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Dear 4K-64K Ramtron Customer:

This letter is intended for customers that currently use Ramtron 4Kb, 16Kb, and 64Kb I2C and SPI F-RAM memory devices.

As communicated in July 2009 and updated in May 2010, we advised our customers that our Japan-based foundry was ceasing manufacturing of our products and that Ramtron's product lines would be transitioned to our US-based foundries by the end of 2010. Before our Japan-based foundry ceased operations, we purchased 18-months of product inventory to support a seamless transition for our customers.

Our original plan was to transition customers that use our Japan-sourced products directly to replacement products manufactured by Ramtron's newest foundry at IBM. Unfortunately, the rapid bounce in our business from last year's economic downturn, as well as higher than anticipated demand for Ramtron products, has put a strain on our remaining inventory ahead of the scheduled completion of our IBM foundry transition. Although we still maintain an inventory of pre-transition devices, the shrinking supply has forced us to begin allocating the available inventory. This has hindered our ability to fulfill orders for certain products in a timely manner. We apologize and deeply regret the impact that this situation may have upon your business.

In response to this problem, we have designed replacement products that will be manufactured by our other US-based foundry, Texas Instruments. Preliminary datasheets are already available and commercial product samples are only a few weeks away. The part numbers for these replacement products are the same as the parts you are used to ordering, except the parts are designated with a "B" at the end of the device number. Please note that some of the specifications for these new devices differ from the devices you have purchased from Ramtron in the past. We have prepared the attached tables so you can compare the older devices to the replacement products. In most cases, the specification changes are very minor.

To ensure continuity of supply for your products, we urge you to take the steps necessary to design in the replacement products offered in the attached tables.

In the near future, we expect to commence manufacturing at IBM alongside Texas Instruments. We will build 4Kb and 16Kb "B" designated devices outlined in the attached tables at IBM once the manufacturing line is available for commercial production. Our design team will ensure that the "B" devices you design in today will be 100% compatible with the "B" devices that will ultimately be built at IBM. Customers will be notified via PCN when the "B" designated devices are transitioned to IBM.

Why is Ramtron planning to eventually move the "B" devices to IBM for manufacturing? We will be able to offer more competitive pricing, especially on IBM-built 4Kb and 16Kb products, and we intend to pass cost savings on to our valued customers.

As always, your Ramtron Area Sales Director is available to guide you through this transition. Despite the near term challenges, we are confident that our customers will benefit from our new foundry strategy.

Our product manufacturing plans for our US-based foundries will not only provide the ability to multi-source F-RAM products for the first time, but will also help ensure increased delivery stability and make using F-RAM in your applications more cost effective.

As always, we appreciate your loyalty and trust in Ramtron.

FM24CL64B (formerly FM24CL64)
Sample availability 12/15/2010 (SOIC8 Package)
Pre-Production Begins 12/15/2010
Reach Full Production 2/15/2011

Symbol	Parameter	FM24CL64	FM24CL64B (Preliminary)	Units
V_{DD}	Main Power Supply	2.7 – 3.65	2.7 – 3.65	V
I_{DD}	V_{DD} Supply Current @ SCL = 100 kHz @ SCL = 400 kHz @ SCL = 1 MHz	 75 150 400	 100 170 300	 µA µA µA
I_{SB}	Standby Current @ V_{DD} = 5.5V	 1	 6	 µA
HBM	Human Body Model ESD	4000	2000	V
CDM	Charged Device Model ESD	N/A	1000	V
MM	Machine Model ESD	300	170	V
Endurance	Endurance cycles	Unlimited	1E14	Cycles
Retention	Retention @ +85°C	45	10	Years
R_{IN}	Address Input Resistance (WP, A2-A0) For $V_{IN} = V_{IL}$ For $V_{IN} = V_{IH}$	 50 1	 40 1	 KΩ MΩ
T_{LEAD}	Lead Temperature (Soldering, for 10 seconds)	300	260	°C

FM24C64B (formerly FM24C64)
Sample availability 12/15/2010 (SOIC8 Package)
Pre-Production Begins 12/15/2010
Reach Full Production 2/15/2011

