

To : _____

SPECIFICATIONS

Product Type _____ Dual Band Power Amplifier MMIC for 2.4GHz & 5GHz W-LAN _____

Model No. _____ **IRM046U7** _____

This specifications contains 27 pages including the cover and appendix.
If you have any objections, please contact us before issuing purchasing order.

CUSTOMERS ACCEPTANCE

DATE : _____

BY : _____

PRESENTED BY :

BY : _____

T. Ohno
Division Deputy General Manager

REVIEWED BY : _____ PREPARED BY : _____

Product Development Dept. II
Analog IC Division
Integrated Circuits Group
SHARP CORPORATION

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The products covered herein are designed and manufactured for the following application areas. When using the products covered herein for the equipment listed in Paragraph , even for the following application areas, be sure to observe the precautions given in Paragraph . Never use the products for the equipment listed in Paragraph .

- Office electronics
- Instrumentation and measuring equipment
- Machine tools
- Audiovisual equipment
- Home appliances
- Communication equipment other than for trunk lines

Those contemplating using the products covered herein for the following equipment which demands high reliability, should first contact a sales representative of the company and then accept responsibility for incorporating into the design fail-safe operation, redundancy, and other appropriate measures for ensuring reliability and safety of the equipment and the overall system.

- Control and safety devices for airplanes, trains, automobiles, and other transportation equipment
- Mainframe computers
- Traffic control systems
- Gas leak detectors and automatic cutoff devices
- Rescue and security equipment
- Other safety devices and safety equipment, etc.

Do not use the products covered herein for the following equipment, which demands extremely high performance in terms of functionality, reliability, or accuracy.

- Aerospace equipment
- Communications equipment for trunk lines
- Control equipment for the nuclear power industry
- Medical equipment related to life support, etc.

Please direct all queries and comments regarding the interpretation of the above three paragraphs to a sales representative of the company.

Please direct all queries regarding the products covered herein to a sales representative of the company.

[IRM046U7]

CONTENTS

	Page
1. Description	2
2. Pin Connections and Names	3
3. Absolute Maximum Ratings	3
4. Electrical Characteristics	4
5. Application Information	6
6. Package outline	12

REFERENCE

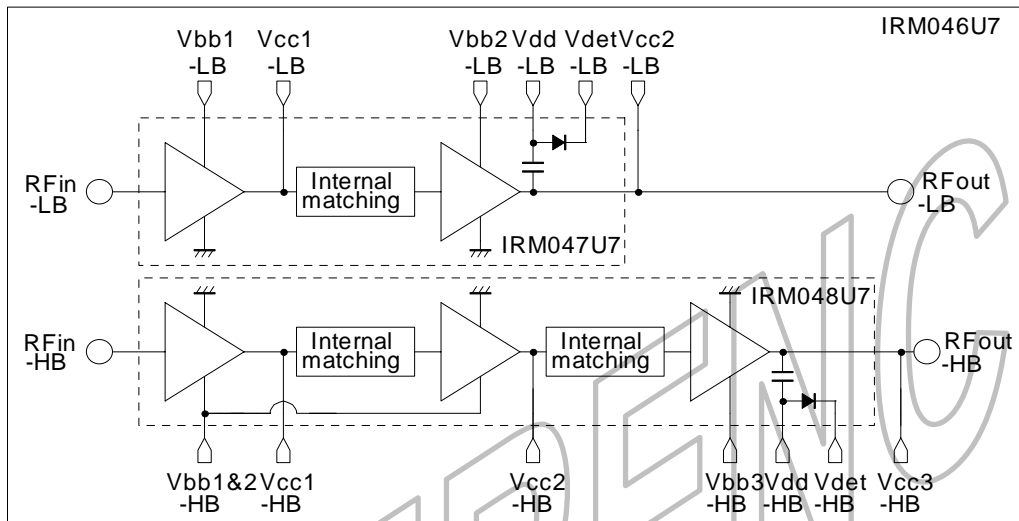
1. Description

(1) Functions

The IRM046U7 is a dual-band power amplifier GaAs MMIC designed for 2.4 GHz & 5 GHz W-LAN operating at 3.3 V supply.

The MMIC consists of 2 amplifiers, one is three-stage amplifier for 5GHz (IRM048U7) and the other is two-stage amplifier for 2.4 GHz (IRM047U7).

Each amplifier consists of npn HBTs (Hetero-junction Bipolar Transistors), detector diode and matching circuitry, except input and output matching circuitry.



(2) Features

- RoHS Directive Compliance
- Single Positive Supply Operation
- Power Down Mode(Very Low Leak Current)
- High Efficiency, Low Distortion
- Low Idle Current
- Small and low profile plastic package (HQFN24, 0.5mm pitch)
- Not designed or rated as Radiation hardened
- Power Detector embedded

(3) Applications

- W-LAN(IEEE.802.11a/b/g, 802.11a/g, 802.11a/b)
- Driver Amplifier for FWA system (LMDS, MMDS, PCS)
- Other linear wireless communication system around 2GHz band.

(*). This Data sheet describes specifications only for W-LAN application.

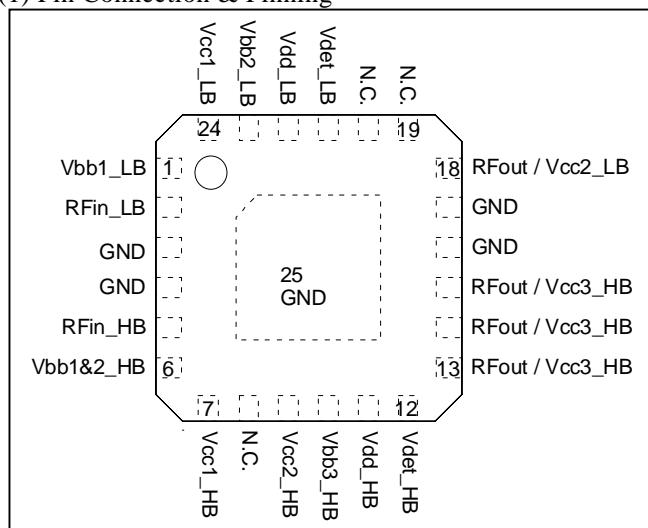
Please ask the application note for other applications.

(4) Handle with care

- ESD(Electro-Static Discharge) sensitive.
The ESD strength of these IC's is 300V minimum for CDM(Charged Device Model), and 20V minimum for HBM(Human Body Model) (100pF, 1.5kΩ).
- Gallium (Ga) and Arsenic (As) specified as poisonous chemicals by law. For the prevention of a hazard, do not burn, destroy, or process chemically to make them as gas or powder.
When the product is disposed, please follow the related regulation and do not mix this with general industrial waste or household waste.

2. Pin Connection and Names

(1) Pin Connection & Pinning



(2) Pinning

Pin #	Pin name	Pin #	Pin name
(1)	Vbb1-LB	(13)	RFout / Vcc3-HB
(2)	RFin-LB	(14)	RFout / Vcc3-HB
(3)	GND	(15)	RFout / Vcc3-HB
(4)	GND	(16)	GND
(5)	RFin-HB	(17)	GND
(6)	Vbb1&2-HB	(18)	RFout / Vcc2-LB
(7)	Vcc1-HB	(19)	N.C.
(8)	N.C.	(20)	N.C.
(9)	Vcc2-HB	(21)	Vdet-LB
(10)	Vbb3-HB	(22)	Vdd-LB
(11)	Vdd-HB	(23)	Vbb2-LB
(12)	Vdet-HB	(24)	Vcc1-LB
		(25)	GND

(3) Pin explanation

Pin #	Pin name	explanation	Pin #	Pin name	explanation
(2)	RFin-LB	RF input pin for 2.4GHz band PA	(5)	RFin-HB	RF input pin for 5GHz band PA
(1)	Vbb1-LB	DC control pin for 2.4GHz band PA	(6)	Vbb1&2-HB	DC control pin for 5GHz band PA
(23)	Vbb2-LB		(10)	Vbb3-HB	
(24)	Vcc1-LB	DC supply pin for 2.4GHz band PA	(7)	Vcc1-HB	DC supply pin for 5GHz band PA
			(9)	Vcc2-HB	
(18)	RFout / Vcc2-LB	DC supply and RF output pin for 2.4GHz band PA	(13)	RFout / Vcc3-HB	DC supply and RF output pin for 5GHz band PA
			(14)		
			(15)		
(22)	Vdd-LB	DC supply pin for power detector of 2.4GHz band PA	(11)	Vdd-HB	DC supply pin for power detector of 5GHz band PA
(21)	Vdet-LB	DC voltage output pin for power detector of 2.4GHz band PA	(12)	Vdet-HB	DC voltage output pin for power detector of 5GHz band PA
(3),(4) (16),(17) (25)	GND	GND pin	(8) (19) (20)	N.C.	Not used in PKG. Recommended to be connected to GND pin

3. Absolute Maximum Ratings and Recommended Operating Conditions

Parameter	Symbol	Condition	Rating	Unit
DC supply voltage	Vcc	Tc_opr = 25 °C	6	V
DC control voltage	Vbb		3	V
Input RF power	Pin		6	dBm
Peak supply current	Icc		0.4	A
Total DC power dissipation	Pt		1	W
Storage temperature range	Tstg		-35 ~ +120	°C
Operating temperature range (Case surface)	Tc_opr		-25 ~ +85	°C

Recommended Operating Conditions

Parameter	Symbol	Condition	Rating			Unit
			Min.	Typ.	Max.	
DC supply voltage	Vcc		2.7	3.3	3.6 (*1)	V
DC control voltage	Vbb			2.8		V

(*1) This PA could operate over 3.6V for high output operation, please ask application note.

4. Electrical Characteristics

(1) Low Band Characteristics

The performance is guaranteed only with the test jig which has the external output circuit in it, specified by Sharp Corporation. Test conditions are $T_{c_opr} = 25\text{ }^{\circ}\text{C}$, $V_{cc} = 3.3\text{ V}$, $V_{bb} = 2.8\text{ V}$, $Z_S = 50\text{ }\Omega$, $Z_L = 50\text{ }\Omega$, if otherwise noted.

