

1A / 90V Snubber Damping Rectifier

QD

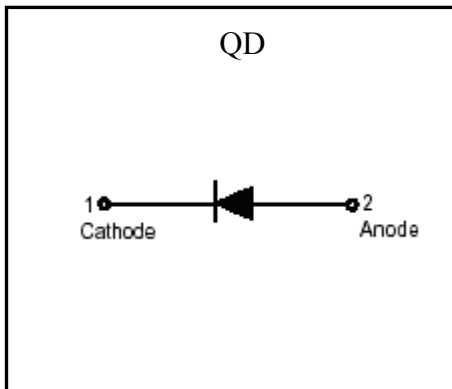
Features

- High current capability
- Smoothly soft reverse recovery time (trr)
- Low profile surface mounted package in order to minimize board space
- Pb-free lead plating and halogen-free package

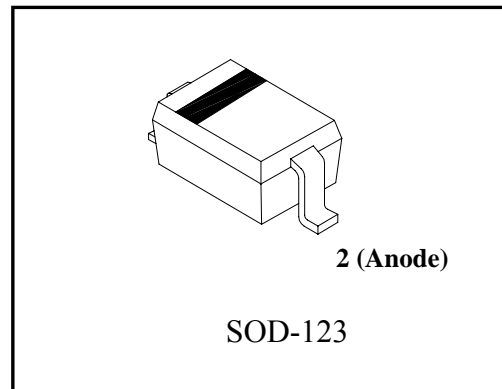
Mechanical data

- Case : Molded plastic, JEDEC SOT-123.
- Epoxy : UL94-V0 rated flame retardant
- Terminals : Plated terminals, solderable per MIL-STD-202 method 208
- Polarity : Indicated by cathode band
- Mounting position : Any
- Weight : approx. 0.04 gram

Symbol

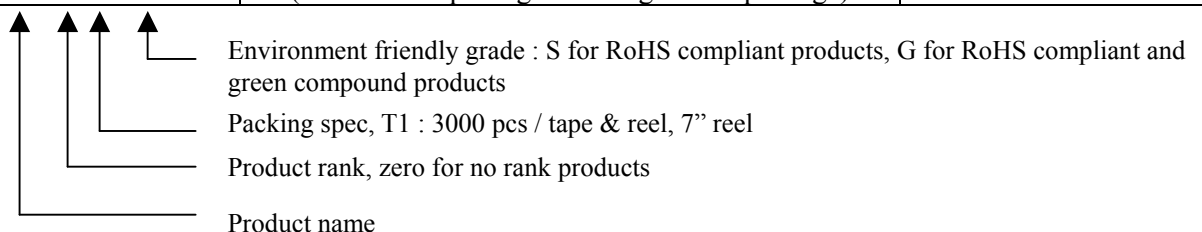


Outline



Ordering Information

| Device | Package | Shipping |
|-----------|--|------------------------|
| QD-0-T1-G | SOD-123 (Pb-free lead plating and halogen-free package) | 3000 pcs / tape & reel |



**Absolute Maximum Ratings** ($T_A=25^{\circ}\text{C}$, unless otherwise noted)

| Parameters | Conditions | Symbol | Value | Units |
|--------------------------------------|---|-------------|----------|--------------------|
| Repetitive peak reverse voltage | | V_{RRM} | 90 | V |
| RMS voltage | | V_{RMS} | 63 | V |
| Continuous reverse voltage | | V_R | 90 | V |
| Forward rectified current | Single phase half wave, 60Hz @ $T_J=25^{\circ}\text{C}$ | $I_{F(AV)}$ | 1 | A |
| Repetitive Peak Forward Current | Single phase half wave, 60Hz @ $T_J=25^{\circ}\text{C}$ | I_{FRM} | 1.57 | A |
| Forward surge current | 8.3ms single half sine-wave superimposed on rated load (JEDEC method) | I_{FSM} | 6 | A |
| | $t_p \leq 1\mu\text{s}$ | | 30 | |
| Maximum reverse recovery time | $I_F=0.5\text{A}$, $I_R=1.0\text{A}$, $I_{RR}=0.25\text{A}$ | t_{rr} | 500 | ns |
| Storage temperature range | | T_{stg} | -55~+150 | $^{\circ}\text{C}$ |
| Operating junction temperature range | | T_j | -55~+150 | $^{\circ}\text{C}$ |

