

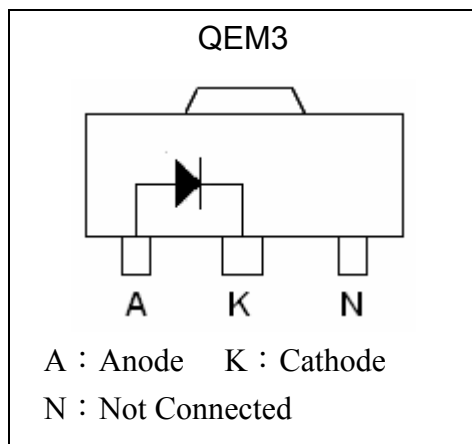
**1A/200V Snubber Damping Rectifier**

# QEM3

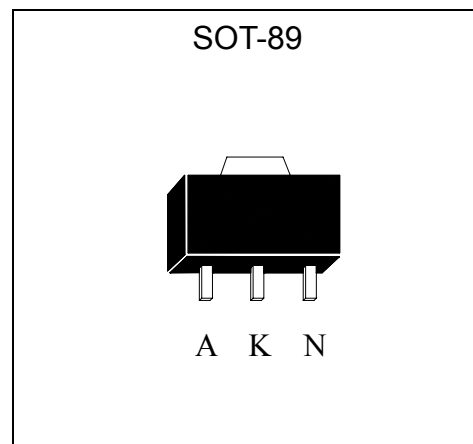
**Features**

- 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

**Symbol**

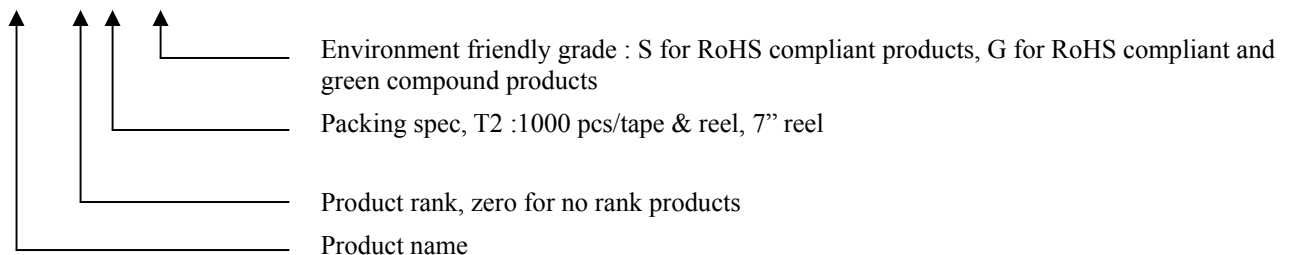


**Outline**



**Ordering Information**

Device	Package	Shipping
QEM3-0-T2-G	SOT-89 (Pb-free lead plating and halogen-free package)	1000 pcs / Tape & Reel



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

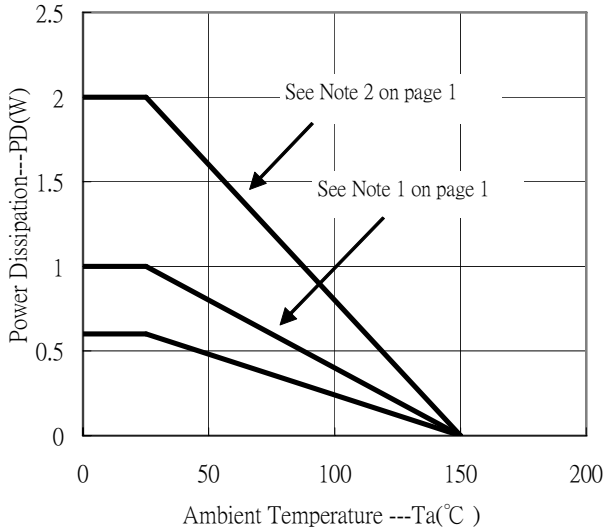
Parameters	Conditions	Symbol	Value	Units
Repetitive peak reverse voltage		$V_{RRM}$	200	V
RMS voltage		$V_{RMS}$	140	V
Continuous reverse voltage		$V_R$	200	V
Forward rectified current	Single phase half wave, 60Hz @ $T_J=25^{\circ}\text{C}$	$I_{F(AV)}$	1	A
Repetitive Peak Forward Current	Single phase 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
Power Dissipation		$P_D$	0.6	W
	(Note 1)		1	
	(Note 2)		2	
Maximum reverse recovery time	$I_F=0.5\text{A}$ , $I_R=1.0\text{A}$ , $RR=0.25\text{A}$	trr	500	ns
Storage temperature range		$T_{stg}$	-55~+150	$^{\circ}\text{C}$
Operating junction temperature range		$T_J$	-55~+150	$^{\circ}\text{C}$