 $T_{c_opr} = 25\text{ }^{\circ}\text{C}$

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit	
Frequency	Freq		2.4	2.45	2.5	GHz	
Leak Current	Icc_leak	$V_{cc} = 6\text{ V}$, $V_{bb} = 0\text{ V}$, No RF Input		0.02	0.5	μA	
Idle Current	Icc_idle	$V_{cc} = 3.3\text{ V}$, $V_{bb} = 2.8\text{ V}$, No RF Input		55	85	mA	
Sine Wave	Saturated Power	$V_{cc} = 3.3\text{ V}$, $V_{bb} = 2.8\text{ V}$	26	28		dBm	
	Power Gain	$V_{cc} = 3.3\text{ V}$, $V_{bb} = 2.8\text{ V}$, Pout = 18 dBm	27	30		dB	
	Collector Current			105	140	mA	
	Control Current		Ibb		5	8	mA
	Maximum Load mismatch (*2)	-	$V_{cc} = 3.6\text{ V}$, $V_{bb} = 2.8\text{ V}$ Pin = -10 dBm(Sine Wave) VSWR = 5, all phases Freq = 2.40 ~ 2.50 GHz	No permanent degradation			
	Load stability (*2)	-	$V_{cc} = 2.7 \sim 3.6\text{ V}$, $V_{bb} = 2.8\text{ V}$ Pin = -10 dBm(Sine Wave) VSWR = 5, all phases Freq = 2.40 ~ 2.50 GHz	Spurious < -60 dBc			

The value shown below is a reference value and the performance is got only with the test jig which has the external output circuit in it, specified by Sharp Corporation. Test conditions are $T_{c_opr} = 25\text{ }^{\circ}\text{C}$, $V_{cc} = 3.3\text{ V}$, $V_{bb} = 2.8\text{ V}$, $Z_S = 50\text{ }\Omega$, $Z_L = 50\text{ }\Omega$, if otherwise noted.

 $T_{c_opr} = 25\text{ }^{\circ}\text{C}$

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit	
IEEE802.11g	Power Gain	Gain_m		30		dB	
	Collector Current	Icc_m		105		mA	
	Control Current	Ibb_m		5		mA	
	Detector Bias Current	Idd_m		0.2		mA	
	Input VSWR	VSWRin_m	$V_{cc} = 3.3\text{ V}$, $V_{bb} = 2.8\text{ V}$, $V_{dd} = 2.8\text{ V}$ Pout = 18 dBm IEEE802.11g Input (OFDM 64QAM 54Mbps) Freq = 2.40 ~ 2.50 GHz		1.5		
	2nd Harmonics	2fo_m			-47		dBc
	3rd Harmonics	3fo_m			-45		dBc
	Adjacent Channel Power Rejection	ACPR1_m			-37		dBc
	Alt. Adjacent Channel Power Rejection	ACPR2_m			-51		dBc
	EVM	EVM			3 (*3)		%
Detector Voltage	Vdet			1.90		V	

(*2) guaranteed by design only

(*3) Corrected EVM : Calculated by below format.

$$\text{EVM}^2 = \text{EVM}(\text{meas})^2 - \text{EVM}(\text{SG})^2$$

(2) High Band Characteristics

The performance is guaranteed only with the test jig which has the external output circuit in it, specified by Sharp Corporation. Test conditions are $T_{c_opr} = 25\text{ }^{\circ}\text{C}$, $V_{cc} = 3.3\text{ V}$, $V_{bb} = 2.8\text{ V}$, $Z_S = 50\text{ }\Omega$, $Z_L = 50\text{ }\Omega$, if otherwise noted.

 $T_{c_opr} = 25\text{ }^{\circ}\text{C}$

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Frequency	Freq		4.9		5.9	GHz
Leak Current	Icc_leak	$V_{cc} = 6\text{ V}$, $V_{bb} = 0\text{ V}$, No RF Input		0.02	0.5	μA
Idle Current	Icc_idle	$V_{cc} = 3.3\text{ V}$, $V_{bb} = 2.8\text{ V}$, No RF Input		75	110	mA
Sine Wave	Saturated Power	$V_{cc} = 3.3\text{ V}$, $V_{bb} = 2.8\text{ V}$	25	27		dBm
	Power Gain	$V_{cc} = 3.3\text{ V}$, $V_{bb} = 2.8\text{ V}$, $P_{out} = 18\text{ dBm}$	22	25		dB
	Collector Current			140	180	mA
	Control Current			6.5	9.5	mA
	Maximum Load mismatch (*2)		-	No permanent degradation		
	Load stability (*2)	-	$V_{cc} = 2.7 \sim 3.6\text{ V}$, $V_{bb} = 2.8\text{ V}$ $P_{in} = -10\text{ dBm}$ (Sine Wave) VSWR = 5, all phases Freq = 4.90 ~ 5.90 GHz	Spurious < -60 dBc		

The value shown below is a reference value and the performance is got only with the test jig which has the external output circuit in it, specified by Sharp Corporation. Test conditions are $T_{c_opr} = 25\text{ }^{\circ}\text{C}$, $V_{cc} = 3.3\text{ V}$, $V_{bb} = 2.8\text{ V}$, $Z_S = 50\text{ }\Omega$, $Z_L = 50\text{ }\Omega$, if otherwise noted.

 $T_{c_opr} = 25\text{ }^{\circ}\text{C}$

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit	
IEEE802.11a	Power Gain	$V_{cc} = 3.3\text{ V}$, $V_{bb} = 2.8\text{ V}$, $V_{dd} = 2.8\text{ V}$ $P_{out} = 18\text{ dBm}$ IEEE802.11a Input (OFDM 64QAM 54Mbps) Freq = 4.90 ~ 5.90 GHz		25		dB	
	Collector Current			140		mA	
	Control Current			6.5		mA	
	Detector Bias Current			0.2		mA	
	Input VSWR				1.5		
	2nd Harmonics				-41		dBc
	3rd Harmonics				-38		dBc
	Adjacent Channel Power Rejection				-37		dBc
	Alt. Adjacent Channel Power Rejection				-51		dBc
	EVM				2 (*3)		%
Detector Voltage	Vdet		1.95		V		

(*2) guaranteed by design only

(*3) Corrected EVM : Calculated by below format.

$$EVM^2 = EVM(\text{meas})^2 - EVM(\text{SG})^2$$

5. Application Information
(1) Example of Evaluation Circuits

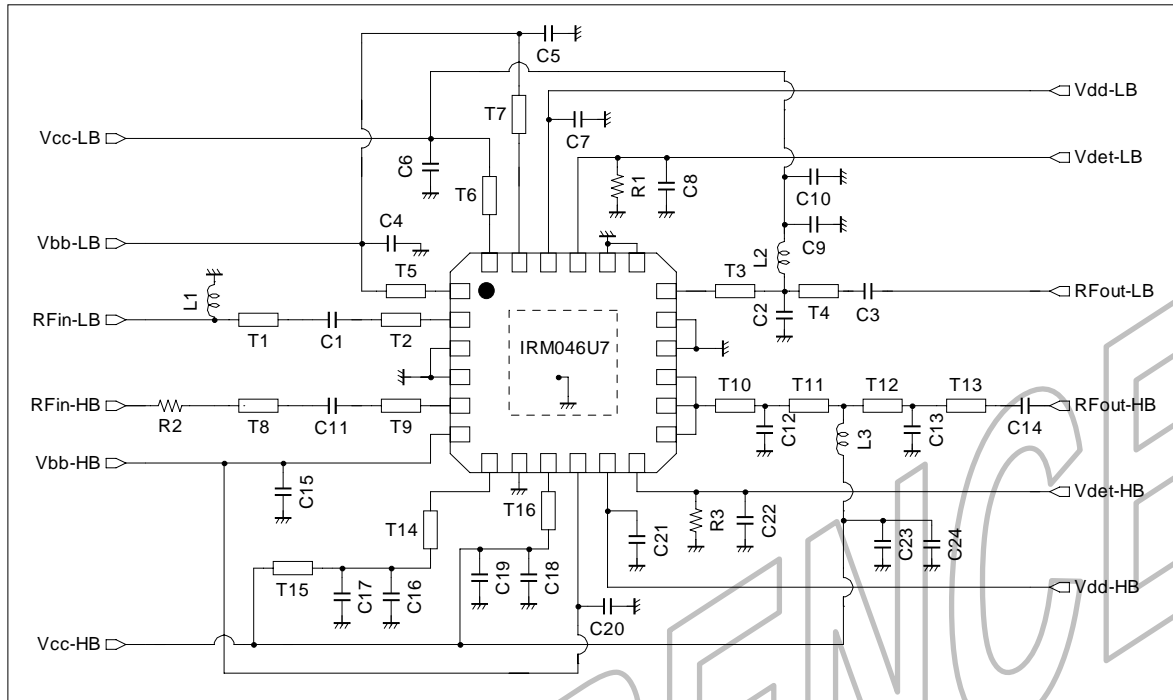
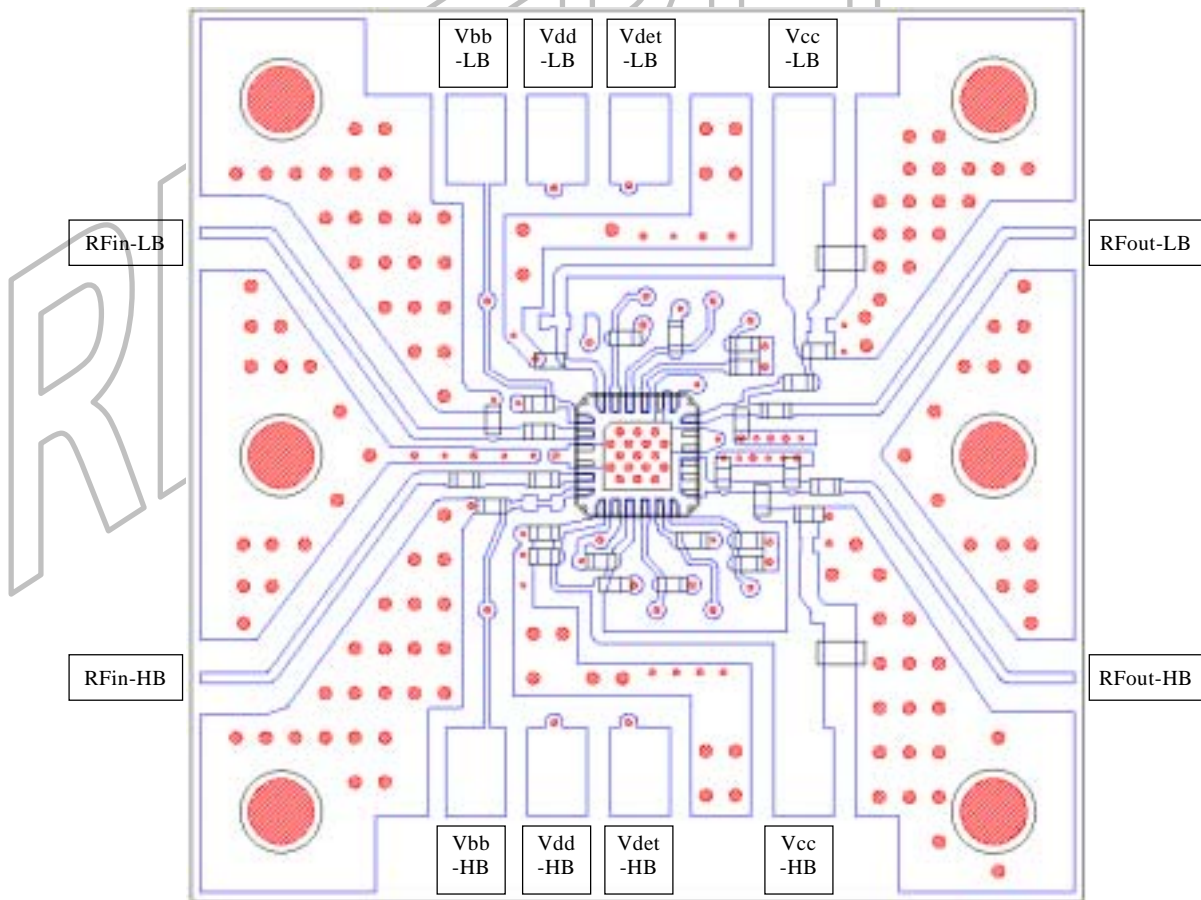


