Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

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## Contact us

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Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China

**ACX114YUQ**

## SMALL SIGNAL COMPLEMENTARY PRE-BIASED DUAL TRANSISTOR

## Features

- Epitaxial Planar Die Construction
- Built-In Biasing Resistors
- Surface Mount Package Suited for Automated Assembly
- **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)**

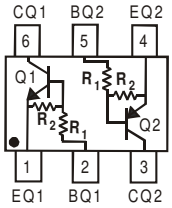
## Mechanical Data

- Case: SOT363
- Case Material: Molded Plastic, "Green" Molding Compound; UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish – Matte Tin Plated Leads, Solderable per MIL-STD-202, Method 208 e3
- Weight: 0.006 grams (Approximate)

| R1(NOM) | R2(NOM) |
|---|---|
| 10kΩ | 47kΩ |

**SOT363**

Top View




Device Schematic

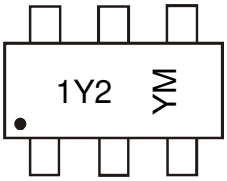
## Ordering Information (Notes 4 & 5)

| Product | Compliance | Marking | Reel Size (inches) | Tape Width (mm) | Quantity per Reel |
|---|---|---|---|---|---|
| ACX114YUQ-7R | Automotive | 1Y2 | 7 | 8 | 3,000 |
| ACX114YUQ-13R | Automotive | 1Y2 | 13 | 8 | 10,000 |

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 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/quality/product_compliance_definitions/.
5. -13R are parts rotated in the pocket tape by +180°. For packaging details, go to our website at http://www.diodes.com/products/packages.html.

## Marking Information

**SOT363**




1Y2 = Product Type Marking Code
YM = Date Code Marking
Y = Year (ex: D = 2016)
M = Month (ex: 9 = September)

Date Code Key

| Year | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Code | D | E | F | G | H | I | J | K | L | M | N |

| 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 |

## Absolute Maximum Ratings - NPN Section (@$T_A$ = +25°C, unless otherwise specified.)

| Characteristic | Symbol | Value | Unit |
|---|---|---|---|
| Supply Voltage <Pin: (6) to (1)> | $V_{CC}$ | 50 | V |
| Input Voltage <Pin: (2) to (1)> | $V_{IN}$ | -6 to +40 | V |
| Output Current | $I_O$ | 70 | mA |
| Output Current | $I_C$ (Max) | 100 | mA |

## Absolute Maximum Ratings - PNP Section (@$T_A$ = +25°C, unless otherwise specified.)

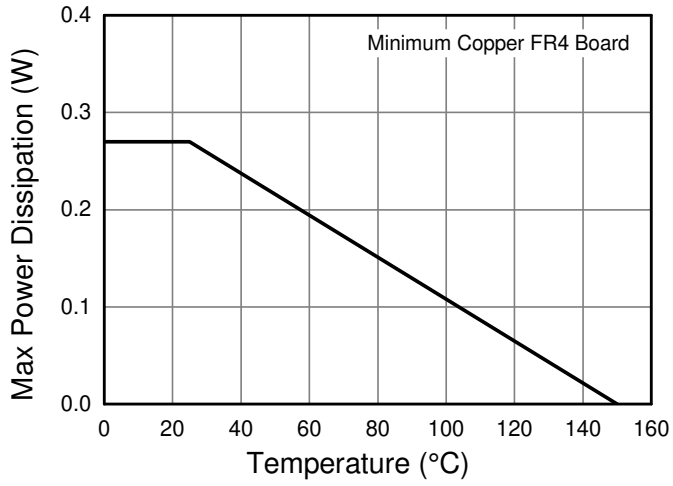
| Characteristic | Symbol | Value | Unit |
|---|---|---|---|
| Supply Voltage <Pin: (4) to (3)> | $V_{CC}$ | -50 | V |
| Input Voltage <Pin: (5) to (4)> | $V_{IN}$ | +6 to -40 | V |
| Output Current | $I_O$ | -70 | mA |
| Output Current | $I_C$ (Max) | -100 | mA |

