

Differences between the FM24C256 and FM24W256

Compares 256Kb 5V I²C F-RAM Devices



DESCRIPTION

This document points out the differences between the FM24C256 and FM24W256 devices. The two devices are identical in terms of pinout, package dimensions and composition, read/write functionality, WP pin operation, and address pin functionality.

DROP-IN REPLACEMENT OR NOT

From a software point of view, the two devices are identical. The summary table below highlights the differences.

COMPATIBILITY CHART

FM24C256 Feature or Spec	... is FM24W256 compatible?
Package	Yes (-EG)
Pinout	Yes
Temperature Range	Yes
Operating Voltage	Yes
Operating Current	Yes
Standby Current	Yes
R/W Function	Yes
Timing/Freq	Yes
Data Retention	Yes*
Endurance	Yes

* See table on next page.

DETAILED COMPARISON TABLE

Differences are highlighted in yellow.

	<u>FM24C256</u>	<u>FM24W256</u>	<u>Comments</u>
Package Types	-	-	Same, "green" EIAJ SOIC package (-EG)
Package Outlines	EIAJ8	EIAJ8	Same outline and board footprint (-EG)
Pinout	-	-	Same
Temperature Range	-40C to +85C	-40C to +85C	Same
Operating Voltage Range	4.5 to 5.5V	2.7 to 5.5V	The FM24W256 has a wider operating voltage range.
Active Supply Current	200 μ A @ 100kHz 1200 μ A @ 1MHz	100 μ A @ 100kHz 400 μ A @ 1MHz	The 24W256 offers lower active current at all clock rates.
Standby Current	100 μ A	30 μ A	The 24W256 offers lower standby current.
Read/Write Function	-	-	Same 2-byte addressing, same Slave IDs, same Device Select bits.
Clock Freq	1 MHz	1 MHz	Same
Data Retention *	45 yrs (+85°C)	38 yrs (+75°C)	Nearly the same
Endurance *	1E+12	1E+14	Better endurance. The FM24W256 is virtually unlimited at 1MHz (1700 yrs for a 64-byte loop)

OTHER			
V_{DD} Rise/Fall Time	-	30 μ s/V, 100 μ s/V	Added power ramp specs to 24W256
t_{PU} Power Up Time	-	10 ms	Added first access timing spec to 24W256
I_{LI}, I_{LO} (max)	\pm 10 μ A	\pm 1 μ A	Improved input & output leakage currents on FM24W256.
V_{IH} (max)	V _{DD} +0.5V	V _{DD} +0.3V	
R_{IN} (min)	20K ohm 1M ohm	40K ohm 4M ohm	Improved pull-down circuit on FM24W256.