



10Amp. Schottky Barrier Rectifiers MBR10200J3

| | |
|---------------|--------|
| $I_{F(AV)}$ | 2 × 5A |
| V_{RRM} | 200V |
| T_j | 175°C |
| $V_{F(TYP.)}$ | 0.7V |

Features

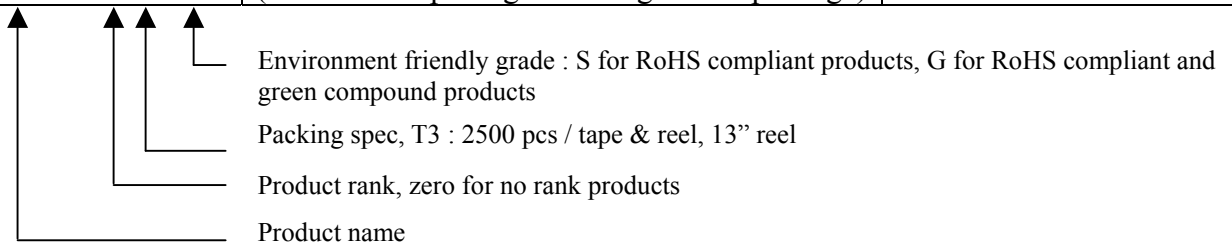
- 175°C operating junction temperature
- Low V_F and low I_R type
- Metal silicon junction, major carrier conduction
- 10A total (5A per diode leg)
- Guardring for over voltage protection
- Low power loss, high efficiency
- High surge capability
- For use in low voltage, high frequency inverters, free wheeling, and polarity protection application
- Pb-free lead plating and halogen-free package

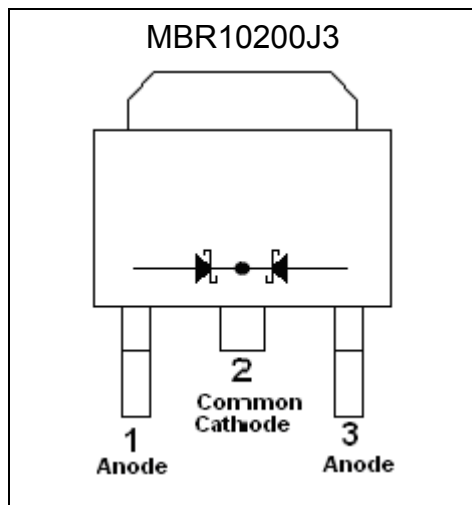
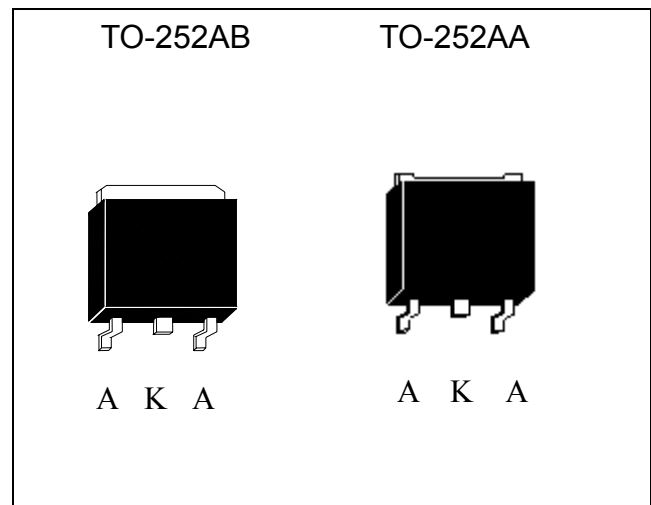
Mechanical Data

- Case: TO-252 molded plastic
- Mounting Position: Any
- Weight: 0.34 grams approximately
- Terminals: Pure tin plated, lead-free, solderable per MIL-STD-750 method 2026
- Epoxy: UL 94V-0 rate flame retardant
- Polarity : Indicated by diode symbol

Ordering Information

| Device | Package | Shipping |
|-------------------|---|------------------------|
| MBR10200J3-0-T3-G | TO-252 (Pb-free lead plating and halogen-free package) | 2500 pcs / Tape & Reel |



Equivalent Circuit

Outline

Maximum Ratings and Electrical Characteristics (Per Diode Leg)

(Rating at 25°C ambient temperature unless otherwise specified. Single phase, half wave, 60Hz, resistive or inductive load. For capacitive load, derate current by 20%.)

