Memory FeRAM

1M (128 K × 8) Bit I²C

MS85RC1MLY

■ DESCRIPTION

The MS85RC1MLY is an FeRAM (Ferroelectric Random Access Memory) chip in a configuration of 131,072 words × 8 bits, using the ferroelectric process and silicon gate CMOS process technologies for forming the nonvolatile memory cells.

Unlike SRAM, the MS85RC1MLY is able to retain data without using a data backup battery.

The read/write endurance of the nonvolatile memory cells used for the MS85RC1MLY has improved to be at least 10^{13} cycles, significantly outperforming other nonvolatile memory products in the number.

The MS85RC1MLY does not need a polling sequence after writing to the memory such as the case of Flash memory or E²PROM.

■ FEATURES

- Bit configuration : 131,072 words × 8 bits
- Two-wire serial interface : Fully controllable by two ports: serial clock (SCL) and serial data (SDA).
- Operating frequency : 3.4 MHz (Max @HIGH SPEED MODE)
  1 MHz
- Read/write endurance : 10^{13} times (+ 125 °C)
  10^{14} times (+ 85 °C)
- Data retention : 193.9 years (+ 85 °C),
  40.7 years (+ 105 °C),
  10.1 years (+ 125 °C)
- Operating power supply voltage : 1.7 V to 1.95 V
- Low-power consumption : Operating power supply current 0.17mA (Typ @3.4 MHz)
  0.4mA(Max @3.4 MHz)
  Standby current 4.8μA (Typ)
- Operation ambient temperature range
  : − 40 °C to + 125 °C
- Package : 8-pin plastic SOP (150mil)
  8-pin plastic DFN (5mm × 6mm)
  RoHS compliant

Fujitsu Semiconductor Memory Solutions Limited has changed its name to RAMXEED Limited. RAMXEED Limited will continue to offer and support existing products while maintaining Fujitsu's part number unchanged.

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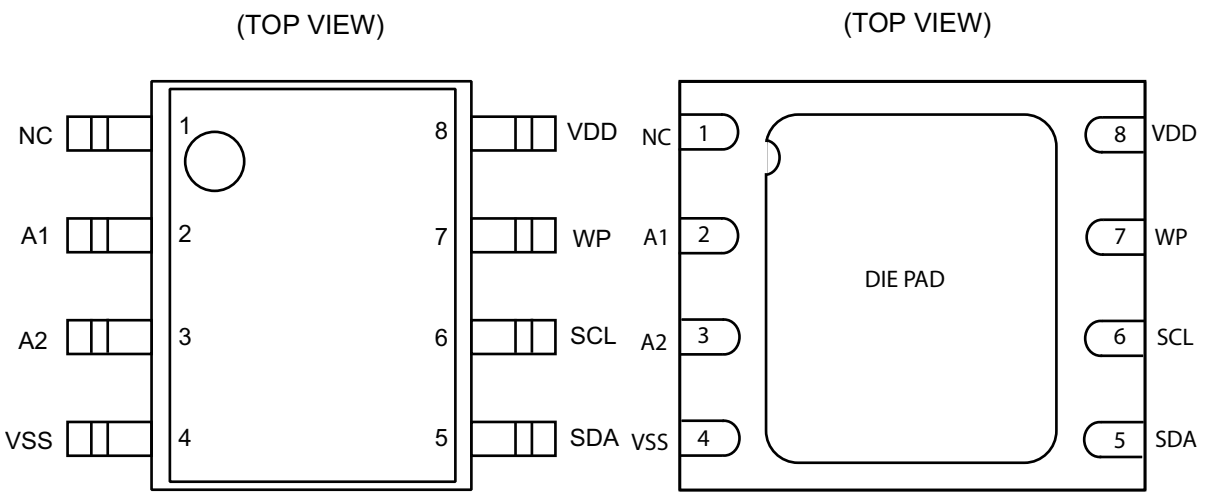
■ PIN ASSIGNMENT



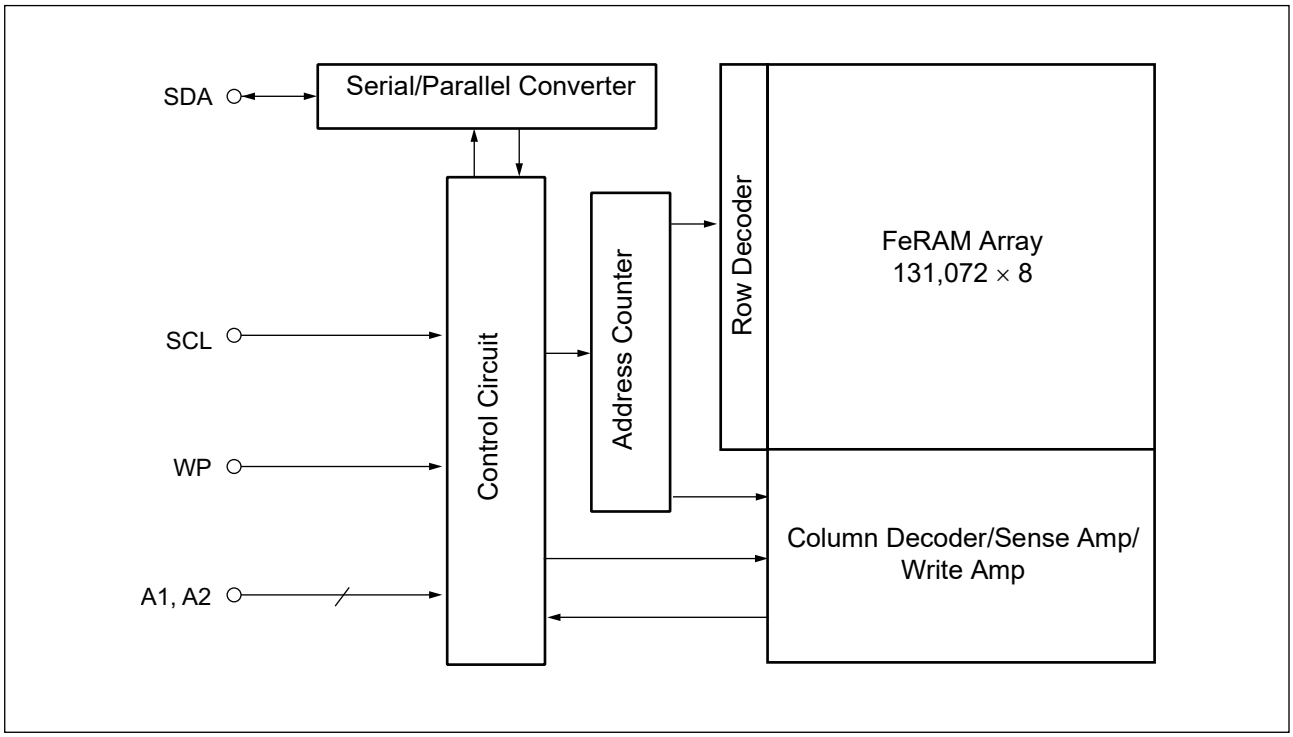
8-pin plastic SOP (150mil)

8-pin plastic DFN (5mm × 6mm)

■ PIN FUNCTIONAL DESCRIPTIONS

Pin Number	Pin Name	Functional Description
1	NC	Not used. Floating or connect to VDD or VSS.
2 to 3	A1 to A2	Device Address pins The MS85RC1MLY can be connected to the same data bus up to 4 devices. Device addresses are used in order to identify each of these devices. Connect these pins to VDD pin or VSS pin externally. Only if the combination of VDD and VSS pins matches Device Address Code inputted from the SDA pin, the device operates. In the open pin state, A1 and A2 pins are internally pulled-down and recognized as the "L" level.
4	VSS	Ground pin
5	SDA	Serial Data I/O pin This is an I/O pin which performs bidirectional communication for both memory address and writing/reading data. It is possible to connect multiple devices. It is an open drain output, so a pull-up resistor is required to be connected to the external circuit.
6	SCL	Serial Clock pin This is a clock input pin for input/output serial data. Data is sampled on the rising edge of the clock and output on the falling edge.
7	WP	Write Protect pin When the Write Protect pin is the “H” level, the writing operation is disabled. When the Write Protect pin is the “L” level, the entire memory region can be overwritten. The reading operation is always enabled regardless of the Write Protect pin input level. The Write Protect pin is internally pulled down to VSS pin, and that is recognized as the “L” level (write enabled) when the pin is the open state.
8	VDD	Supply Voltage pin

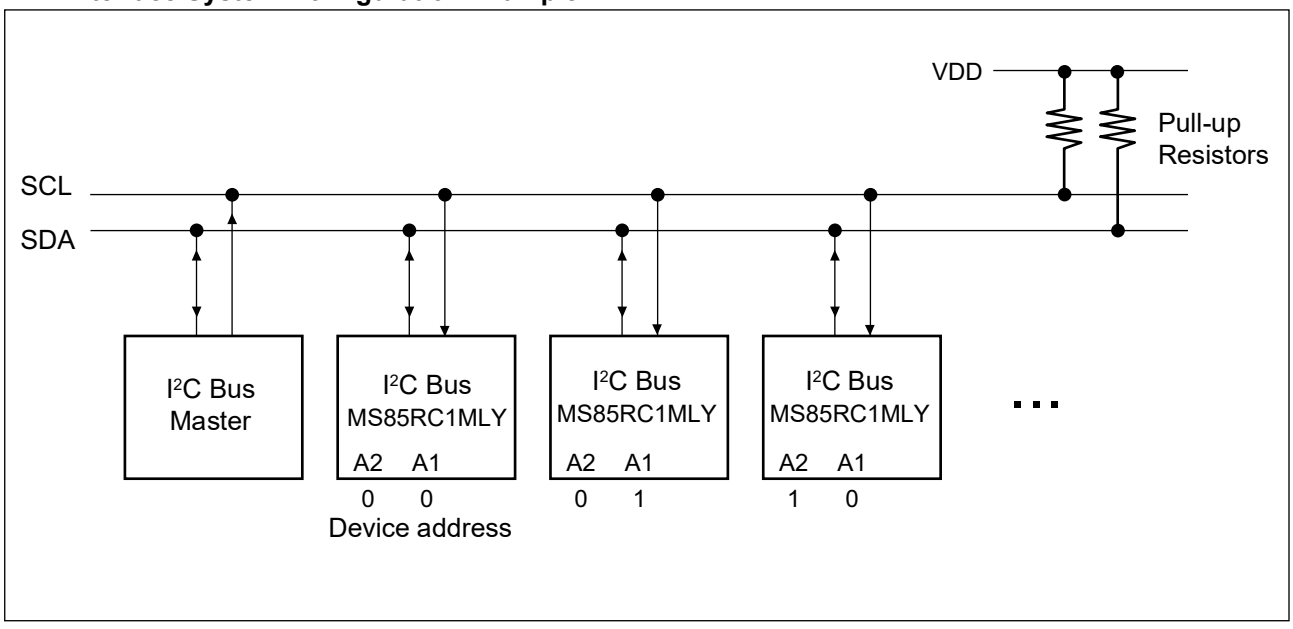
■ BLOCK DIAGRAM



■ I²C (Inter-Integrated Circuit)

The MS85RC1MLY has the two-wire serial interface; the I²C bus, and operates as a slave device. The I²C bus defines communication roles of “master” and “slave” devices, with the master side holding the authority to initiate control. Furthermore, the I²C bus connection is possible where a single master device is connected to multiple slave devices in a party-line configuration. In this case, it is necessary to assign a unique device address to the slave device, the master side starts communication after specifying the slave to communicate by addresses.

- **I²C Interface System Configuration Example**



■ I²C COMMUNICATION PROTOCOL

The I²C bus is a two wire serial interface that uses a bidirectional data bus (SDA) and serial clock (SCL). A data transfer can only be initiated by the master, which will also provide the serial clock for synchronization. The SDA signal should change while the SCL is the “L” level. However, as an exception, when starting and stopping communication sequence, the SDA is allowed to change while the SCL is the “H” level.

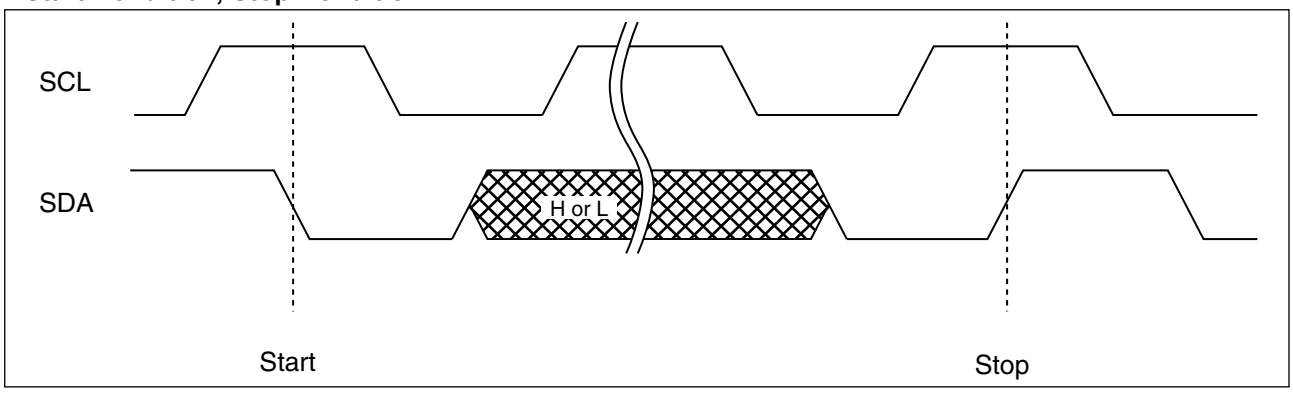
- Start Condition

To start read or write operations by the I²C bus, change the SDA input from the “H” level to the “L” level while the SCL input is in the “H” level.