Figure 1. Sch ematic of Evaluation Circuit



Board Material : FR-4

Figure 2. Pattern Layout of Evaluation Circuit

Symbol	Value	Vendor	Parts Number
C1	4.5 pF	KYOCERA	CM05CH4R5B50A
C2	2.0 pF	KYOCERA	CM05CH2R0B50A
C3, C16, C18, C23	3.0 pF	KYOCERA	CM05CH3R0B50A
C4, C5, C6, C9, C15, C20	1000 pF	KYOCERA	CM05W5R102K50A
C7, C8, C17, C19, C21, C22	0.1 uF	KYOCERA	CM05B104K10A
C10, C24	1 uF	KYOCERA	CM105W5R105M10A
C11, C12	0.5 pF	KYOCERA	CM05CHR50B50A
C13	0.3 pF	KYOCERA	CM05CHR30B50A
C14	1.0 pF	KYOCERA	CM05CH1R0B50A
L1, L2	1.2 nH	TDK	MLK1005S1N2S
L3	8.2 nH	TDK	MLK1005S8N2D
R1, R3	10000 Ohm	ROHM	MCR MZSJ 103
R2	30 Ohm	ROHM	MCR MZSJ 300
T1	50 Ohm micro strip line		length = 0.6 mm
T2, T9, T10	50 Ohm micro strip line		length = 0.7 mm
T3	50 Ohm micro strip line		length = 1.5 mm
T4	50 Ohm micro strip line		length = 0.2 mm
T5, T14, T16	54 Ohm ~ 73 Ohm micro strip line		length = 1.0 mm
T6	54 Ohm ~ 73 Ohm micro strip line		length = 1.5 mm
T7, T15	54 Ohm ~ 73 Ohm micro strip line		length > 1.0 mm
T8	50 Ohm micro strip line		length = 0.8 mm
T11	50 Ohm micro strip line		length = 1.2 mm
T12	50 Ohm micro strip line		length = 1.0 mm
T13	50 Ohm micro strip line		length = 0.5 mm