Thermal Data

| Parameter | Symbol | Value | Unit |
|---|--------------|-------|-----------------------------|
| Thermal Resistance, Junction-to-case, max | $R_{th,j-c}$ | 60 | $^{\circ}\text{C}/\text{W}$ |
| Thermal Resistance, Junction-to-ambient, max (Note) | $R_{th,j-a}$ | 250 | |

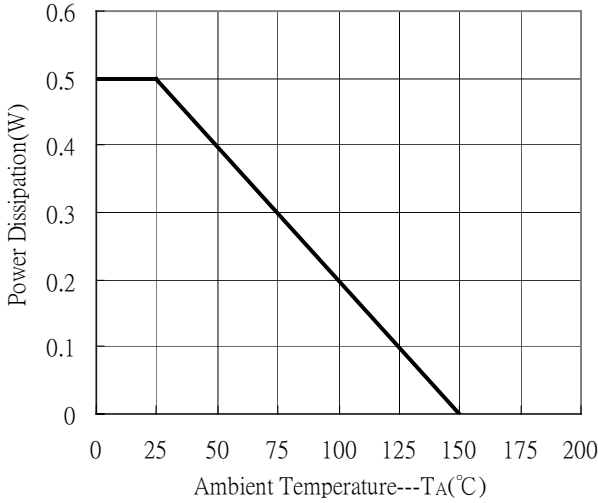
Note: When mounted on FR-4 PCB with area measuring 10×10 mm**Characteristics** ($T_A=25^{\circ}\text{C}$, unless otherwise noted)

| Characteristic | Symbol | Condition | Min. | Typ | Max. | Unit |
|-------------------------|---------|--|------|-----|------|---------------|
| Reverse Voltage | V_R | $I_R=100\mu\text{A}$ | 90 | - | - | V |
| Forward Voltage | $V_F 1$ | $I_F=100\text{mA}$ | - | - | 0.95 | V |
| | $V_F 2$ | $I_F=500\text{mA}$ | - | - | 1.2 | |
| Reverse Leakage Current | I_R | $V_R=90\text{V}$ | - | - | 100 | nA |
| | I_R | $V_R=90\text{V}$, $T_A=125^{\circ}\text{C}$ | - | - | 10 | μA |
| Junction Capacitance | C_J | $V_R=1\text{V}$, $f=1\text{MHz}$ | - | 7 | - | pF |