- Stop Condition

To stop the I²C bus communication, change the SDA input from the “L” level to the “H” level while the SCL input is in the “H” level. In the reading operation, inputting the stop condition finishes reading and enters the standby state. In the writing operation, inputting the stop condition finishes inputting the rewrite data and enters the standby state.

• Start Condition, Stop Condition



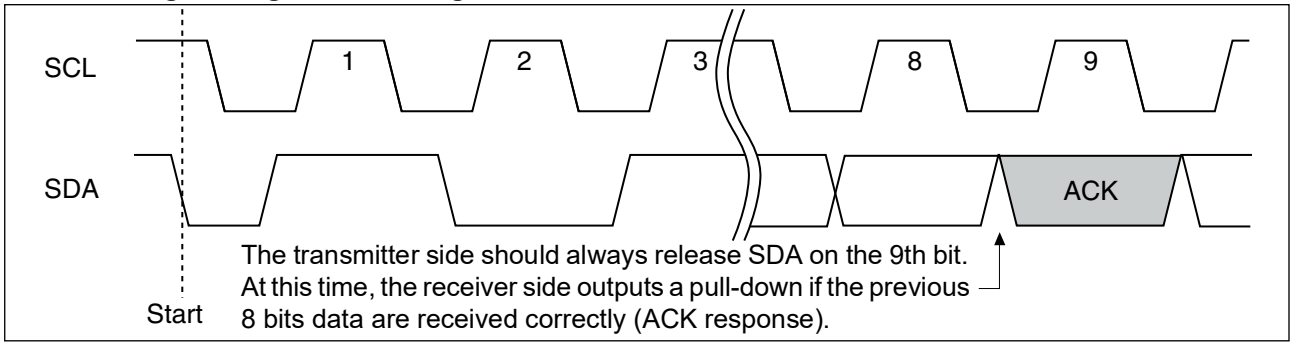
Note : At the write operation, the FeRAM device does not need the programming wait time (t_{WC}) after issuing the Stop Condition.

■ ACKNOWLEDGE (ACK)

In the I²C bus, serial data including memory address or memory information is sent and received in units of 8 bits. The acknowledge signal indicates that every 8 bits of the data is successfully sent and received. The receiver side usually outputs the “L” level every time on the 9th SCL clock after each 8 bits are successfully transmitted and received. On the transmitter side, the bus is temporarily released to Hi-Z every time on this 9th clock to allow the acknowledge signal to be received and checked. During this Hi-Z released period, the receiver side pulls the SDA line down to indicate the “L” level that the previous 8 bits communication is successfully received.

In case the slave side receives Stop condition before sending or receiving the ACK “L” level, the slave side stops the operation and enters to the standby state. On the other hand, the slave side releases the bus state after sending or receiving the NACK “H” level. The master side generates Stop condition or Start condition in this released bus state.

• Acknowledge timing overview diagram



■ DEVICE ADDRESS WORD (Slave address)

Following the start condition, the master inputs the 8 bits device address word to start I²C communication. The device address word (8 bits) consists of a device Type code (4 bits), device address code (2 bits), MSB(1bit) and a read/write code (1 bit).

• Device Type Code (4 bits)

The upper 4 bits of the device address word are a device type code that identifies the device type, and are fixed at “1010” for the MS85RC1MLY.

• Device Address Code (2 bits)

Following the device type code, the 2 bits of the device address code are input in order of A2 and A1. The device address code identifies one device from up to four devices connected to the bus. Each MS85RC1MLY is given a unique 2 bits code on the device address pin (external hardware pin A2 and A1). The slave only responds if the received device address code is equal to this unique 2 bits code.

• The most significant address(1 bit)

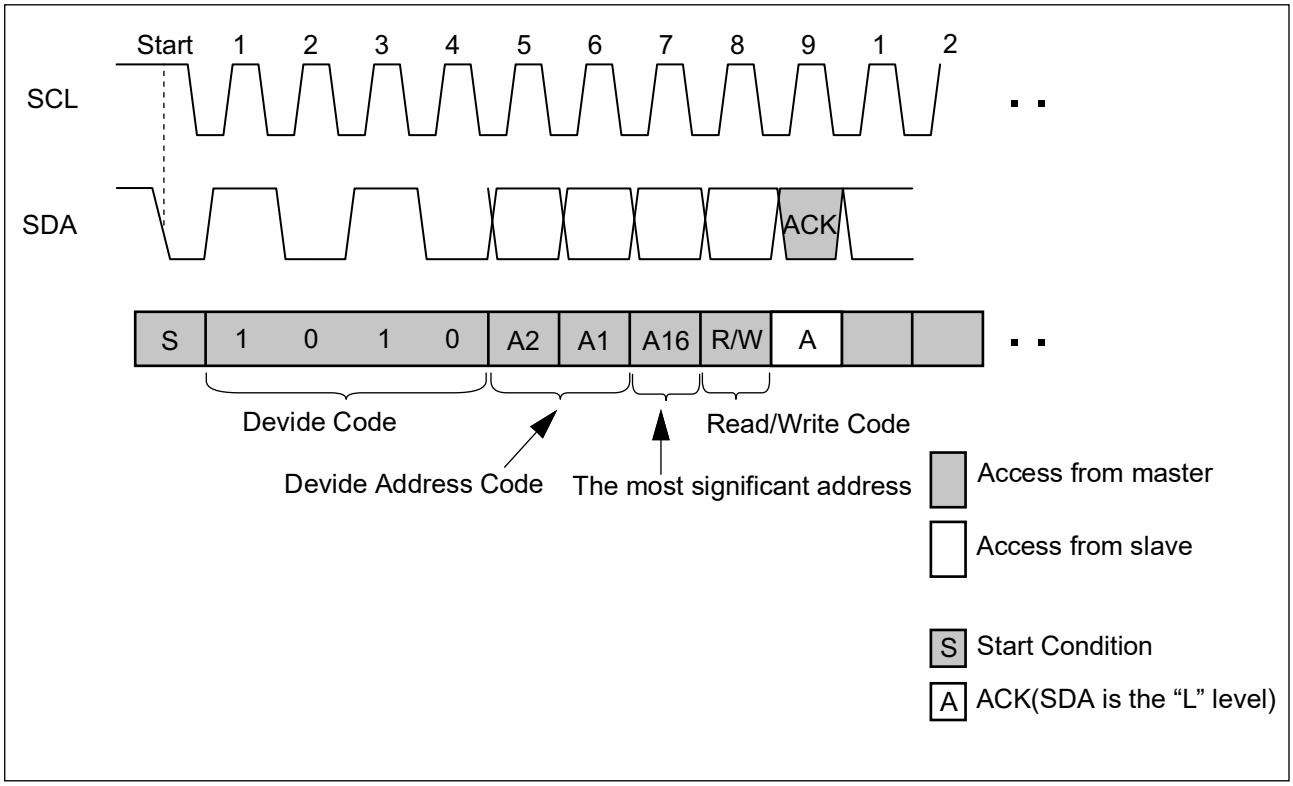
The seventh bit of device address word is A16(1 bit) that is the most significant address.

• Read/Write Code (1 bit)

The 8th bit of the device address word is the R/W (read/write) code. When the R/W code is “0”, a write operation is enabled, and the R/W code is “1”, a read operation is enabled for the MS85RC1MLY.

It turns to a stand-by state if the device code is not “1010” or device address code does not equal to pin A2 and A1.

• Device Address Word



■ DATA STRUCTURE

In the I²C bus, the acknowledge “L” level is output on the 9th bit by a slave, after the 8 bits of the device address word following the start condition are input by a master. After confirming the acknowledge response by the master, the master outputs remained 8 bits × 2 memory address to the slave. When the each memory address input ends, the slave again outputs the acknowledge “L” level. After this operation, the I/O data follows in units of 8 bits, with the acknowledge “L” level output after every 8 bits.

It is determined by the R/W code whether the data line is driven by the master or the slave. However, the clock line shall be driven by the master. For a write operation, the slave will accept 8 bits from the master, then send an acknowledge. If the master detects the acknowledge, the master will transfer the next 8 bits. For a read operation, the slave will place 8 bits on the data line, then wait for an acknowledge from the master.

■ FeRAM ACKNOWLEDGE -- POLLING NOT REQUIRED

The MS85RC1MLY performs the high speed write operations, so any waiting time for an ACK polling* does not occur.

*: In E²PROM, the Acknowledge Polling is performed as a progress check whether rewriting is executed or not. It is normal to judge by the 9th bit of Acknowledge whether rewriting is performed or not after inputting the start condition and then the device address word (8 bits) during rewriting.

■ WRITE PROTECT (WP)

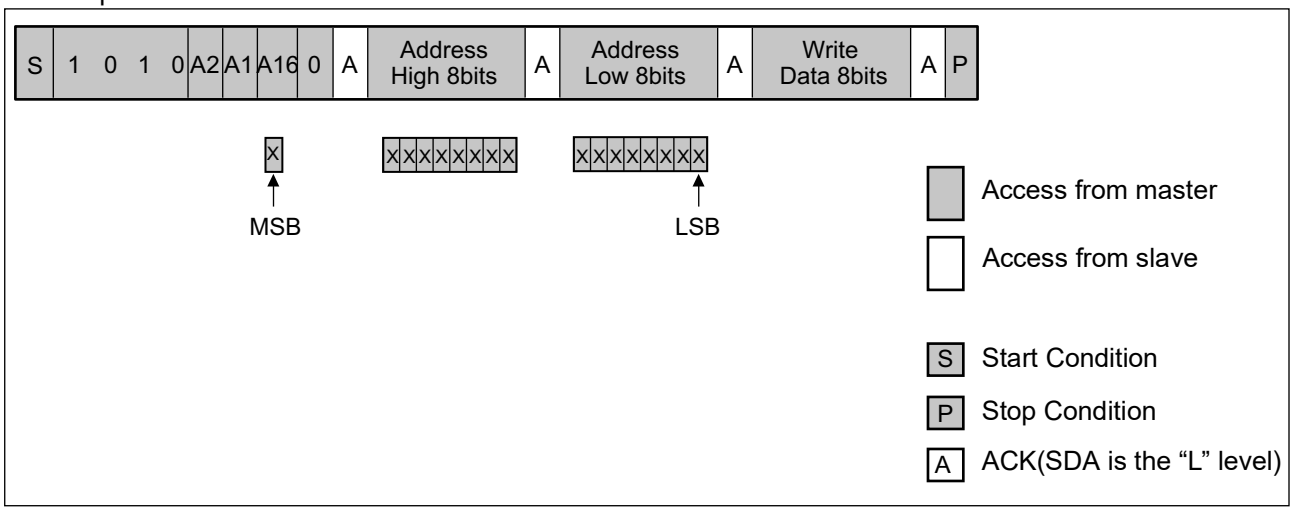
The entire memory array can be write protected using the Write Protect pin. When the Write Protect pin is set to the “H” level, the entire memory array will be write protected. When the Write Protect pin is the “L” level, the entire memory array will be rewritten. Reading is allowed regardless of the WP pin's “H” level or “L” level.

Note : The Write Protect pin is pulled down internally to the VSS pin, therefore if the Write Protect pin is open, the pin status is detected as the “L” level (write enabled).

■ COMMAND

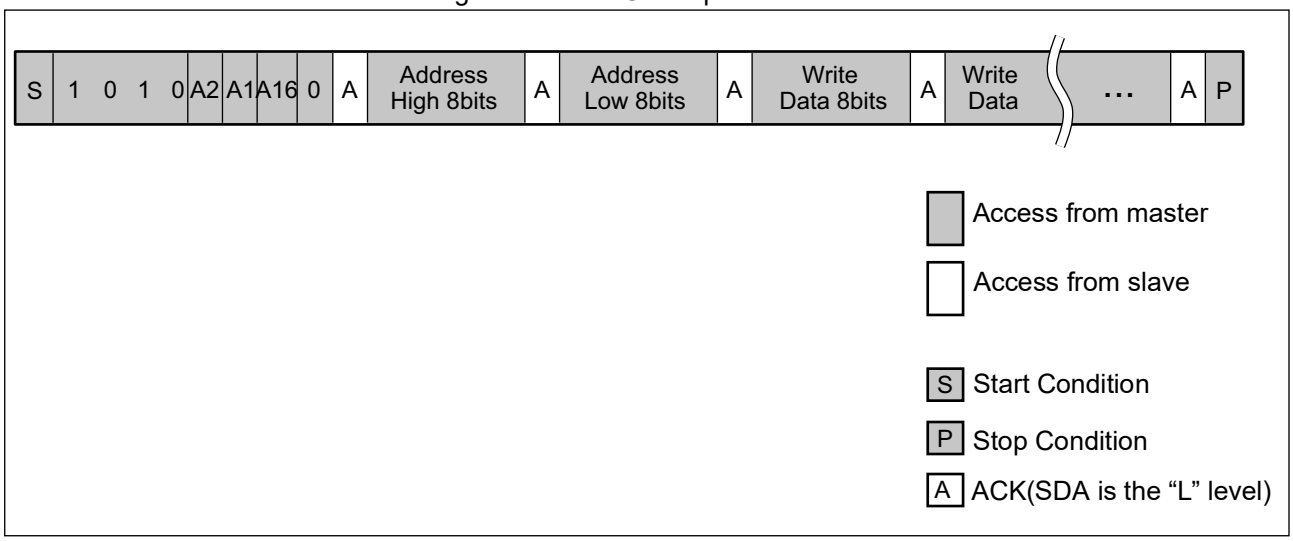
• Byte Write

If the device address word (R/W “0” input) is sent following the start condition, the slave responds with an ACK. After this ACK, write addresses and data are sent in the same way, and the write ends by generating a stop condition at the end.



