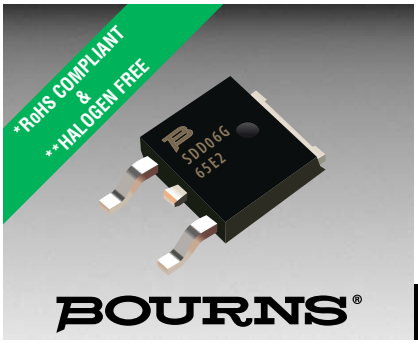



## Features

- High efficiency with low power loss
- Low reverse leakage current
- High peak forward surge current ($I_{FSM}$)
- Reduced EMI
- Maximum operating $T_J$ up to 175 °C
- Epoxy compound is flame retardant to the UL 94V-0 standard
- RoHS compliant*, Pb free and halogen free**

## Applications

- Switched-Mode Power Supplies (SMPS)
- Power Factor Correction (PFC)
- PV inverters
- DC-DC converters
- Telecommunications
- Motor drives

# BSDD06G65E2 Silicon Carbide Schottky Diode

## General Information

Bourns® Model BSDD06G65E2 Silicon Carbide (SiC) Schottky Diode provides excellent current carrying capacity. This advanced, high efficiency power component is suitable for applications such as converters requiring a high peak forward surge capability, low forward voltage drop, reduced thermal resistance and low power loss.

Bourns offers Silicon Carbide Schottky Diodes for rectification applications in assorted styles. The Model BSDD06G65E2 is available in a TO252 (DPAK) package, well-suited for high frequency Switched-Mode Power Supplies.

## Additional Information

Click these links for more information:

PRODUCT SELECTOR | TECHNICAL LIBRARY | INVENTORY | SAMPLES | CONTACT

## Absolute Maximum Ratings (@ $T_J$ = 25 °C Unless Otherwise Noted)

| Parameter | Symbol | BSDD06G65E2 | Unit |
|---|---|---|---|
| Repetitive Peak Reverse Voltage | $V_{RRM}$ | 650 | V |
| Average Forward Current (Square Wave Pulse, D = 0.5, $T_{mb}$ ≤141 °C, Fig. $Zth_{(J-mb)}$) | $I_{F(AV)}$ | 6 | A |
| Repetitive Peak Forward Current (Square Wave Pulse, D = 0.5, $T_{mb}$ ≤141 °C, $t_p$ = 25 µs, Fig. $Zth_{(J-mb)}$) | $I_{FRM}$ | 12 | A |
| Non-Repetitive Peak Forward Surge Current (10 ms, Single Sine-Wave Pulse) | $I_{FSM}$ | 36 | A |
| Total Power Dissipation | $P_{tot}$ | 85.7 | W |
| Operating Junction Temperature Range | $T_J$ | -55 to +175 | °C |
| Storage Temperature | $T_{STG}$ | -55 to +175 | °C |

## Thermal Characteristics

| Parameter | | Symbol | Condition or Model | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|---|
| Thermal Resistance | Junction to Ambient | $R_{θ(J-A)}$ | In ambient air | | 50 | | °C/W |
| | Junction to Mounting Base | $R_{θ(J-mb)}$ | Transient thermal impedance curves | | 1.44 | 1.75 | |

## Electrical Characteristics (@ $T_J$ = 25 °C Unless Otherwise Noted)

| Parameter | Symbol | Condition or Model | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| Forward Voltage | $V_F$ | $I_F$ = 6 A, $T_J$ = 25 °C<br>$I_F$ = 6 A, $T_J$ = 175 °C | | 1.45<br>2.0 | 1.7<br>2.3 | V |
| Reverse Leakage Current | $I_R$ | $V_R$ = 650 V, $T_J$ = 25 °C<br>$V_R$ = 650 V, $T_J$ = 175 °C | | 0.3<br>15 | 30<br>150 | µA |
| Recovered Charge | $Q_r$ | $dI_F/dt$ = 500 A/µs, $V_R$ = 400 V, $I_F$ = 6 A | | 9 | | nC |
| Diode Capacitance | $C_d$ | $V_R$ = 1 V, f = 1 MHz | | 201 | | pF |
| Capacitance Stored Energy | $E_c$ | $V_R$ = 400 V | | 2.2 | | µJ |

