# Dual Footprint for the FM24C256

*Migration from 20-pin to 8-pin SOP*

## Overview

Ramtron manufactures 256K serial FRAM products that are offered in both the 20-pin and 8-pin SOP. The FM24C256 was first introduced in a 20-pin SOP and is migrating to the 8 pin SOP package in order to reduce footprint size, provide compatibility with EEPROMs, and to lower cost. The 8-pin version of the FM24C256 provides exactly he same pinout as the EEPROM, but currently requires the larger package due to its die size. Using the 20-pin device today requires a special board layout. However a board layout can be designed to accommodate both the 20-pin package and the 8-pin version.

The basic idea is to place the 8-pin footprint inside of the 20-pin footprint. The 20-pin version uses only the 8 outer corner pins.
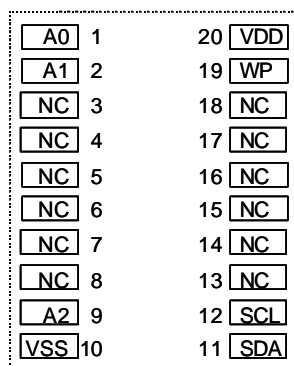


**Figure 1.  20-pin Footprint**

Therefore, it has essentially the same pin out as the 8-pin version, with no connects between the top 4 and bottom 4 pins. The 8-pin diagram is shown below.
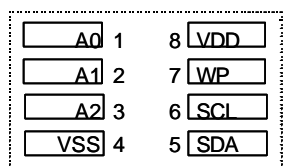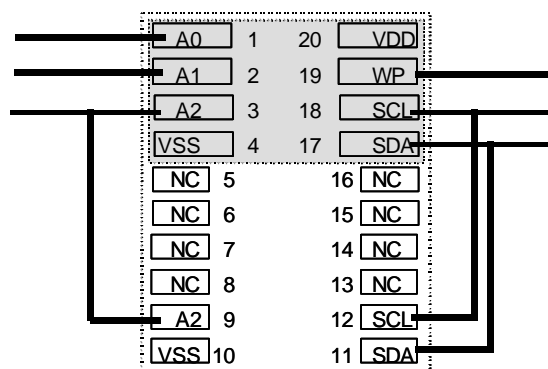


**Figure 2.  8-pin Footprint**



**Figure 3.  Example of a Dual Footprint Layout**

## 8-pin Packages

Note that there are two industry package standards for the 8-pin SOP - a JEDEC standard and an EIAJ standard. Many EEPROM manufacturers offer both, and it is quite simple to layout a board that accommodates both versions. The key difference between the standards is the body width. The JEDEC version is 3.9 mm wide and the EIAJ version is 5.3 mm wide. Both have essentially the same length and lead pitch. The 8-pin FM24C256 complies with the EIAJ package standard.

Mechanical diagrams of both JEDEC and EIAJ are shown below. To lay out a board that accommodates both types, the pad length must be long enough to allow both packages to land properly. Extending the pads from the body of the JEDEC package to the landing site of the EIAJ leads will allow any one of the three packages to be placed on the same board.

The following table summarizes the package dimensions.

| | 8-pin SOP (FM24C256-SE) | 20-pin SOP (FM24C256-S) |
|---|---|---|
| Package Width (nominal) | 5.3 mm | 7.50 mm |
| Package Length (max) | 5.38 mm | 13.0 mm |
| Pin Pitch (nominal) | 1.27 mm (50 mils) | 1.27 mm (50 mils) |