• Page Write

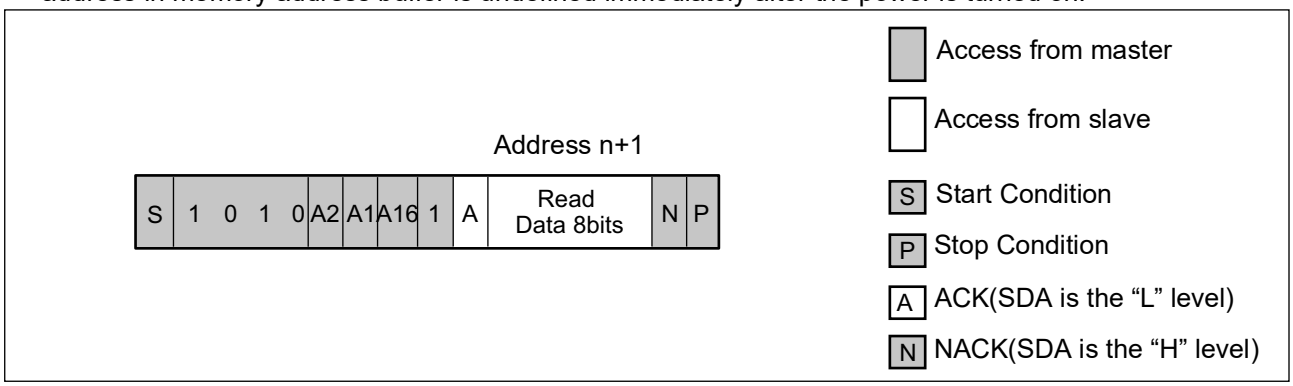
If additional 8 bits are continuously sent after the same command (except stop condition) as Byte Write, a page write is performed. The memory address rolls over to first memory address (0 0000$_H$) at the end of the address. Therefore, if more than 128K bytes are sent, the data is overwritten in order starting from the start of the memory address that was written first. Because FeRAM performs the high-speed write operations, the data will be written to FeRAM right after the ACK response finished.



Note: It is not necessary to take a period for internal write operation cycles from the buffer to the memory after the stop condition is generated.

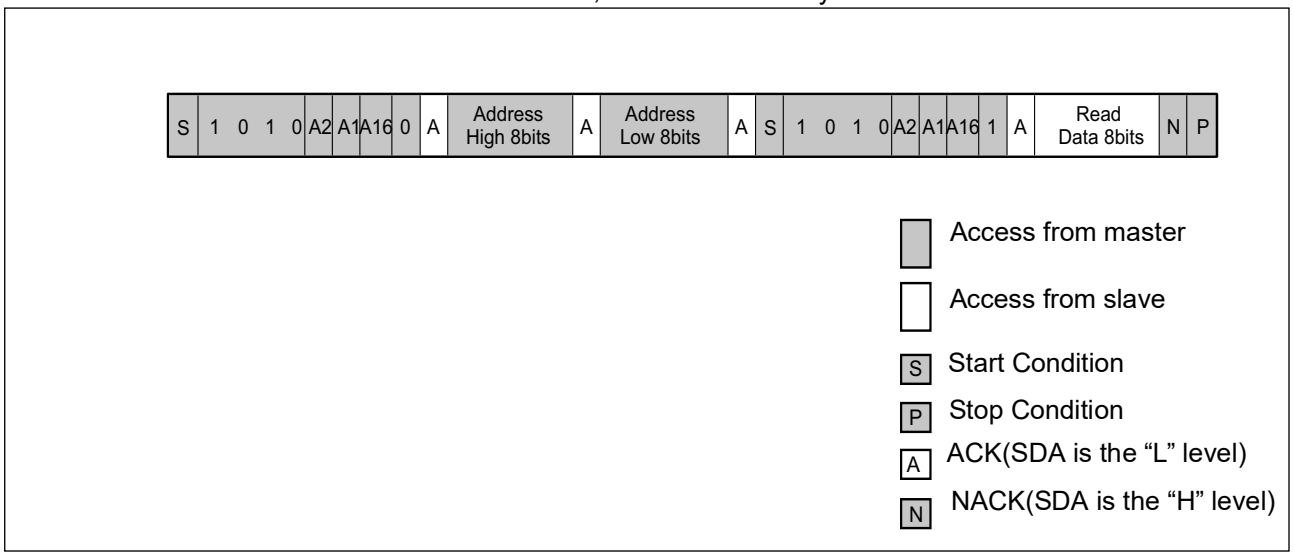
• Current Address Read

When the previous write or read operation finishes successfully up to the stop condition, the memory address accessed last time is remain in memory address buffer(17bits). As it is, then send the command without turning off the power, the memory address "n", total 17 bits consist of the 1 bit of the top memory address from the Device Address Word input and lower 16 bits of memory address buffer, is read from the address "n+1". If the memory address “n” is last address, the address counter will roll over to (0000_H). The current address in memory address buffer is undefined immediately after the power is turned on.



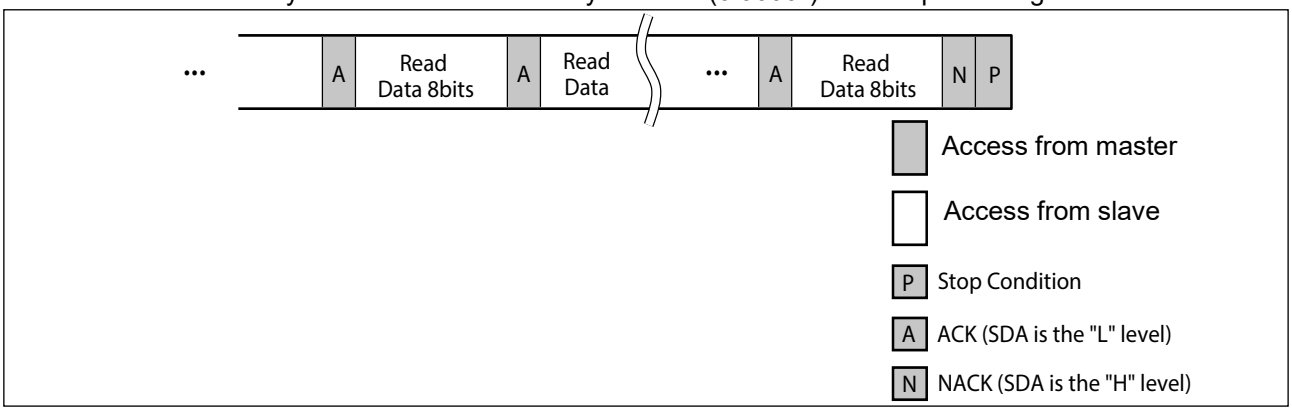
• Random Read

The one byte of data from the memory address saved in the memory address buffer can be read out synchronously to SCL by specifying the address in the same way as for a write, and then issuing another start condition and sending the Device Address Word (R/W “1” input). The top address input at second time need to same value as top address inputed first time. If input the different value at first time and second time, the second value is reflected as the address to access. The final NACK (SDA is the “H” level) is issued by the receiver that receives the data. In this case, this bit is issued by the master side.



• Sequential Read

Data can be received continuously following the Device address word (R/W “1” input) after specifying the address in the same way as for Random Read. If the read reaches the end of address, the internal read address automatically rolls over to first memory address (0 0000H) and keeps reading.

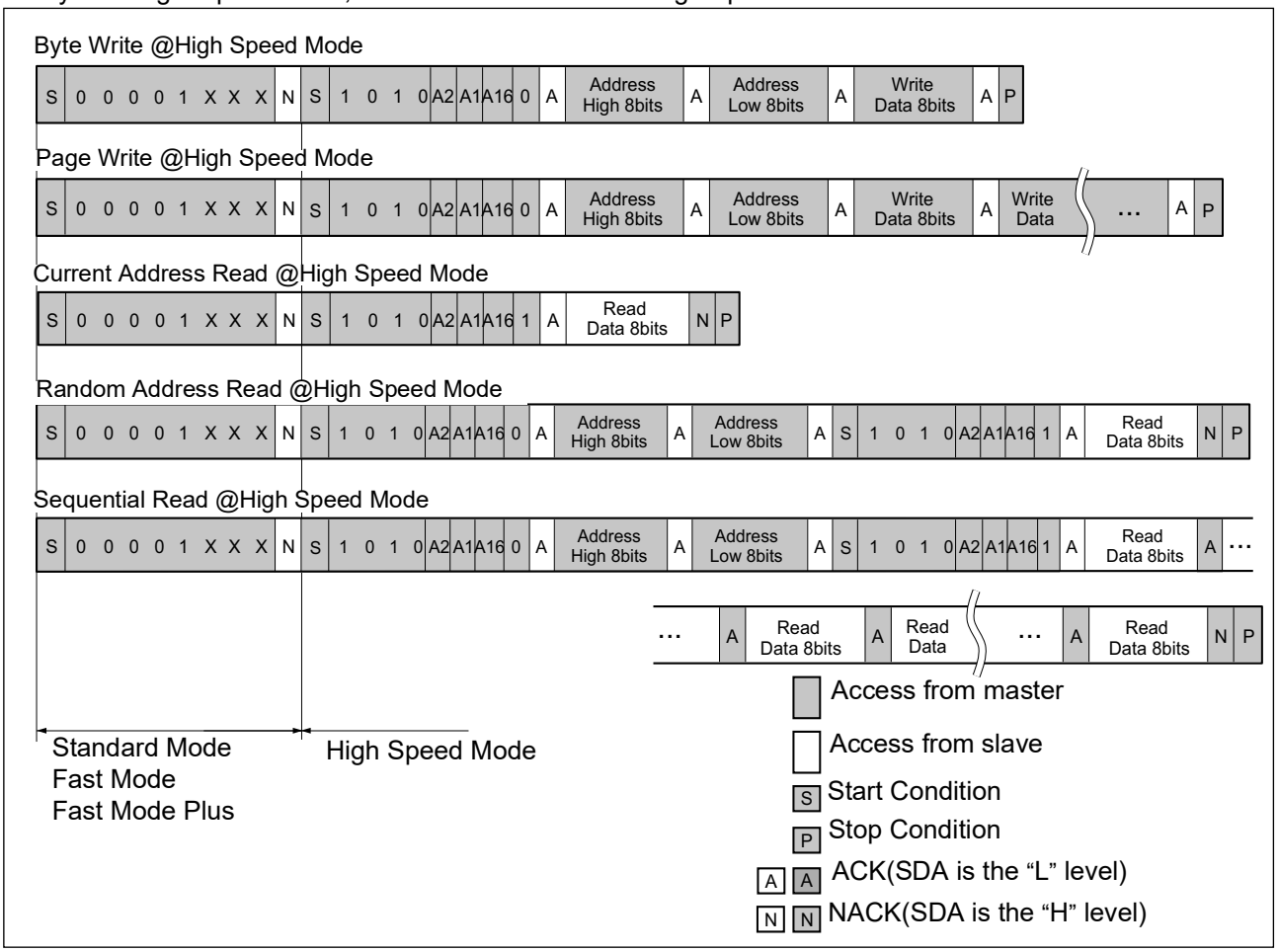


• High Speed Mode

MS85RC1MLY supports High Speed mode up to 3.4 MHz. By sending an entry command (0000 1XXX) after start condition from the master side, it informs to the slave that the data transmission with High Speed mode will start.

Since there is no slave side which is allowed to respond to this entry command, NACK response continues from the slave side. After the master side recognizes this NACK response, the master side changes its state to High Speed mode and enables the bidirectional communication up to 3.4 MHz.

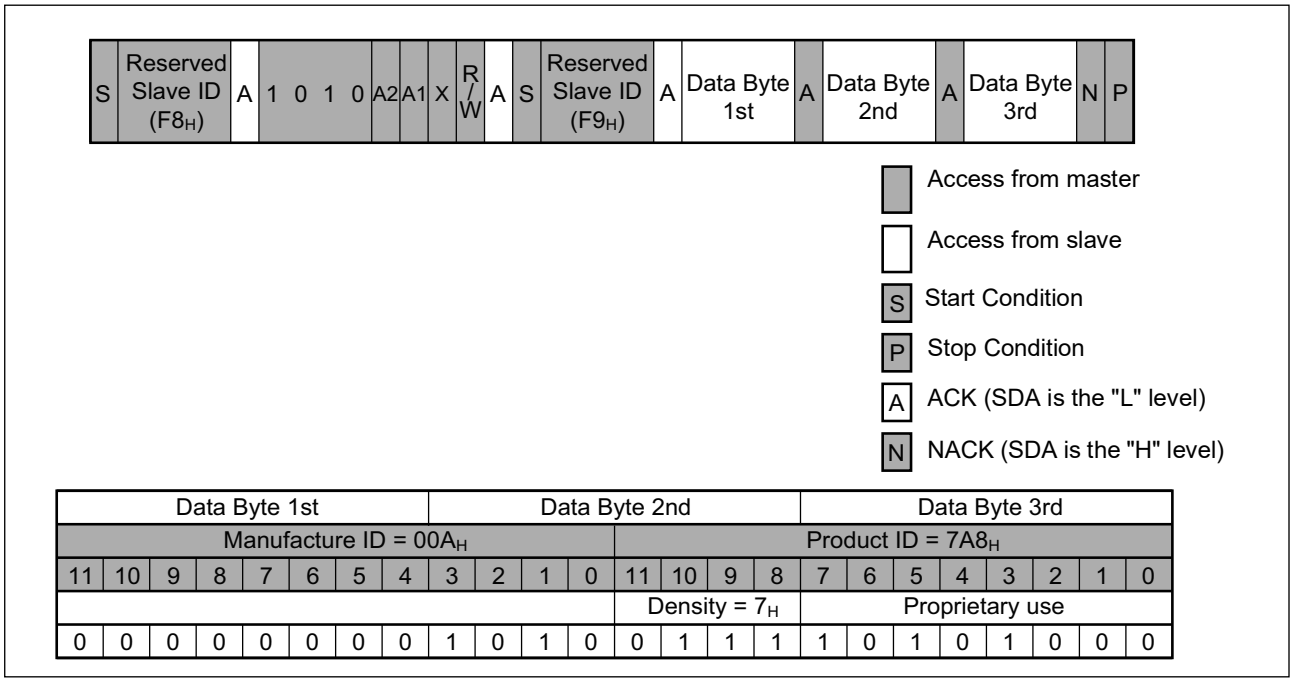
By sending Stop condition, it exits out of the state in High Speed communication.