Note: \*1 When mounted on FR-4 PCB with area measuring  $10 \times 10 \times 1$  mm\*2 When mounted on ceramic with area measuring  $40 \times 40 \times 1$  mm**Characteristics** ( $T_A=25^{\circ}\text{C}$ , unless otherwise noted)

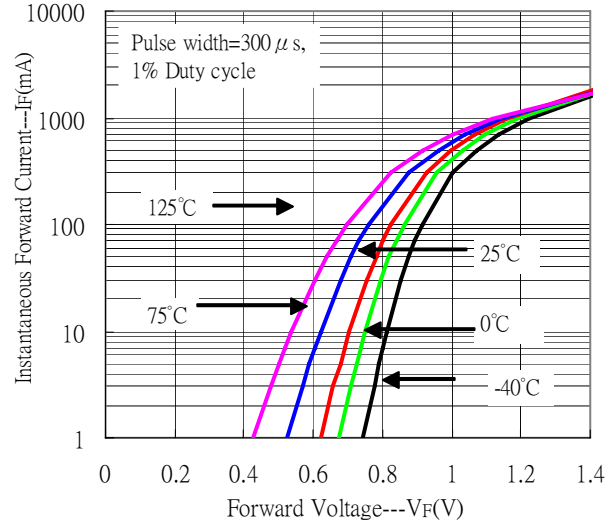
Characteristic	Symbol	Condition	Min.	Typ	Max.	Unit
Reverse Voltage	$V_R$	$I_R=100\mu\text{A}$	200	-	-	V
Forward Voltage	$V_F 1$	$I_F=100\text{mA}$	-	-	0.95	V
	$V_F 2$	$I_F=500\text{mA}$	-	-	1.2	
Reverse Leakage Current	$I_R$	$V_R=200\text{V}$	-	-	100	nA
	$I_R$	$V_R=200\text{V}$ , $T_A=125^{\circ}\text{C}$	-	-	1	$\mu\text{A}$
Junction Capacitance	$C_J$	$V_R=1\text{V}$ , $f=1\text{MHz}$	-	2.9	-	pF

