

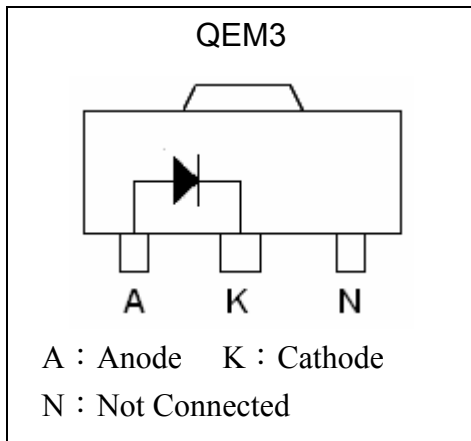
1A/200V Snubber Damping Rectifier

QEM3

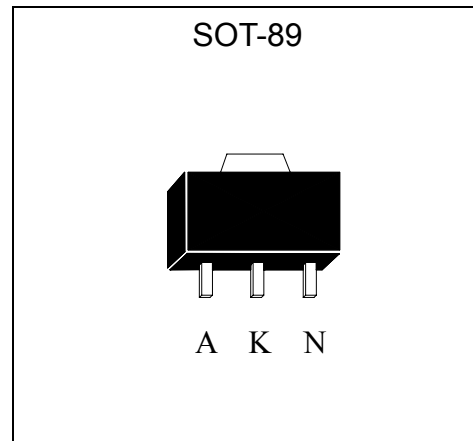
Features

- 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

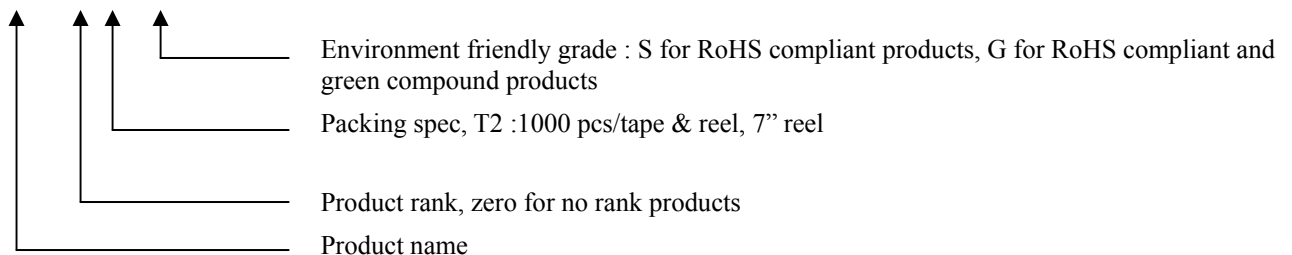


Outline



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)

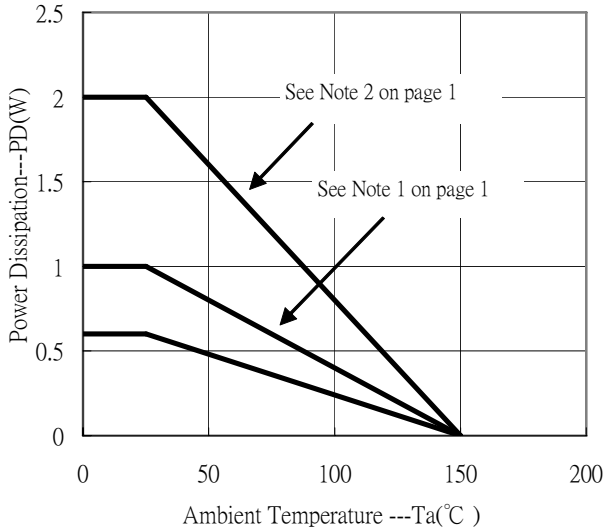
Parameters	Conditions	Symbol	Value	Units
Repetitive peak reverse voltage		V_{RRM}	200	V
RMS voltage		V_{RMS}	140	V
Continuous reverse voltage		V_R	200	V
Forward rectified current	Single phase half wave, 60Hz @ $T_J=25^{\circ}\text{C}$	$I_{F(AV)}$	1	A
Repetitive Peak Forward Current	Single phase half 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)