• Device ID

The Device ID command reads fixed Device ID. The size of Device ID is 3 bytes and consists of manufacturer ID and product ID. The Device ID is read-only and can be read out by following sequences.

a) The master sends the Reserved Slave ID $F8_H$ after the START condition.
b) The master sends the device address word after the ACK response from the slave.
In this device address word, R/W code is “Don't care”.
c) The master re-sends the START condition followed by the Reserved Slave ID $F9_H$ after the ACK response from the slave.
d) The master read out the Device ID succeedingly in order of Data Byte 1st / 2nd / 3rd after the ACK response from the slave.
e) The master responds the NACK (SDA is the “H” level) after reading 3 bytes of the Device ID.
In case the master respond the ACK after reading 3 bytes of the Device ID, the master re-reading the Device ID from the 1st byte.



Data Byte 1st								Data Byte 2nd				Data Byte 3rd											
Manufacture ID = $00A_H$												Product ID = $7A8_H$											
11	10	9	8	7	6	5	4	3	2	1	0	11	10	9	8	7	6	5	4	3	2	1	0
												Density = 7_H				Proprietary use							
0	0	0	0	0	0	0	0	1	0	1	0	0	1	1	1	1	0	1	0	1	0	0	0

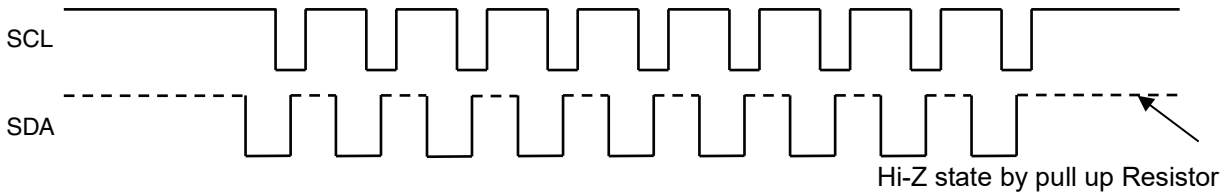
■ SOFTWARE RESET SEQUENCE OR COMMAND RETRY

In case the malfunction has occurred after power on, the master side stopped the I²C communication during processing, or unexpected malfunction has occurred, execute the following (1) software recovery sequence just before each command, or (2) retry command just after failure of each command.

(1) Software Reset Sequence

Since the slave side may be outputting “L” level, do not force to drive “H” level, when the master side drives the SDA port. This is for preventing a bus conflict. The additional hardware is not necessary for this software reset sequence.

9 set of “Start Conditions and one “1” data”



Send “Start Condition and one data “1””.
Repeat these 9 times just before Write or Read command.

(2) Command Retry

Command retry is useful to recover from failure response during I²C communication.

■ ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Rating		Unit
		Min	Max	
Power supply voltage*	V_{DD}	− 0.5	+2.5	V
Input voltage*	V_{IN}	− 0.5	V_{DD} + 0.5	V
Output voltage*	V_{OUT}	− 0.5	V_{DD} + 0.5	V
Operation ambient temperature	T_A	− 40	+ 125	°C
Storage temperature	Tstg	− 55	+ 150	°C

*: These parameters are based on the condition that VSS is 0 V.

WARNING: Semiconductor devices can be permanently damaged by application of stress (voltage, current, temperature, etc.) in excess of absolute maximum ratings. Do not exceed these ratings.

■ RECOMMENDED OPERATING CONDITIONS

Parameter	Symbol	Value			Unit
		Min	Typ	Max	
Power supply voltage*1	V_{DD}	1.70	1.80	1.95	V
Operation ambient temperature*2	T_A	− 40	—	+ 125	°C

*1: These parameters are based on the condition that VSS is 0 V.

*2: Ambient temperature when only this device is working. Please consider it to be the almost same as the package surface temperature.

WARNING: The recommended operating conditions are required in order to ensure the normal operation of the semiconductor device. All of the device's electrical characteristics are warranted when the device is operated within these ranges.

Always use semiconductor devices within their recommended operating condition ranges. Operation outside these ranges may adversely affect reliability and could result in device failure.

No warranty is made with respect to uses, operating conditions, or combinations not represented on the data sheet. Users considering application outside the listed conditions are advised to contact their representatives beforehand.

■ ELECTRICAL CHARACTERISTICS

1. DC Characteristics

(within recommended operating conditions)

Parameter	Symbol	Condition	Value			Unit
			Min	Typ (T_A=25 °C)	Max	
Input leakage current*1	$\|I_{LI}\|$	V_{IN} = 0 V to V_{DD}	—	—	1	μA
Output leakage current*2	$\|I_{LO}\|$	V_{OUT} = 0 V to V_{DD}	—	—	1	μA
Operating power supply current	I_{DD}	SCL = 0.1 MHz	—	0.01	0.4	mA
		SCL = 1 MHz	—	0.06	0.4	mA
		SCL = 3.4 MHz	—	0.17	0.4	mA
Standby current	I_{SB}	SCL, SDA = V_{DD} A1, A2, WP = 0 V or Open Under Stop Condition	—	4.8	150	μA
"H" level input voltage	V_{IH}	V_{DD} = 1.7 V to 1.95 V	V_{DD} × 0.8	—	V_{DD} +0.5	V
"L" level input voltage	V_{IL}	V_{DD} = 1.7 V to 1.95 V	-0.5	—	V_{DD} × 0.2	V
"L" level output voltage	V_{OL}	I_{OL} = 3 mA	—	—	0.4	V
Input resistance for WP, A1 and A2 pins	R_{IN}	—	11	33	125	kΩ

*1: Applicable pin: SCL,SDA

*2: Applicable pin: SDA

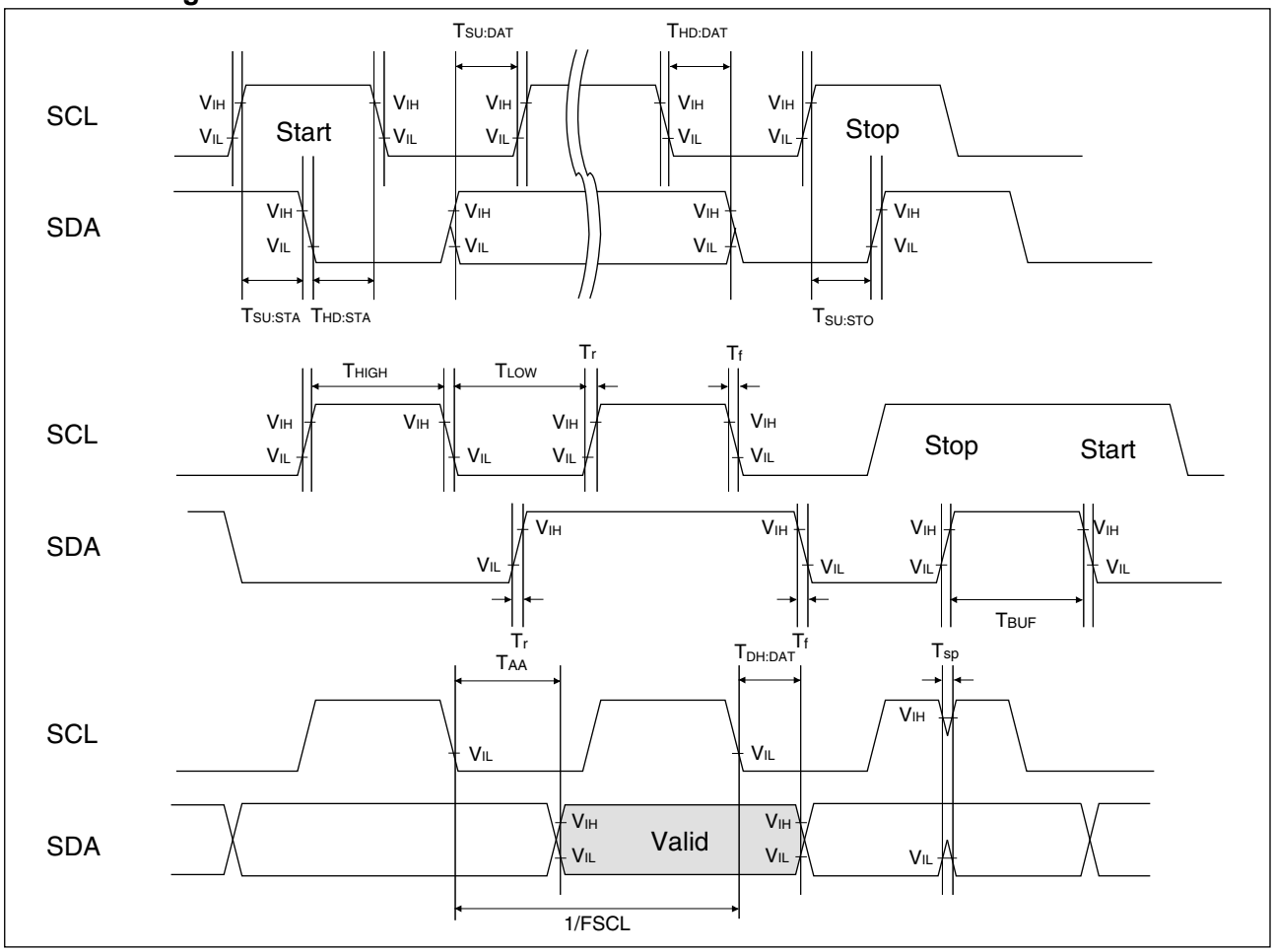
2. AC Characteristics

Parameter	Symbol	Value								Unit
		STANDARD MODE		FAST MODE		FAST MODE PLUS		HIGH SPEED MODE		
		Min	Max	Min	Max	Min	Max	Min	Max	
SCL clock frequency	FSCL	0	100	0	400	0	1000	0	3400	kHz
Clock high time	THIGH	4000	—	600	—	260	—	60	—	ns
Clock low time	TLOW	4700	—	1300	—	500	—	160	—	ns
SCL/SDA rising time	Tr	—	1000	—	300	—	300	—	80	ns
SCL/SDA falling time	Tf	—	300	—	300	—	120	—	80	ns
Start condition hold	THD:STA	4000	—	600	—	250	—	160	—	ns
Start condition setup	TSU:STA	4700	—	600	—	250	—	160	—	ns
SDA input hold	THD:DAT	0	—	0	—	0	—	0	—	ns
SDA input setup	TSU:DAT	250	—	100	—	50	—	10	—	ns
SDA output hold	TDH:DAT	0	—	0	—	0	—	0	—	ns
Stop condition setup	TSU:STO	4000	—	600	—	250	—	160	—	ns
SDA output access after SCL falling	TAA	—	3000	—	900	—	450	—	130	ns
Pre-charge time	TBUF	4700	—	1300	—	500	—	300	—	ns
Noise suppression time (SCL and SDA)	TSP	—	50	—	50	—	50	—	10	ns

AC characteristics were measured under the following measurement conditions.

