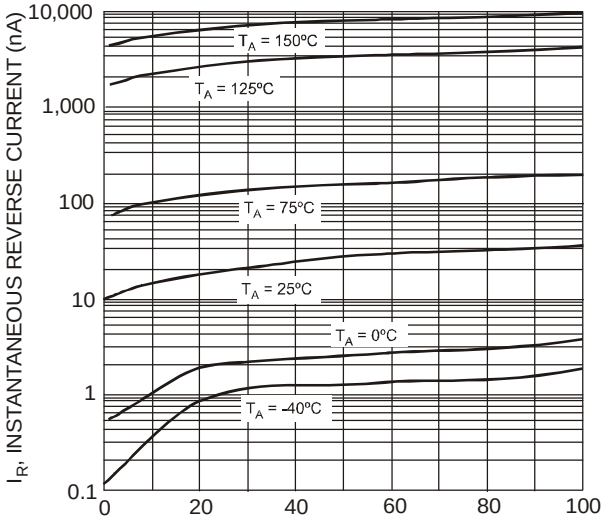



Fig. 3 Typical Reverse Characteristics, Per Element

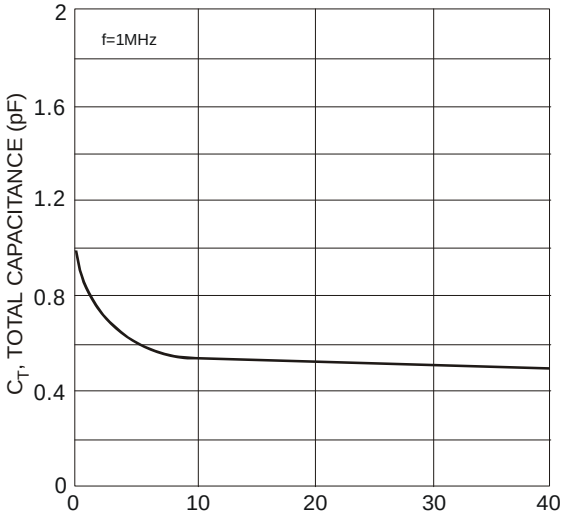
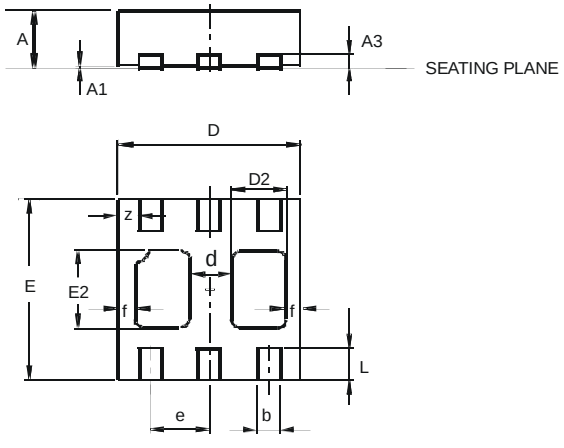



Fig. 4 Total Capacitance vs. Reverse Voltage, Per Element

## Package Outline Dimensions



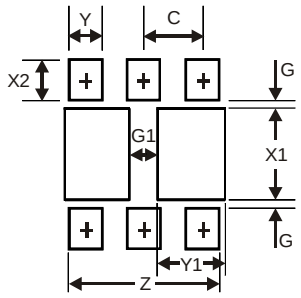

Bottom View

| DFN2020B-6 | | | |
|---|---|---|---|
| **Dim** | **Min** | **Max** | **Typ** |
| **A** | 0.545 | 0.605 | 0.575 |
| **A1** | 0 | 0.05 | 0.02 |
| **A3** | — | — | 0.13 |
| **b** | 0.20 | 0.30 | 0.25 |
| **D** | 1.95 | 2.075 | 2.00 |
| **d** | — | — | 0.45 |
| **D2** | 0.50 | 0.70 | 0.60 |
| **e** | — | — | 0.65 |
| **E** | 1.95 | 2.075 | 2.00 |
| **E2** | 0.90 | 1.10 | 1.00 |
| **f** | — | — | 0.15 |
| **L** | 0.25 | 0.35 | 0.30 |
| **z** | — | — | 0.225 |
| **All Dimensions in mm** | | | |


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## Suggested Pad Layout




| Dimensions | Value (in mm) |
|---|---|
| **Z** | 1.67 |
| **G** | 0.20 |
| **G1** | 0.40 |
| **X1** | 1.0 |
| **X2** | 0.45 |
| **Y** | 0.37 |
| **Y1** | 0.70 |
| **C** | 0.65 |

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