



# 1.0Amp. Surface Mount Schottky Barrier Diodes

## SK12SB thru SK1BSB

### Features

- For surface mounted applications.
- For use in low voltage, high frequency inverters, free wheeling, and polarity protection applications.
- Plastic material used carries Underwriters Laboratory Flammability Classification 94V-0.
- Low leakage current.
- High surge capability.
- High temperature soldering: 250°C/10 seconds at terminals.
- Exceeds environmental standards of MIL-S-19500/228.

### Mechanical Data

- Case: Molded plastic, JEDEC DO-214AA/SMB.
- Terminals: Solder plated, solderable per MIL-STD-750 method 2026.
- Polarity: Indicated by cathode band.
- Mounting position: Any.
- Weight: 0.093 gram.

### Maximum Ratings and Electrical Characteristics

(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              | Type       |      |      |      |      |      |      | Units |
|--|---------------------|------------|------|------|------|------|------|------|-------|
|  |                     | SK12       | SK13 | SK14 | SK15 | SK16 | SK18 | SK1B |       |
| Repetitive peak reverse voltage  | V <sub>RRM</sub>    | 20         | 30   | 40   | 50   | 60   | 80   | 100  | V     |
| Maximum RMS voltage  | V <sub>RMS</sub>    | 14         | 21   | 28   | 35   | 42   | 56   | 70   | V     |
| Maximum DC blocking voltage  | V <sub>R</sub>      | 20         | 30   | 40   | 50   | 60   | 80   | 100  | V     |
| Maximum instantaneous forward Voltage @ I <sub>F</sub> =1A (Note 1)                                      | V <sub>F</sub>      | 0.5        |      | 0.7  |      | 0.85 |      |      | V     |
| Maximum average forward rectified current @ T <sub>L</sub> =100°C  | I <sub>O</sub>      | 1          |      |      |      |      |      |      | A     |
| Peak forward surge current @ 8.3ms, single half sine-wave superimposed on rated load (JEDEC method)      | I <sub>FSM</sub>    | 30         |      |      |      |      |      |      | A     |
| Maximum DC reverse current at Rated DC blocking voltage<br>T <sub>J</sub> =25°C<br>T <sub>J</sub> =100°C | I <sub>R</sub>      | 0.5<br>10  |      |      |      |      |      |      | mA    |
| Typical thermal resistance, junction to ambient  | R <sub>th, JA</sub> | 40         |      |      |      |      |      |      | °C/W  |
| Typical diode junction capacitance @ f=1MHz and applied 4V reverse voltage                               | C <sub>J</sub>      | 120        |      |      |      |      |      |      | pF    |
| Storage temperature  | T <sub>stg</sub>    | -55 ~ +150 |      |      |      |      |      |      | °C    |
| Operating temperature  | T <sub>J</sub>      | -55 ~ +125 |      |      |      |      |      |      | °C    |