- Power supply voltage : 1.7 V to 1.95 V
- Operation ambient temperature : – 40 °C to + 125 °C
- Input voltage magnitude : $V_{DD} \times 0.2$ to $V_{DD} \times 0.8$
- Input rising time : 5 ns
- Input falling time : 5 ns
- Input judge level : $V_{DD}/2$
- Output judge level : $V_{DD}/2$
- Output load capacitance : 100 pF

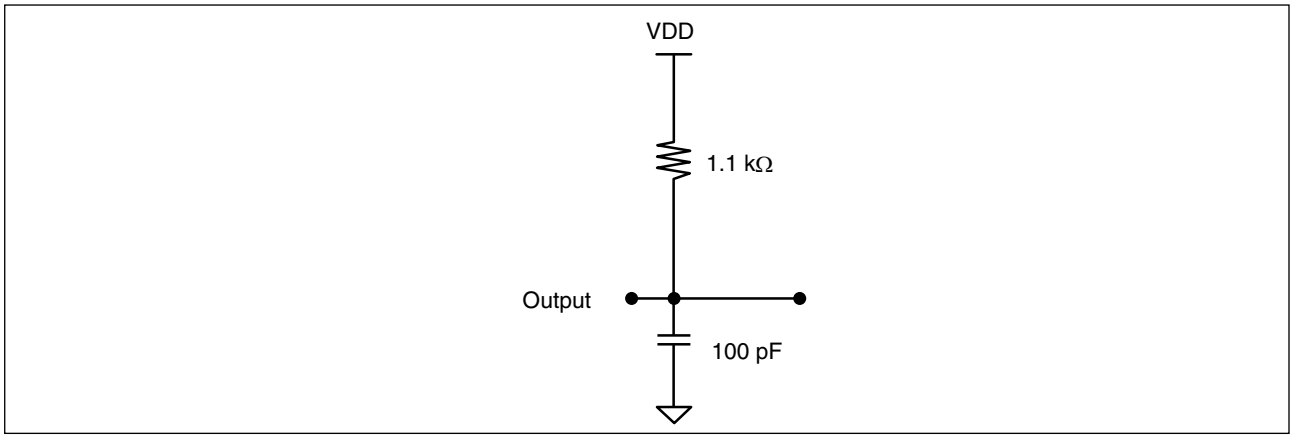
3. AC Timing Definitions



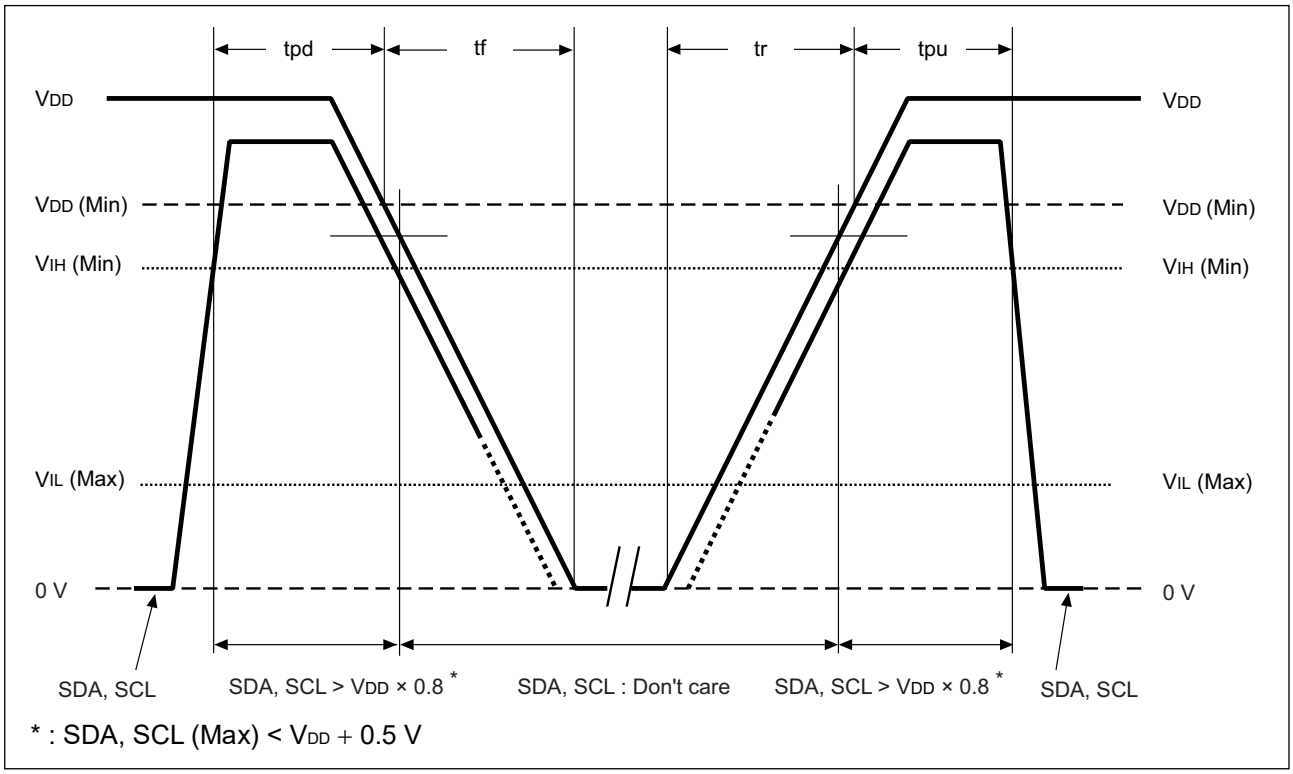
4. Pin Capacitance

Parameter	Symbol	Conditions	Value			Unit
			Min	Typ	Max	
I/O capacitance	$C_{I/O}$	V_{DD} = 1.8 V, f = 1 MHz, T_A = + 25 °C	—	—	8	pF
Input capacitance	C_{IN}		—	—	8	pF

5. AC Test Load Circuit



■ POWER ON/OFF SEQUENCE



When applying relatively short term V_{DD} pulse whose peak is more than 1.6V, it is required to set falling time, tf more than 0.4ms/V. (In case V_{DD} rises over 1.6V and falls just after that, if this term is short, device may lose its function.).

Parameter	Symbol	Value		Unit
		Min	Max	
SDA, SCL level hold time during power down	tpd	85	—	ns
SDA, SCL level hold time during power up	tpu	450	—	µs
Power supply rising time	tr	0.05	—	ms/V
Power supply falling time	tf	0.1	—	ms/V

If the device does not operate within the specified conditions of read cycle, write cycle or power on/off sequence, memory data can not be guaranteed.

■ FeRAM CHARACTERISTICS

Item	Min	Max	Unit	Parameter
Read/Write Endurance*1	10^{13}	—	Times	Operation Ambient Temperature T_A = + 125 °C
	10^{14}	—		Operation Ambient Temperature T_A = + 85 °C
Data Retention*2	10.1*3	—	Years	Operation Ambient Temperature T_A = + 125 °C
	40.7	—		Operation Ambient Temperature T_A = + 105 °C
	193.9	—		Operation Ambient Temperature T_A = + 85 °C

*1 : The value for Read/Write endurance apply to the total number of read and write operations per row in FeRAM. This is because FeRAM needs writing operation after each reading operations.

*2 : Minimum values define retention time of the first reading/writing data right after shipment.

*3: Under evaluation for more than 10.1 years(+125 °C).
These values are calculated by qualification results.

■ NOTE ON USE

- We recommend programming of the device after reflow. Data written before reflow cannot be guaranteed.
- During the access period from the start condition to the stop condition, keep the level of WP, A1 and A2 pins to the “H” level or the “L” level.

■ ESD AND LATCH-UP

Test	DUT	Value
ESD HBM (Human Body Model) JEDEC JS001 compliant	MS85RC1MLYPNF-G-BDE1 MS85RC1MLYPNF-G-BDERE1 MS85RC1MLYPN-G-AME1 MS85RC1MLYPN-G-AMEWE1	≥ |2000 V|
ESD CDM (Charged Device Model) JEDEC JS002 compliant		≥ |1000 V|
Latch-Up (I-test) JESD78 compliant		≥ |125mA|
Latch-Up (V_{supply} overvoltage test) JESD78 compliant		≥ 2.93V

■ REFLOW CONDITIONS AND FLOOR LIFE

[JEDEC MSL] : Moisture Sensitivity Level 1 (IPC/JEDEC J-STD-020E)

MS85RC1MLYPN-G-AME1/ MS85RC1MLYPN-G-AMEWE1

[JEDEC MSL] : Moisture Sensitivity Level 3 (IPC/JEDEC J-STD-020E)

MS85RC1MLYPNF-G-BDE1/ MS85RC1MLYPNF-G-BDERE1

■ CURRENT STATUS ON CONTAINED RESTRICTED SUBSTANCES

This product complies with the regulations of REACH Regulations, EU RoHS Directive and China RoHS.

■ ORDERING INFORMATION

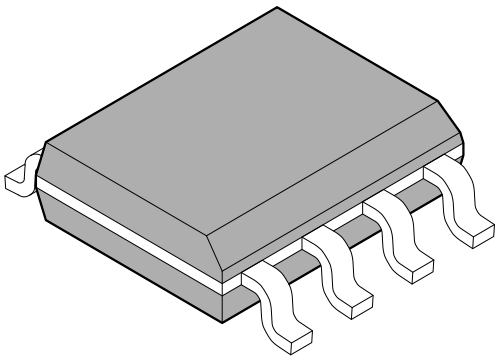
Part number	Package	Shipping form	Minimum shipping quantity
MS85RC1MLYPNF-G-BDE1	8-pin, plastic SOP	Tube	—*
MS85RC1MLYPNF-G-BDERE1	8-pin, plastic SOP	Embossed Carrier tape	1500
MS85RC1MLYPN-G-AME1	8-pin, plastic DFN	Tray	—*
MS85RC1MLYPN-G-AMEWE1	8-pin, plastic DFN	Embossed Carrier tape	1500

*: Please contact our sales office about minimum shipping quantity.

■ PACKAGE DIMENSION

(1) MS85RC1MLYPNF-G-BDE1/MS85RC1MLYPNF-G-BDERE1

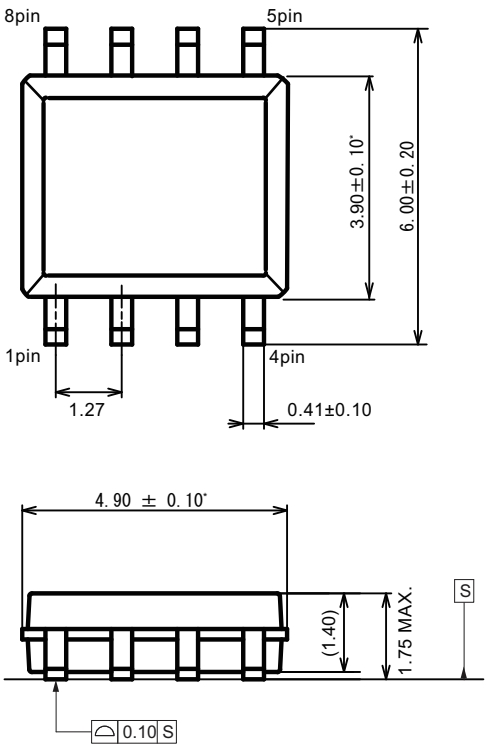
8-pin plastic SOP(150mil)

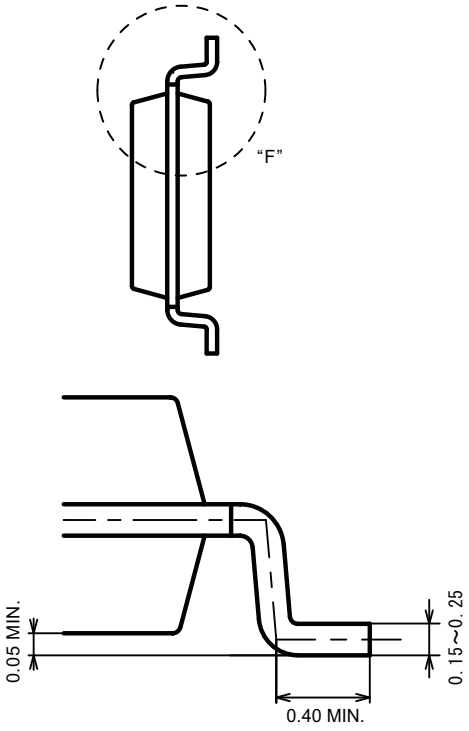


Lead pitch	1.27mm
Package width x Package length	3.90mm x 4.90mm
Lead shape	Gullwing
Sealing method	Plastic mold
Mounting height	1.75mm MAX.

8-pin plastic SOP

Note *: These dimension do not include resin protrution.
Pins width do not include tie bar cutting remaindar.

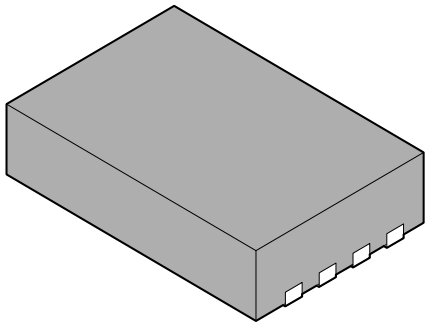




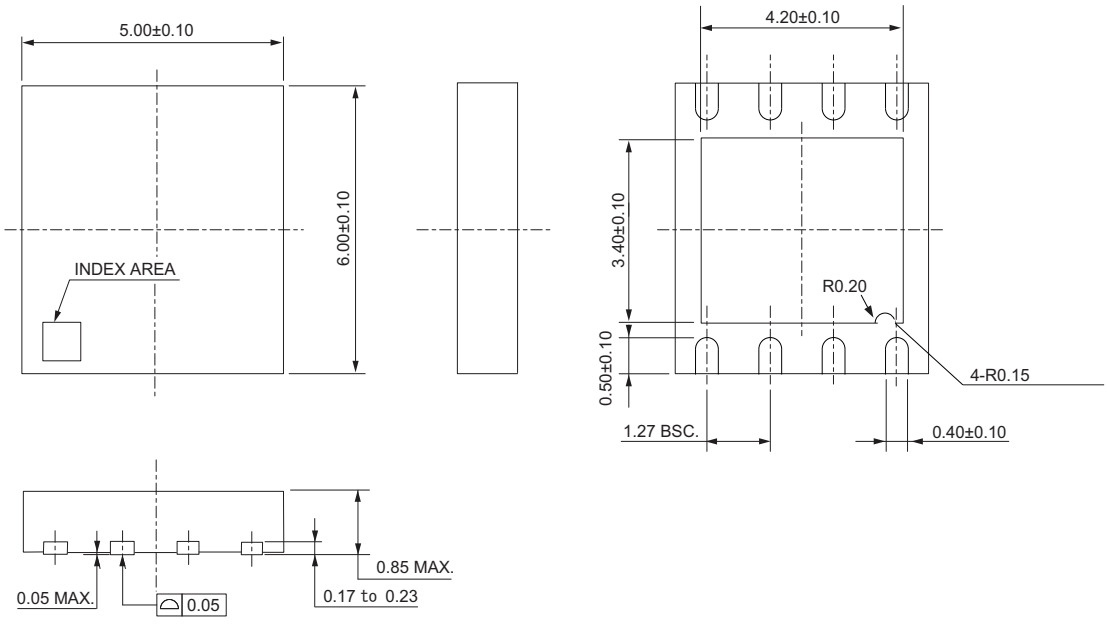
Details of "F"part

Dimension in mm

(2) MS85RC1MLYPN-G-AME1/MS85RC1MLYPN-G-AMEWE1

8-pin plastic DFN		
	Lead pitch	1.27 mm
	Package width x Package length	5.00 mm × 6.00 mm
	Sealing method	Plastic mold
	Mounting height	0.85 mm MAX

8-pin plastic DFN

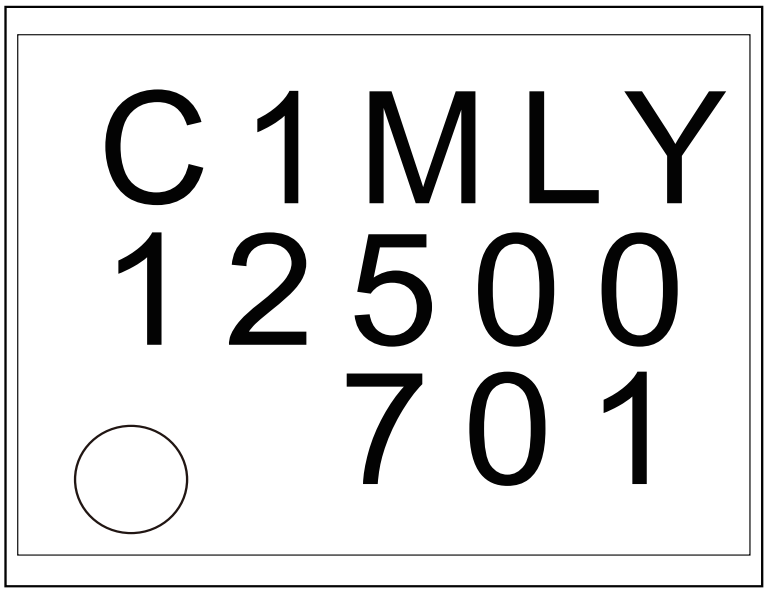


Dimensions in mm.

