



**PACKAGING AND SOLDERING METHOD
DEVICES IN SMA, SMB AND SMC PACKAGE**

P. Rault

PACKING :

Devices in SMA, SMB and SMC package are delivered in standard embossed 12 & 16 mm tape and reel (EIA 481A standards).

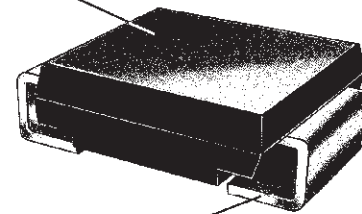
This packing minimizes handling and is fully compatible with state-of-the-art assembly technology for hybrid circuits and printed circuit boards.

The diodes are pre-orientated and the tape can be used directly on automatic pick and place equipment.

Picking up is easy thanks to the rectangular parallelepiped shape. For this, the use of a vacuum chuck is very efficient due to the flatness of the upper side of the components, thus avoiding air leakage.

- Lead frame: copper alloy.
- Top connection: copper alloy.
- Die attach: Soft solder alloy.
- Encapsulation: high performance epoxy compound UL-94.
- Lead coating: Sn-Pb plating (10% Pb typical).
- Lead bending: suitable with surface mounting techniques (wave or reflow)

Epoxy encapsulation compound



Terminal

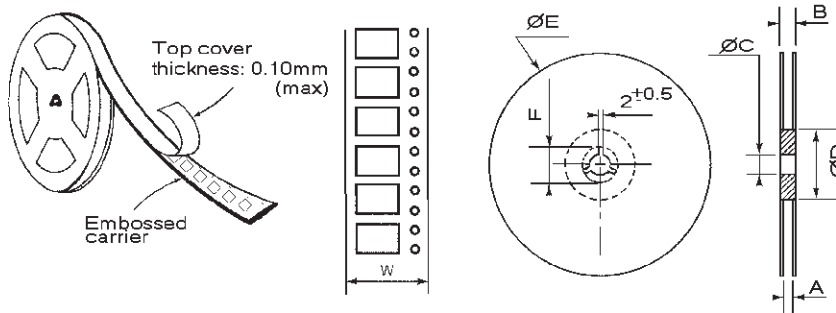
Case	Base QTY	Film Width	Reel Dimensions						
			W	A	B	C	D	E	F
SMA	5000	12 ± 0.3	12.4 ± 2	18.4 Max	13	100		330	20.2min
SMB ⁽¹⁾	2500	12 ± 0.2	12.4 ± 2	18.4 Max	13	60 ± 2		330	20.2min
SMC ⁽²⁾	2500	16 ± 0.2	16.4 ± 2	22.4 Max	13	60 ± 2		330	20.2min

All dimensions are in millimetres.

(1) Also known as CB472 or SMB.

(2) Also known as CB473 or SMC.

Note : Polarized devices have their cathode lead oriented toward the perforated side of the film.



In compliance with EIA 481-1 and IEC 286-3 specifications.

APPLICATION NOTE

SOLDERING METHODS :

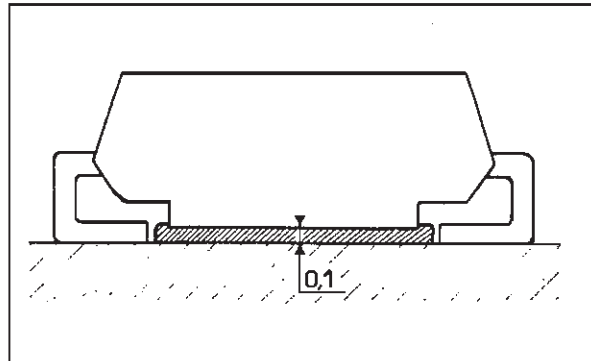
SMD devices are suitable for mounting on various substrates (thick or thin films) and printed circuit boards. They are compatible with current soldering techniques.

1) WAVE SOLDERING :

This method is employed when surface mount components are used with conventional through-hole components on the same board. The through-hole mounting components are inserted from the top, and the SMD are attached to the under-side, using a suitable adhesive.

The lower part of the package allows a controlled thickness of the glue and ensures efficient adhesion.