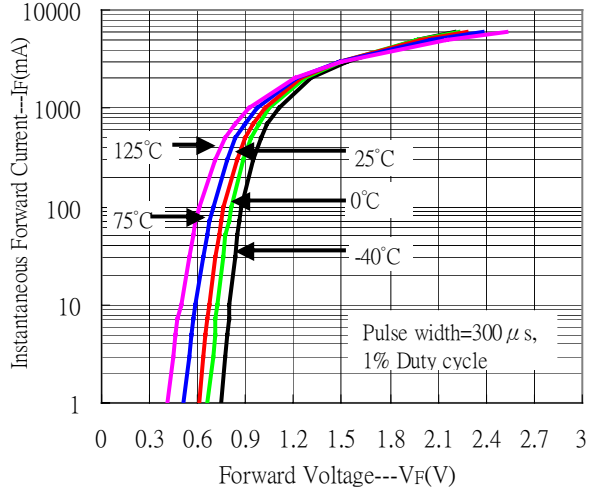


Typical Characteristics

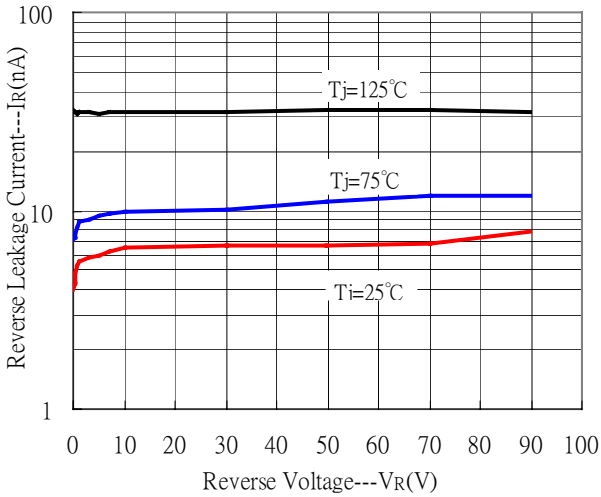
Power Derating Curve



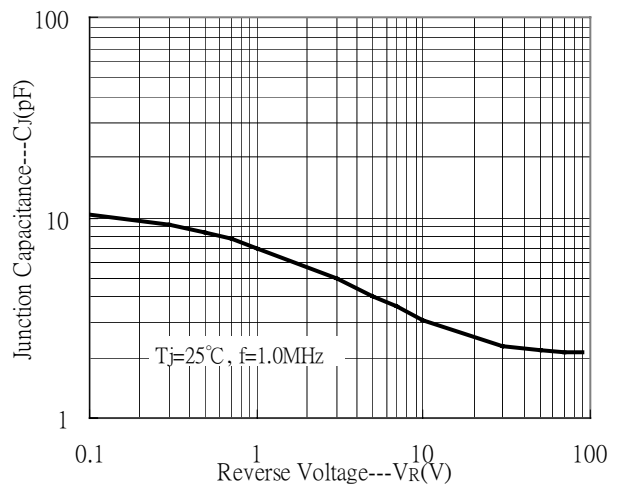
Forward Current vs Forward Voltage



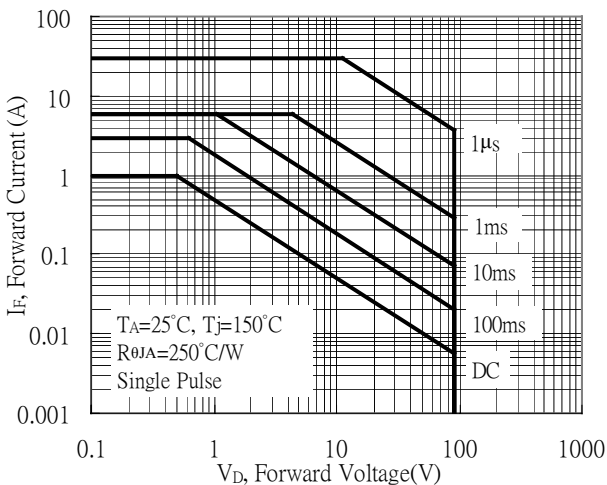
Reverse Leakage Current vs Reverse Voltage