■ MARKING (Example)

(1) MS85RC1MLYPNF-G-BDE1/MS85RC1MLYPNF-G-BDERE1

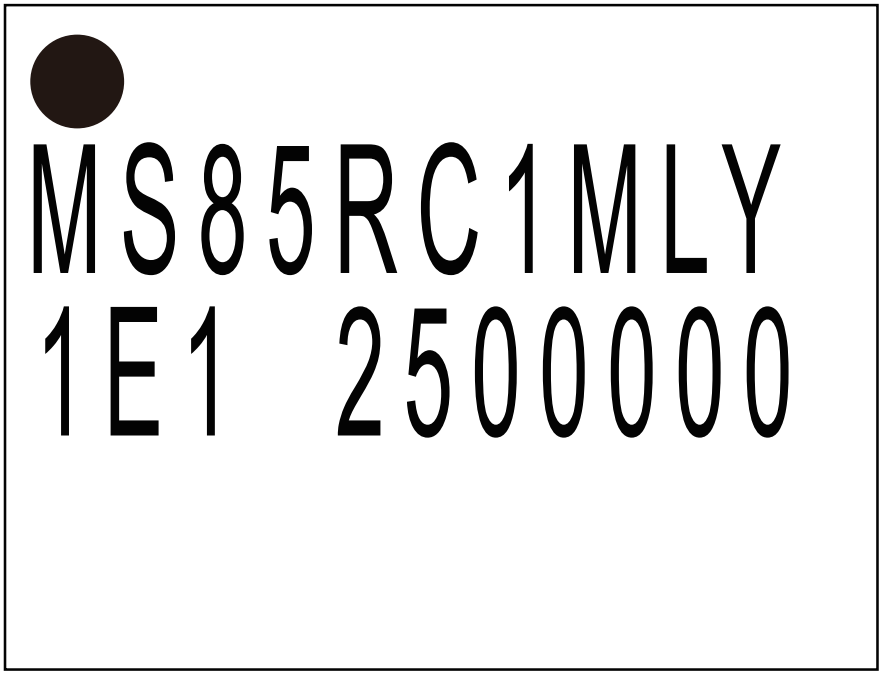
[MS85RC1MLYPNF-G-BDE1]
[MS85RC1MLYPNF-G-BDERE1]



C1MLY: Product name
12500 : 1(CS code) + 2500(Year and Week code)
701 : Trace code

(2) MS85RC1MLYPN-G-AME1/MS85RC1MLYPN-G-AMEWE1

[MS85RC1MLYPN-G-AME1]
[MS85RC1MLYPN-G-AMEWE1]



MS85RC1MLY: Product name
1E1 : 1(CS code) + E1(Lead free code)
2500000 : 2500(Year and Week code) + 000(Trace code)

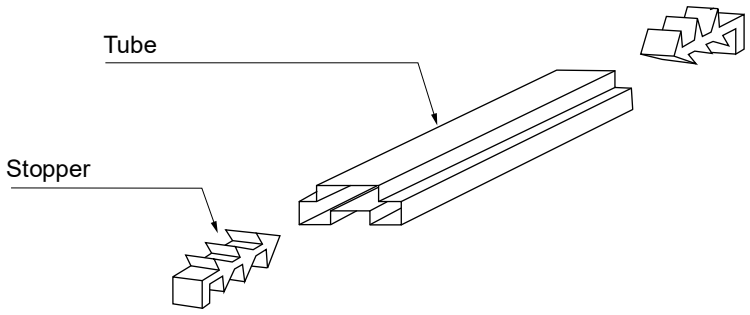
■ PACKING INFORMATION

(1) MS85RC1MLYPNF-G-BDE1/MS85RC1MLYPNF-G-BDERE1

1. Tube (MS85RC1MLYPNF-G-BDE1)

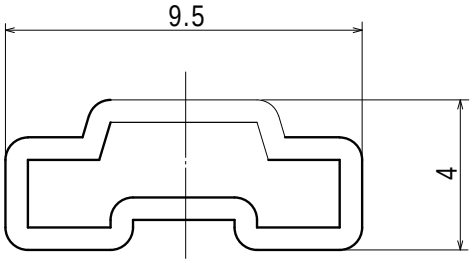
1.1 Tube Dimensions

• Tube/stopper shape (example)



• **Tube cross-sections** and Maximum quantity

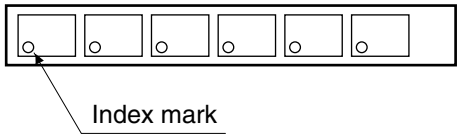
Maximum quantity		
pcs/tube(500mm)	pcs/inner box	pcs/outer box
85	4,250	17,000



No heat resistance.
Package should not be baked by using tube.

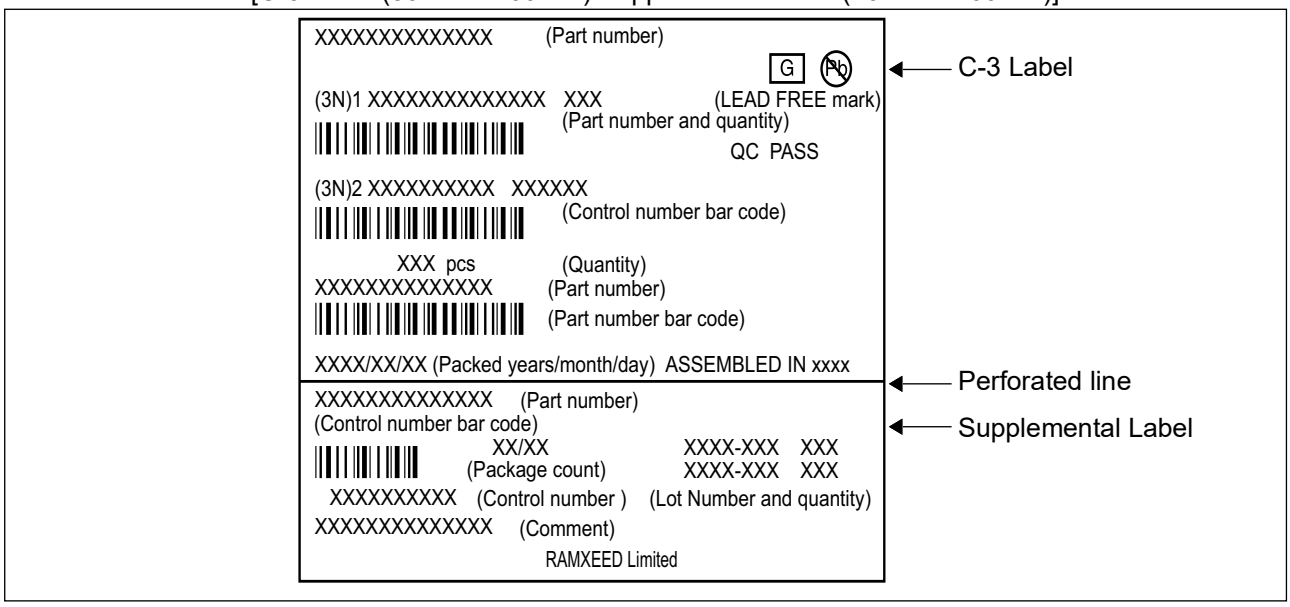
(Dimensions in mm)

• **Direction of index in tube**



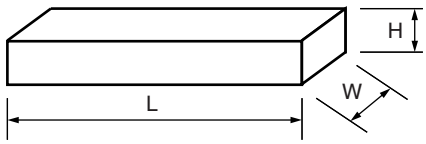
1.2 Product label indicators (example)

Label I: Label on Inner box/Moisture Barrier Bag/ (It sticks it on the reel for the emboss taping)
[C-3 Label (50mm × 100mm) Supplemental Label (20mm × 100mm)]



1.3 Dimensions for Containers

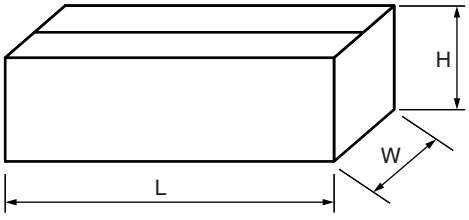
(1) Dimensions for inner box



L	W	H
540	125	75

(Dimensions in mm)

(2) Dimensions for outer box



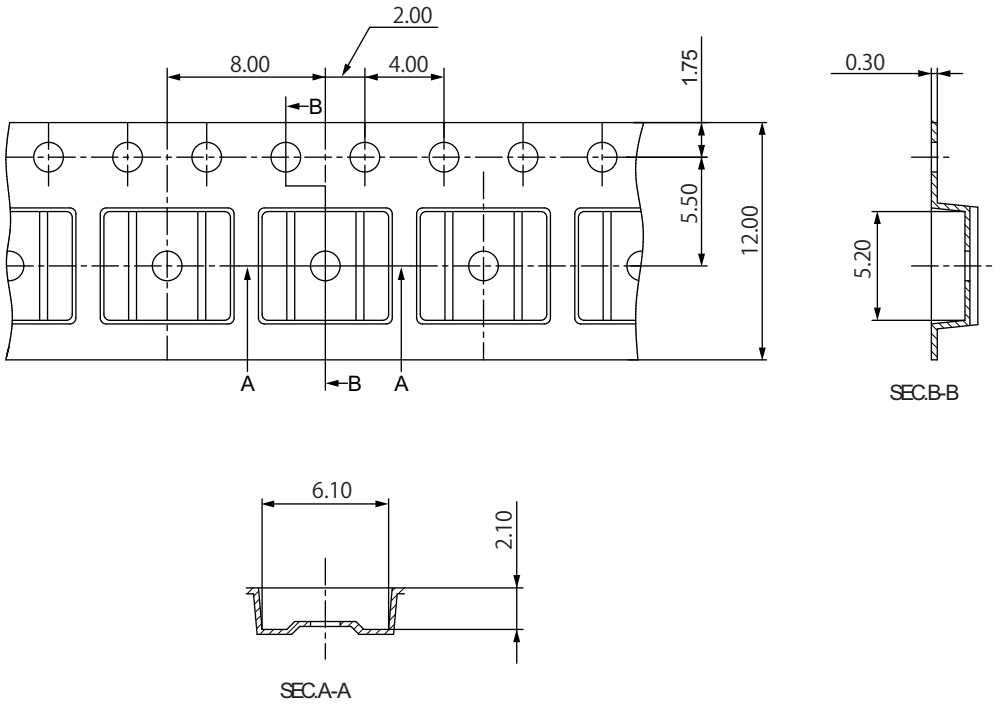
L	W	H
565	270	180

(Dimensions in mm)

2. Emboss Tape (MS85RC1MLYPNF-G-BDERE1)

2.1 Tape Dimensions (not drawn to scale) (8-pin plastic SOP)

Maximum storage capacity		
pcs/reel(Φ254mm)	pcs/inner box	pcs/outer box
1500	1500 (1 pack/inner box)	9000 (6 inner boxes/outer box:Max)

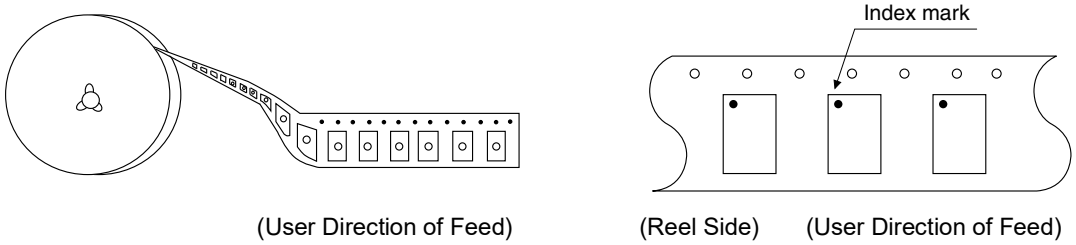


(Dimensions in mm)

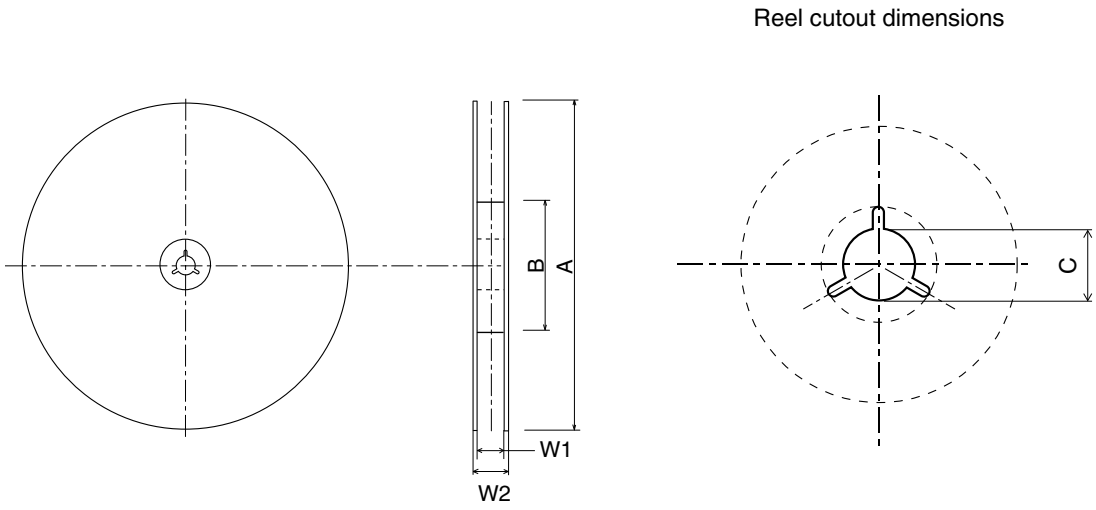
Heat proof temperature : No heat resistance.
Package should not be baked by using tape and reel.