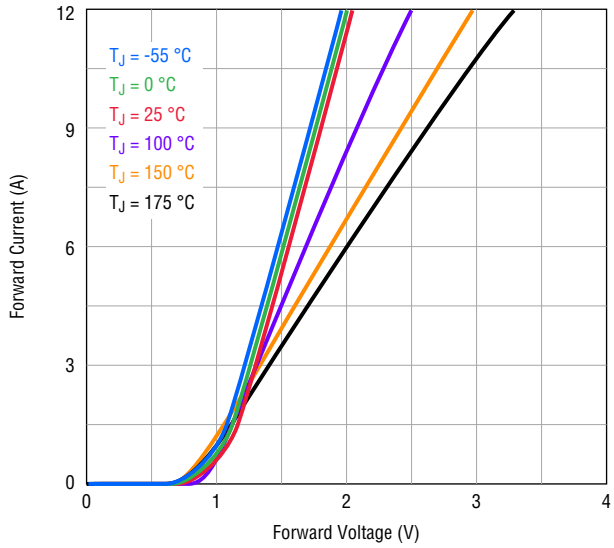
**WARNING Cancer and Reproductive Harm** - www.P65Warnings.ca.gov

*RoHS Directive 2015/863, Mar 31, 2015 and Annex.
**Bourns considers a product to be "halogen free" if (a) the Bromine (Br) content is 900 ppm or less; (b) the Chlorine (Cl) content is 900 ppm or less; and (c) the total Bromine (Br) and Chlorine (Cl) content is 1500 ppm or less.
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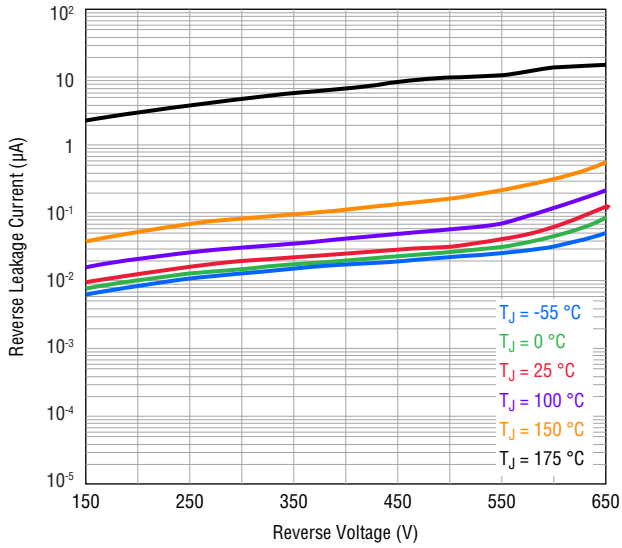
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## Rating and Characteristic Curves ($T_J$ = 25 °C unless otherwise noted)