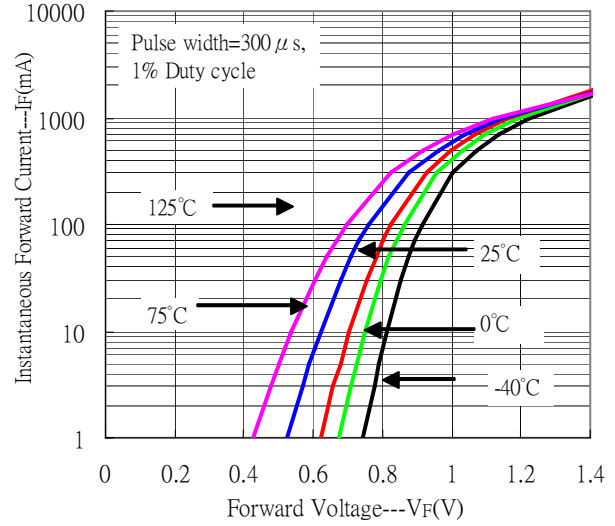
Characteristic	Symbol	Condition	Min.	Typ	Max.	Unit
Reverse Voltage	V_R	$I_R=100\mu\text{A}$	200	-	-	V
Forward Voltage	$V_F 1$	$I_F=100\text{mA}$	-	-	0.95	V
	$V_F 2$	$I_F=500\text{mA}$	-	-	1.2	
Reverse Leakage Current	I_R	$V_R=200\text{V}$	-	-	100	nA
	I_R	$V_R=200\text{V}$, $T_A=125^{\circ}\text{C}$	-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

Typical Characteristics

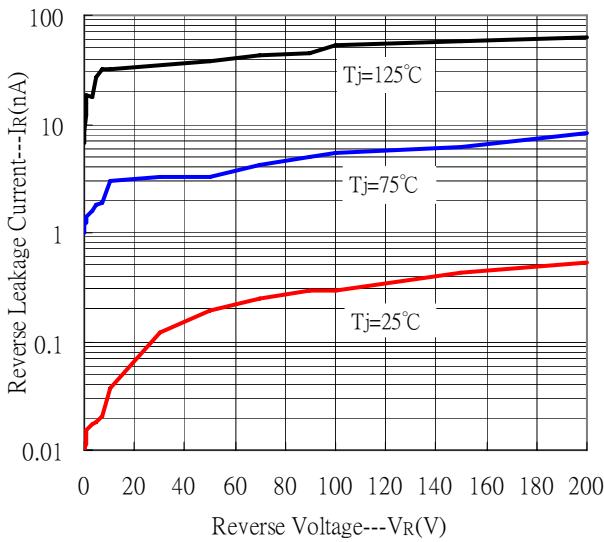
Power Derating Curves



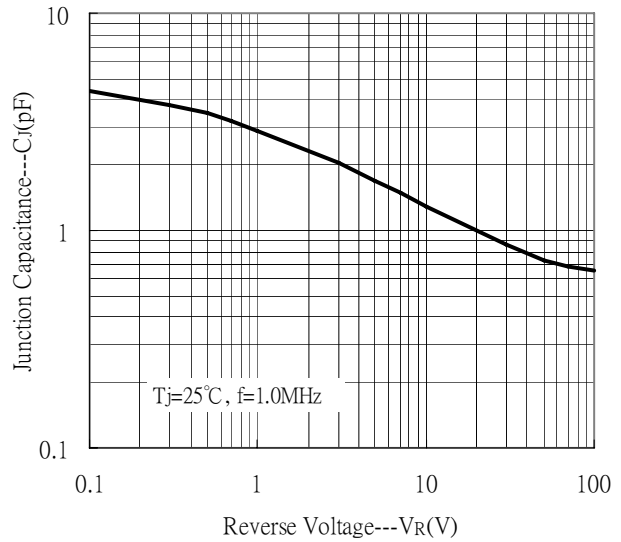
Forward Current vs Forward Voltage



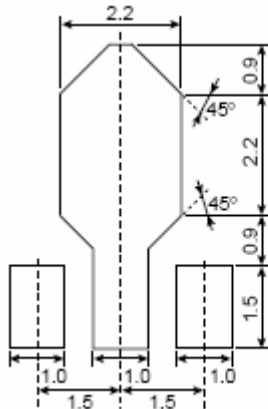
Reverse Leakage Current vs Reverse Voltage



