



30Amp. Schottky Barrier Rectifiers MBR30100E3

| | |
|--------------------|----------------|
| $I_{F(AV)}$ | $2 \times 15A$ |
| V_{RRM} | 100V |
| T_j | 175°C |
| $V_F(\text{typ.})$ | 0.68V |

Features

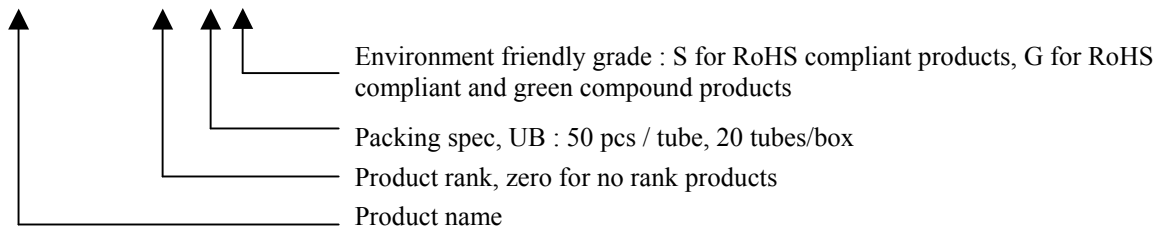
- 175°C operating junction temperature
- Low V_F and low I_r type
- Metal silicon junction, major carrier conduction
- 30A total (15A per diode leg)
- Guardring for over voltage protection
- Low power loss, high efficiency
- High surge capability
- High temperature soldering guaranteed : 260°C/10s, 0.25”(6.35mm) from case
- RoHS compliant package

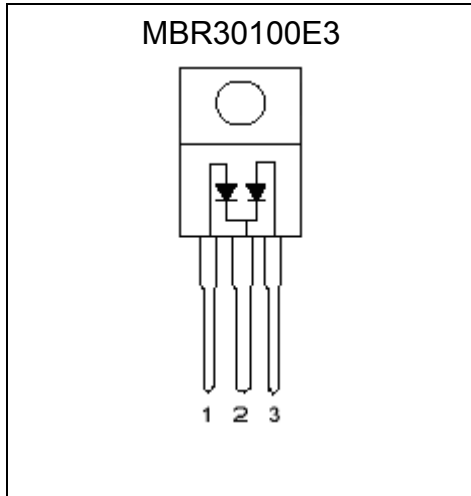
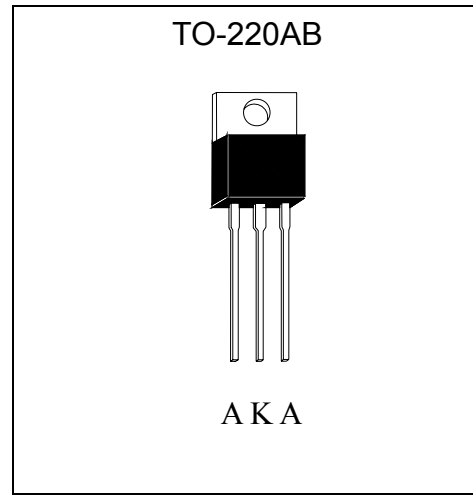
Mechanical Data

- Case: JEDEC TO-220AB molded plastic
- Mounting Position: Any
- Weight: 0.08 ounce, 2.24 grams
- Terminals: Pure tin plated, lead-free, solderable per MIL-STD-750 method 2026
- Epoxy: UL 94V-0 rate flame retardant
- Mounting Torque : 5 in-lbs max

Ordering Information

| Device | Package | Shipping |
|-------------------|--|---|
| MBR30100E3-0-UB-X | TO-220 (Pb-free lead plating package) | 50 pcs/tube, 20 tubes/box, 4 boxes / carton |



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} | 100 | V |
| Maximum RMS voltage | V_{RMS} | 70 | V |
| Maximum DC blocking voltage | V_{DC} | 100 | V |
| Maximum instantaneous forward voltage at (Note 1) | V_F | $I_F=15A, T_C=25^\circ C$ | 0.85 |
| | | $I_F=15A, T_C=125^\circ C$ | 0.70 |
| | | $I_F=30A, T_C=25^\circ C$ | 0.97 |
| | | $I_F=30A, T_C=125^\circ C$ | 0.82 |
| Maximum Average forward rectified current @ $T_C=156^\circ C$ | Per Diode | 15 | A |
| | Per Device | 30 | |
| Non-repetitive peak forward surge current @ 8.3ms single half sine wave superimposed on rated load (JEDEC method) | I_{FSM} | 250 | A |
| Peak repetitive reverse surge current, $T_J < 175^\circ C$ (Note 1) | I_{RRM} | 4 | A |
| Maximum instantaneous reverse current at | I_R | $V_R=100V, T_C=25^\circ C$ | 5 μA |
| | | $V_R=100V, T_C=125^\circ C$ | 6 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 | 341 (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, $f=1.0kHz$