| Parameter | Symbol | Value | Units |
|---|------------|-----------------------------|------------|
| Maximum Recurrent peak reverse voltage | V_{RRM} | 200 | V |
| Maximum RMS voltage | V_{RMS} | 140 | V |
| Maximum DC blocking voltage | V_{DC} | 200 | V |
| Maximum instantaneous forward voltage at (Note 1) | V_F | $I_F=5A, T_C=25^\circ C$ | 0.90 |
| | | $I_F=5A, T_C=125^\circ C$ | 0.74 |
| | | $I_F=10A, T_C=25^\circ C$ | 1.00 |
| | | $I_F=10A, T_C=125^\circ C$ | 0.87 |
| Maximum Average forward rectified current @ $T_C=133^\circ C$ | Per Diode | 5 | A |
| | Per Device | 10 | |
| Peak repetitive forward current (square wave, 20kHz, $T_C=133^\circ C$) | I_{FRM} | 10 | A |
| Non-repetitive peak forward surge current @ 8.3ms single half sine wave superimposed on rated load (JEDEC method) | I_{FSM} | 110 | A |
| Peak repetitive reverse surge current (Note 1), $T_J < 175^\circ C$ | I_{RRM} | 2 | A |
| Maximum instantaneous reverse current at | I_R | $V_R=200V, T_C=25^\circ C$ | 5 μA |
| | | $V_R=200V, T_C=125^\circ C$ | 5 mA |
| Voltage rate of change, (rated V_R) | dV/dt | 10,000 | V/ μs |
| Typical junction capacitance @ $f=1MHz$ and applied 5V reverse voltage | C_J | 65 (typ.) | pF |
| ESD susceptibility (Note 2) | | 8000 | V |
| Storage temperature range | T_{stg} | -65 ~ +175 | $^\circ C$ |
| Operating junction temperature range | T_J | -65 ~ +175 | $^\circ C$ |

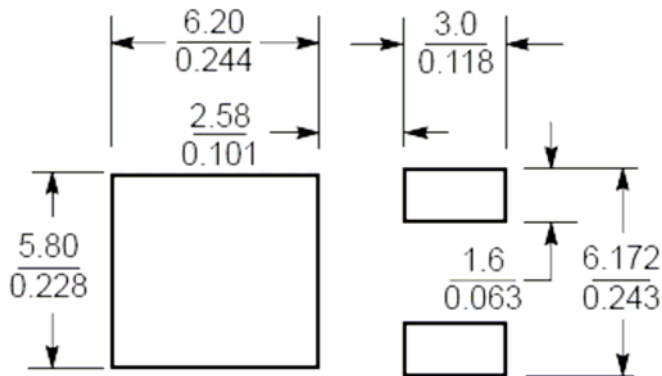
Notes : 1. 2.0 μs pulse width, $f=1.0kHz$

2. Human body model, 1.5k Ω in series with 100pF

Thermal Data

| Parameter | | Symbol | Value | Unit |
|---|-----------|---------------------|-------|------|
| Maximum Thermal Resistance, Junction-to-case | Per diode | R _{th,j-c} | 2.4 | °C/W |
| | Total | | 4 | |
| Maximum Thermal Resistance, Junction-to-ambient | | R _{th,j-a} | 90 | °C/W |