Symbol	Parameter	FM24C64	FM24C64B (Preliminary)	Units
V_{DD}	Main Power Supply	4.5 – 5.5	4.5 – 5.5	V
I_{DD}	V_{DD} Supply Current @ SCL = 100 kHz @ SCL = 400 kHz @ SCL = 1 MHz	 150 500 1200	 100 200 400	 µA µA µA
I_{SB}	Standby Current @ V_{DD} = 5.5V	 10	 10	 µA
HBM	Human Body Model ESD	4000	2000	V
CDM	Charged Device Model ESD	N/A	1000	V
MM	Machine Model ESD	250	170	V
Endurance	Endurance cycles	1E12	1E12	Cycles
Retention	Retention @ +85°C	45	10	Years
R_{IN}	Address Input Resistance (WP, A2-A0) For $V_{IN} = V_{IL}$ For $V_{IN} = V_{IH}$	 50 1	 40 1	 KΩ MΩ
T_{LEAD}	Lead Temperature (Soldering, for 10 seconds)	300	260	°C

FM24CL16B (formerly FM24CL16)
Sample availability 12/15/2010 (SOIC8 Package)
Pre-Production Begins 12/15/2010
Reach Full Production 2/15/2011

Symbol	Parameter	FM24CL16	FM24CL16B (Preliminary)	Units
V_{DD}	Main Power Supply	2.7 – 3.65	2.7 – 3.65	V
I_{DD}	V_{DD} Supply Current @ SCL = 100 kHz @ SCL = 400 kHz @ SCL = 1 MHz	 75 200 450	 100 170 300	 µA µA µA
I_{SB}	Standby Current @ V_{DD} = 3.65V	 1	 6	 µA
HBM	Human Body Model ESD	4000	2000	V
CDM	Charged Device Model ESD	N/A	1000	V
MM	Machine Model ESD	300	170	V
Endurance	Endurance cycles	Unlimited	1E14	Cycles
Retention	Retention @ +85°C	45	10	Years
R_{IN}	Address Input Resistance (WP) For $V_{IN} = V_{IL}$ For $V_{IN} = V_{IH}$	 50 1	 40 1	 KΩ MΩ
T_{LEAD}	Lead Temperature (Soldering, for 10 seconds)	300	260	°C

FM24C16B (formerly FM24C16A)
Sample availability 12/15/2010 (SOIC8 Package)
Pre-Production Begins 12/15/2010
Reach Full Production 2/15/2011

Symbol	Parameter	FM24C16A	FM24C16B (Preliminary)	Units
V_{DD}	Main Power Supply	4.5 – 5.5	4.5 – 5.5	V
I_{DD}	V_{DD} Supply Current @ SCL = 100 kHz @ SCL = 400 kHz @ SCL = 1 MHz	 150 500 1000	 100 200 400	 µA µA µA
I_{SB}	Standby Current @ V_{DD} = 5.5V	 10	 10	 µA
HBM	Human Body Model ESD	4000	2000	V
CDM	Charged Device Model ESD	1000	1000	V
MM	Machine Model ESD	300	170	V
Endurance	Endurance cycles	1E12	1E12	Cycles
Retention	Retention @ +85°C	45	10	Years
R_{IN}	Address Input Resistance (WP) For $V_{IN} = V_{IL}$ For $V_{IN} = V_{IH}$	 50 1	 40 1	 KΩ MΩ
T_{LEAD}	Lead Temperature (Soldering, for 10 seconds)	300	260	°C

FM24CL04B (formerly 24CL04)
Sample availability 12/15/2010 (SOIC8 Package)
Pre-Production Begins 12/15/2010
Reach Full Production 2/15/2011

Symbol	Parameter	FM24CL04	FM24CL04B (Preliminary)	Units
V_{DD}	Main Power Supply	2.7 – 3.65	2.7 – 3.65	V
I_{DD}	V_{DD} Supply Current @ SCL = 100 kHz @ SCL = 400 kHz @ SCL = 1 MHz	 75 150 300	 100 170 300	 µA µA µA
I_{SB}	Standby Current @ V_{DD} = 3.65V	 1	 6	 µA
HBM	Human Body Model ESD	3000	2000	V
CDM	Charged Device Model ESD	N/A	1000	V
MM	Machine Model ESD	300	170	V
Endurance	Endurance cycles	Unlimited	1E14	Cycles
Retention	Retention @ +85°C	45	10	Years
R_{IN}	Address Input Resistance (WP, A2-A1) For $V_{IN} = V_{IL}$ For $V_{IN} = V_{IH}$	 50 1	 40 1	 KΩ MΩ
T_{LEAD}	Lead Temperature (Soldering, for 10 seconds)	300	260	°C