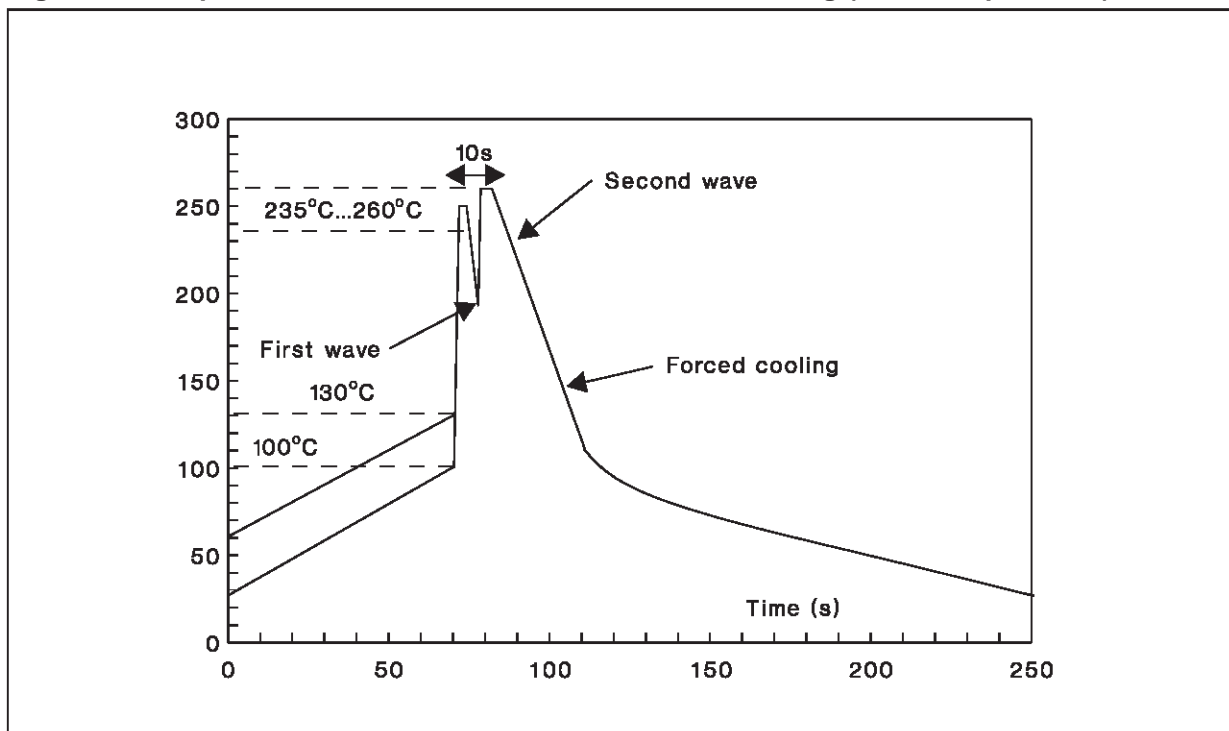
The height (2.6 mm) provides a very low "screen effect".



- The assembly should be pre-heated to about 100°C to minimize the thermal shock.
- The maximum solder temperature is 260°C and the exposure time should not exceed 10 seconds.
- A dual wave process gives the best results.

Recommendations :

Figure 1: Temperature -Time-Profile Double-Wave Soldering (Lead temperature)



Note : According to Standard Method CECC00802 issue 2

2) REFLOW SOLDERING :

The epoxy resin specially designed for the molding of these components is suitable for all reflow soldering techniques used today :

- vapour phase
- infrared tunnel
- pulse-heat
- etc...

According to these methods, components are first positioned on the substrate and kept in place thanks to the adhesive properties of the solder paste applied to the soldering areas (footprints).