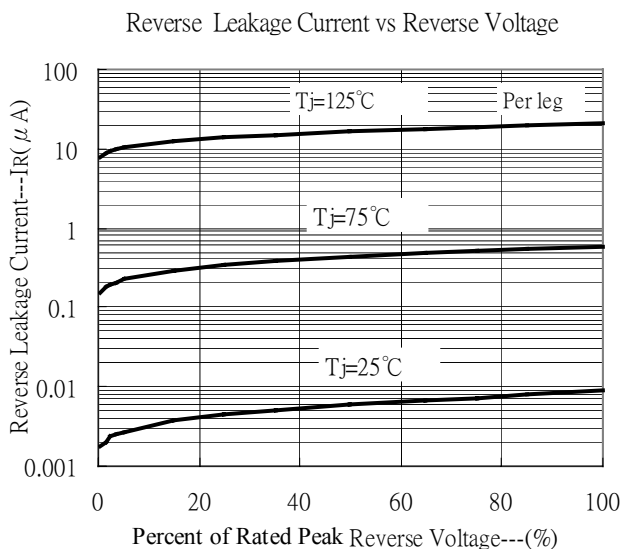
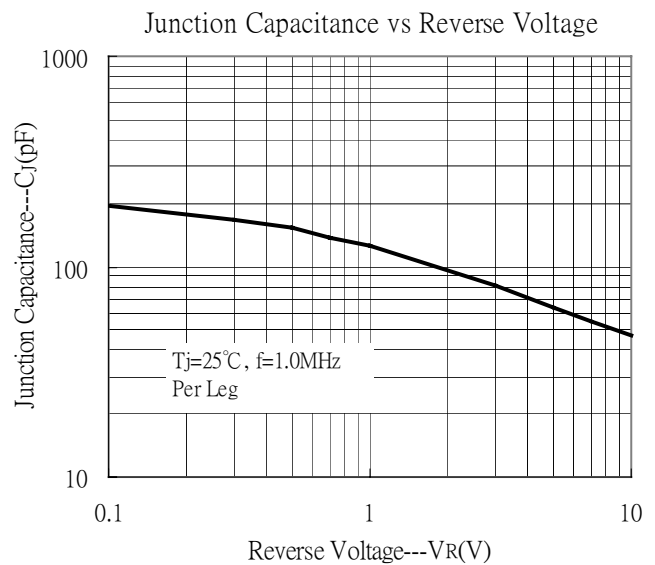
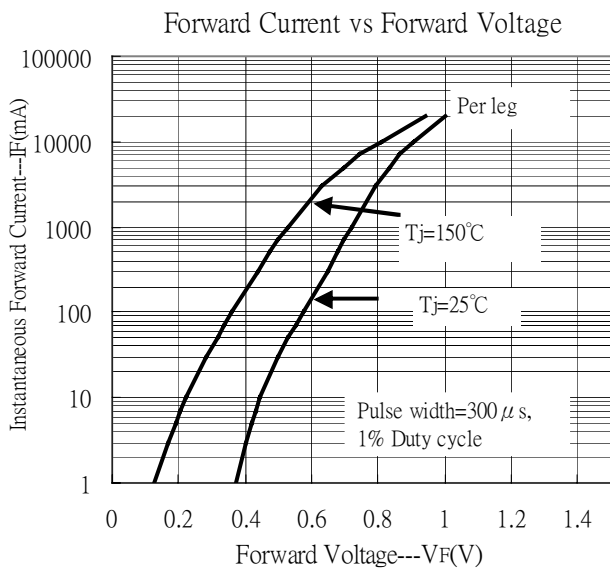
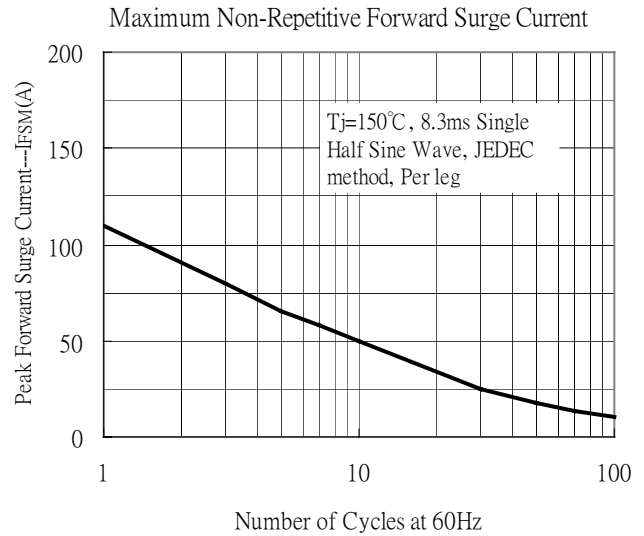
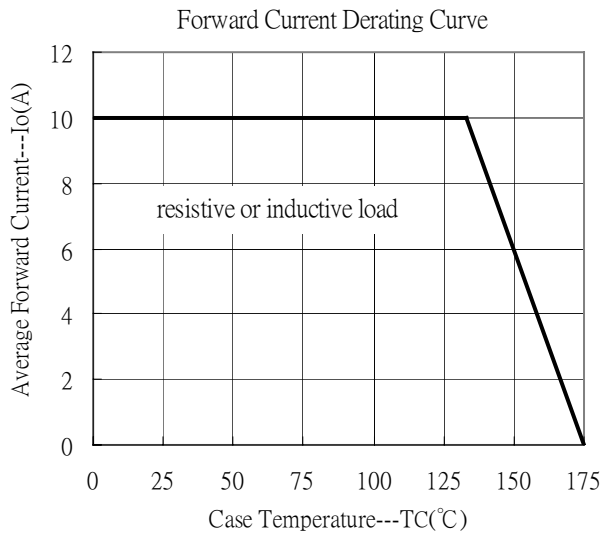
Recommended soldering footprint