## Typical Characteristics

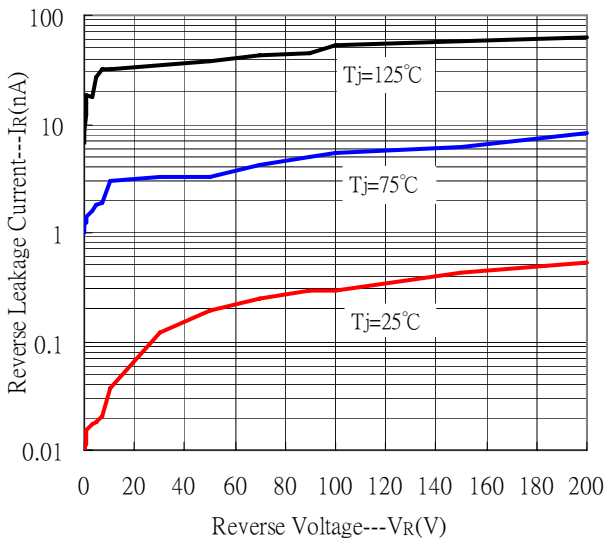
Power Derating Curves



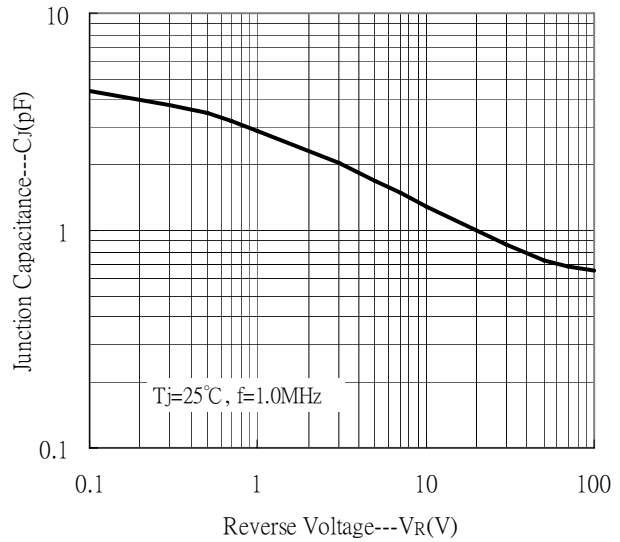
Forward Current vs Forward Voltage



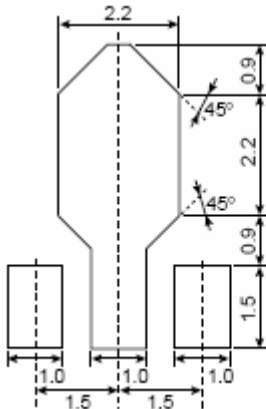
Reverse Leakage Current vs Reverse Voltage