Table 1. Parts List of Evaluation Circuits

(2) Electrical characteristics examples

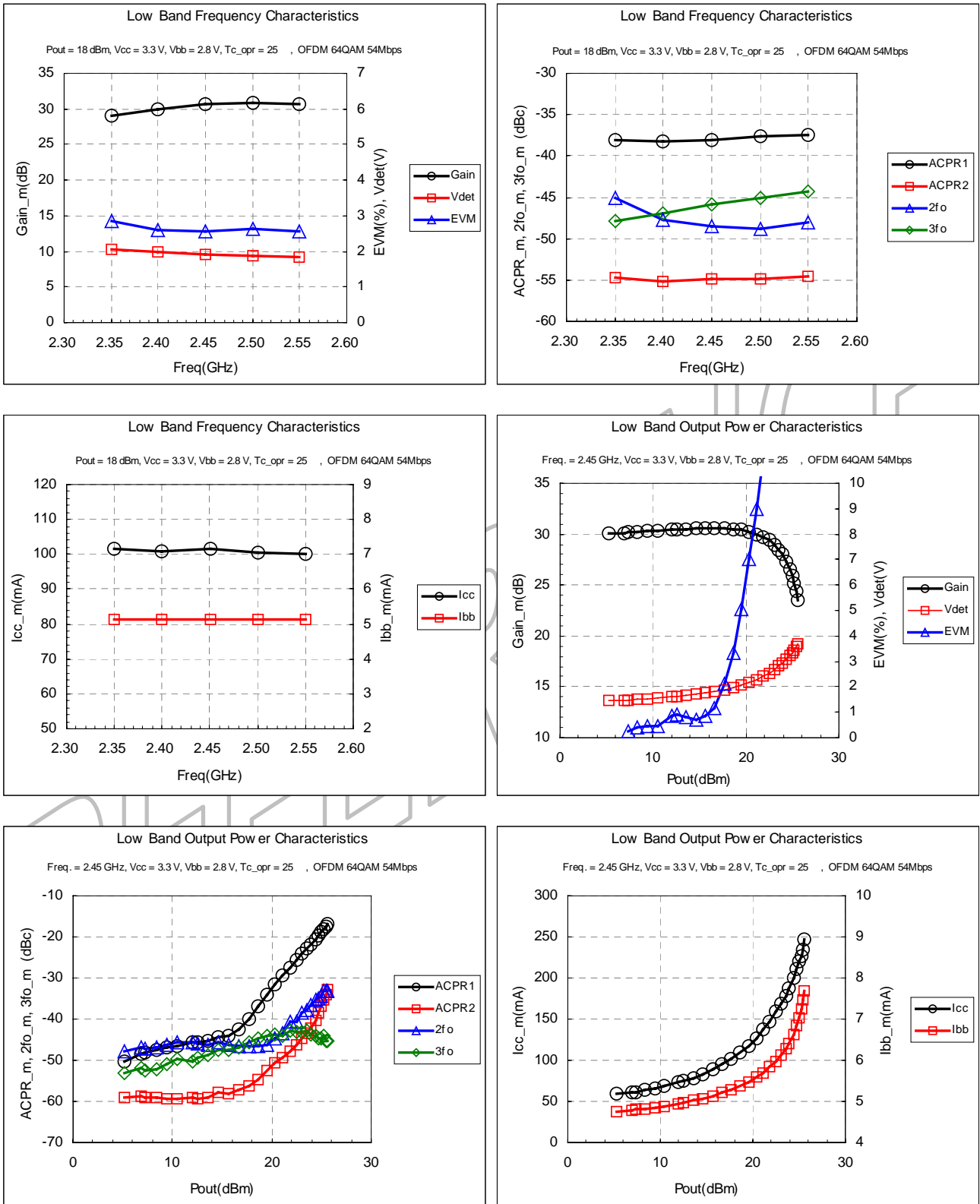


Figure 3. Low Band Amplifier Characteristics

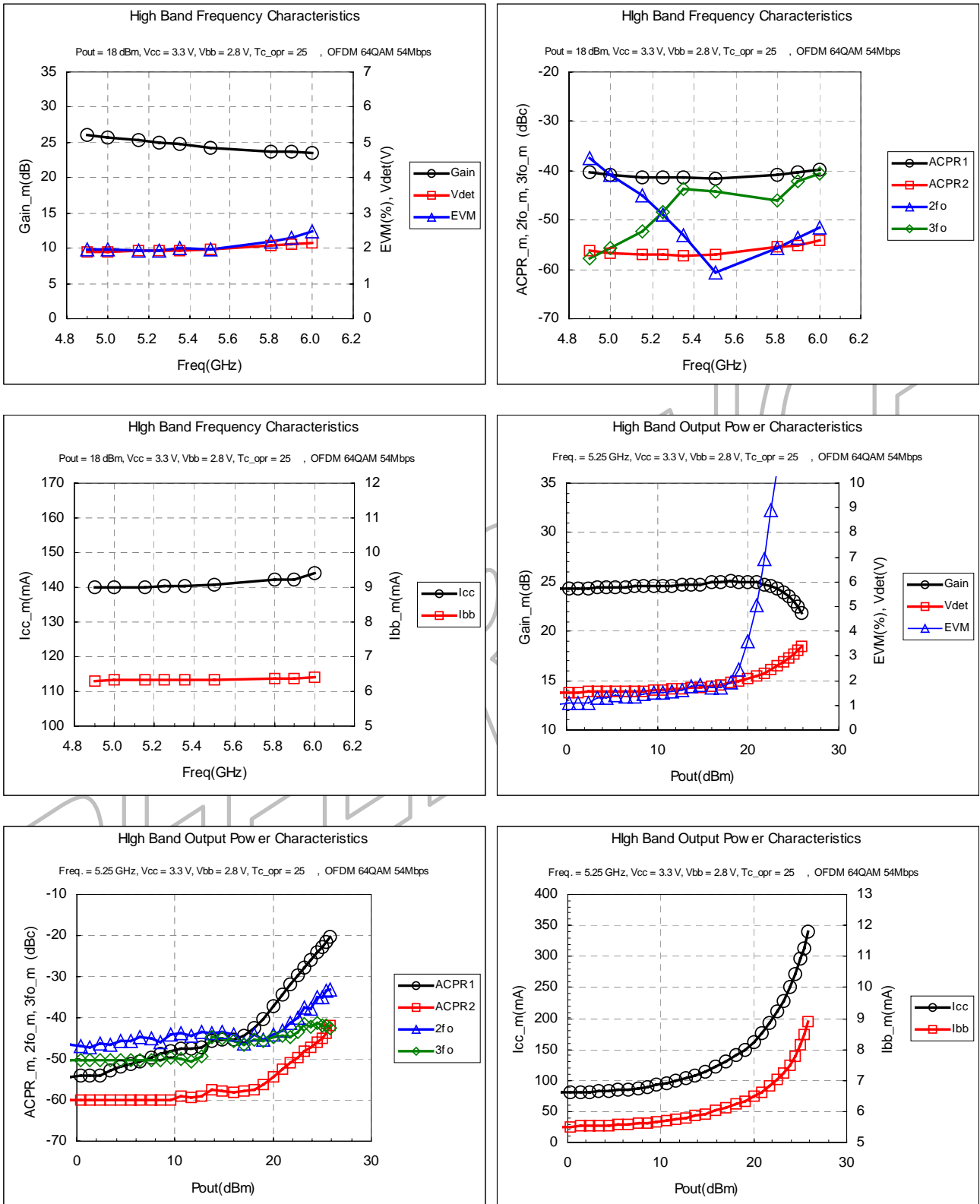


Figure 4. High Band Amplifier Characteristics

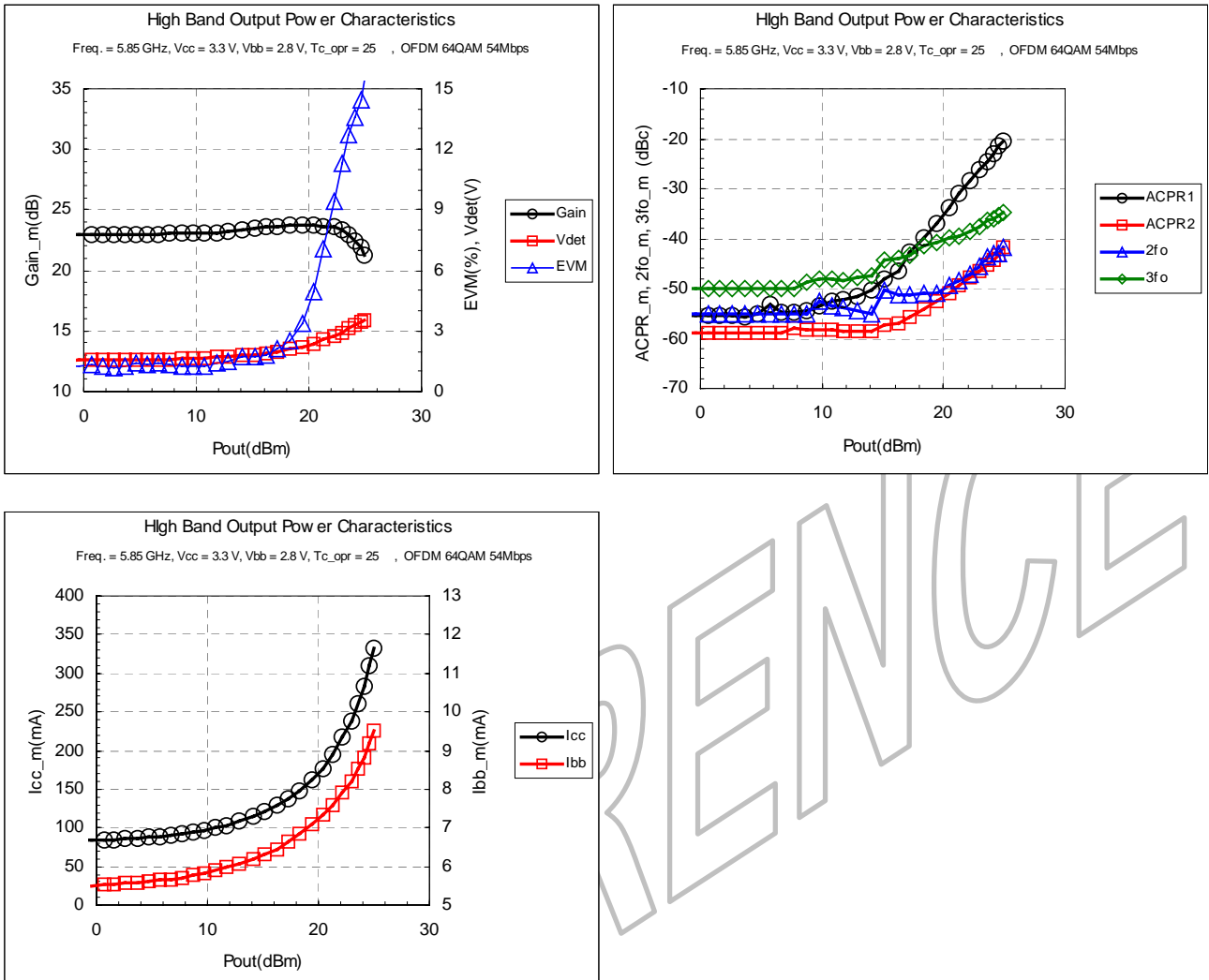


Figure 5. High Band Amplifier Characteristics(5.85 GHz)

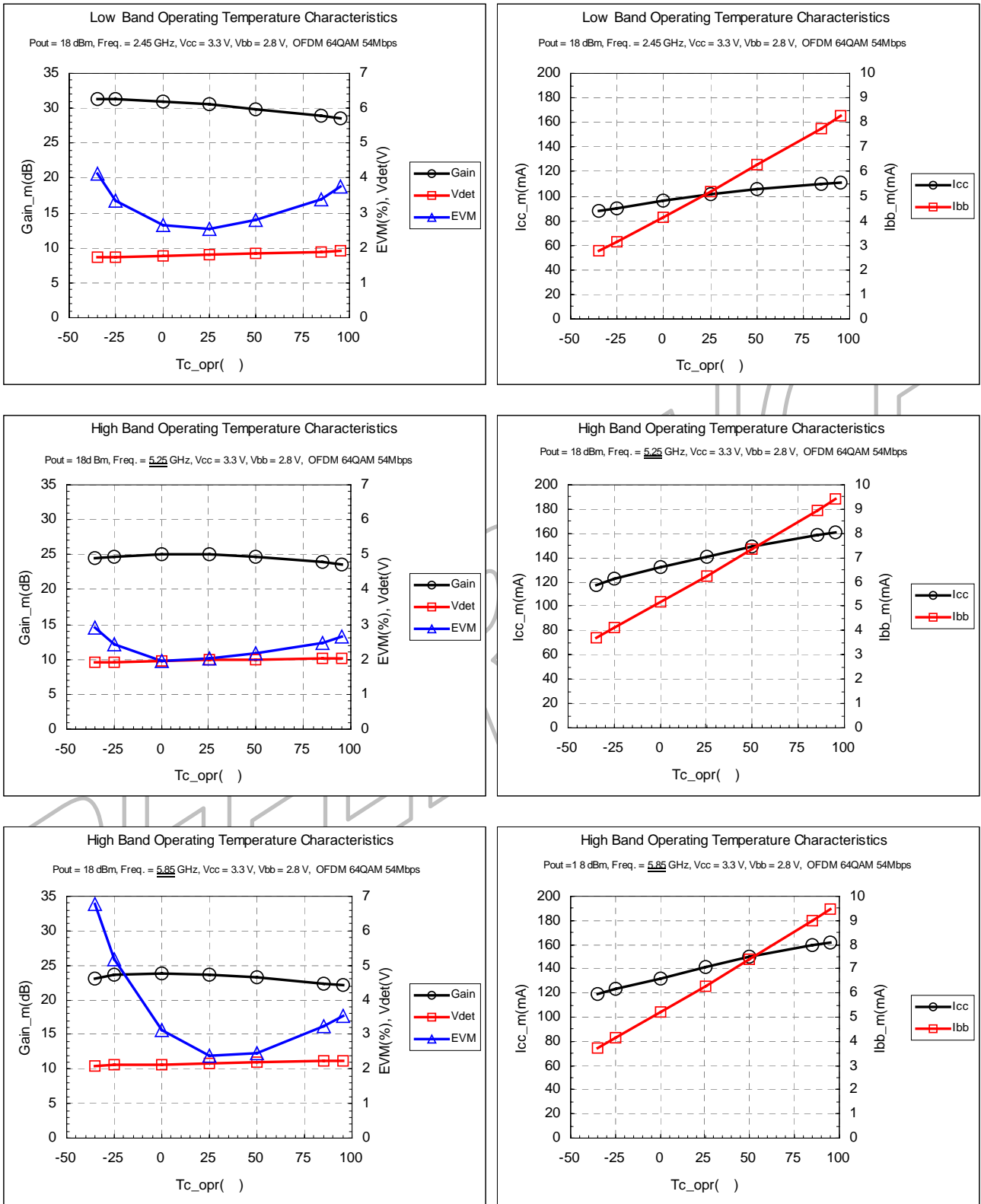


Figure 6. Operating Temperature characteristics

6 Package and packing specification

[Applicability]

This specification applies to IC package delivered as a standard specification.

1.Storage Conditions.

1-1.Storage conditions required before opening the dry packing.

- Normal temperature : 5~40°C
- Normal humidity : 80% R.H. max.

1-2.Storage conditions required after opening the dry packing.

In order to prevent moisture absorption after opening, ensure the following storage conditions apply:

- (1) Storage conditions for one-time soldering. (Convection reflow^{*1}, IR/Convection reflow.^{*1})
 - Temperature : 5~25°C
 - Humidity : 60% R.H. max.
 - Period : 96 hours max. after opening.
- (2) Storage conditions for two-time soldering. (Convection reflow^{*1}, IR/Convection reflow.^{*1})
 - a. Storage conditions following opening and prior to performing the 1st reflow.
 - Temperature : 5~25°C
 - Humidity : 60% R.H. max.
 - Period : 96 hours max. after opening.
 - b. Storage conditions following completion of the 1st reflow and prior to performing the 2nd reflow.
 - Temperature : 5~25°C
 - Humidity : 60% R.H. max.
 - Period : 96 hours max. after completion of the 1st reflow.

^{*1}:Air or nitrogen environment.

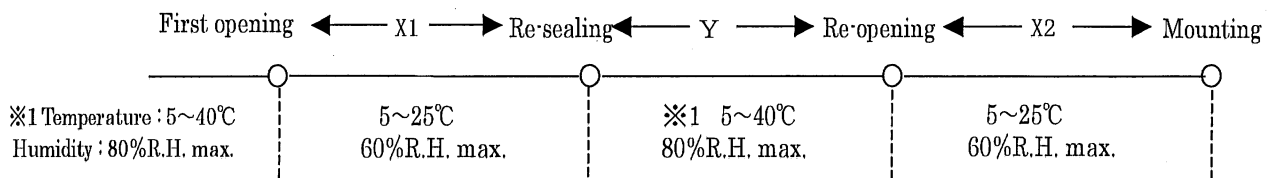
1-3.Temporary storage after opening.

To re-store the devices before soldering, do so only once and use a dry box or place desiccant (with a blue humidity indicator) with the devices and perform dry packing again using heat-sealing.

The storage period, temperature and humidity must be as follows :

(1) Storage temperature and humidity.

※1 : External atmosphere temperature and humidity of the dry packing.



(2) Storage period.

- X1 + X2 : Refer to Section 1-2(1) and (2)a , depending on the mounting method.
- Y : Two weeks max.