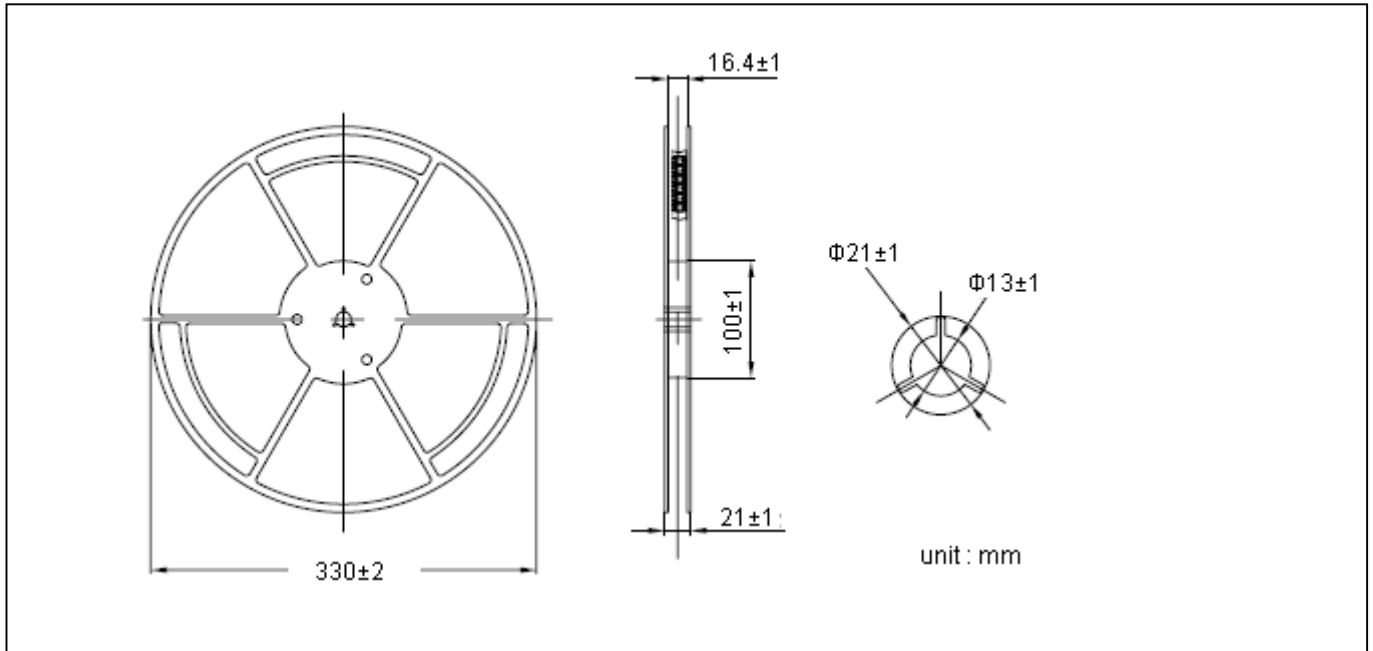
Unit ($\frac{\text{mm}}{\text{inch}}$)



