

FM24C16 & FM25160 RELIABILITY SUMMARY



Product: FRAM 16K SERIAL MEMORY

Foundry: ROHM

Packaging: HANA - SOIC, CHIPPAC - PDIP

Test Description	Applied Stress	Device Stress Hrs	Sample Size	Number of Rejects	Failure Mode	Equivalent Hrs 55°C	Ea	FITS (55°C)
HTOL (total hr)	125°C, Dynam.	3.34E+06	3008	9	^{1/} Single Bit	2.6E+08	0.7eV	35
HTOL Early Life	V _{cc} = 5.5V	2.66E+05	2881	7	^{1/} Single Bit	2.1E+07	0.7eV	337
RETN, 200C bake	SS & OS RETN	3.31E+05	4595	87	^{2/} Single Bit	Cumulative RETN		
RETN, 150C bake	No elect. bias	2.14E+06	2038	49	^{2/} Single Bit			
HAST (SOIC)	120°C, V _{cc} =5.5V	8.16E+04	816	0	N/A	1.6E+07	0.9eV	^{3/} 58
HAST (PDIP)	2 ATM, 85% RH	1.15E+05	1461	0	N/A	2.2E+07	0.9eV	^{3/} 41
Thermal Shock	100 cycles	N/A	1296 - SOIC	0	N/A			
	-55 to 125°C	N/A	1035 - PDIP	2	N/A			

NOTES:

1/ HTOL Single bit Failures are the result of the following mechanisms:

- Particles causing shorts between conductive layers.
- Foreign material in contact window causing open circuits.
- Defective gate oxide of cell transistors.

2/ Memory data retention failures are the result of the following mechanisms:

- Thermal depoling of the ferroelectric cell elements.
- Nodules on the bottom electrode.
- Top electrode stringers.

3/ This FIT rate is an X² estimate (60% single sided confidence interval for zero failures).