FM24C04B (formerly FM24C04A)
Sample availability 12/15/2010 (SOIC8 Package)
Pre-Production Begins 12/15/2010
Reach Full Production 2/15/2011

Symbol	Parameter	FM24C04A	FM24C04B (Preliminary)	Units
V_{DD}	Main Power Supply	4.5 – 5.5	4.5 – 5.5	V
I_{DD}	V_{DD} Supply Current @ SCL = 100 kHz @ SCL = 400 kHz @ SCL = 1 MHz	 150 500 1000	 100 200 400	 µA µA µA
I_{SB}	Standby Current @ V_{DD} = 5.5V	 10	 10	 µA
HBM	Human Body Model ESD	3000	2000	V
CDM	Charged Device Model ESD	N/A	1000	V
MM	Machine Model ESD	300	170	V
Endurance	Endurance cycles	1E12	1E12	Cycles
Retention	Retention @ +85°C	45	10	Years
R_{IN}	Address Input Resistance (WP, A2-A1) For $V_{IN} = V_{IL}$ For $V_{IN} = V_{IH}$	 50 1	 40 1	 KΩ MΩ
T_{LEAD}	Lead Temperature (Soldering, for 10 seconds)	300	260	°C

FM25CL64 (formerly FM25CL64)
Sample availability 1/1/2011 (SOIC8 Package)
Pre-Production Begins 1/1/2011
Reach Full Production 3/1/2011

Symbol	Parameter	FM25CL64	FM25CL64B (Preliminary)	Units
V_{DD}	Main Power Supply	2.7 – 3.65	2.7 – 3.65	V
fCK max	Maximum Frequency	20.0	20.0	MHz
I_{DD}	V_{DD} Supply Current @ SCK = 1.0 MHz @ SCK = fCK max	 0.35 7.00	 0.20 3.00	 mA mA
I_{SB}	Standby Current @ V_{DD} = 3.65V	 1	 6	 µA
HBM	Human Body Model ESD	4000	4000	V
CDM	Charged Device Model ESD	N/A	1000	V
MM	Machine Model ESD	300	300	V
Endurance	Endurance cycles	Unlimited	1E14	Cycles
Retention	Retention @ +85°C	45	10	Years
tR max	Data in Rise Time	50	50	ns
T_{LEAD}	Lead Temperature (Soldering, for 10 seconds)	300	260	°C

FM25640B (formerly FM25640)
Sample availability 1/1/2011 (SOIC8 Package)
Pre-Production Begins 1/1/2011
Reach Full Production 3/1/2011

Symbol	Parameter	FM25640	FM25640B (Preliminary)	Units
V_{DD}	Main Power Supply	4.5 – 5.5	4.5 – 5.5	V
fCK max	Maximum Frequency	5.0	20.0	MHz
I_{DD}	V_{DD} Supply Current @ SCK = 1.0 MHz @ SCK = fCK max	 0.60 3.00	 0.25 4.00	 mA mA
I_{SB}	Standby Current @ V_{DD} = 5.5V	 10	 10	 µA
HBM	Human Body Model ESD	4500	4000	V
CDM	Charged Device Model ESD	1250	1000	V
MM	Machine Model ESD	N/A	300	V
Endurance	Endurance cycles	1E12	1E12	Cycles
Retention	Retention @ +85°C	45	10	Years
tR max	Data in Rise Time	1000	50	ns
tF max	Data in Fall Time	1000	50	ns
T_{LEAD}	Lead Temperature (Soldering, for 10 seconds)	300	260	°C

FM25L16B (formerly FM25L16)
Sample availability 12/15/2010 (SOIC8 Package)
Pre-Production Begins 12/15/2010
Reach Full Production 2/15/2011