2. Baking Condition.

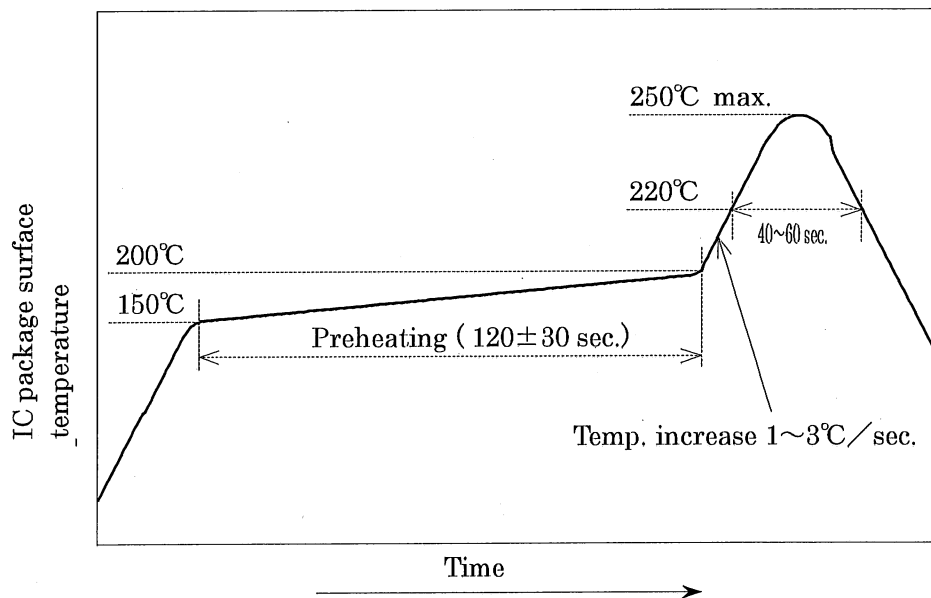
- (1) Situations requiring baking before mounting.
 - Storage conditions exceed the limits specified in Section 1-2 or 1-3.
 - Humidity indicator in the desiccant was already red (pink) when opened.
(Also for re-opening.)
- (2) Recommended baking conditions.
 - Baking temperature and period : $120 \pm 10 / -0^{\circ}\text{C}$ for 2~3 hours.
 - The above baking conditions do not apply since the embossed carrier tape are not heat-resistant . Replace the devices on heat-resistant carrier .
- (3) Storage after baking.
 - After baking, store the devices in the environment specified in Section 1-2 and mount immediately.

3. Surface mount conditions.

The following soldering condition are recommended to ensure device quality.

3-1. Soldering.

- (1) Convection reflow or IR/Convection. (one-time soldering or two-time soldering in air or nitrogen environment)
 - Temperature and period :
Peak temperature of 250°C max.,
Above 220°C for 40~60 sec.
Preheat temperature of $150 \sim 200^{\circ}\text{C}$ for 120 ± 30 sec.
Temperature increase rate of $1 \sim 3^{\circ}\text{C}/\text{sec}$.
 - Measuring point : IC package surface.
 - Temperature profile :



4. Condition for removal of residual flux.

- (1) Ultrasonic washing power : 25 watts / liter max.
- (2) Washing time : Total 1 minute max.
- (3) Solvent temperature : $15 \sim 40^{\circ}\text{C}$

5. Package outline specification.

Refer to the attached drawing.

Object of there specification regarding LEAD-FREE (*2)

6. Markings.

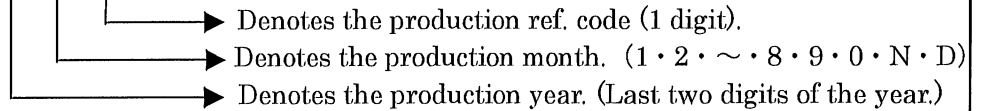
6-1. Marking details. (The information on the package should be given as follows.)

(1) Product name : 046U7

(2) Company name : S

(3) Date code

(Example) Y M X



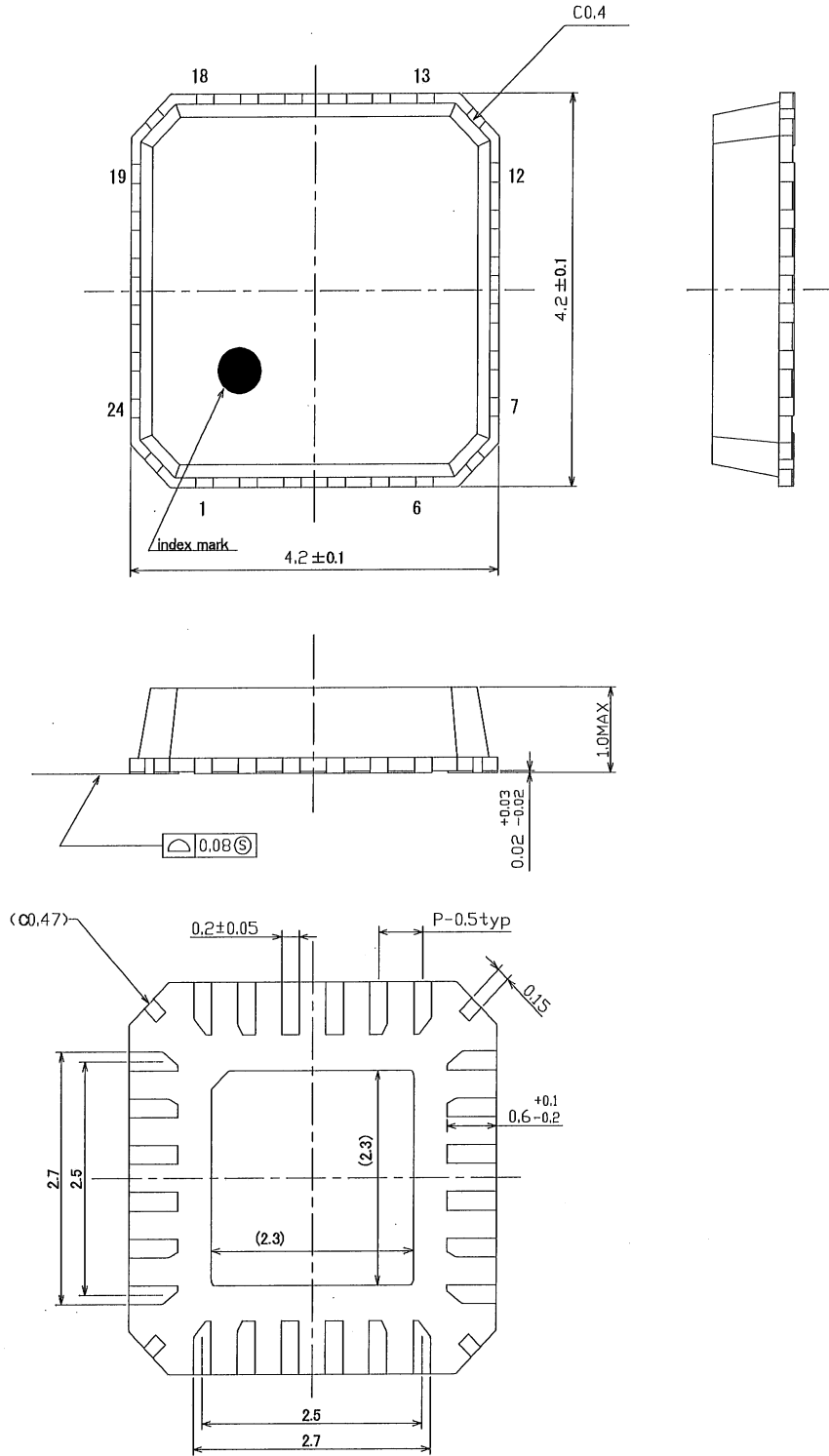
6-2. Marking layout.

The layout is shown in the attached drawing.

(However, this layout does not specify the size of the marking character and marking position.)

*2 Object of there specification regarding LEAD-FREE

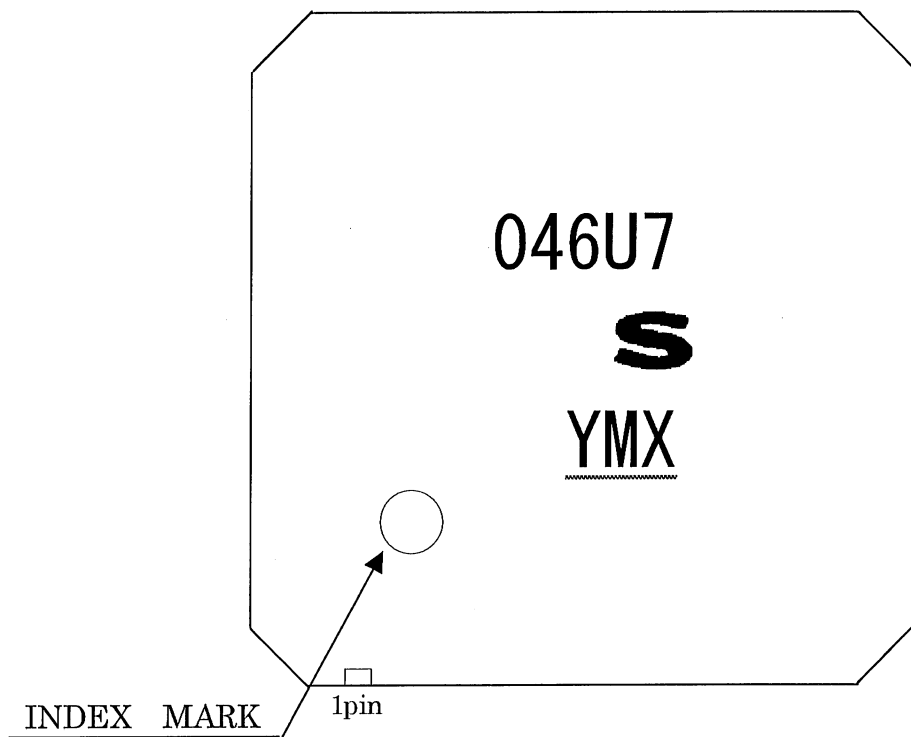
	Not applies	Applies
LEAD FINISH	NOT LEAD-FREE TYPE (Sn-Pb)	LEAD-FREE TYPE (Sn-Bi)
DATE CODE	There is no underline (Example) YYWW	There is an underline. (Example) <u>YYWW</u>
The word of " LEAD FREE" is printed on the packing label	Not printed	Printed



HQFN024-P-0404-AA2267

LEAD TYPE	LEAD FINISH		LEAD MATERIAL	
	Sn-Bi PLATING		Cu	
	TIN LEAD PLATING		Cu	
NAME	HQFN024-P-0404			備考 プラスチックパッケージ外形寸法は、バリを含むものとする。 NOTE Plastic body dimensions do include burr of resin.
DRAWING NO.	AA2267	UNIT	mm	

マークイメージ図
Marking image



(注) デートコードにアンダーラインがある場合は LEAD FREE タイプです。
(Note) It is a lead free device when there is an underline under the date code.

7. Packing specifications (Embossed carrier tape specifications)

This standard applies to the embossed carrier tape specifications for ICs supplied by SHARP CORPORATION. SHARP's embossed carrier tape specifications are generally based on those described in JIS C 0806 (Japanese Industrial Standard) and EIA481A.

7-1. Tape structure

The embossed carrier tape is made of conductive plastic. The embossed portions of the carrier tape are filled with IC packages and a top covering tape is used to enclose them.

7-2. Taping reel and embossed carrier tape size

For the taping reel and embossed carrier tape sizes, refer to the attached drawing.

7-3. IC package enclosure direction in embossed carrier tape

The IC package enclosure direction in the embossed portion relative to the direction in which the tape is pulled is indicated by an index mark on the package (indicating the No. 1 pin) shown in the attached drawing.