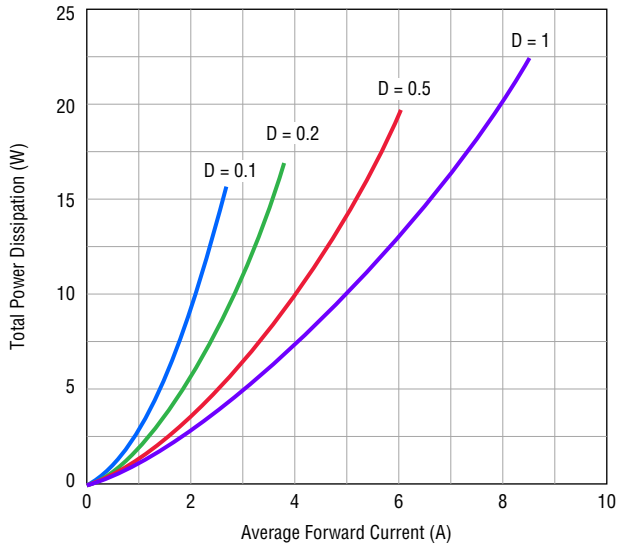
### Typical Forward Characteristics



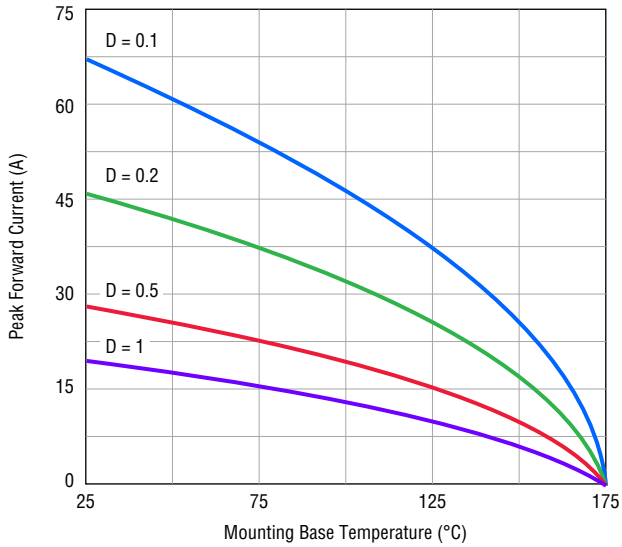

### Typical Reverse Characteristics




### Forward Power Dissipation




### Forward Current Derating

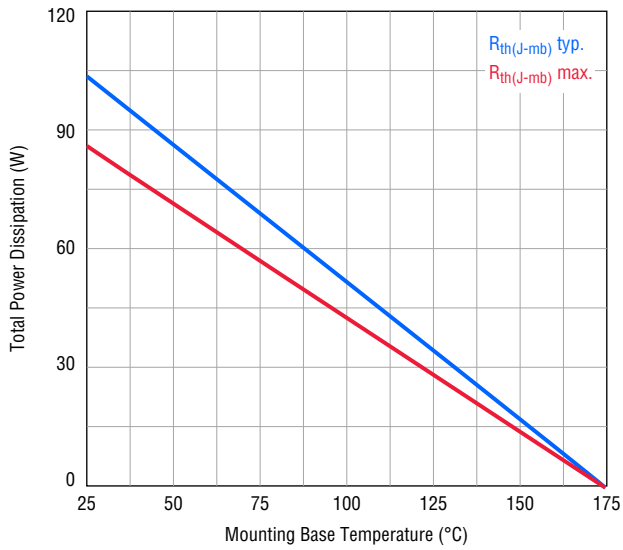



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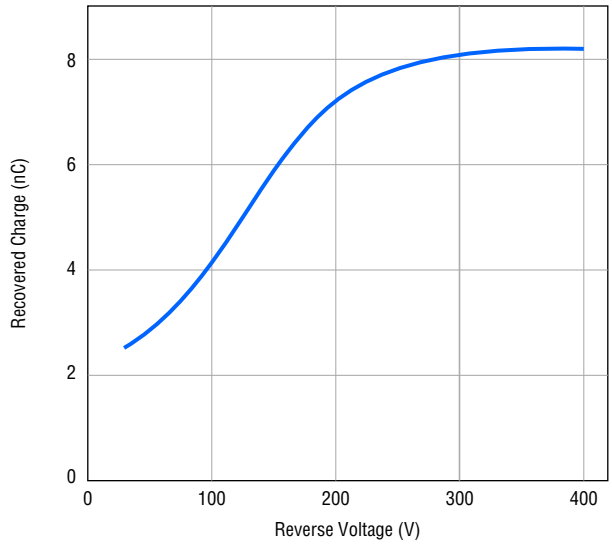
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## Rating and Characteristic Curves (Continued)