## Thermal Characteristics (@$T_A$ = +25°C, unless otherwise specified.)

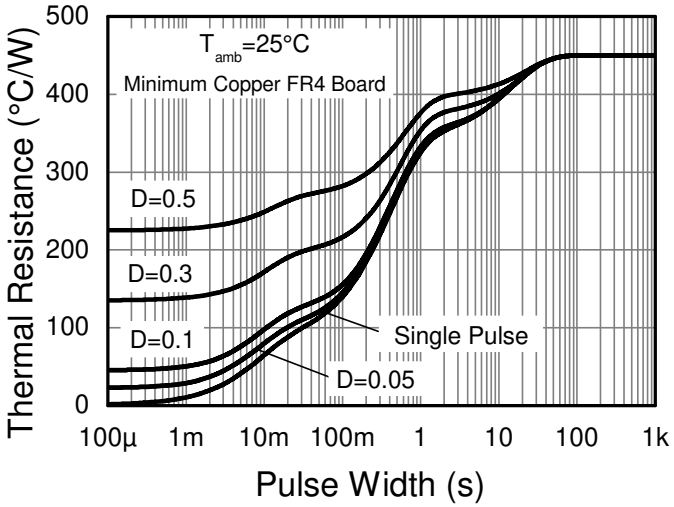
| Characteristic | Symbol | Value | Unit |
|---|---|---|---|
| Power Dissipation (Notes 6 & 7) | $P_D$ | 270 | mW |
| Thermal Resistance, Junction to Ambient Air (Note 6) | $R_{\theta JA}$ | 450 | °C/W |
| Operating and Storage Temperature Range | $T_J$, $T_{STG}$ | -55 to +150 | °C |

Notes: 6. Mounted on FR4 PC Board with minimum recommended pad layout.
7. 150mW per element must not be exceeded.

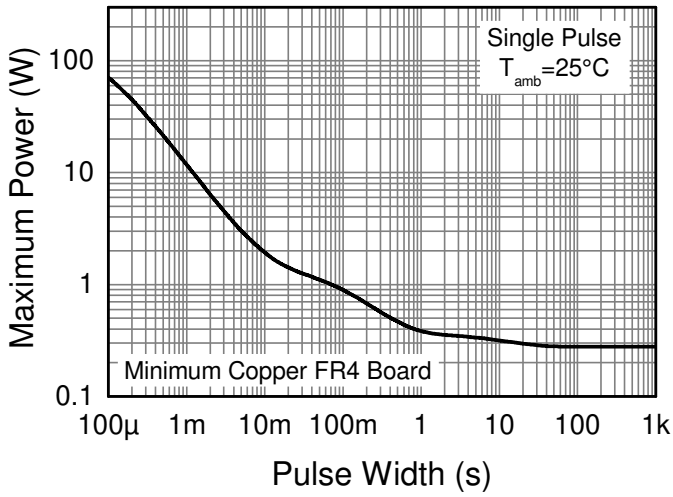
## Thermal Characteristics and Derating Information




**Derating Curve**




**Transient Thermal Impedance**




**Pulse Power Dissipation**

## Electrical Characteristics - NPN Section (@$T_A$ = +25°C, unless otherwise specified.)

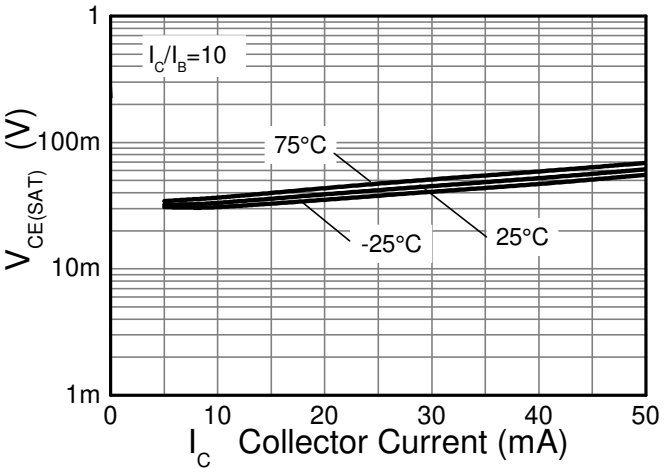
| Characteristic | Symbol | Min | Typ | Max | Unit | Test Condition |
|---|---|---|---|---|---|---|
| Input Voltage | $V_{I(OFF)}$ | 0.3 | — | — | V | $V_{CC}$ = 5V, $I_O$ = 100µA |
| | $V_{I(ON)}$ | — | — | 1.4 | | $V_O$ = 0.3V, $I_O$ = 1mA |
| Output Voltage | $V_{O(ON)}$ | — | 0.1 | 0.3 | V | $I_O/I_I$ = 5mA / 0.25mA |
| Input Current | $I_I$ | — | — | 0.88 | mA | $V_I$ = 5V |
| Output Current | $I_{O(OFF)}$ | — | — | 0.5 | µA | $V_{CC}$ = 50V, $V_I$ = 0V |
| DC Current Gain (Note 8) | $G_I$ | 80 | — | — | — | $V_O$ = 5V, $I_O$ = 10mA |
| Input Resistor ($R_1$) Tolerance | $\Delta R_1$ | -30 | — | +30 | % | — |
| Resistance Ratio Tolerance | $\Delta R_2/R_1$ | -20 | — | +20 | % | — |
| Gain-Bandwidth Product | $f_T$ | — | 250 | — | MHz | $V_{CE}$ = 10V, $I_E$ = 5mA, f = 100MHz |