Junction Capacitance vs Reverse Voltage

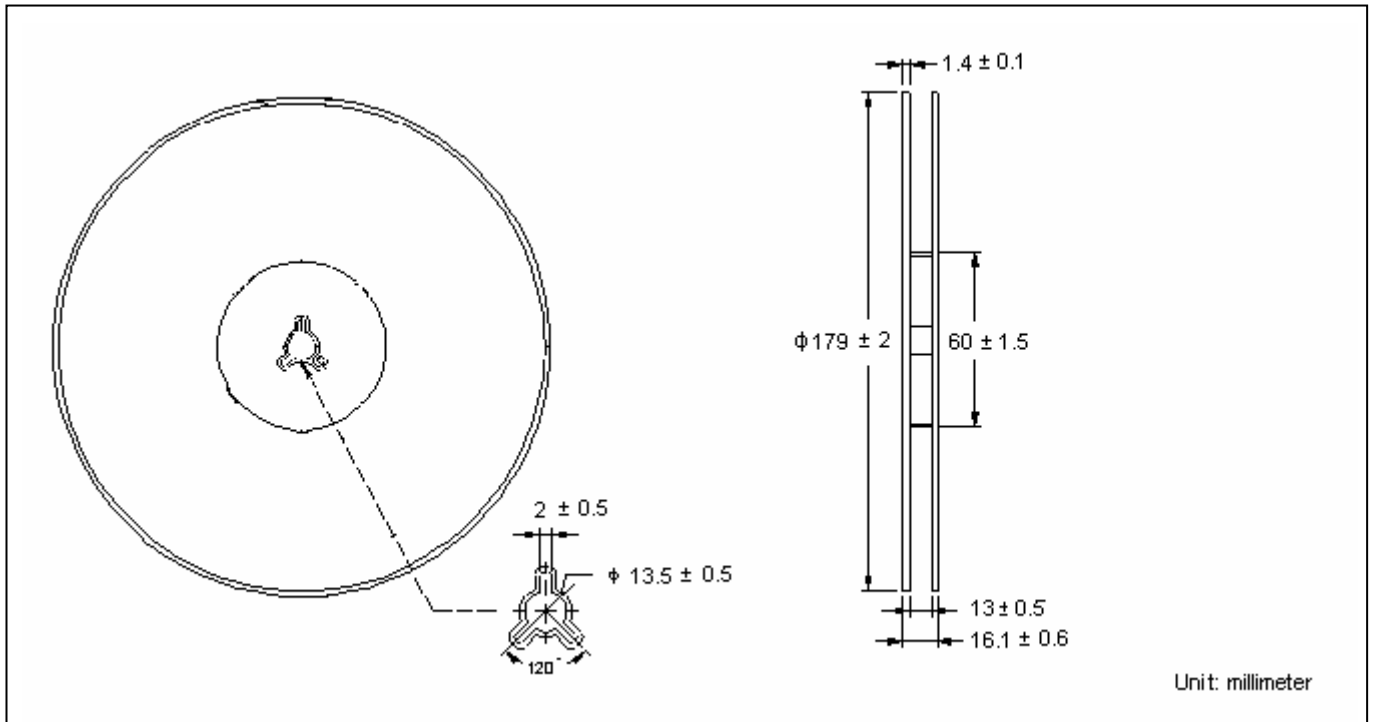


## Recommended soldering footprint

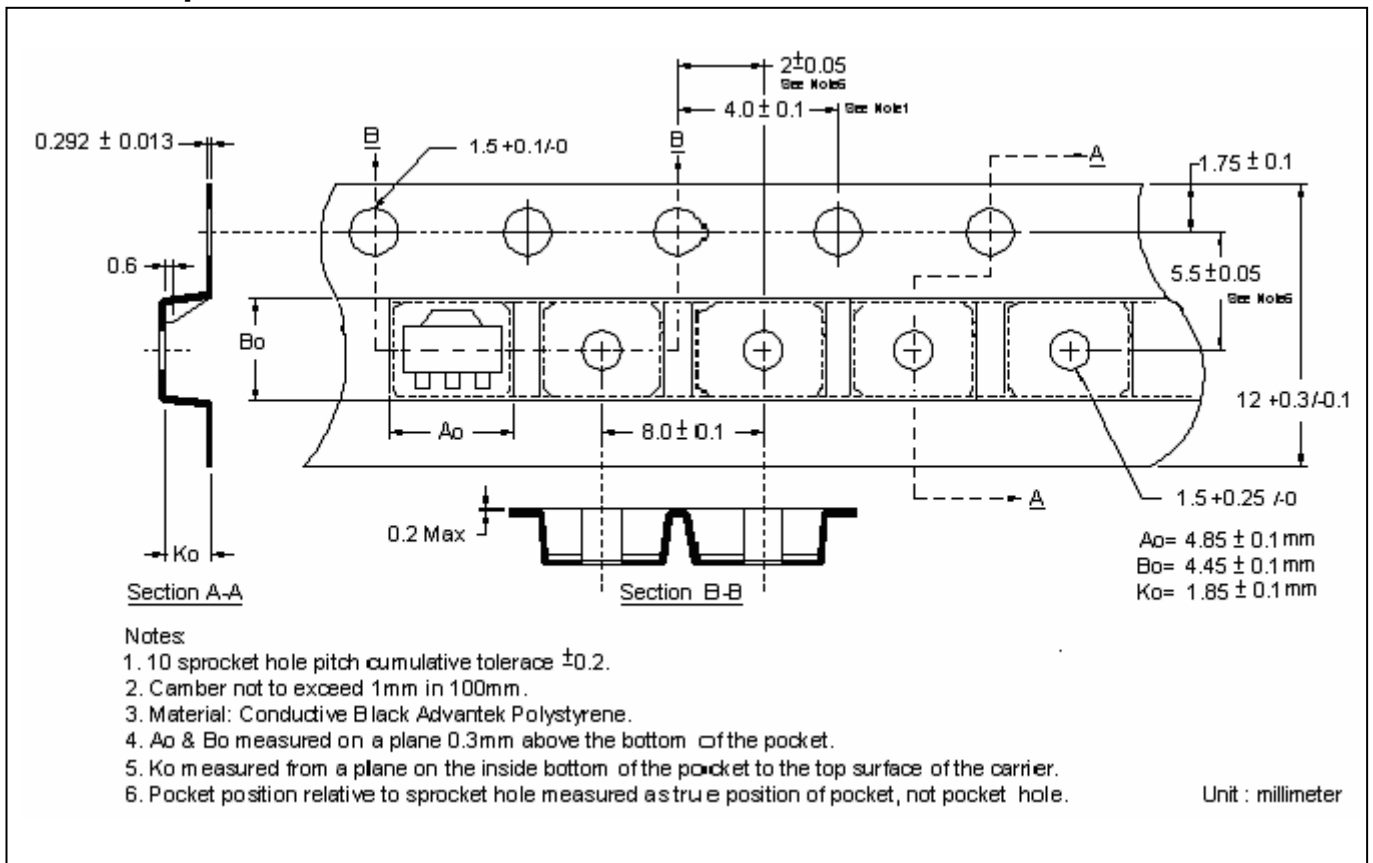


unit : mm

**Reel Dimension**



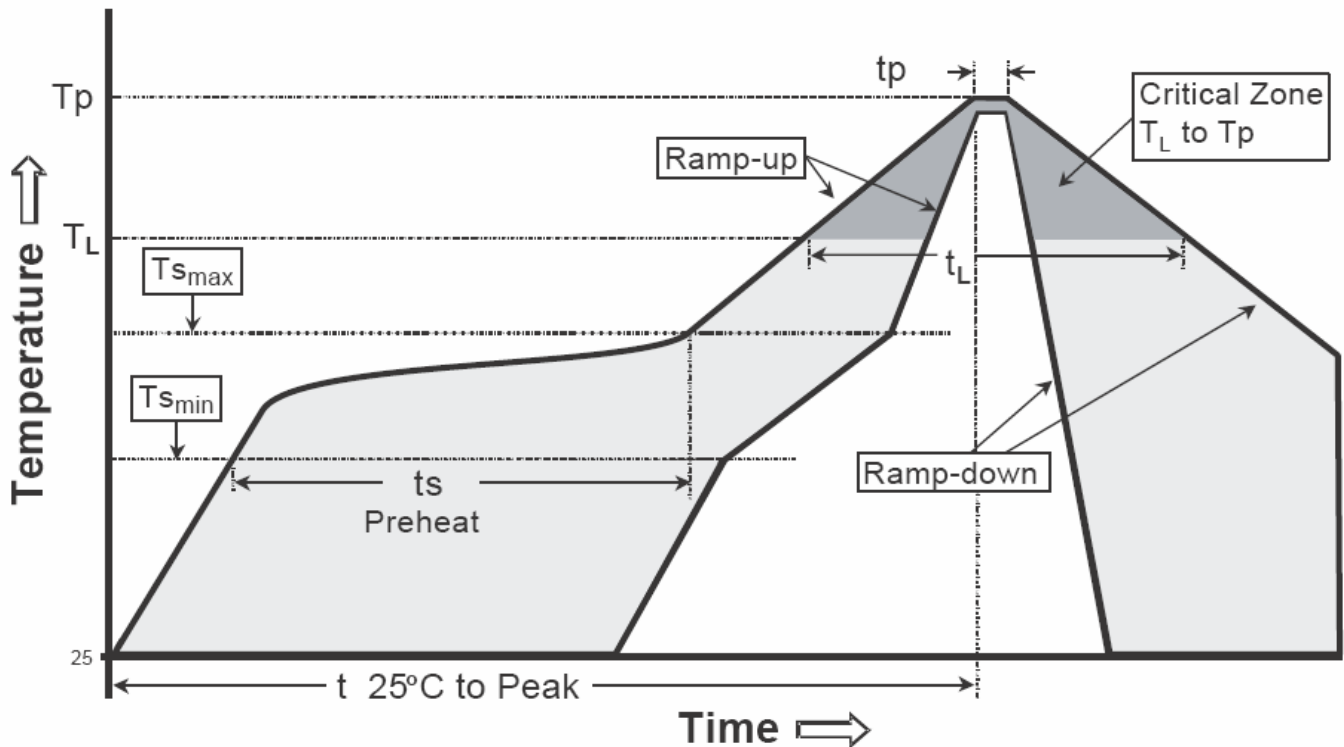
**Carrier Tape Dimension**



**Recommended wave soldering condition**

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

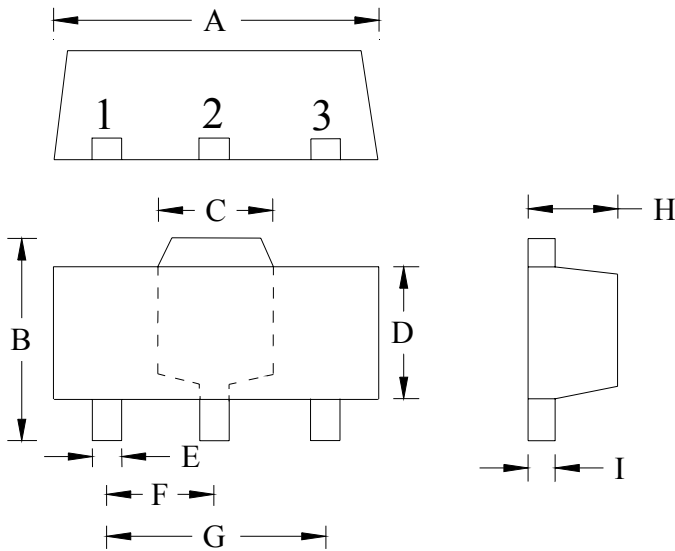
**Recommended temperature profile for IR reflow**



Profile feature	Sn-Pb eutectic Assembly	Pb-free Assembly
Average ramp-up rate (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.