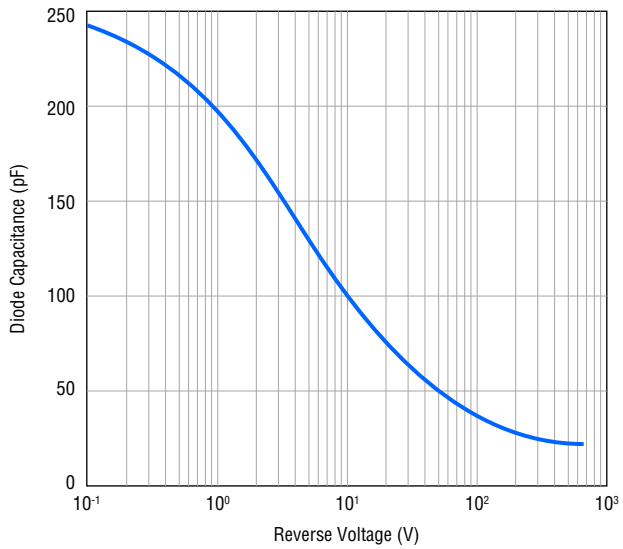
### Power Derating



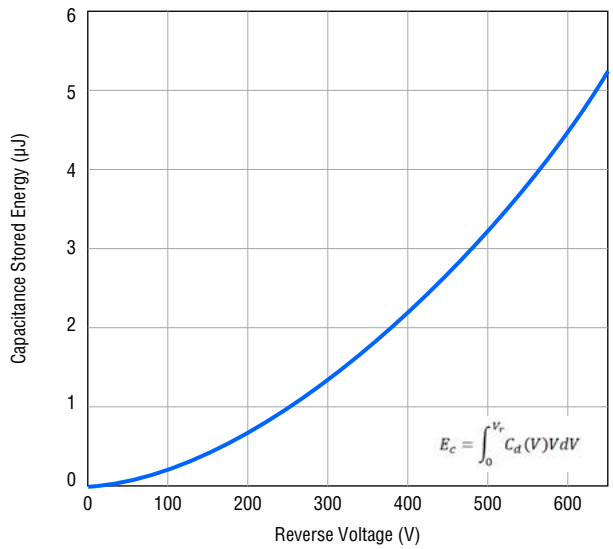

### Typical Recovered Charge vs $V_R$




### Typical Diode Capacitance vs $V_R$



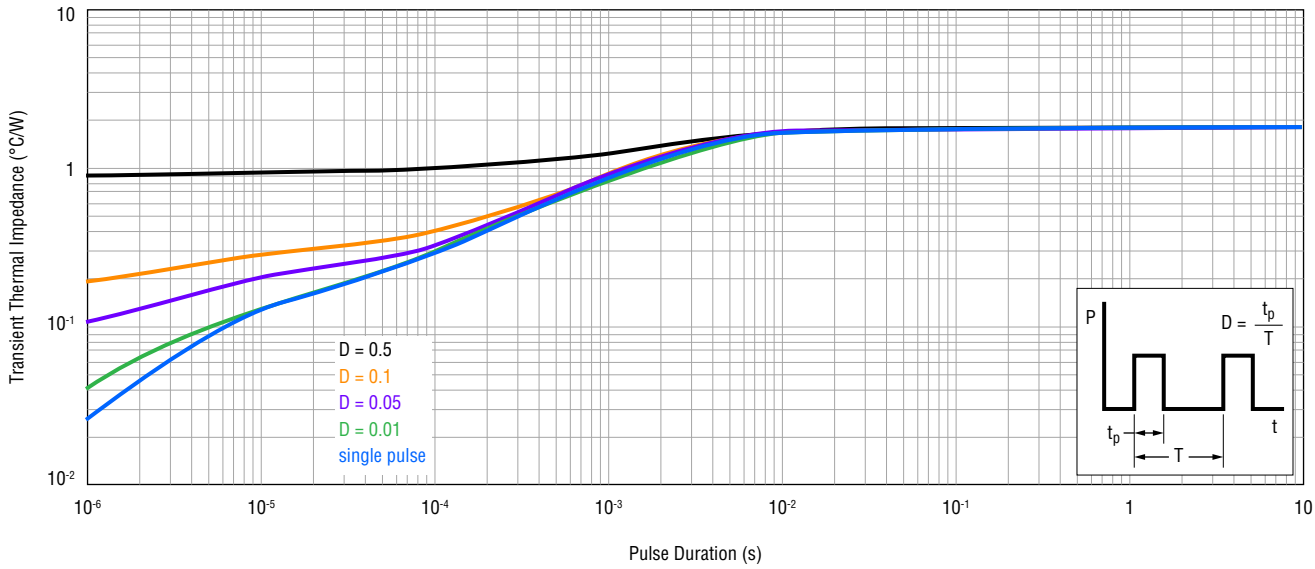

### Typical Capacitance Stored Energy vs $V_R$




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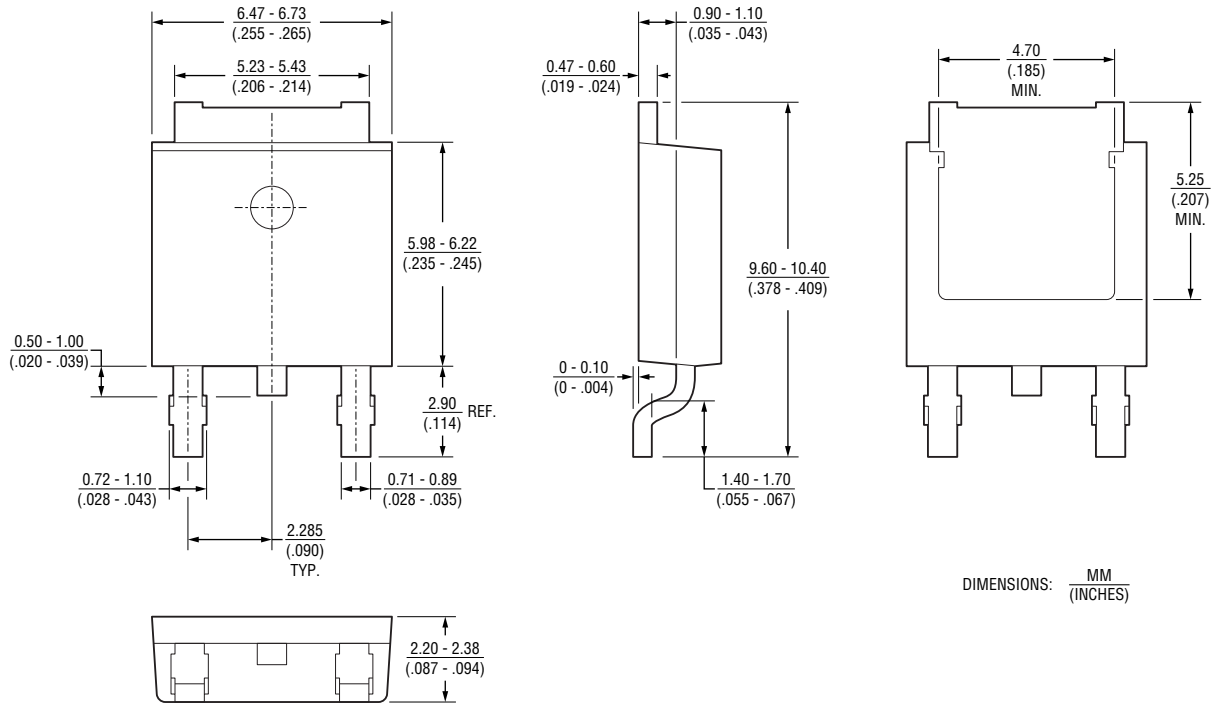
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## Transient Thermal Impedance, $Zth_{(J\text{-}mb)}$




## Product Dimensions

Package: TO252 (DPAK)



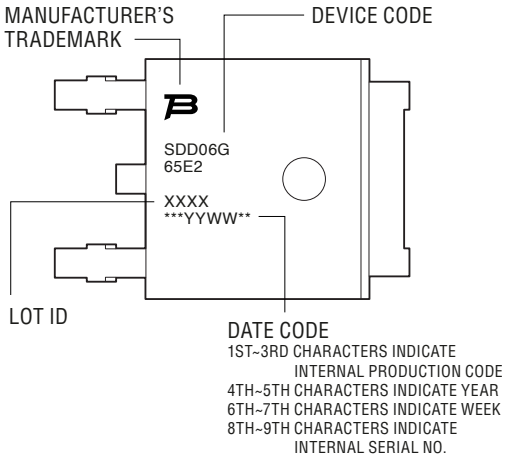

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# BSDD06G65E2 Silicon Carbide Schottky Diode