Junction Capacitance vs Reverse Voltage

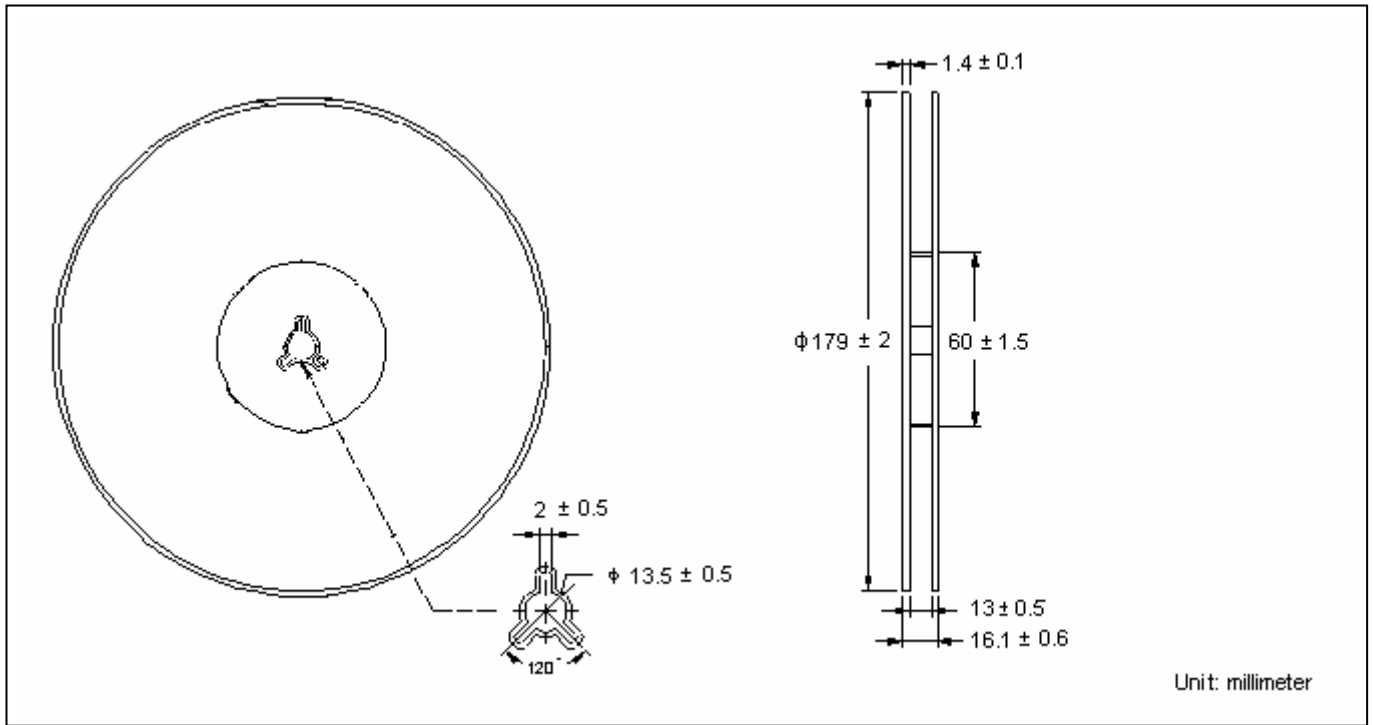


Recommended soldering footprint

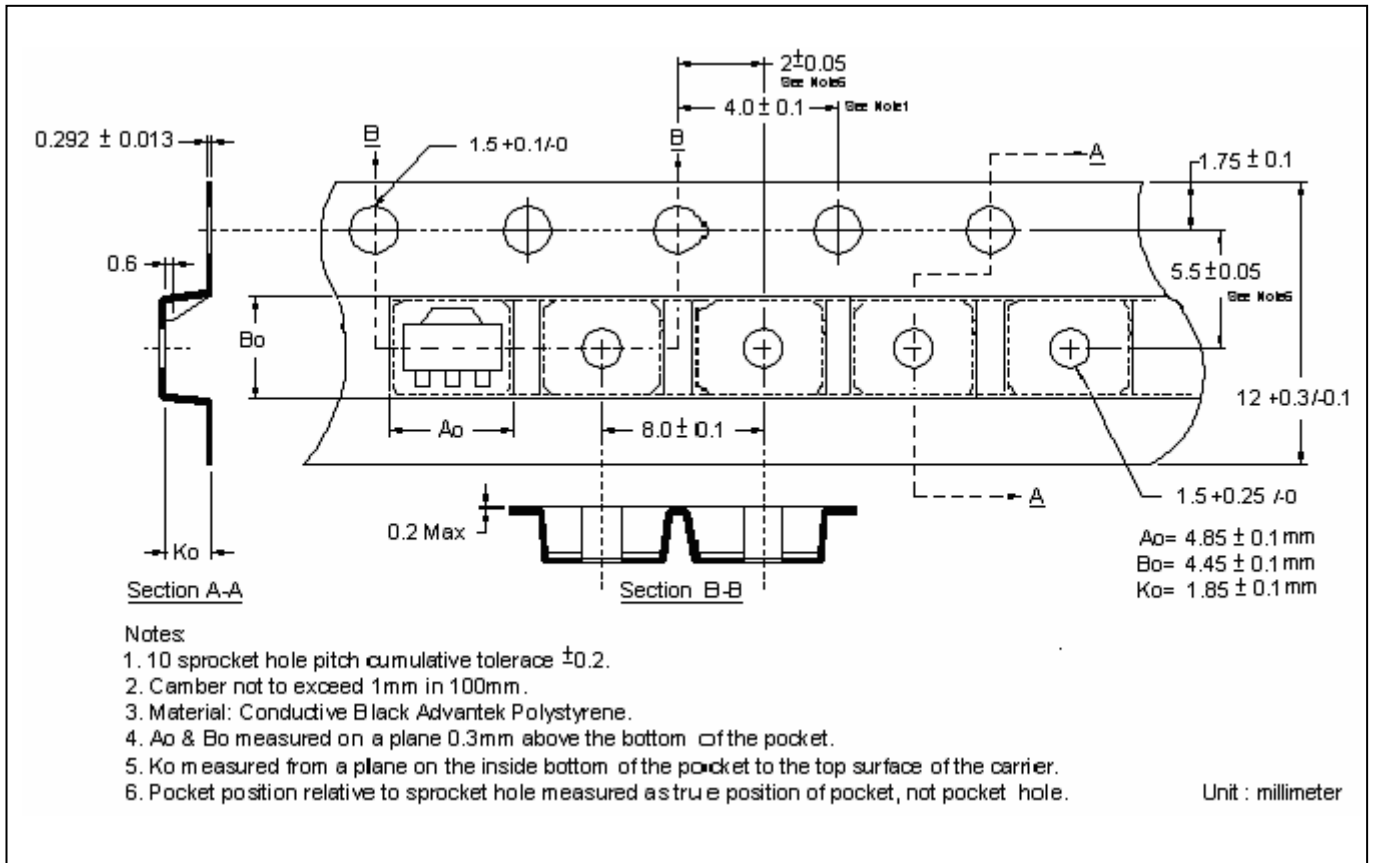


unit : mm

Reel Dimension



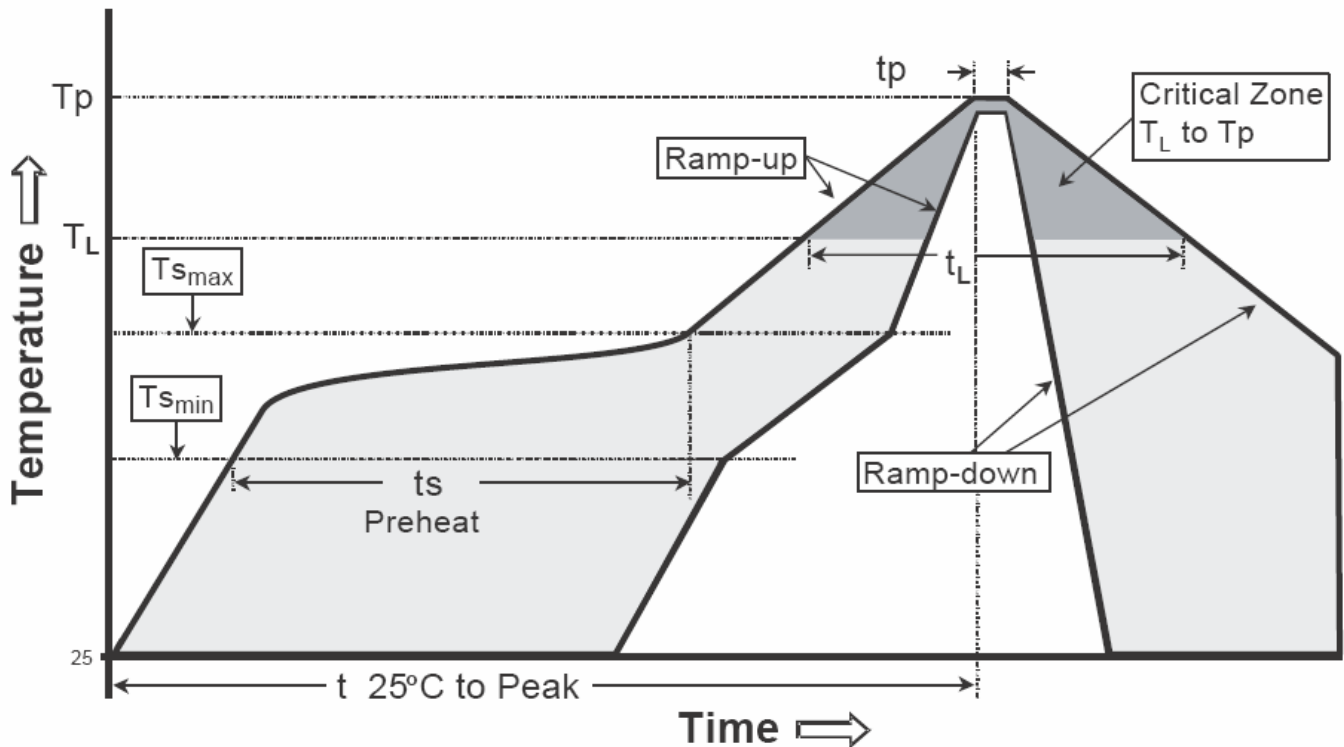
Carrier Tape Dimension