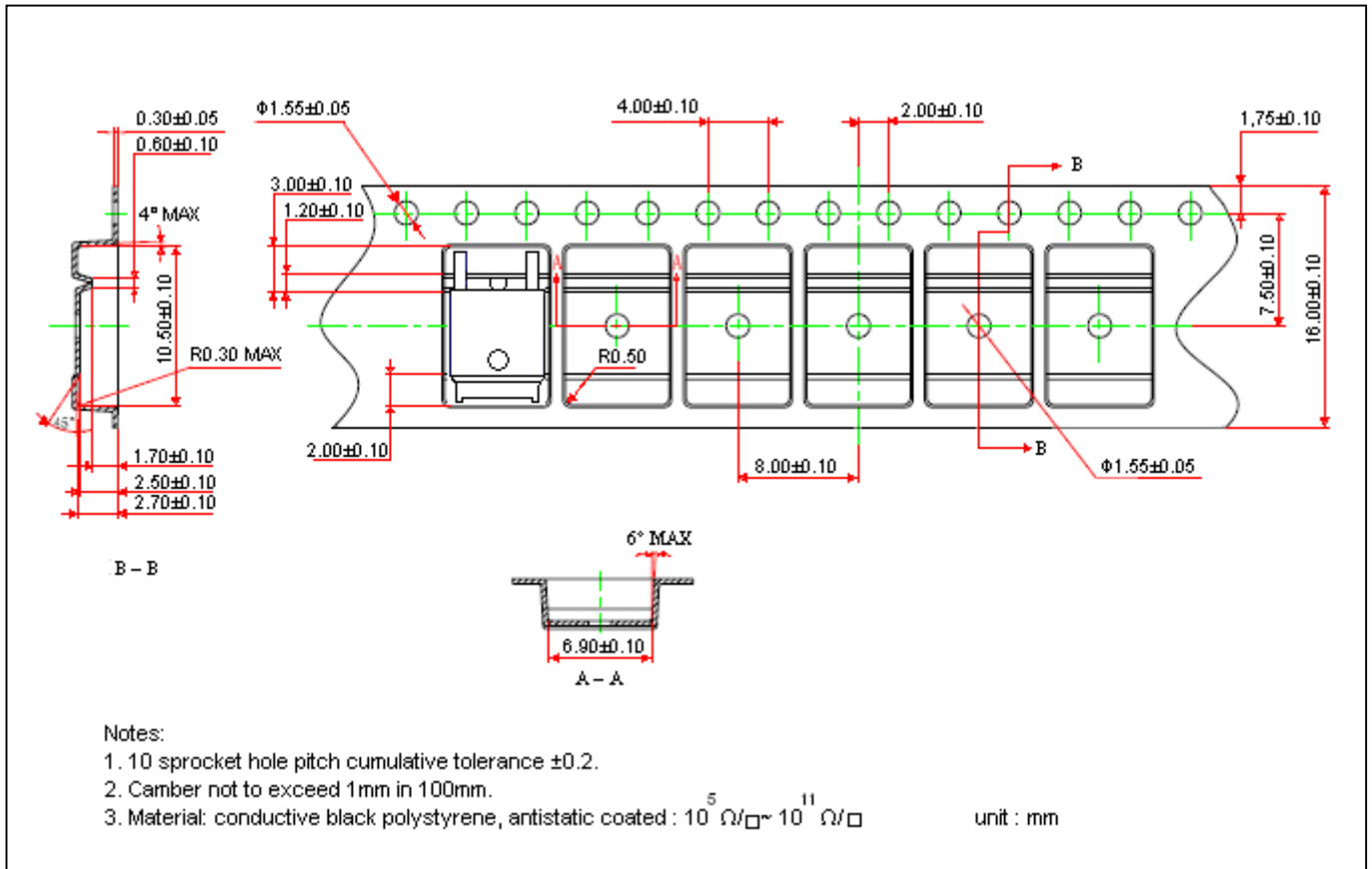
Typical Characteristics



Reel Dimension

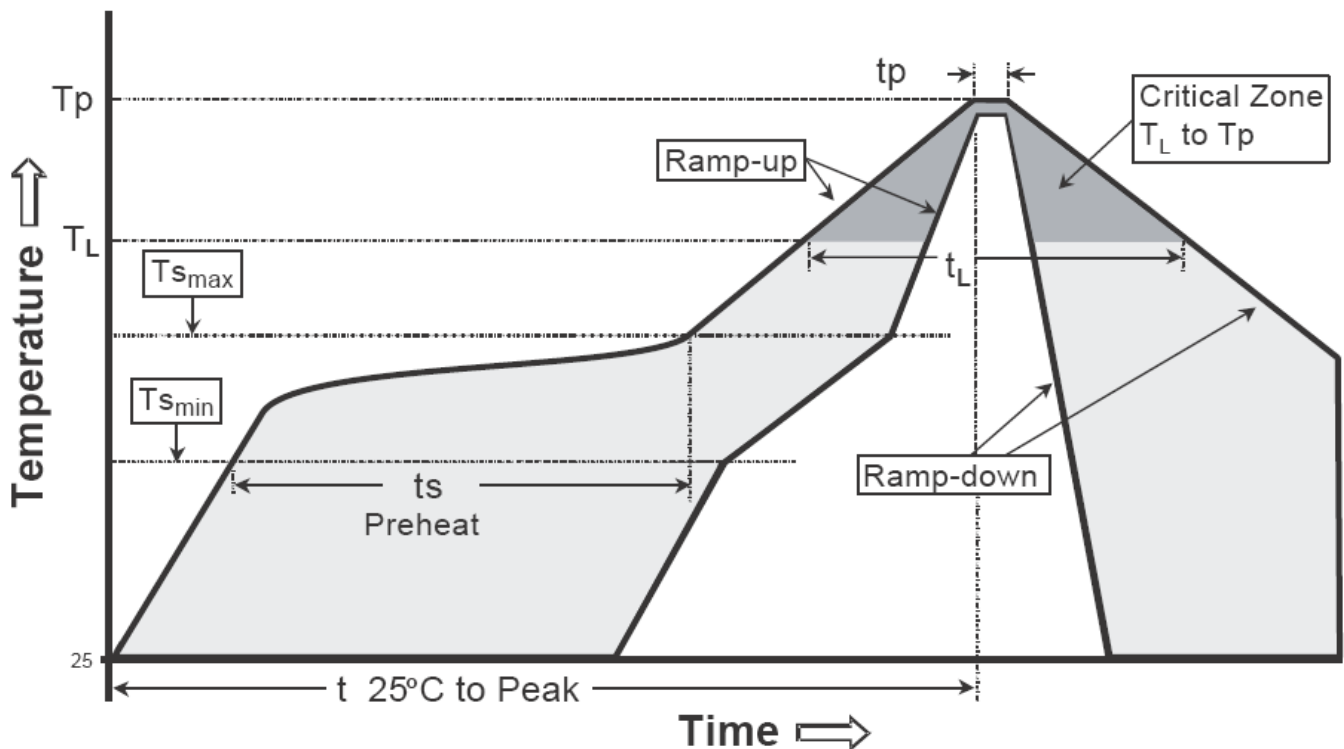


Carrier Tape Dimension



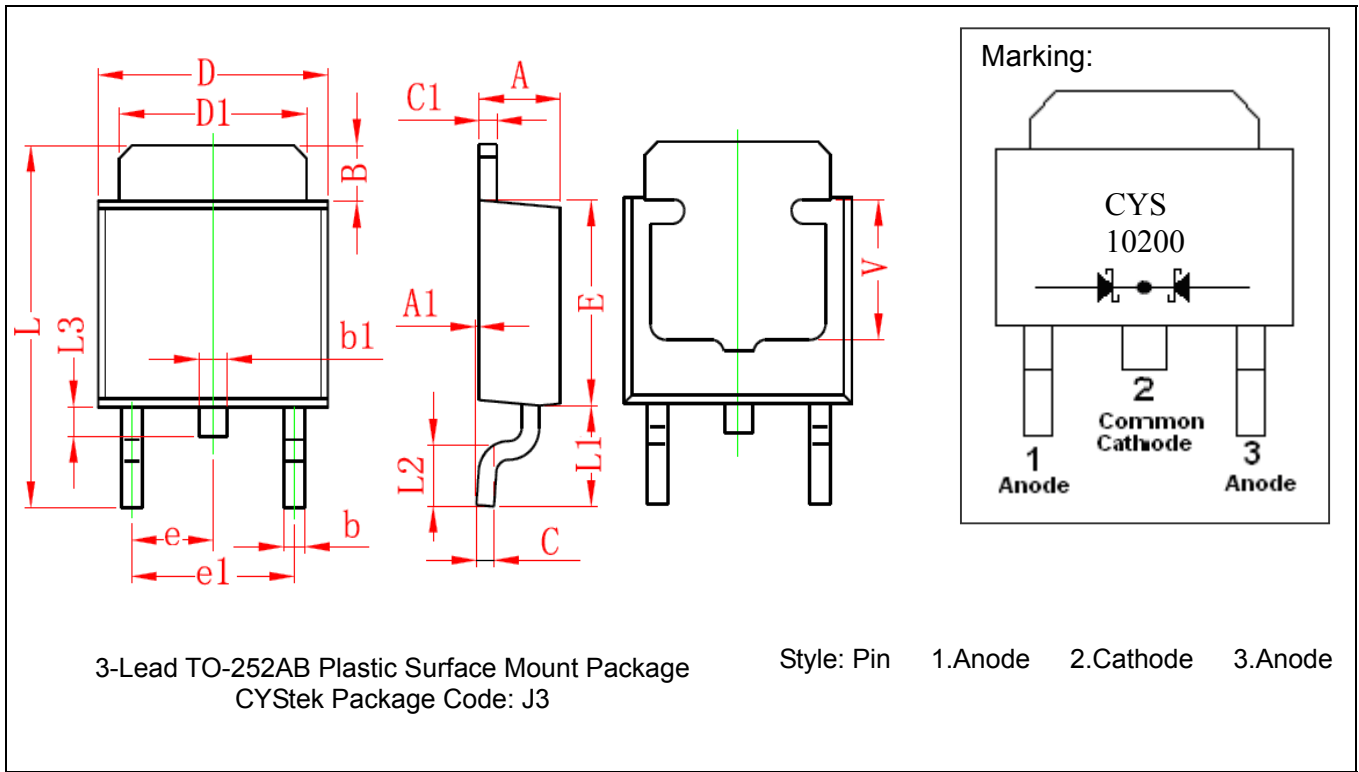
Recommended wave soldering condition

| Product | Peak Temperature | Soldering Time |
|-----------------|------------------|-----------------|
| Pb-free devices | 260 +0/-5 °C | 5 +1/-1 seconds |

Recommended temperature profile for IR reflow


| Profile feature | Sn-Pb eutectic Assembly | Pb-free Assembly |
|---|-------------------------|------------------|
| Average ramp-up rate (T _{smax} to T _p) | 3°C/second max. | 3°C/second max. |
| Preheat | | |
| -Temperature Min(T _{s min}) | 100°C | 150°C |