## Characteristic Curves

FIG.1 - FORWARD CURRENT DERATING CURVE

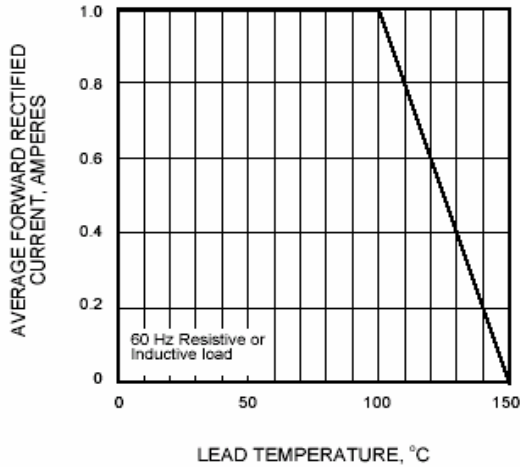


FIG.2 - MAXIMUM NON-REPETITIVE PEAK FORWARD SURGE CURRENT

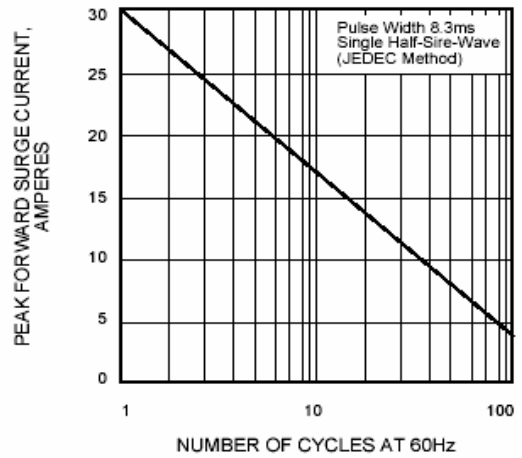


FIG.3 - TYPICAL INSTANTANEOUS FORWARD CHARACTERISTICS

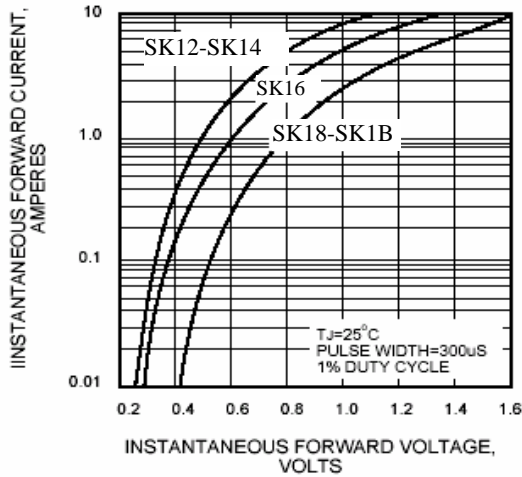


FIG.4 - TYPICAL REVERSE CHARACTERISTICS

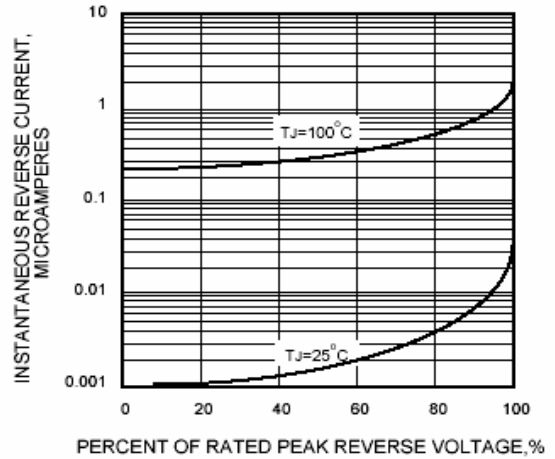
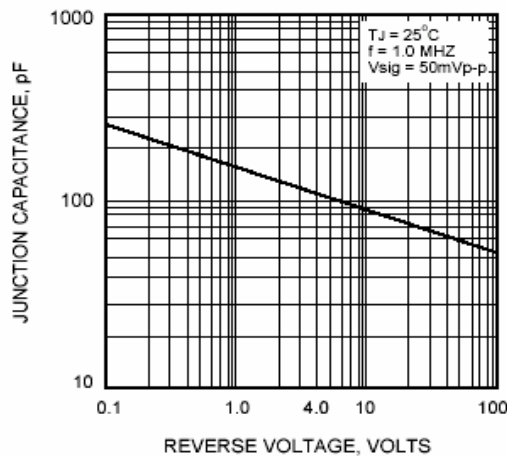
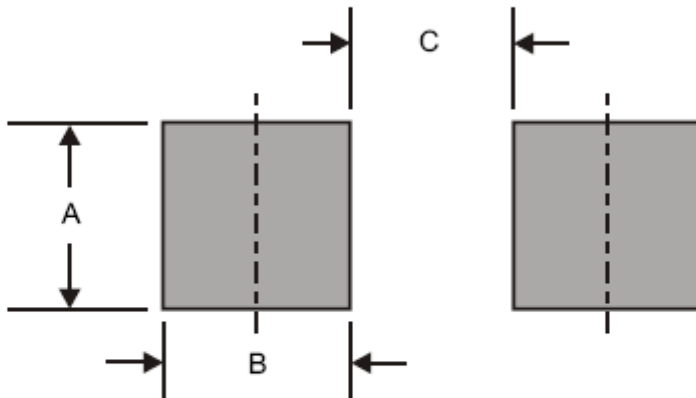