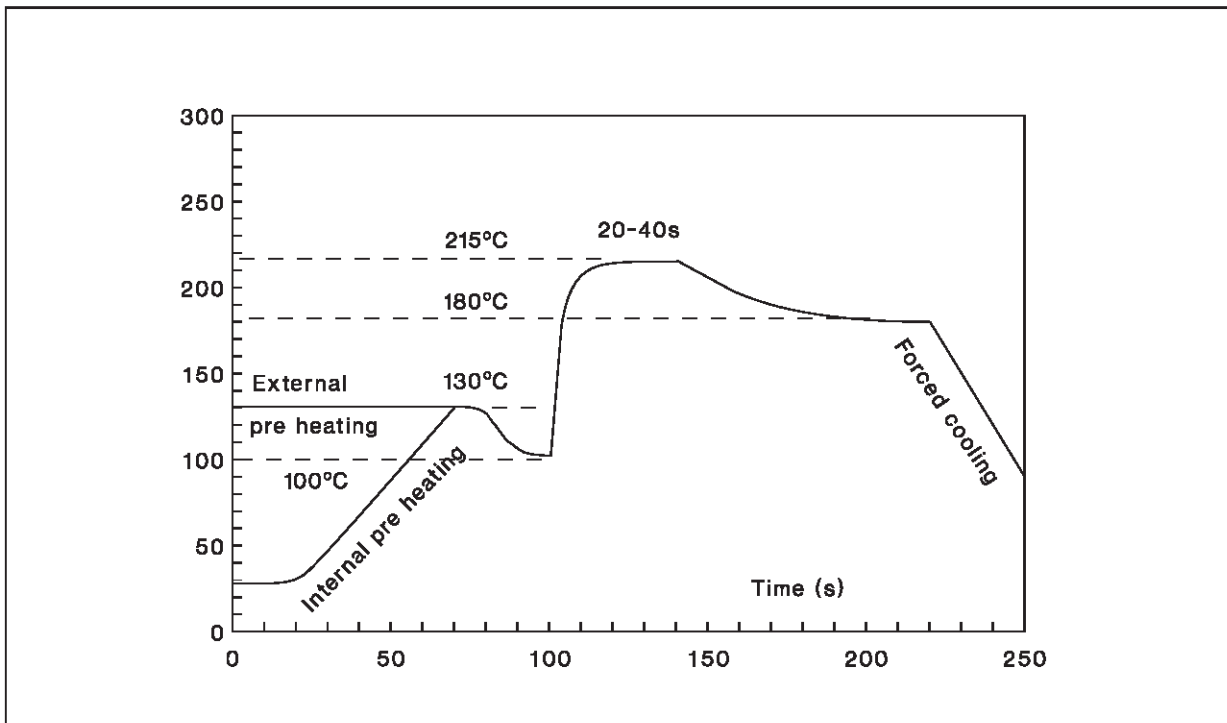
The wide surfaces of contact of SMD packages ensure a good stability of the assembly before reflowing process.

Recommendations :

The soldering temperature changes according to the method used. Pre-heating up to 100°C is required. The temperature during reflow should be limited in order to keep the plastic body of the device below 260°C. At this temperature, exposure time should be less than 10 seconds.

The vapour phase reflow soldering method provides the best control of the temperature and gives the most uniform results.

Figure 2 : In Line System with Preheating - Temp.-Time-Profile Vapour-Phase-Soldering (Lead Temperature)



Note : According to Standard Method CECC00802 issue 2

3) PROTOTYPES :

In the laboratory, for low volume, reflow soldering using heat-plate can be implemented. The immersion method is also a possibility.

When the complete circuit board is immersed in a solder bath, the temperature should not exceed 260°C and the soldering cycle should not exceed 10 seconds. A forced cooling is then recommended.

Information furnished is believed to be accurate and reliable. However, SGS-THOMSON Microelectronics assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of SGS-THOMSON Microelectronics. Specifications mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied.

SGS-THOMSON Microelectronics products are not authorized for use as critical components in life support devices or systems without express written approval of SGS-THOMSON Microelectronics.

© 1998 SGS-THOMSON Microelectronics - Printed in Italy - All rights reserved.

SGS-THOMSON Microelectronics GROUP OF COMPANIES
Australia - Brazil - Canada - China - France - Germany - Italy - Japan - Korea - Malaysia - Malta - Morocco
The Netherlands - Singapore - Spain - Sweden - Switzerland - Taiwan - Thailand - United Kingdom - U.S.A.