Junction Capacitance vs Reverse Voltage

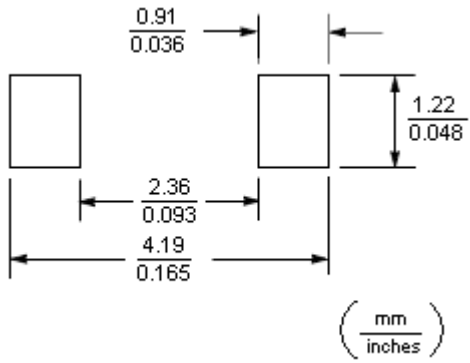


Maximum Safe Operating Area

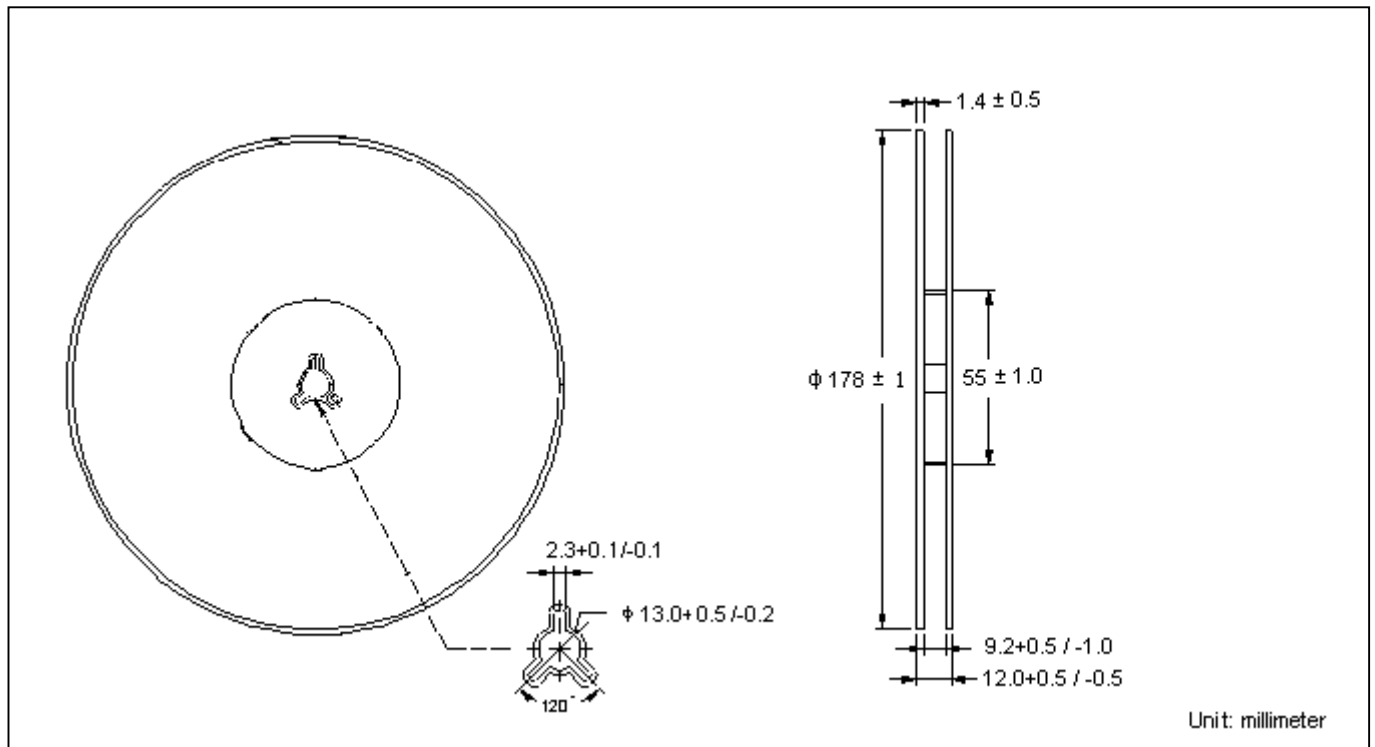




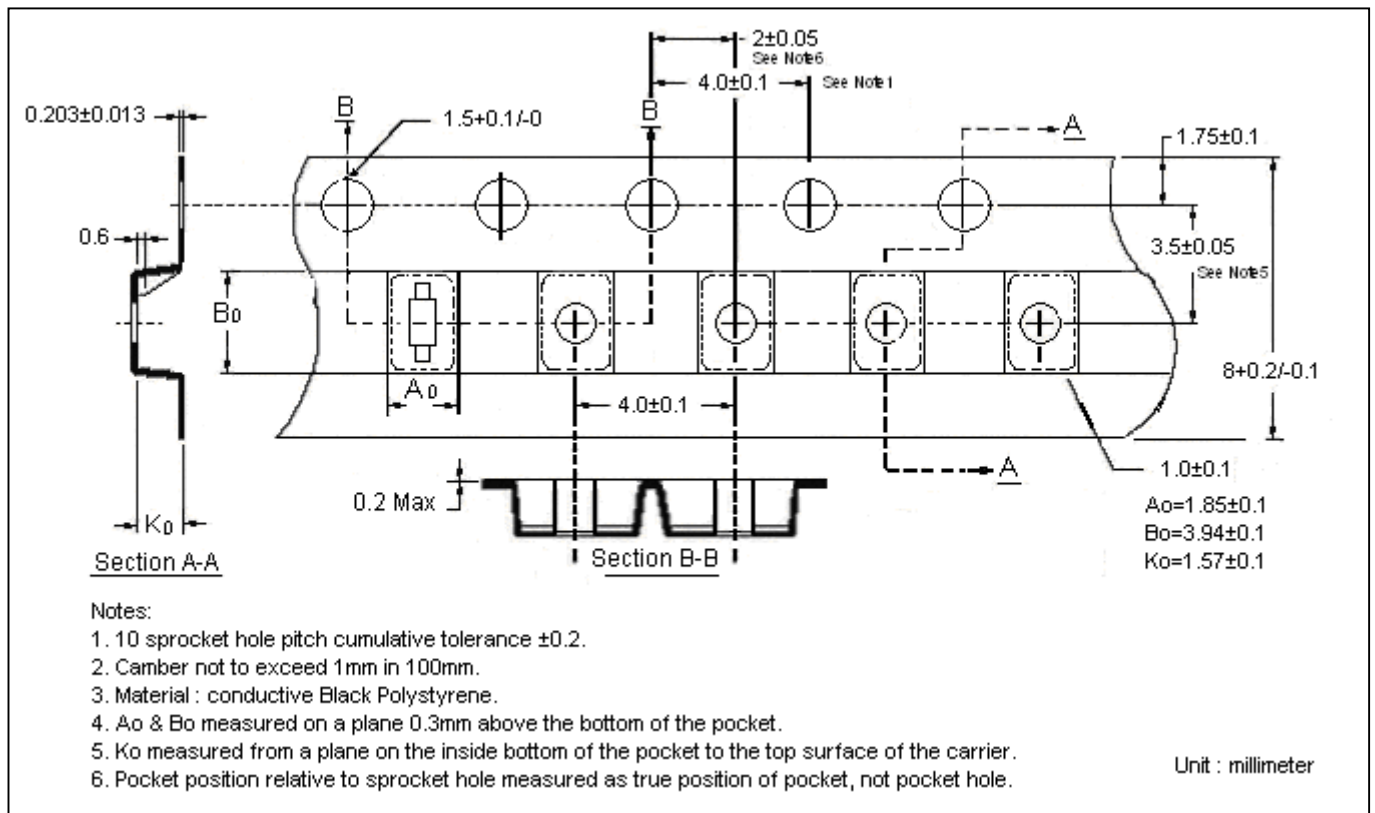
Recommended Soldering Footprint



Reel Dimension



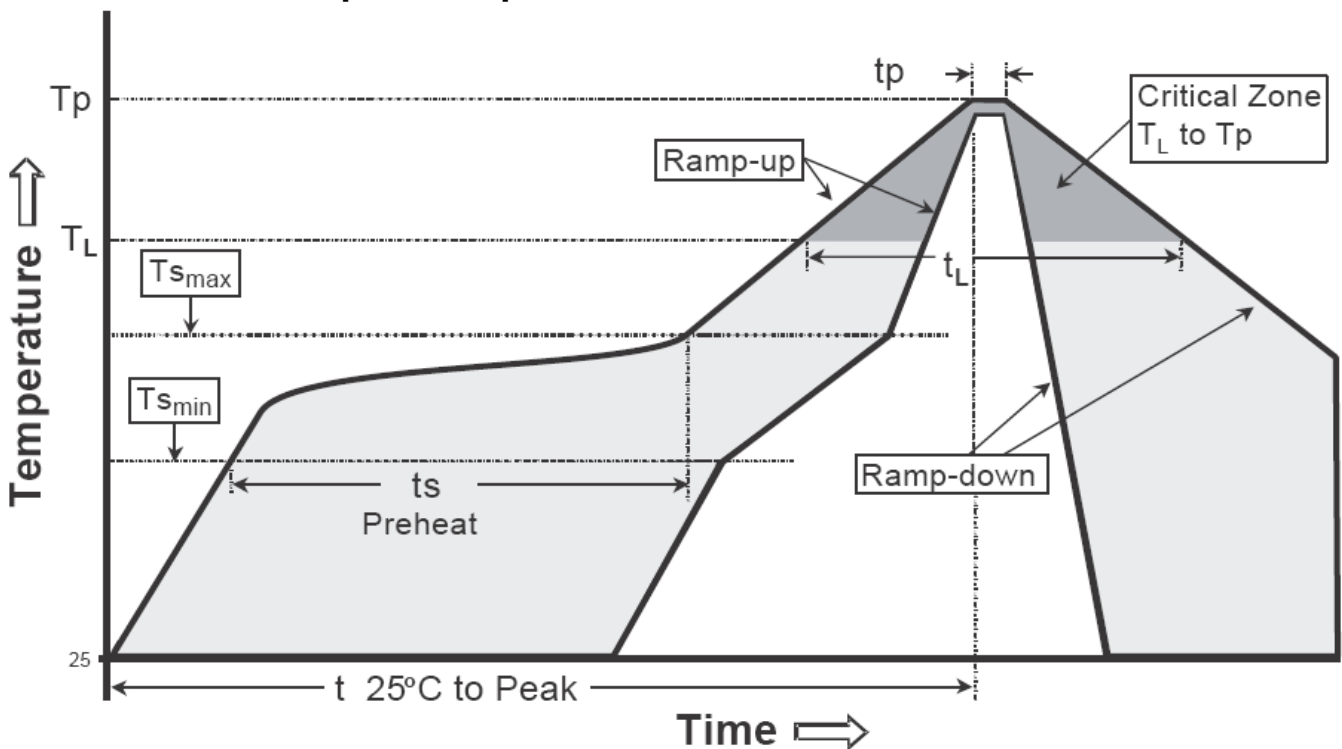
Carrier Tape Dimension



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(t _p) | 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.

SOD-123 Dimension

2-Lead SOD-123 Plastic
 Surface Mounted Package
 CYStek Package Code: SH

Style: Pin 1.Cathode 2.Anode

| DIM | Inches | | Millimeters | | DIM | Inches | | Millimeters | |
|-----|--------|-------|-------------|-------|-----|--------|-------|-------------|-------|
| | Min. | Max. | Min. | Max. | | Min. | Max. | Min. | Max. |
| A | 0.102 | 0.110 | 2.600 | 2.800 | D | 0.018 | 0.026 | 0.450 | 0.650 |
| B | 0.059 | 0.067 | 1.500 | 1.700 | E | 0.140 | 0.152 | 3.550 | 3.850 |
| C | 0.041 | 0.049 | 1.050 | 1.250 | | | | | |

Notes: 1.Controlling dimension : millimeters.
 2.Lead thickness specified per L/F drawing with solder plating.
 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.

Important Notice:

- All rights are reserved. Reproduction in whole or in part is prohibited without the prior written approval of CYStek.
- CYStek reserves the right to make changes to its products without notice.
- CYStek **semiconductor products are not warranted to be suitable for use in Life-Support Applications, or systems.**
- CYStek assumes no liability for any consequence of customer product design, infringement of patents, or application assistance.