FIG.5 - TYPICAL JUNCTION CAPACITANCE



## Recommended Footprint



Dimensions in inches and (millimeters)

| DIM | Inches | Millimeters |
|-----|--------|-------------|
|     | Typ    | Typ         |
| A   | 0.142  | 3.60        |
| B   | 0.059  | 1.50        |
| C   | 0.118  | 3.00        |

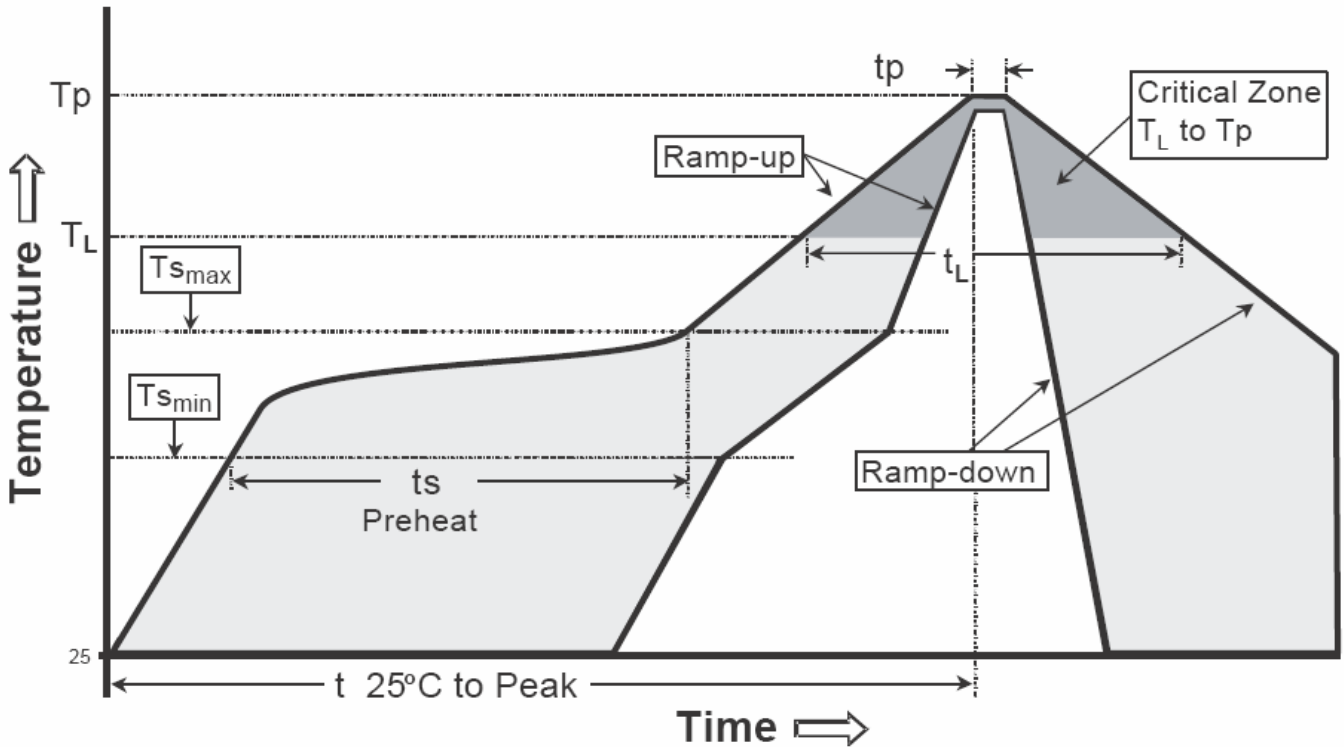
## Ordering Information

| Device | Package | Shipping               | Marking |
|--------|---------|------------------------|---------|
| SK12SB | SMB     | 3000 pcs / Tape & Reel | SK12    |
| SK13SB | SMB     | 3000 pcs / Tape & Reel | SK13    |
| SK14SB | SMB     | 3000 pcs / Tape & Reel | SK14    |
| SK15SB | SMB     | 3000 pcs / Tape & Reel | SK15    |
| SK16SB | SMB     | 3000 pcs / Tape & Reel | SK16    |
| SK18SB | SMB     | 3000 pcs / Tape & Reel | SK18    |
| SK1BSB | SMB     | 3000 pcs / Tape & Reel | SK1B    |

**Recommended wave soldering condition**

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

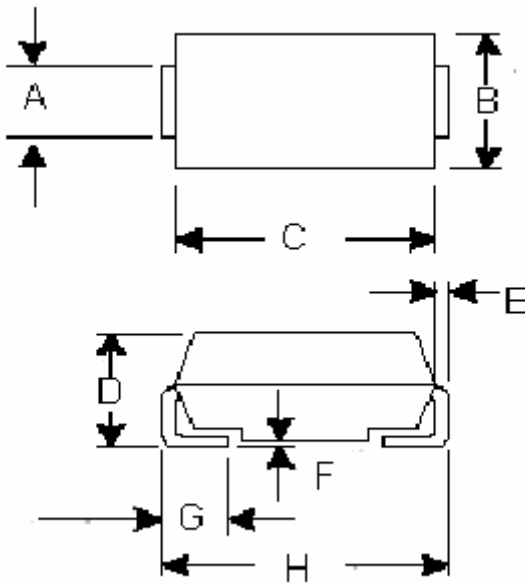
**Recommended temperature profile for IR reflow**



| Profile feature   | Sn-Pb eutectic Assembly | Pb-free Assembly |
|---|-------------------------|------------------|
| Average ramp-up rate (T <sub>smax</sub> to T <sub>p</sub> ) | 3°C/second max.         | 3°C/second max.  |
| Preheat   |                         |                  |
| -Temperature Min(T <sub>s min</sub> )                       | 100°C                   | 150°C            |
| -Temperature Max(T <sub>s max</sub> )                       | 150°C                   | 200°C            |
| -Time(t <sub>s min</sub> to t <sub>s max</sub> )            | 60-120 seconds          | 60-180 seconds   |