## Electrical Characteristics - PNP Section (@$T_A$ = +25°C, unless otherwise specified.)

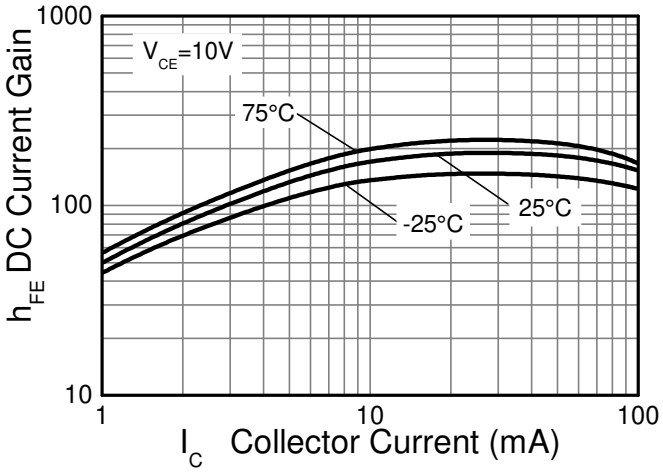
| Characteristic | Symbol | Min | Typ | Max | Unit | Test Condition |
|---|---|---|---|---|---|---|
| Input Voltage | $V_{I(OFF)}$ | -0.3 | — | — | V | $V_{CC}$ = -5V, $I_O$ = -100µA |
| | $V_{I(ON)}$ | — | — | -1.4 | | $V_O$ = -0.3V, $I_O$ = -1mA |
| Output Voltage | $V_{O(ON)}$ | — | -0.1 | -0.3 | V | $I_O/I_I$ = -5mA / -0.25mA |
| Input Current | $I_I$ | — | — | -0.88 | mA | $V_I$ = -5V |
| Output Current | $I_{O(OFF)}$ | — | — | -0.5 | µA | $V_{CC}$ = -50V, $V_I$ = 0V |
| DC Current Gain (Note 8) | $G_I$ | 80 | — | — | — | $V_O$ = -5V, $I_O$ = -10mA |
| Input Resistor ($R_1$) Tolerance | $\Delta R_1$ | -30 | — | +30 | % | — |
| Resistance Ratio Tolerance | $\Delta R_2/R_1$ | -20 | — | +20 | % | — |
| Gain-Bandwidth Product | $f_T$ | — | 250 | — | MHz | $V_{CE}$ = -10V, $I_E$ = -5mA, f = 100MHz |

Note: 8. Measured under pulsed conditions. Pulse width ≤ 300µs. Duty cycle ≤ 2%.

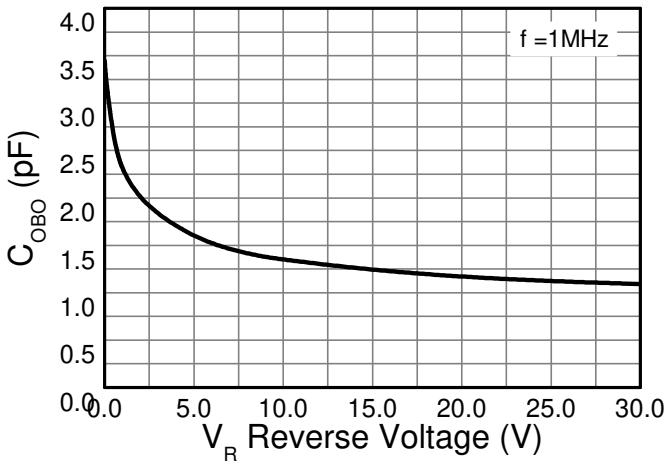
## Typical Electrical Characteristics – NPN Section (@$T_A$ = +25°C, unless otherwise specified.)