Symbol	Parameter	FM25L16	FM25L16B (Preliminary)	Units
V_{DD}	Main Power Supply	2.7 – 3.6	2.7 – 3.6	V
fCK max	Maximum Frequency	18.0	20.0	MHz
I_{DD}	V_{DD} Supply Current @ SCK = 1.0 MHz @ SCK = fCK max	 0.30 5.50	 0.20 3.00	 mA mA
I_{SB}	Standby Current @ V_{DD} = 3.6V	 1	 6	 µA
HBM	Human Body Model ESD	4000	4000	V
CDM	Charged Device Model ESD	1000	1000	V
MM	Machine Model ESD	300	300	V
Endurance	Endurance cycles	Unlimited	1E14	Cycles
Retention	Retention @ +85°C	45	10	Years
tR max	Data in Rise Time	50	50	ns
tF max	Data in Fall Time	50	50	ns
T_{LEAD}	Lead Temperature (Soldering, for 10 seconds)	300	260	°C

FM25C160B (formerly 25C160)
Sample availability 12/15/2010 (SOIC8 Package)
Pre-Production Begins 12/15/2010
Reach Full Production 2/15/2011

Symbol	Parameter	FM25C160	FM25C160B (Preliminary)	Units
V_{DD}	Main Power Supply	4.5 – 5.5	4.5 – 5.5	V
fCK max	Maximum Frequency	20.0	20.0	MHz
I_{DD}	V_{DD} Supply Current @ SCK = 1.0 MHz @ SCK = fCK max	 0.40 8.00	 0.25 4.00	 mA mA
I_{SB}	Standby Current @ V_{DD} = 5.5V	 10	 10	 µA
HBM	Human Body Model ESD	4000	4000	V
CDM	Charged Device Model ESD	1000	1000	V
MM	Machine Model ESD	400	300	V
Endurance	Endurance cycles	1E12	1E12	Cycles
Retention	Retention @ +85°C	45	10	Years
tR max	Data in Rise Time	50	50	ns
tF max	Data in Fall Time	50	50	ns
T_{LEAD}	Lead Temperature (Soldering, for 10 seconds)	300	260	°C

FM25L04B (formerly FM25L04)
Sample availability 12/15/2010 (SOIC8 Package)
Pre-Production Begins 12/15/2010
Reach Full Production 2/15/2011

Symbol	Parameter	FM25L04	FM25L04B (Preliminary)	Units
V_{DD}	Main Power Supply	2.7 – 3.6	2.7 – 3.6	V
fCK max	Maximum Frequency	14.0	20.0	MHz
I_{DD}	V_{DD} Supply Current @ SCK = 1.0 MHz @ SCK = fCK max	 0.17 3.00	 0.20 3.00	 mA mA
I_{SB}	Standby Current @ V_{DD} = 3.6V	 1	 6	 µA
HBM	Human Body Model ESD	4000	4000	V
CDM	Charged Device Model ESD	1000	1000	V
MM	Machine Model ESD	400	300	V
Endurance	Endurance cycles	Unlimited	1E14	Cycles
Retention	Retention @ +85°C	45	10	Years
tR max	Data in Rise Time	50	50	ns
tF max	Data in Fall Time	50	50	ns
T_{LEAD}	Lead Temperature (Soldering, for 10 seconds)	300	260	°C

FM25040B (formerly FM25040A)
Sample availability 12/15/2010 (SOIC8 Package)
Pre-Production Begins 12/15/2010
Reach Full Production 2/15/2011

Symbol	Parameter	FM25040A	FM25040B (Preliminary)	Units
V_{DD}	Main Power Supply	4.5 – 5.5	4.5 – 5.5	V
fCK max	Maximum Frequency	20.0	20.0	MHz
I_{DD}	V_{DD} Supply Current @ SCK = 1.0 MHz @ SCK = fCK max	 0.40 8.00	 0.25 4.00	 mA mA
I_{SB}	Standby Current @ V_{DD} = 5.5V	 10	 10	 µA
HBM	Human Body Model ESD	4000	4000	V
CDM	Charged Device Model ESD	1000	1000	V
MM	Machine Model ESD	400	300	V
Endurance	Endurance cycles	1E12	1E12	Cycles
Retention	Retention @ +85°C	45	10	Years
tR max	Data in Rise Time	50	50	ns
tF max	Data in Fall Time	50	50	ns
T_{LEAD}	Lead Temperature (Soldering, for 10 seconds)	300	260	°C