| Time maintained above:                                      |                         |                  |
| -Temperature (T <sub>L</sub> )                              | 183°C                   | 217°C            |
| - Time (t <sub>L</sub> )                                    | 60-150 seconds          | 60-150 seconds   |
| Peak Temperature(T <sub>P</sub> )                           | 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.

**SMB/DO-214AA Dimension**



Marking Code :

|        |        |        |        |
|--------|--------|--------|--------|
| SK12SB | SK13SB | SK14SB | SK15SB |
| SK12   | SK13   | SK14   | SK15   |

|        |        |        |  |
|--------|--------|--------|--|
| SK16SB | SK18SB | SK1BSB |  |
| SK16   | SK18   | SK1B   |  |

SMB/DO-214AA Plastic  
 Surface Mounted Package  
 CYStek Package Code : SB

\*:Typical

| DIM | Inches |       | Millimeters |      | DIM | Inches |       | Millimeters |       |
|-----|--------|-------|-------------|------|-----|--------|-------|-------------|-------|
|     | Min.   | Max.  | Min.        | Max. |     | Min.   | Max.  | Min.        | Max.  |
| A   | 0.075  | 0.083 | 1.91        | 2.11 | E   | 0.006  | 0.012 | 0.152       | 0.305 |
| B   | 0.130  | 0.155 | 3.30        | 3.94 | F   | 0.002  | 0.008 | 0.051       | 0.203 |
| C   | 0.160  | 0.185 | 4.06        | 4.70 | G   | 0.030  | 0.060 | 0.76        | 1.52  |
| D   | 0.083  | 0.096 | 2.13        | 2.44 | H   | 0.200  | 0.220 | 5.08        | 5.59  |

**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.

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