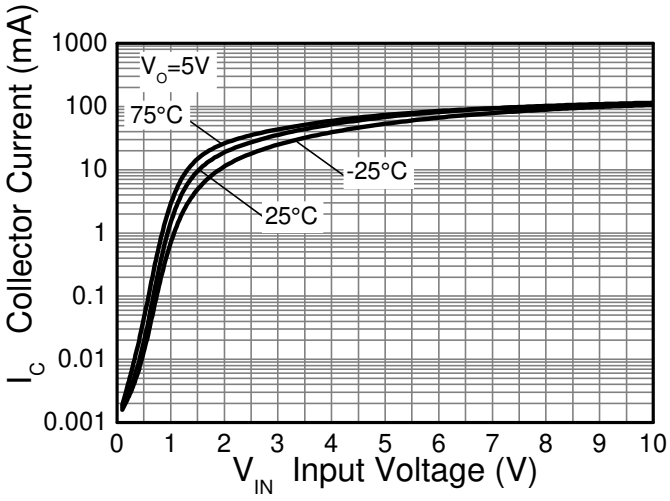

**$V_{CE(SAT)}$ v Collector Current**



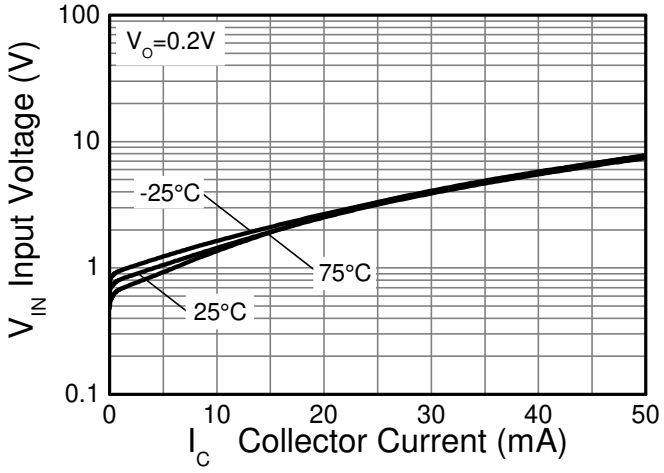

**$h_{FE}$ v Collector Current**




**Output Capacitance**

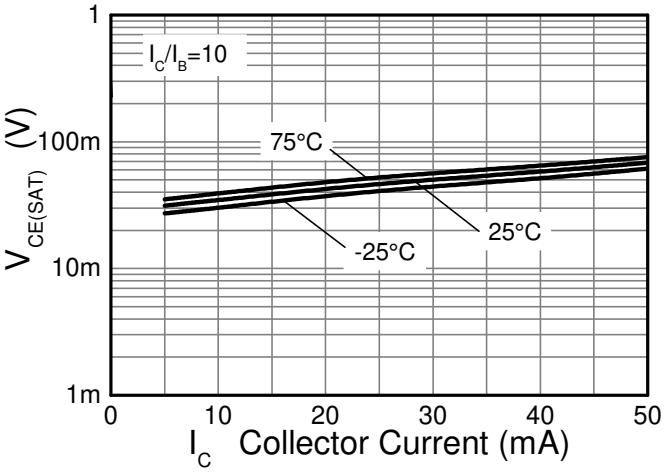



**Collector Current v Input Voltage**

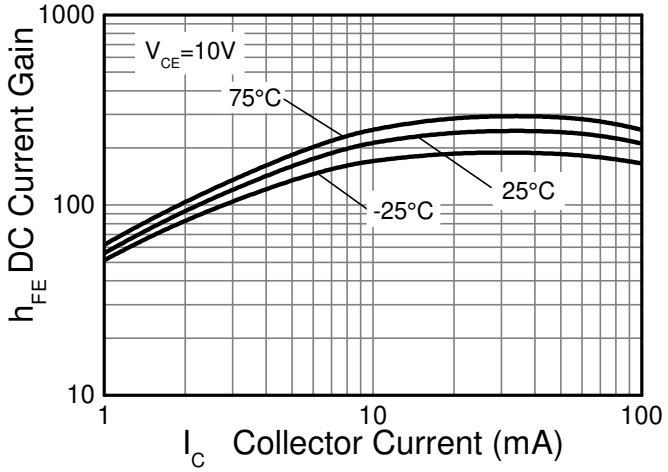



**Input Voltage v Collector Current**

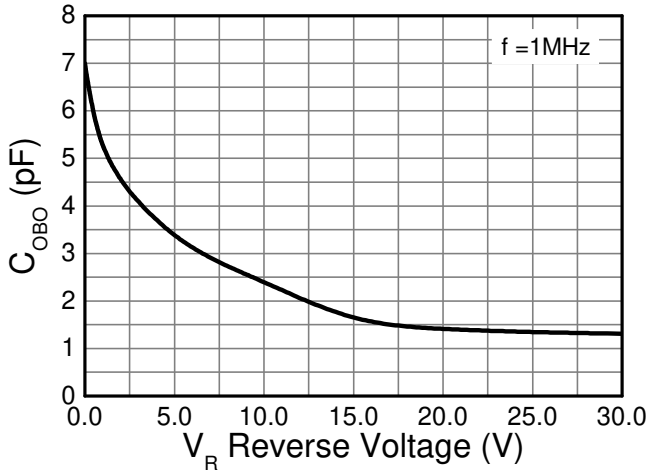
## Typical Electrical Characteristics – PNP Section (@$T_A$ = +25°C, unless otherwise specified.)