Recommended wave soldering condition

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

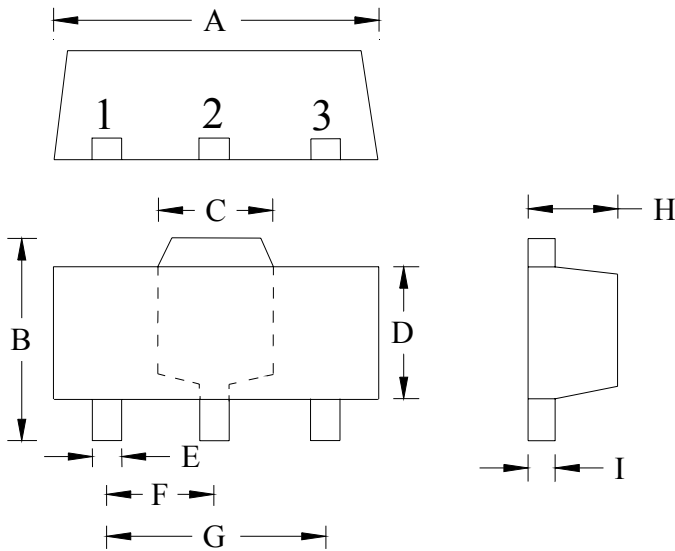
Recommended temperature profile for IR reflow



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

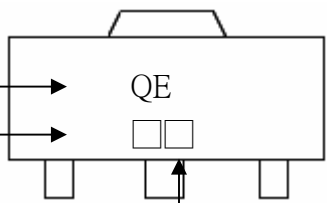
Note : All temperatures refer to topside of the package, measured on the package body surface.

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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