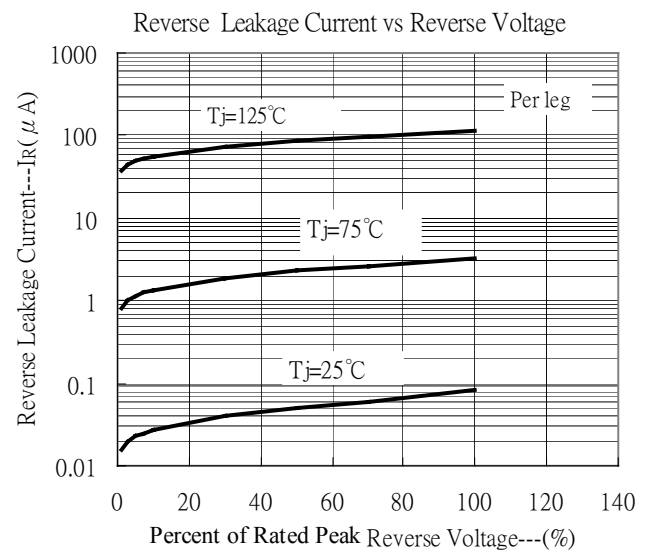
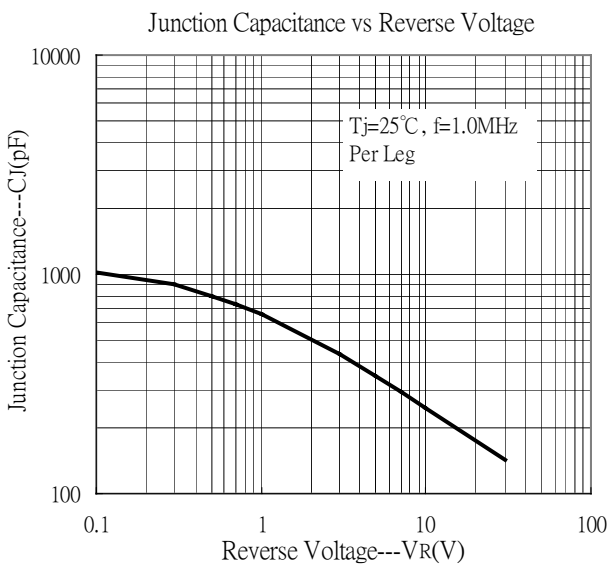
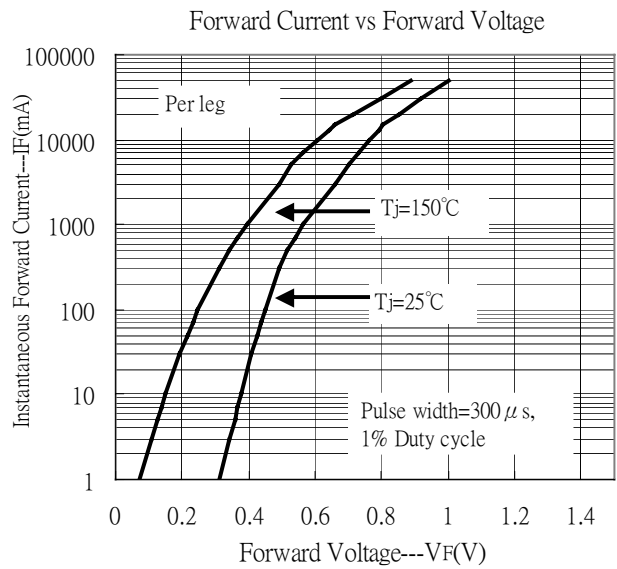
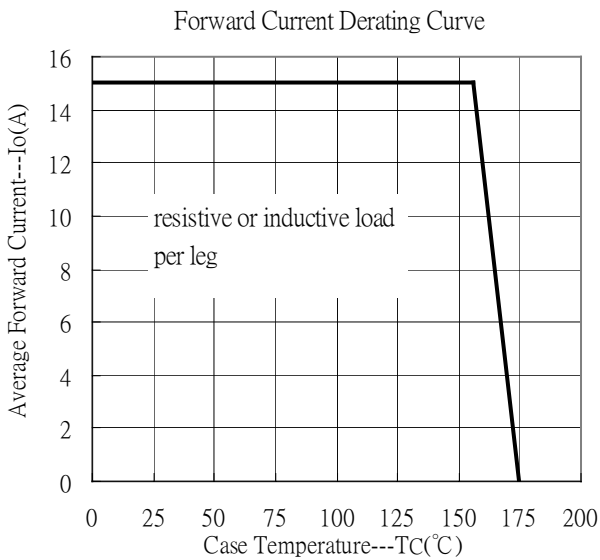
2. Human body model, 1.5k Ω in series with 100pF