7-4. Missing IC packages in embossed carrier tape

The number of missing IC packages in the embossed carrier tape per reel should not exceed Either 1 or 0.1 % of the total contained on the tape per reel, whichever is larger. There should never be more than two consecutive missing IC packages.

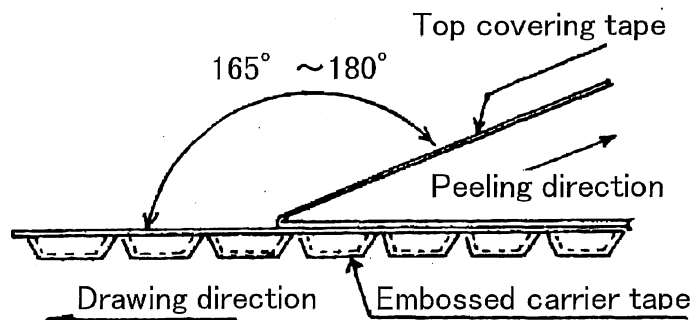
7-5. Tape joints

There is no joint in an embossed carrier tape.

7-6. Peeling strength of the top covering tape

Peeling strength must meet the following conditions.

- (1) Peeling angle at $165^{\circ} \sim 180^{\circ}$.
- (2) Peeling speed at 300mm/min .
- (3) Peeling strength at 0.2~0.7N (20~70gf) .



7-7. Packing

- (1) The top covering tape (leader side) at the leading edge of the embossed carrier tape, and the trailing edge of the embossed carrier tape, should both be held in place with paper adhesive tape at least 30 mm in length.
- (2) The leading and trailing edges of the embossed carrier tape should be left empty (with embossed portions not filled with IC packages) in the attached drawing.
- (3) The number of IC packages enclosed in the embossed carrier tape per reel should generally comply with the list given below.

Number of IC Packages/ Reel	Number of IC Packages/ Inner carton	Number of IC Packages/ Outer carton
2500 devices / Reel	2500 devices / Inner carton	12500 devices / Outer carton

7-8.Indications

The following should be indicated on the taping reel and the packing carton.

- Part Number (Product Name) • Storage Quantity • Packed date
- Manufacture's Name (SHARP)

Note : The IC taping direction is indicated by " EL " suffixed to the part number .

EL : Equivalent to " L " of the JIS C 0806 standard..

7-9.Protection during transportation

The IC packages should have no deformation and deterioration of their electrical Characteristics resulting from transportation.

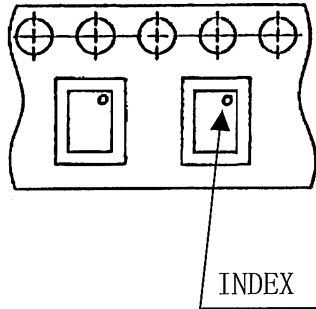
8.Precautions for use.

- (1) Opening must be done on an anti-ESD treated workbench.
All workers must also have undergone anti-ESD treatment.
- (2) The devices should be mounted the devices within one year of the date of delivery.

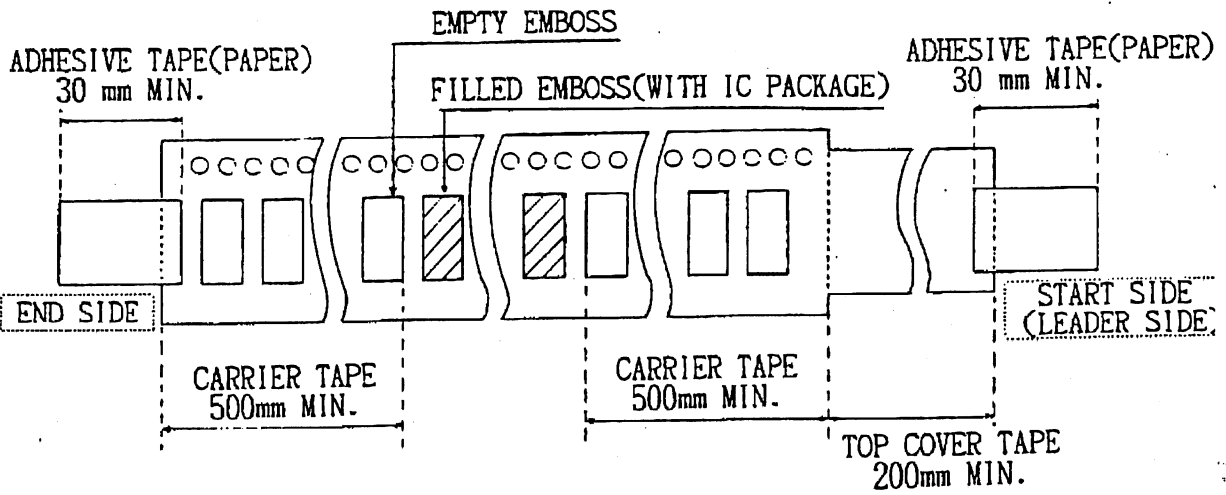
EMBOSS TAPING TYPE (EL)