| -Temperature Max(T _{s max}) | 150°C | 200°C |
| -Time(t _{s min} to t _{s max}) | 60-120 seconds | 60-180 seconds |
| Time maintained above: | | |
| -Temperature (T _L) | 183°C | 217°C |
| - Time (t _L) | 60-150 seconds | 60-150 seconds |
| Peak Temperature(T _P) | 240 +0/-5 °C | 260 +0/-5 °C |
| Time within 5°C of actual peak temperature(tp) | 10-30 seconds | 20-40 seconds |
| Ramp down rate | 6°C/second max. | 6°C/second max. |
| Time 25 °C to peak temperature | 6 minutes max. | 8 minutes max. |

TO-252AB Dimension



*: Typical

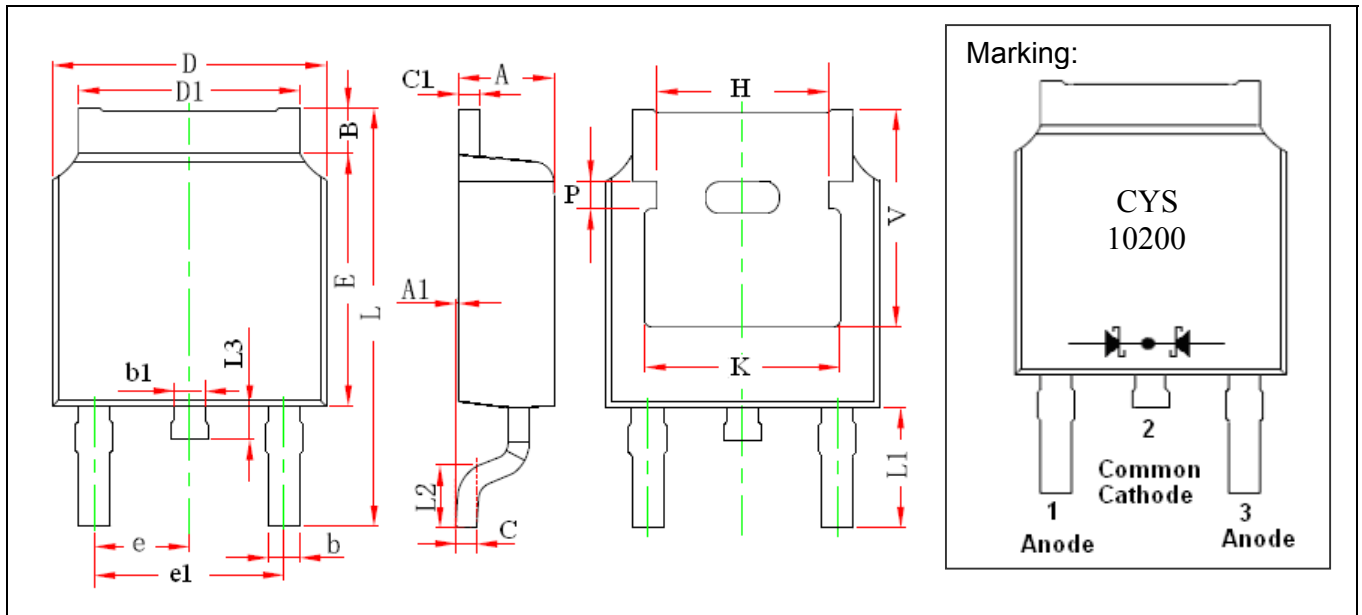
| DIM | Inches | | Millimeters | | DIM | Inches | | Millimeters | |
|-----|--------|-------|-------------|-------|-----|--------|-------|-------------|-------|
| | Min. | Max. | Min. | Max. | | Min. | Max. | Min. | Max. |
| A | 0.087 | 0.094 | 2.200 | 2.400 | E | 0.213 | 0.224 | 5.400 | 5.700 |
| A1 | 0.000 | 0.005 | 0.000 | 0.127 | e | *0.091 | | *2.300 | |
| B | 0.053 | 0.065 | 1.350 | 1.650 | e1 | 0.177 | 0.185 | 4.500 | 4.700 |
| b | 0.020 | 0.028 | 0.500 | 0.700 | L | 0.374 | 0.390 | 9.500 | 9.900 |
| b1 | 0.028 | 0.035 | 0.700 | 0.900 | L1 | 0.100 | 0.114 | 2.550 | 2.900 |
| c | 0.017 | 0.023 | 0.430 | 0.580 | L2 | 0.055 | 0.070 | 1.400 | 1.780 |
| c1 | 0.017 | 0.023 | 0.430 | 0.580 | L3 | 0.014 | 0.026 | 0.350 | 0.650 |
| D | 0.250 | 0.262 | 6.350 | 6.650 | V | 0.150 | REF | 3.800 | REF |
| D1 | 0.205 | 0.213 | 5.200 | 5.400 | | | | | |