2.2 IC orientation

• example



2.3 Reel dimensions

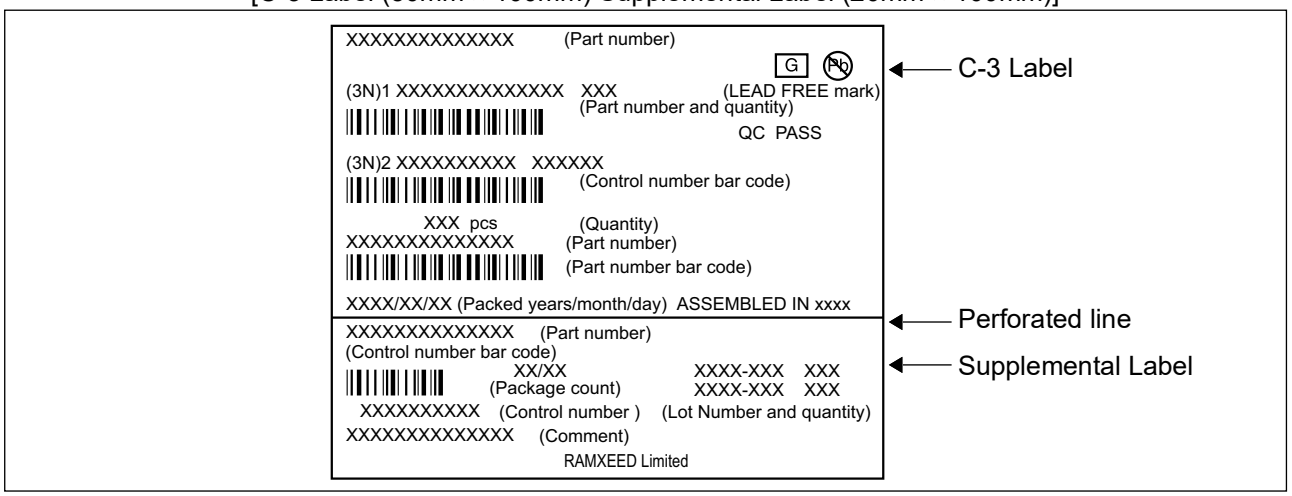


Dimensions in mm

A	B	C	W1	W2
254	100	13	13.5	17.5

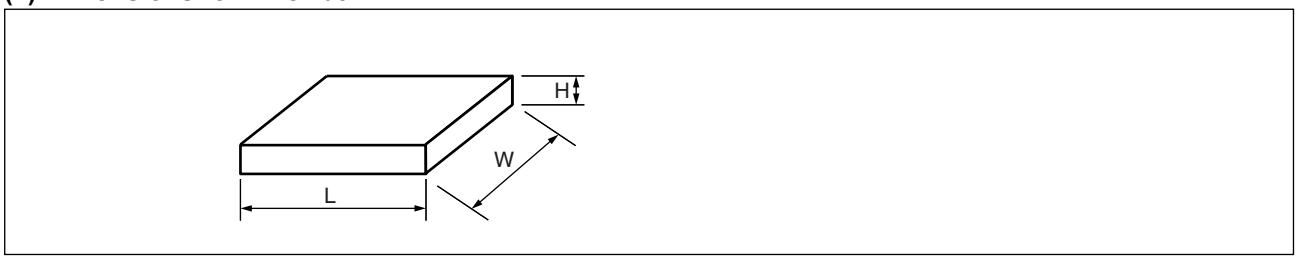
2.4 Product label indicators (examples)

Label I: Label on Inner box/Moisture Barrier Bag/ (It sticks it on the reel for the emboss taping)
[C-3 Label (50mm × 100mm) Supplemental Label (20mm × 100mm)]



2.5 Dimensions for Containers

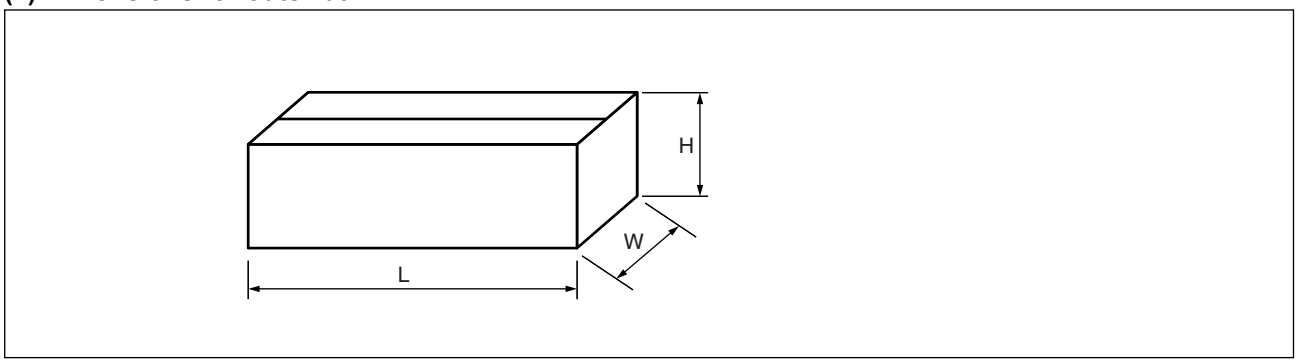
(1) Dimensions for inner box



L	W	H
265	260	50

(Dimensions in mm)

(2) Dimensions for outer box



L	W	H
565	270	180

(Dimensions in mm)

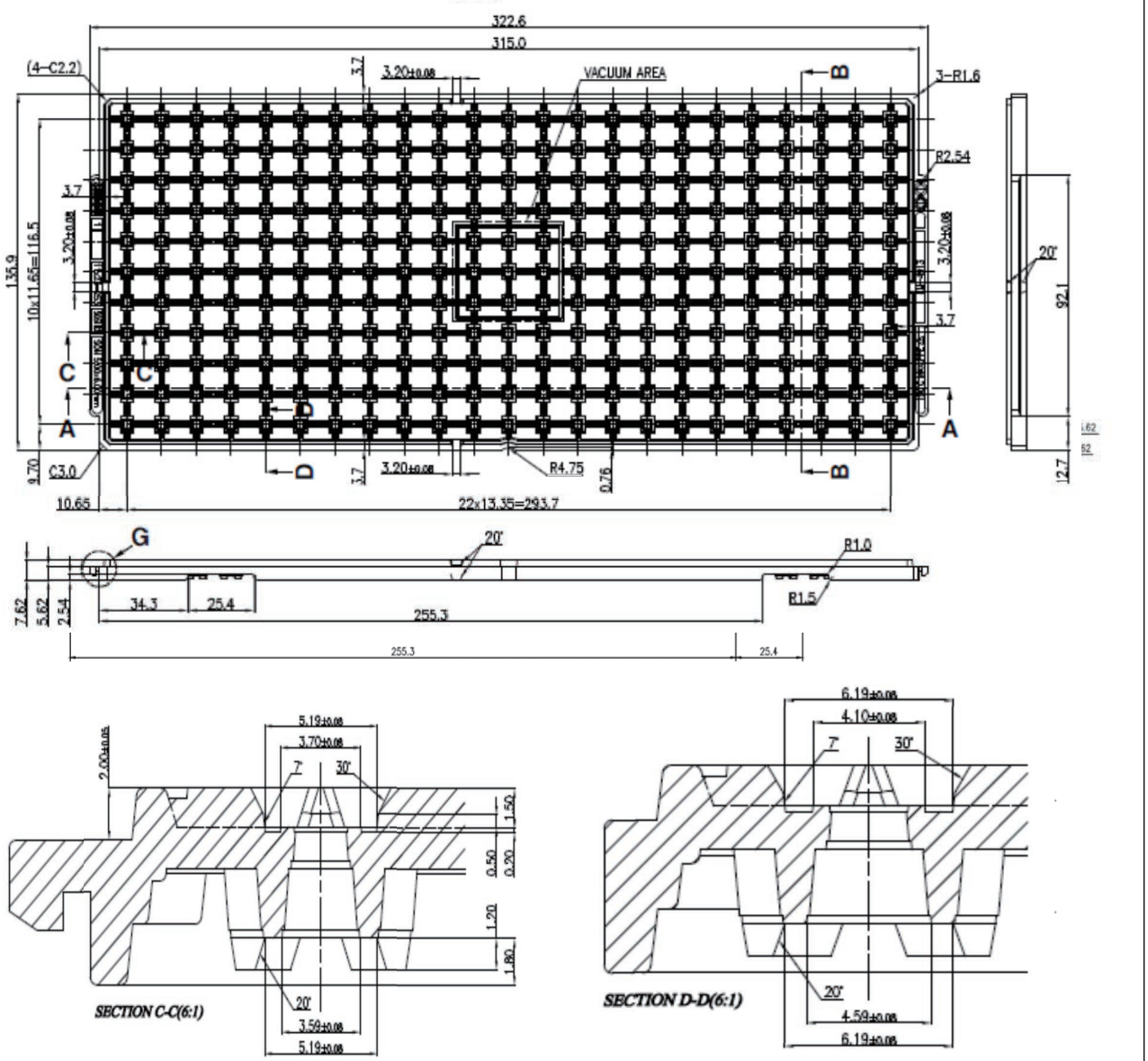
(2) MS85RC1MLYPN-G-AME1/MS85RC1MLYPN-G-AMEWE1

1. Tray (MS85RC1MLYPN-G-AME1)

1.1 Tray Dimensions

DFN8

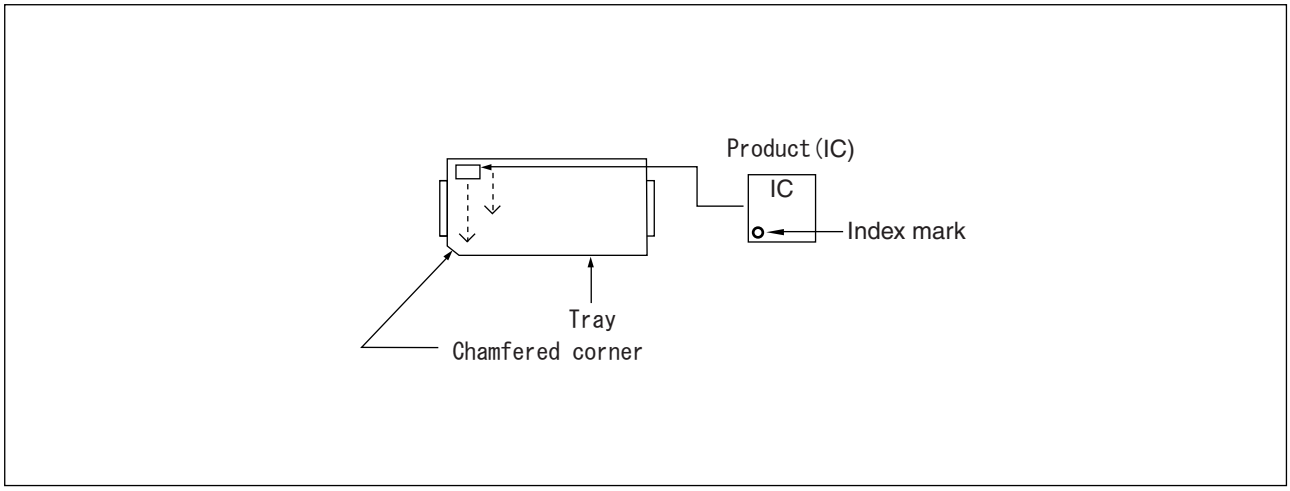
Maximum storage capacity		
pcs/tray	pcs/inner box	pcs/outer box
253	2024	8096



(Dimensions in mm)