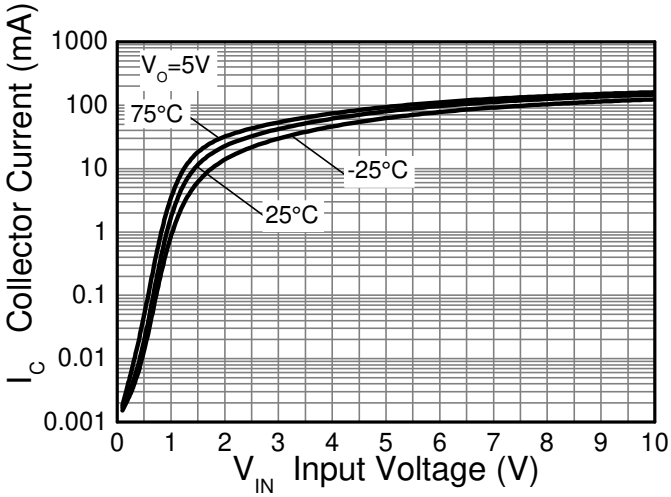

**$V_{CE(SAT)}$ v Collector Current**



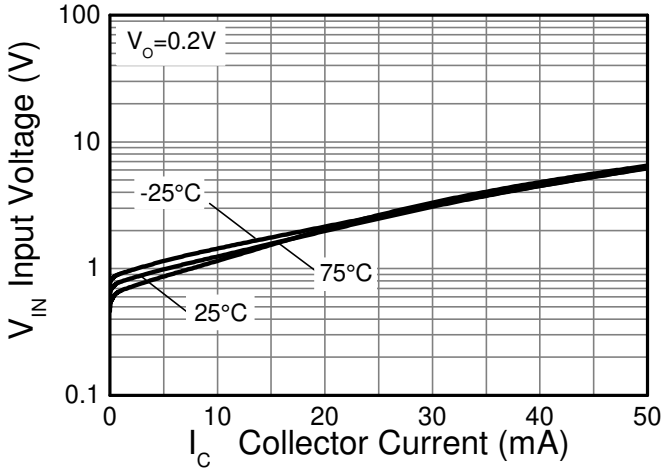

**$h_{FE}$ v Collector Current**




**Output Capacitance**



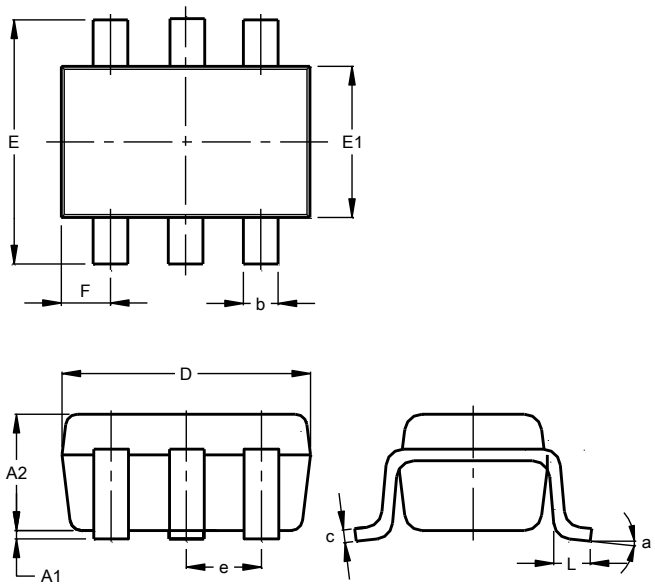

**Collector Current v Input Voltage**




**Input Voltage v Collector Current**

## Package Outline Dimensions

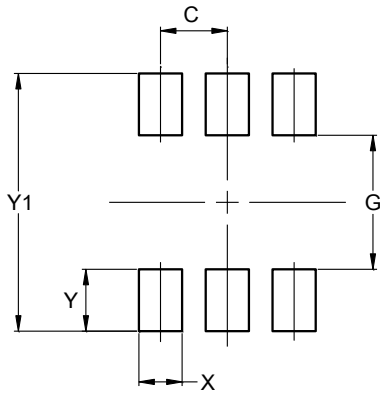
Please see http://www.diodes.com/package-outlines.html for the latest version.




| 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.




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

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