Thermal Data

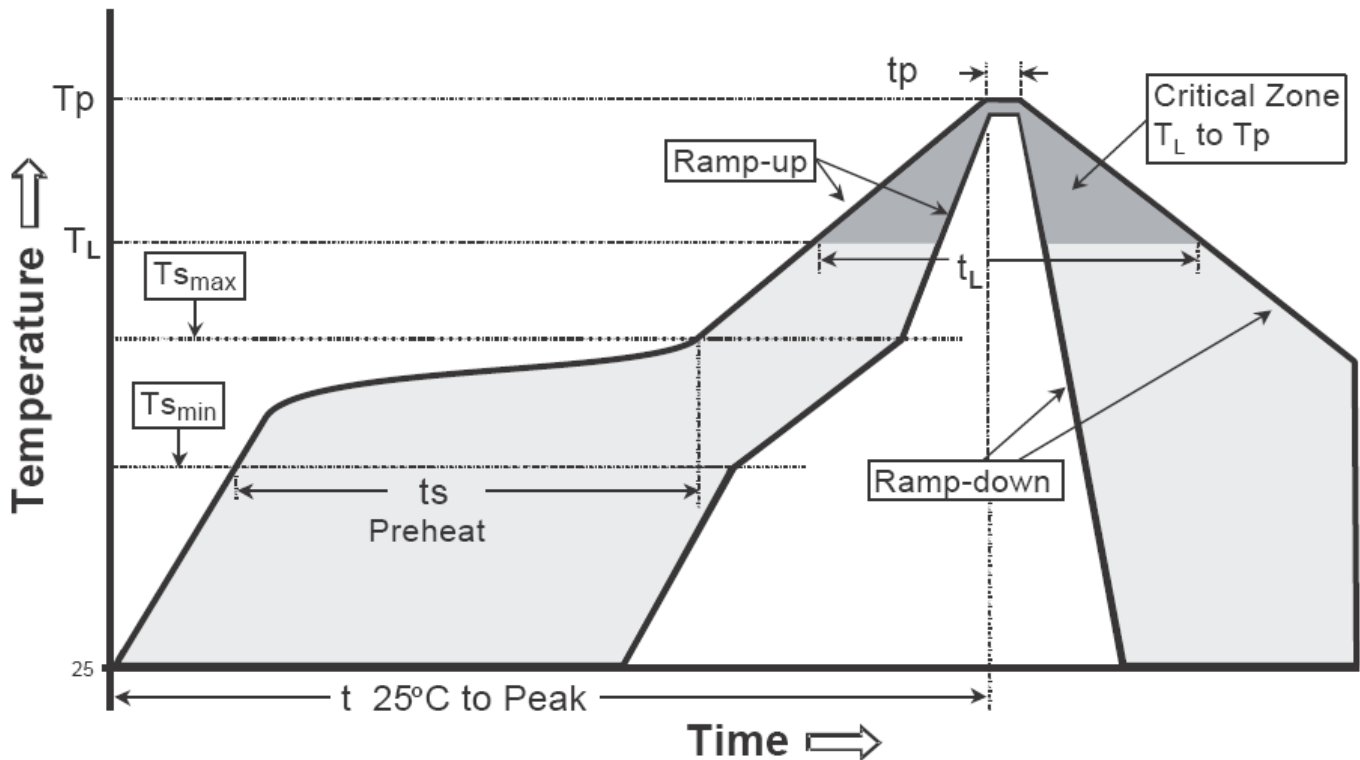
| Parameter | Symbol | Value | Unit |
|---|--------------|-------|---------------|
| Maximum Thermal Resistance, Junction-to-case | $R_{th,j-c}$ | 2.0 | $^{\circ}C/W$ |
| Maximum Thermal Resistance, Junction-to-ambient | $R_{th,j-a}$ | 60 | $^{\circ}C/W$ |