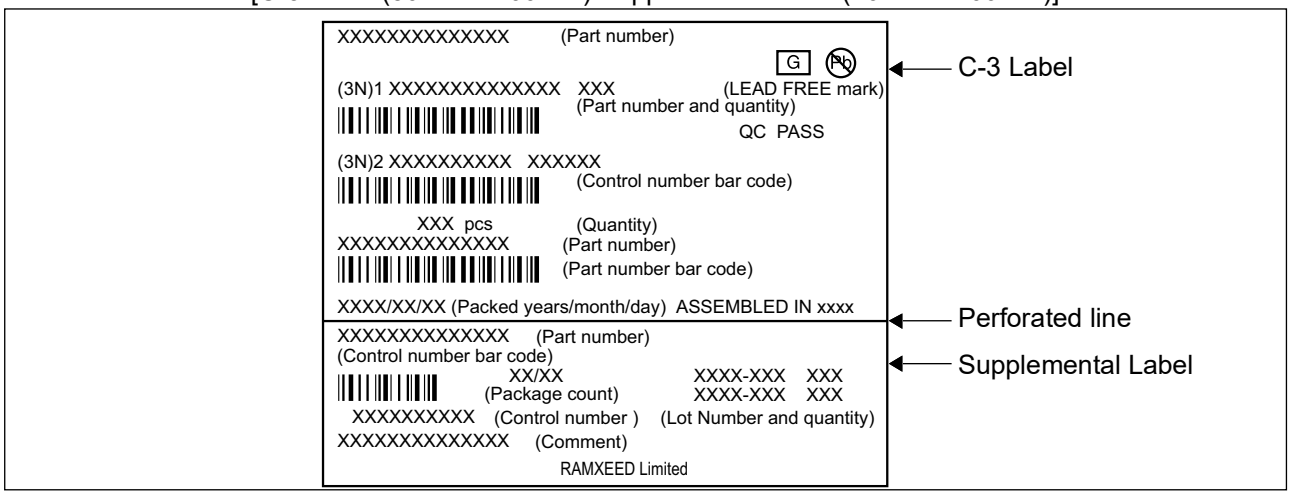
Heat proof temperature : 150 °C Max

1.2 IC orientation



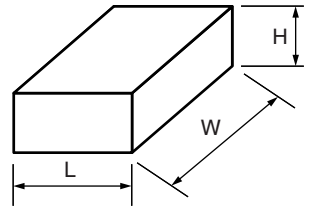
1.3 Product label indicators(example)

Label I: Label on Inner box/Moisture Barrier Bag/ (It sticks it on the reel for the emboss taping)
[C-3 Label (50mm × 100mm) Supplemental Label (20mm × 100mm)]



1.4 Dimensions for Containers

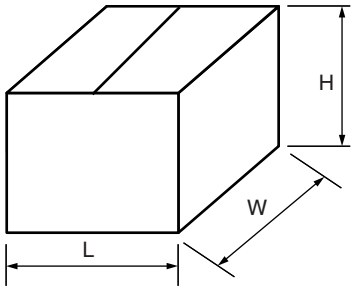
(1) Dimensions for inner box



L	W	H
165	360	75

(Dimensions in mm)

(2) Dimensions for outer box



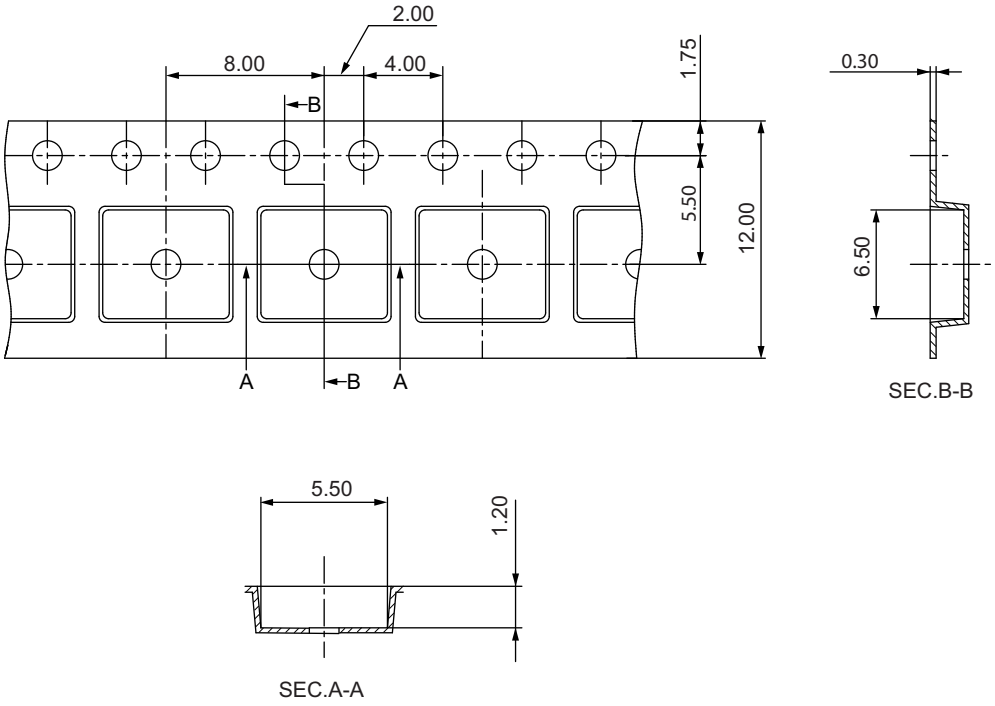
L	W	H
355	385	195

(Dimensions in mm)

2. Emboss Tape (MS85RC1MLYPN-G-AMEWE1)

2.1 Tape Dimensions (not drawn to scale)(8-pin plastic DFN 5mm × 6mm)

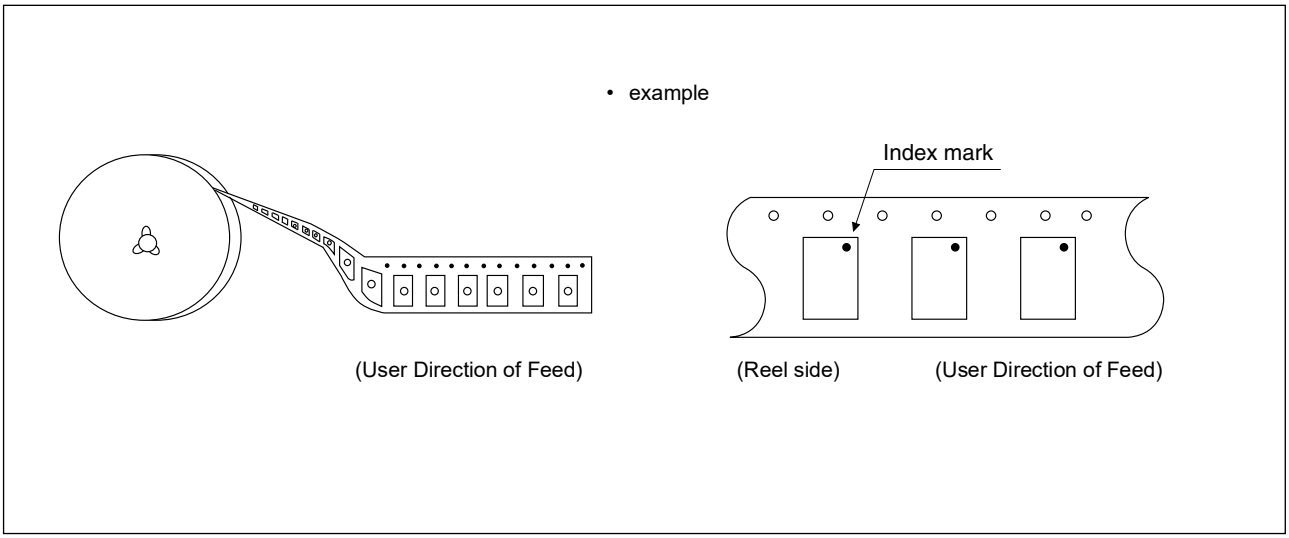
Maximum storage capacity		
pcs/reel(Φ254mm)	pcs/inner box	pcs/outer box
1500	1500 (1 pack/inner box)	9000 (6 inner boxes/outer box:Max)



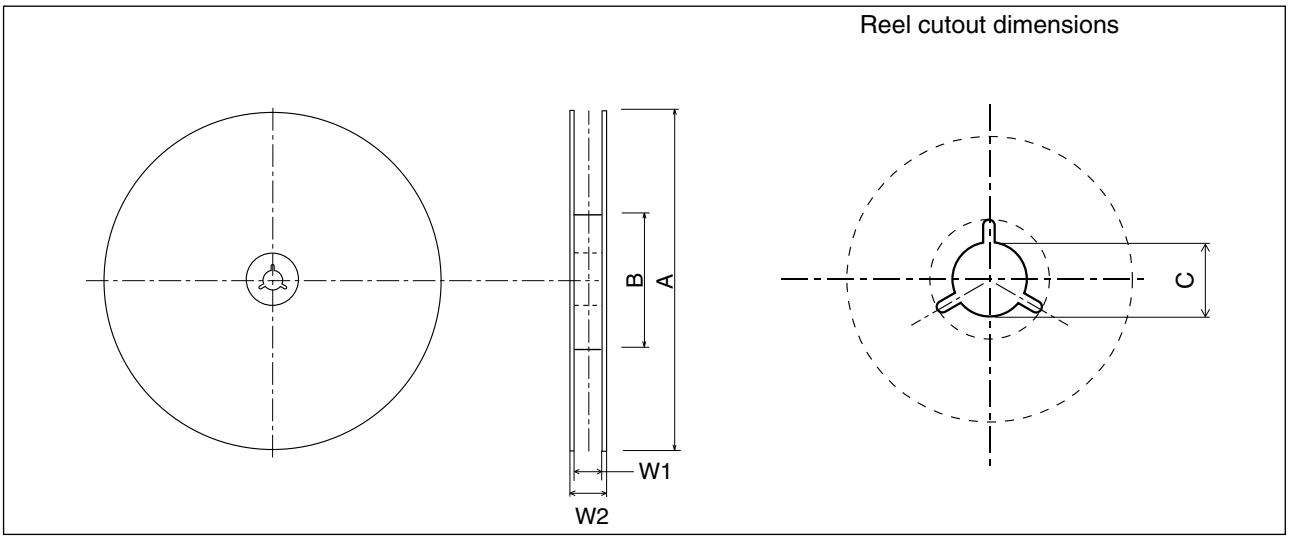
(Dimensions in mm)

Heat proof temperature : No heat resistance.
Package should not be baked by using tape and reel.

2.2 IC orientation



2.3 Reel dimensions

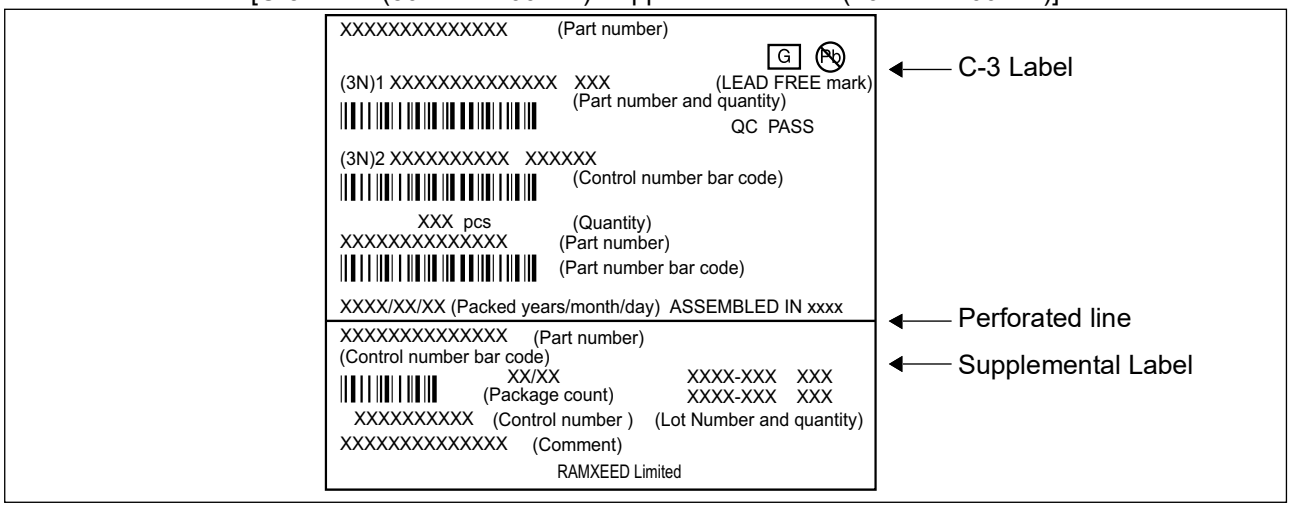


Dimensions in mm

A	B	C	W1	W2
254	100	13	13.5	17.5

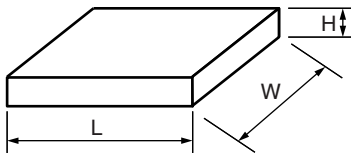
2.4 Product label indicators (example)

Label I: Label on Inner box/Moisture Barrier Bag/ (It sticks it on the reel for the emboss taping)
[C-3 Label (50mm × 100mm) Supplemental Label (20mm × 100mm)]



2.5 Dimensions for Containers

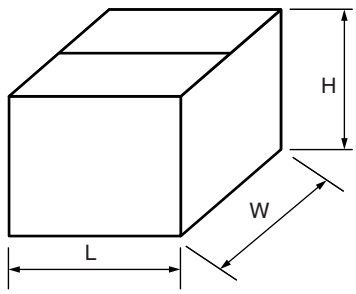
(1) Dimensions for inner box



L	W	H
265	260	50

(Dimensions in mm)

(2) Dimensions for outer box



L	W	H
565	270	180

(Dimensions in mm)

RAMXEED LIMITED
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Kohoku-ku, Yokohama, Kanagawa 222-0033, Japan
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