IC TAPING DIRECTION

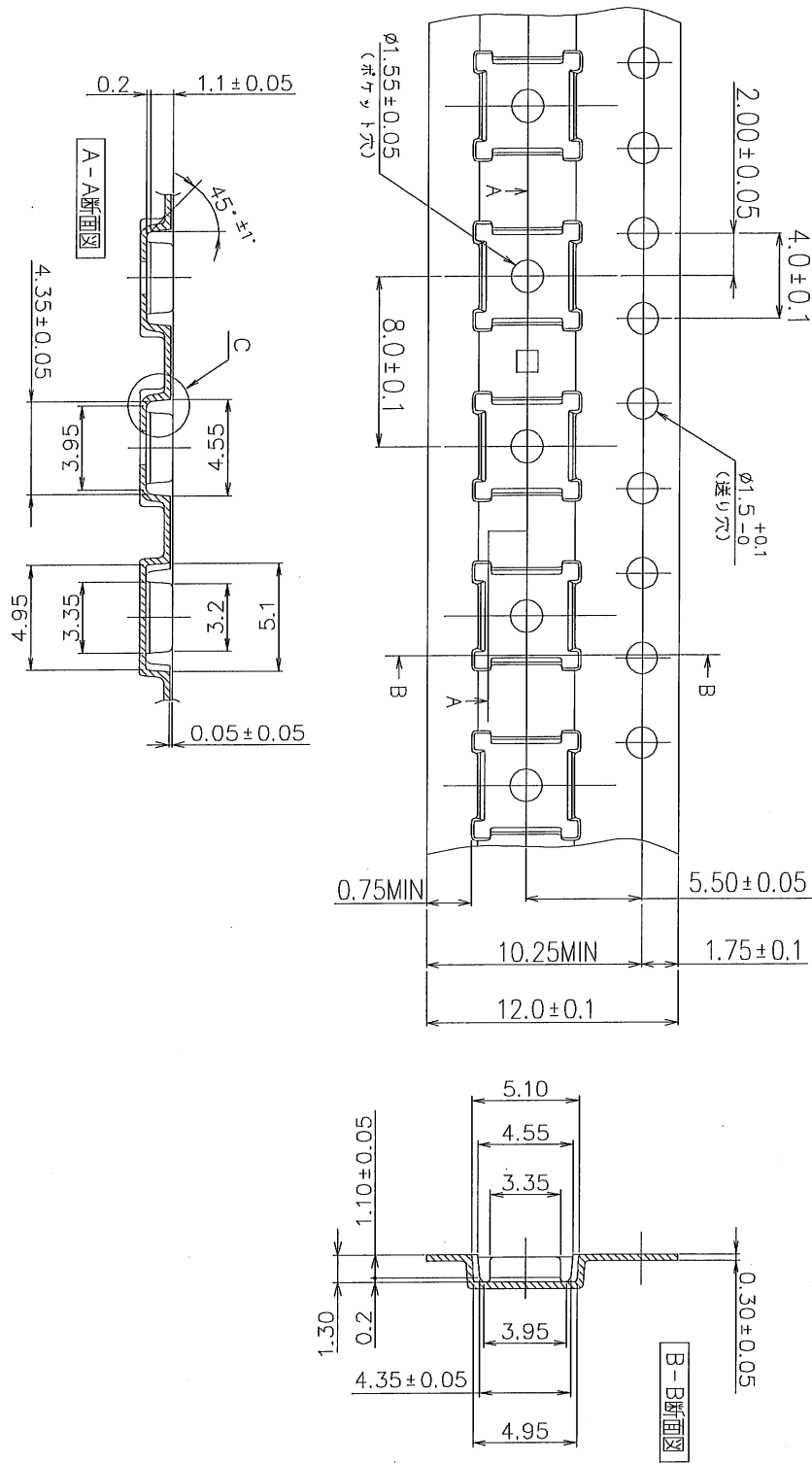
THE DRAWING DIRECTION OF TAPE →



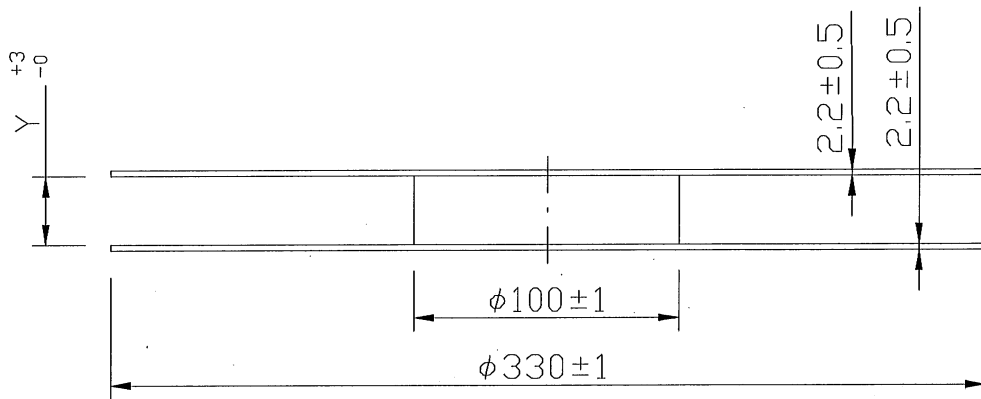
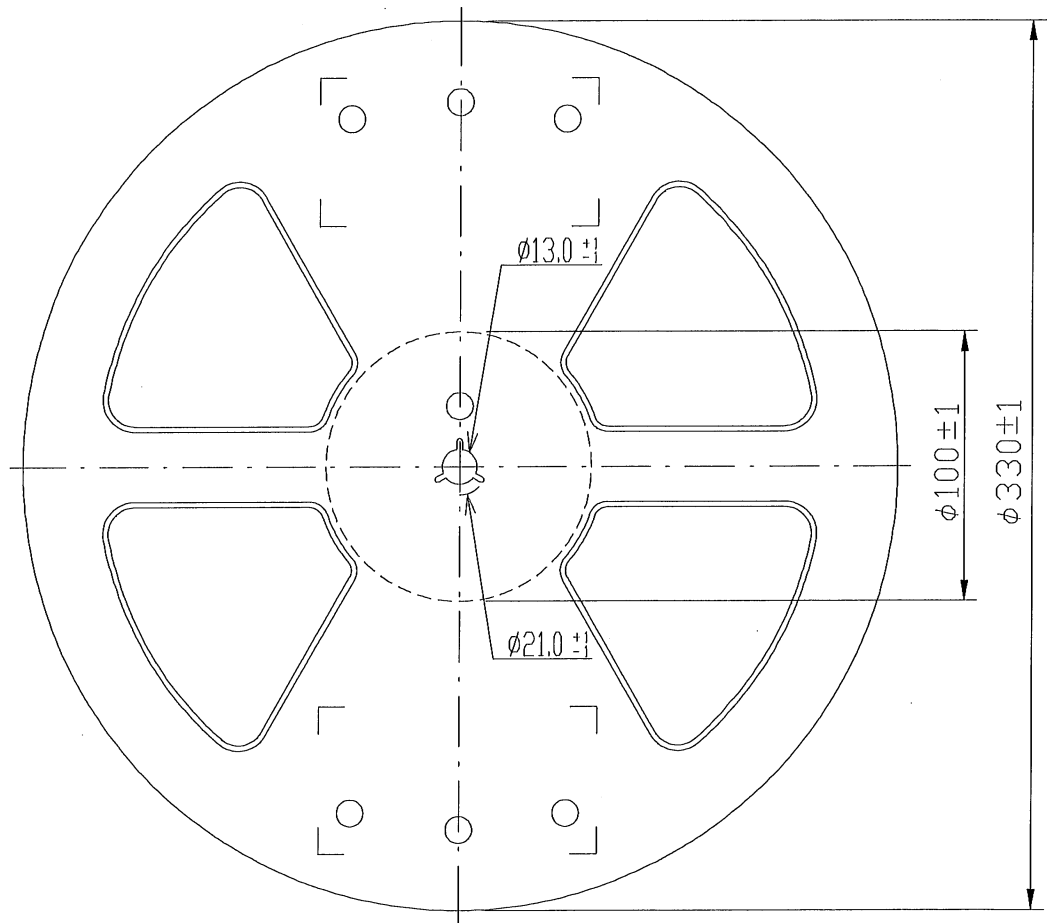
LEADER SIDE AND END SIDE OF TAPE



名称 NAME	Emboss taping type (EL)			備考 NOTE
DRAWING NO.	CV522	単位 UNIT	mm	

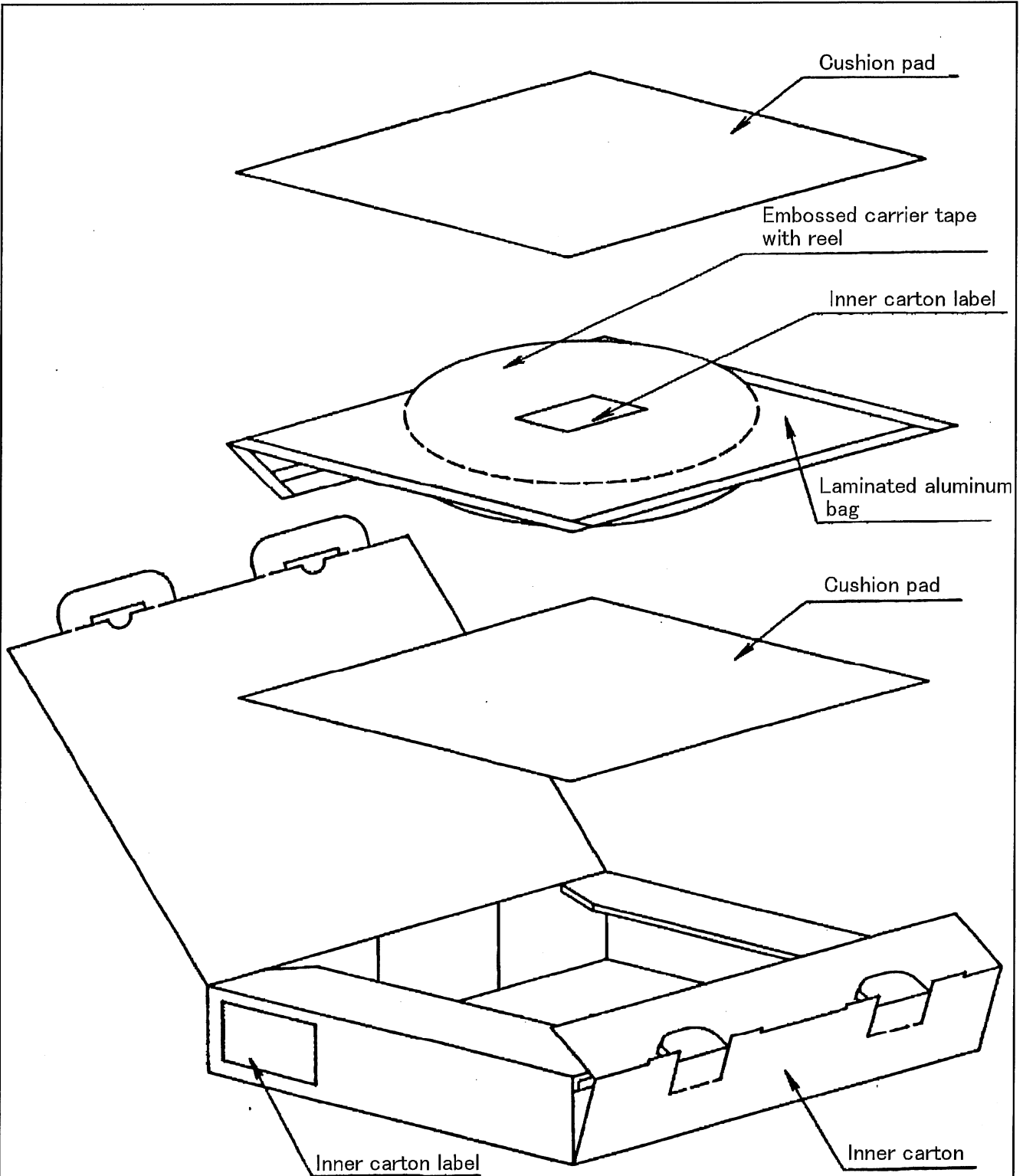


名称 NAME	EC20-0404VQNSY		備考 NOTE
DRAWING NO.	CV904	単位 UNIT	mm



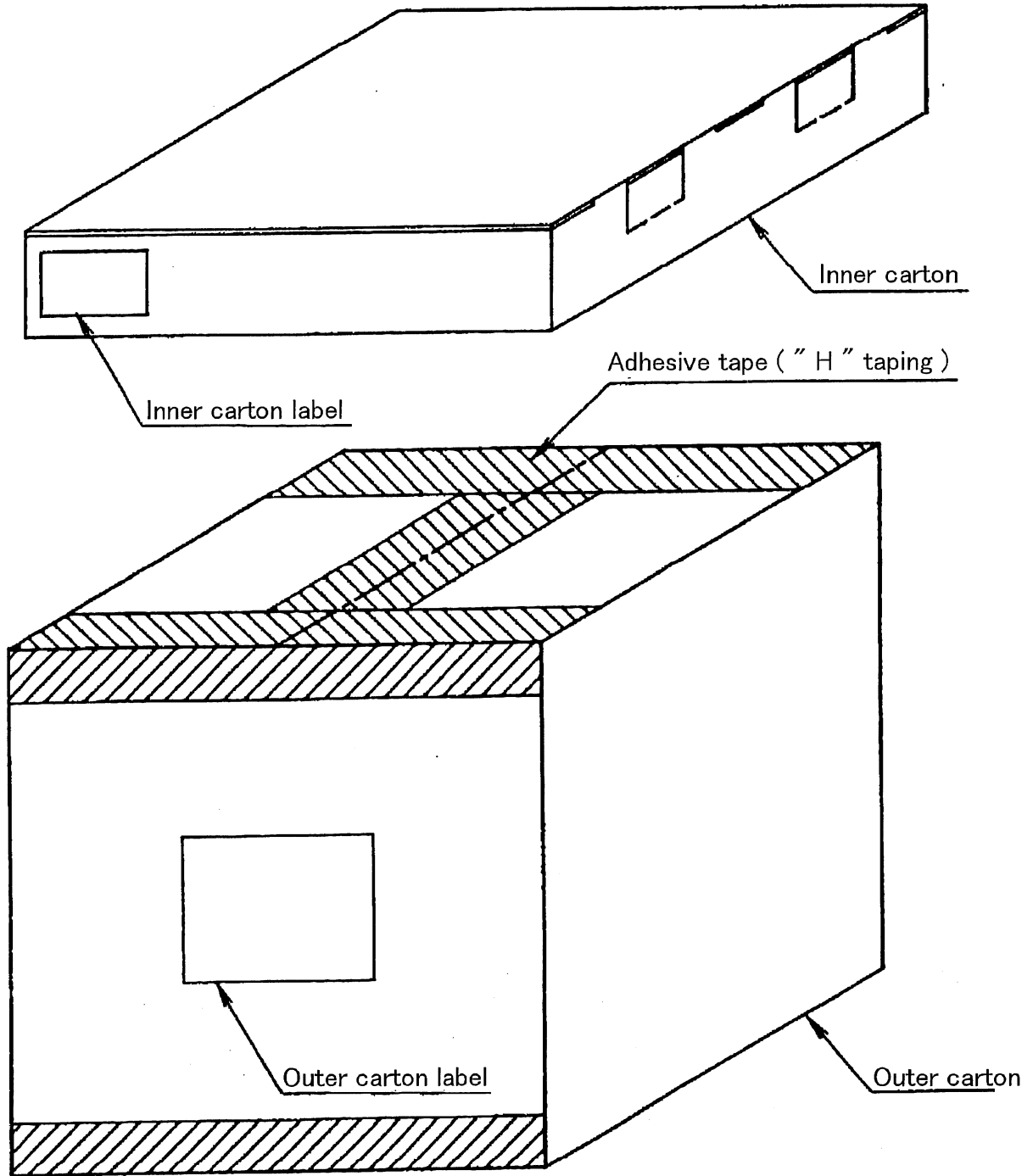
SIZE	Y	SIZE	Y
8mm	9.5	32mm	33.5
12mm	13.5	44mm	45.5
16mm	17.5	56mm	57.5
24mm	25.5		