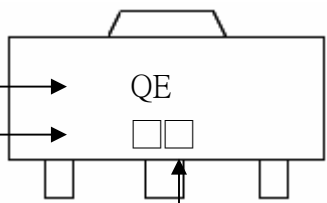
Note : All temperatures refer to topside of the package, measured on the package body surface.

**SOT-89 Dimension**



The diagram shows three views of the SOT-89 package: a top view with dimensions A, B, C, E, F, and G; a front view with dimensions B, D, and I; and a side view with dimensions H and I. The top view also labels the three leads as 1, 2, and 3.

**Marking:**



Product Code → QE

Year code: → [ ] [ ]

0→2010,  
1→2011,  
2→2012,  
...etc.

month code: 1~9, → [ ]

A,B,C

3-Lead SOT-89 Plastic  
 Surface Mounted Package  
 CYStek Package Code: M3

Style: Pin 1. Anode 2. Cathode 3. Not Connected

\*: Typical

DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.1732	0.1811	4.40	4.60	F	0.0583	0.0598	1.48	1.527
B	0.1594	0.1673	4.05	4.25	G	0.1165	0.1197	2.96	3.04
C	0.0591	0.0663	1.50	1.70	H	0.0551	0.0630	1.40	1.60
D	0.0945	0.1024	2.40	2.60	I	0.0138	0.0161	0.35	0.41
E	0.01417	0.0201	0.36	0.51					

**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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