Typical Characteristics



Recommended wave soldering condition

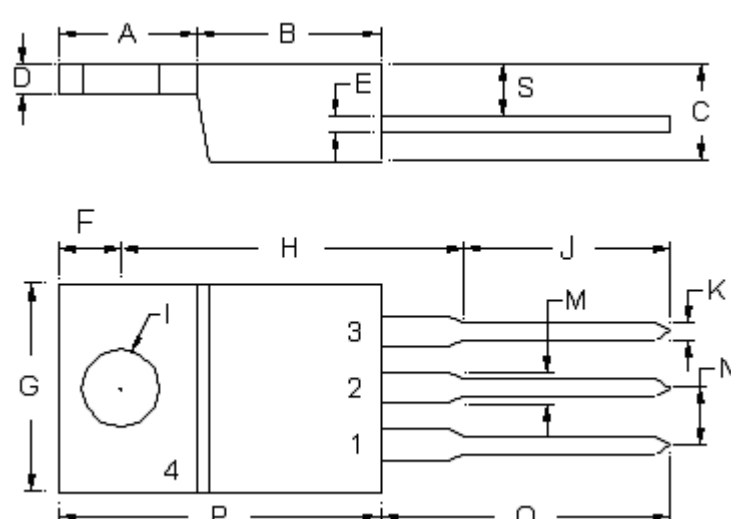
| | | |
|-----------------|------------------|-----------------|
| Product | Peak Temperature | Soldering Time |
| Pb-free devices | 260 +0/-5 °C | 5 +1/-1 seconds |

Recommended temperature profile for IR reflow


| Profile feature | Sn-Pb eutectic Assembly | Pb-free Assembly |
|--|-------------------------|------------------|
| Average ramp-up rate (Tsmax to Tp) | 3°C/second max. | 3°C/second max. |
| Preheat | | |
| -Temperature Min(Ts min) | 100°C | 150°C |
| -Temperature Max(Ts max) | 150°C | 200°C |
| -Time(ts min to ts max) | 60-120 seconds | 60-180 seconds |
| Time maintained above: | | |
| -Temperature (TL) | 183°C | 217°C |
| - Time (tL) | 60-150 seconds | 60-150 seconds |
| Peak Temperature(TP) | 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. |

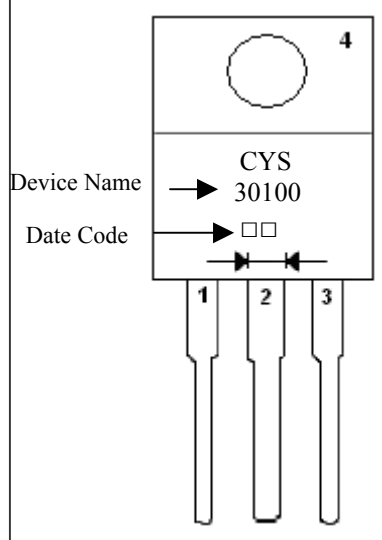
Note : All temperatures refer to topside of the package, measured on the package body surface.

TO-220AB Dimension



3-Lead TO-220AB Plastic Package
CYStek Package Code: E3

Marking:



Device Name → **CYS 30100**

Date Code → □□

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

*: Typical

| DIM | Inches | | Millimeters | | DIM | Inches | | Millimeters | |
|-----|--------|---------|-------------|--------|-----|--------|---------|-------------|-------|
| | Min. | Max. | Min. | Max. | | Min. | Max. | Min. | Max. |
| A | 0.2197 | 0.2949 | 5.58 | 7.49 | I | - | *0.1508 | - | *3.83 |
| B | 0.3299 | 0.3504 | 8.38 | 8.90 | J | 0.3165 | 0.4449 | 8.04 | 11.30 |
| C | 0.1732 | 0.185 | 4.40 | 4.70 | K | 0.0295 | 0.0374 | 0.75 | 0.95 |
| D | 0.0453 | 0.0547 | 1.15 | 1.39 | M | 0.0449 | 0.0551 | 1.14 | 1.40 |
| E | 0.0138 | 0.0236 | 0.35 | 0.60 | N | - | *0.1000 | - | *2.54 |
| F | 0.1020 | 0.1138 | 2.59 | 2.89 | O | 0.5000 | 0.5618 | 12.70 | 14.27 |
| G | 0.3803 | 0.4047 | 9.66 | 10.28 | P | 0.5701 | 0.6248 | 14.48 | 15.87 |
| H | - | *0.6398 | - | *16.25 | S | 0.0992 | 0.1110 | 2.52 | 2.82 |

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

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