BOURNS®

## Typical Part Marking




## Environmental Specifications

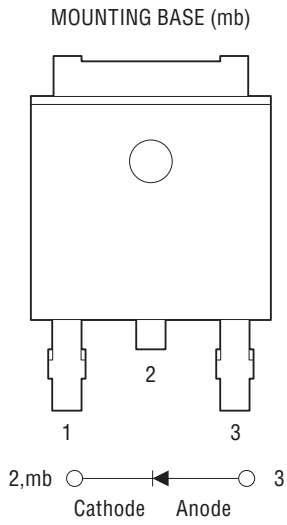
ESD Classification (HBM).....3B

## How to Order

| B | SD | D | 06 | G | 65 | E | 2 |
|---|---|---|---|---|---|---|---|

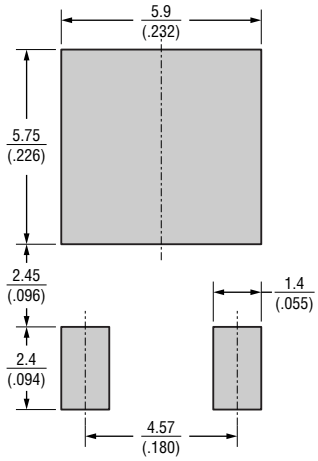
- Manufacturer: B = Bourns
- Product Type: SD = SiC Diodes
- Package Code: D = TO252
- Current Rating: 06 = 06 A
- Device Type: G = General $V_F$
- Nominal Voltage: 65 = 650 V
- Configuration: E = Single Diode
- Version Number

## Pin Information




1: N.C. (Not Connected)

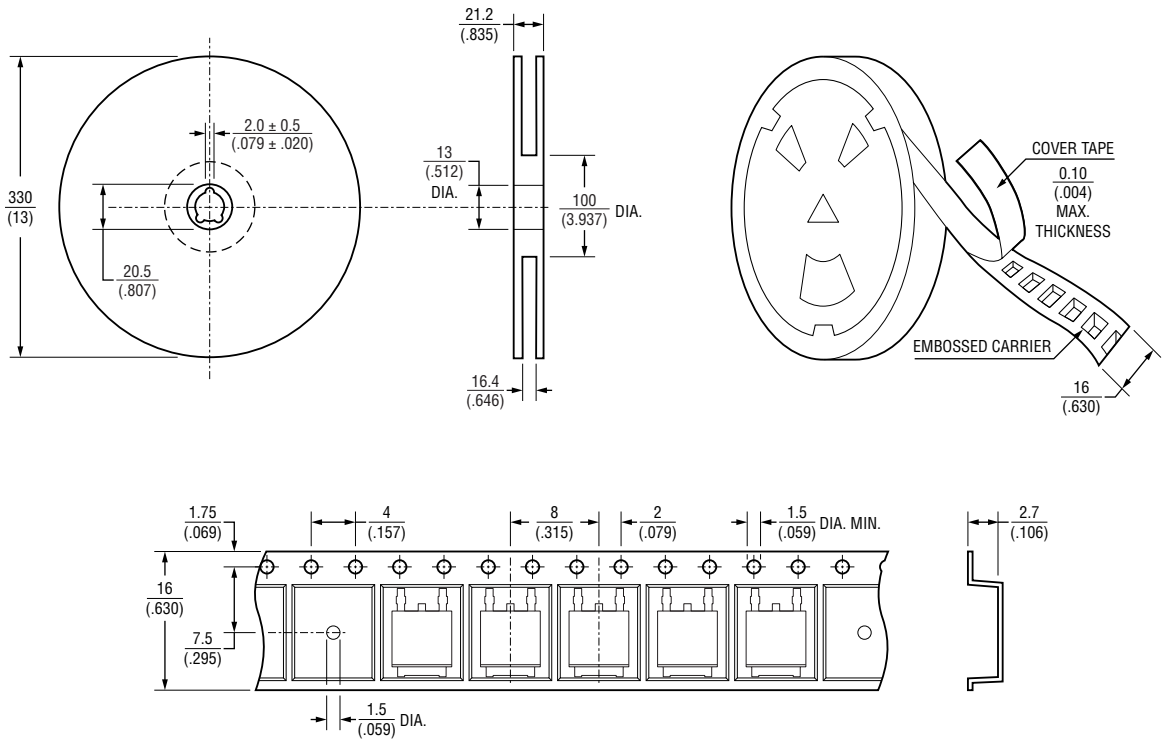
## Recommended Footprint




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## Packaging Specifications




BOURNS®

**Asia-Pacific:** Tel: +886-2 2562-4117
Email: asiacus@bourns.com

**EMEA:** Tel: +36 88 885 877
Email: eurocus@bourns.com

**The Americas:** Tel: +1-951 781-5500
Email: americus@bourns.com

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