名称 NAME	Reel for embossed carrier tape			備考 NOTE
DRAWING NO.	CV755	単位 UNIT	mm	



Inner carton - Outer dimensions : : L W H
 345 × 345 × 55

名称 NAME	Packing specifications 《1》			備考 NOTE
DRAWING NO.	CV428	単位 UNIT	mm	



L W H

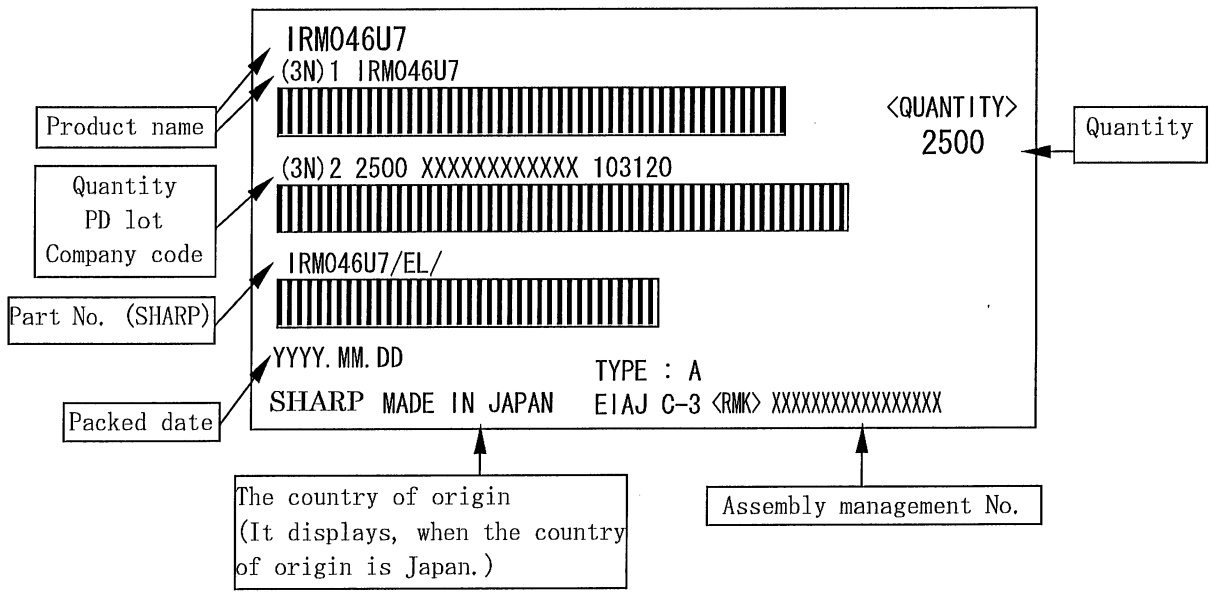
Inner carton - Outer dimensions : 345 × 345 × 55

Outer carton - Outer dimensions : 365 × 315 × 385

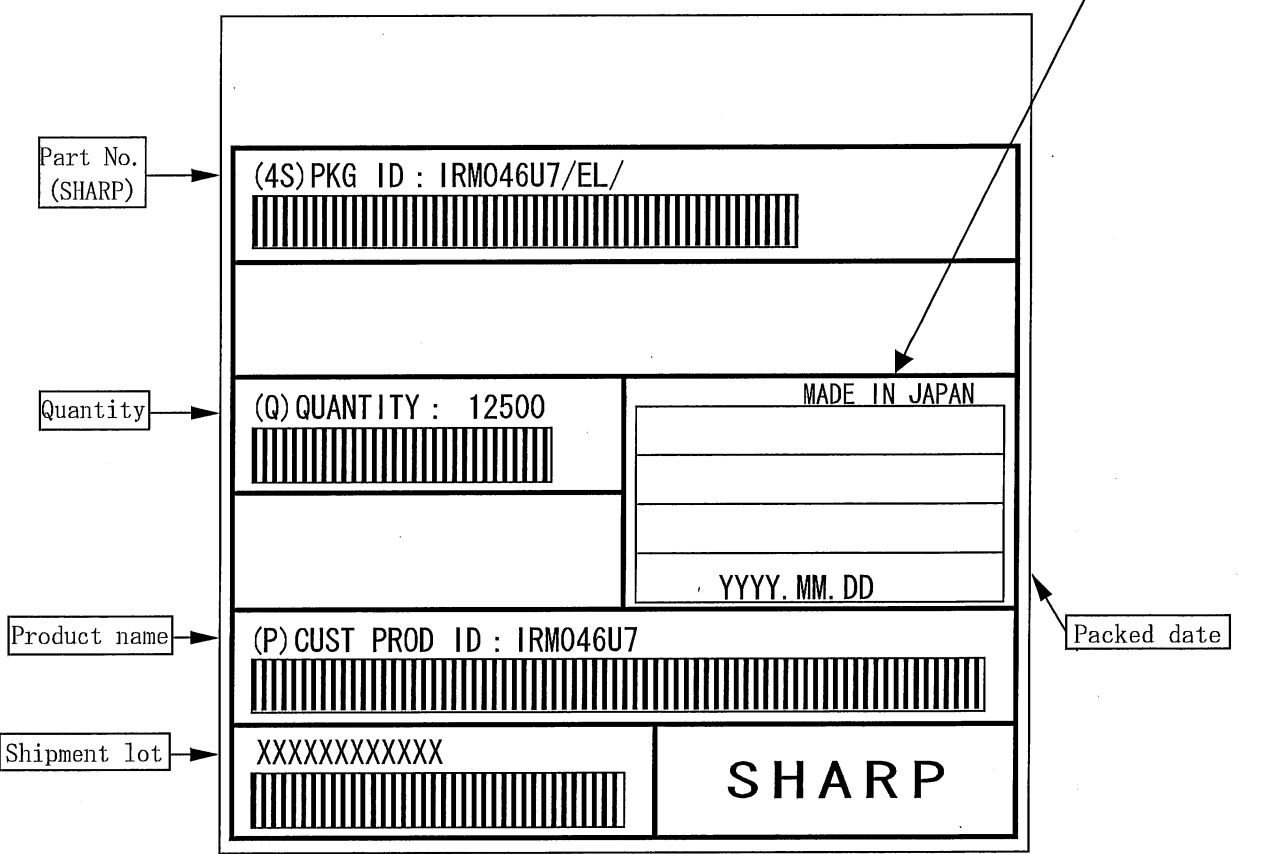
名称 NAME	Packing specifications 《2》	備考 出荷数量が端数の場合、本仕様と異なることがあります。 NOTE There is a possibility different from this specification when the number of shipments is fractions.
DRAWING NO.	BJ426	単位 UNIT mm

(*)The Lead-Free product will be printed as "Lead-Free" on the packing label. However, it doesn't print about the current product.

Inner carton label

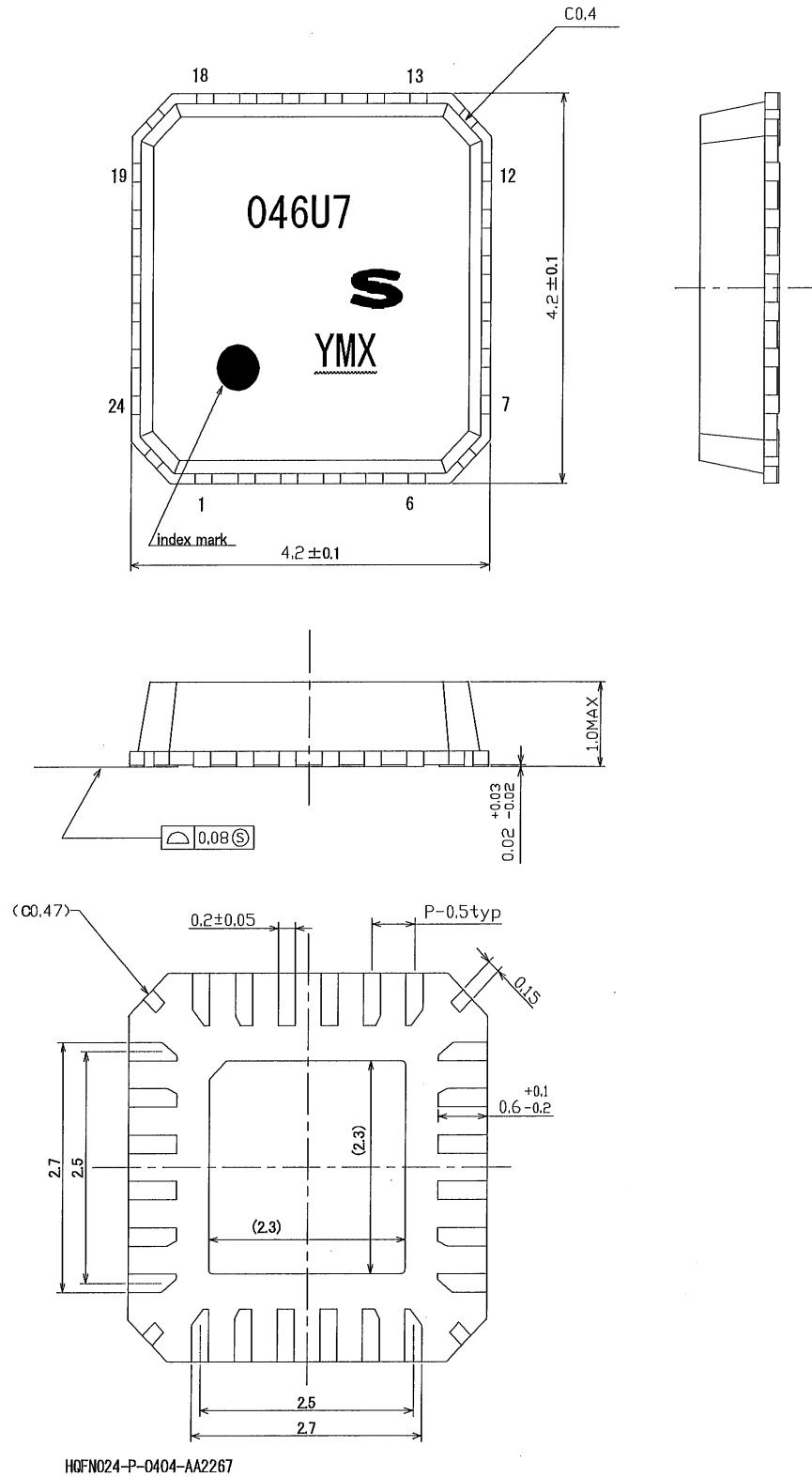


Outer carton label



(Former) EIAJ B Standard conforming

Image.



LEAD TYPE	LEAD FINISH		LEAD MATERIAL	
	Sn-Bi PLATING		Cu	
	TIN LEAD PLATING		Cu	
NAME	HQFN024-P-0404		備考 プラスチックパッケージ外形寸法は、バリを含むものとする。	
DRAWING NO.	AA2267	UNIT	mm	NOTE Plastic body dimensions do include burr of resin.