Notes: 1.Controlling dimension: millimeters.
 2.Maximum lead thickness includes lead finish thickness, and minimum lead thickness is the minimum thickness of base material.
 3.If there is any question with packing specification or packing method, please contact your local CYStek sales office.

Material:

- Lead : Pure tin plated
- Mold Compound: Epoxy resin family, flammability solid burning class: UL94V-0

TO-252AA Dimension



3-Lead TO-252AA Plastic Surface Mount Package
 CYStek Package Code: J3

Style: Pin 1.Anode 2.Cathode 3.Anode

*: Typical

| DIM | Inches | | Millimeters | | DIM | Inches | | Millimeters | |
|-----|--------|-------|-------------|-------|-----|--------|-------|-------------|--------|
| | Min. | Max. | Min. | Max. | | Min. | Max. | Min. | Max. |
| A | 0.087 | 0.094 | 2.200 | 2.400 | e | 0.086 | 0.094 | 2.186 | 2.386 |
| A1 | 0.000 | 0.005 | 0.000 | 0.127 | e1 | 0.172 | 0.188 | 4.372 | 4.772 |
| B | 0.039 | 0.048 | 0.990 | 1.210 | H | 0.163 | REF | 4.140 | REF |
| b | 0.026 | 0.034 | 0.660 | 0.860 | K | 0.190 | REF | 4.830 | REF |
| b1 | 0.026 | 0.034 | 0.660 | 0.860 | L | 0.386 | 0.409 | 9.800 | 10.400 |
| C | 0.018 | 0.023 | 0.460 | 0.580 | L1 | 0.114 | REF | 2.900 | REF |
| C1 | 0.018 | 0.023 | 0.460 | 0.580 | L2 | 0.055 | 0.067 | 1.400 | 1.700 |
| D | 0.256 | 0.264 | 6.500 | 6.700 | L3 | 0.024 | 0.039 | 0.600 | 1.000 |
| D1 | 0.201 | 0.215 | 5.100 | 5.460 | P | 0.030 | REF | 0.750 | REF |
| E | 0.236 | 0.244 | 6.000 | 6.200 | V | 0.211 | REF | 5.350 | REF |

Notes: 1.Controlling dimension: millimeters.
 2.Maximum lead thickness includes lead finish thickness, and minimum lead thickness is the minimum thickness of base material.
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Material:

- Lead : Pure tin plated
- Mold Compound: Epoxy resin family, flammability solid burning class: UL94V-0

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