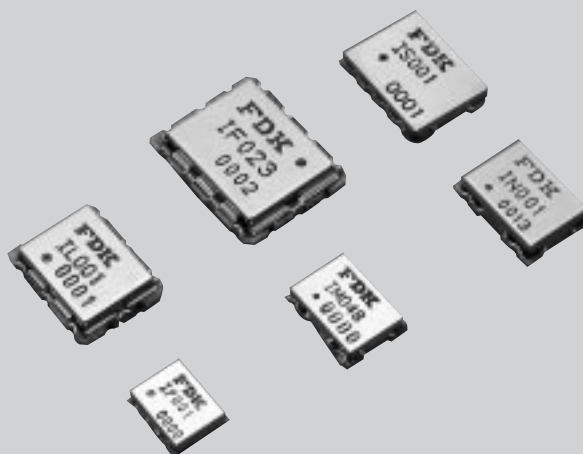




VCO

(Voltage Controlled Oscillators)



VCOs are one of electronic products that FDK has been producing and supplying to makers of cellular/ handy phones and other communications equipment.

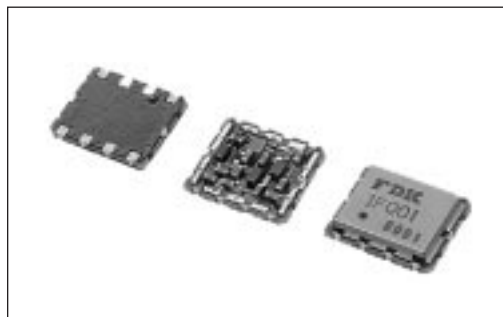
These VCOs come in six model series-IF, IL, IN, IM, IP and IS-all using glass epoxy substrates. They VCOs cover a wide frequency range (100MHz to 2.9GHz) and have achieved impressively low prices.

FDK's VCOs are recommended to all the manufacturers of mobile and other wireless communications equipment who are trying to improve their products even more at low costs.

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• IM series VCOs	5
• IP series VCOs	6
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• Recommended reflow soldering temperatures/ Shipment packaging	8

IF series VCOs



Features

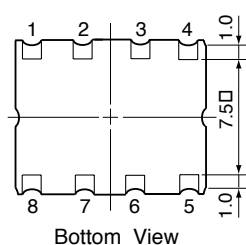
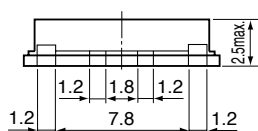
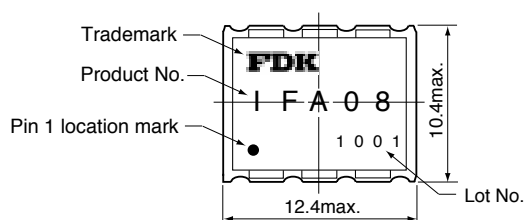
- Triplet-strip lines are adopted as resonators.
- The range of operation is wide, from 100MHz to 2.9GHz.

Specifications

Applications	Model No.	Oscillation frequency (MHz)	Supplied voltage (V)	Controlled voltage range (V)	Controlled voltage sensitivity (MHz / V)	Power consumption (mA max.)	Oscillation output (dBm min.)	C/N (dBC min.)
AMPS	TX I FA09	836.5±12.5	4.2	1 to 4	13±3.0	8.0	-3	110(25)/Hz
	RX I FA08	926.5±12.5	4.2	1 to 4	13±3.0	8.0	-5	110(25)/Hz
ETACS	TX I FA17	888.5±16.5	4.2	1 to 4	16±3.0	8.0	-4	110(25)/Hz
	RX I FA16	978.5±16.5	4.2	0.7 to 4.3	13±5.0	8.0	-6	109(25)/Hz
Wireless LAN	I FA59	2240.0±15.0	5.0	1 to 4	20.5±4.0	12.0	-4	90(25)/Hz
	I FA62	2240.0±51.0	5.0	0.75 to 4.25	42±6.0	15.0	-5	83(25)/Hz

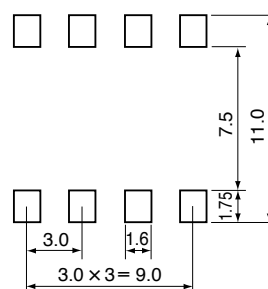
Note : 1) Numbers in the parentheses in the C / N column indicate non-tuning frequency values in KHz.
2) Numbers appearing on the right side of "/" denote frequency bandwidths.

Shapes, dimensions and recommended soldering pads

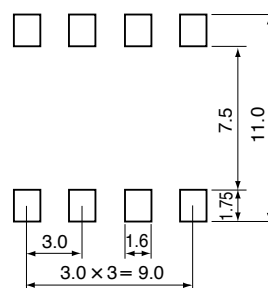


- 1 Vc
- 2 GND
- 3 GND
- 4 Vcc
- 5 OUT
- 6 GND
- 7 GND
- 8 NC

● Dimensions of soldering pads

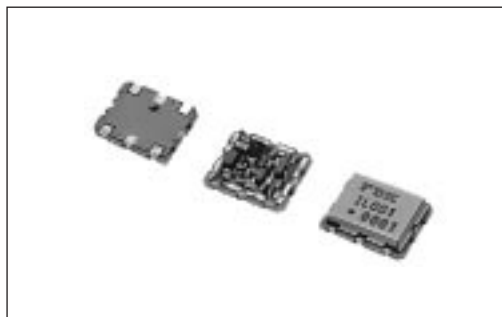


● Dimensions of solder printing mask openings



Unit = mm

IL series VCOs



Features

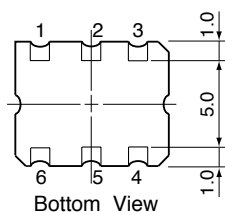
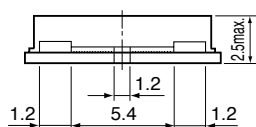
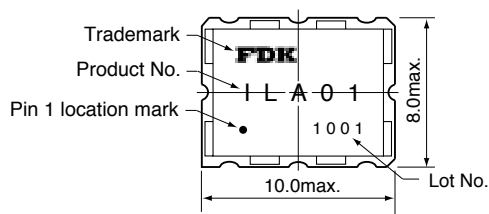
- Triplet-strip lines are incorporated as resonators.
- These VCOs are miniaturized versions of IF series VCOs.

Specifications

Applications	Model No.	Oscillation frequency (MHz)	Supplied voltage (V)	Controlled voltage range (V)	Controlled voltage sensitivity (MHz / V)	Power consumption (mA max.)	Oscillation output (dBm min.)	C/N (dBC min.)
AMPS	TX I LA35	836.5±12.5	3.3	1 to 2.8	24±4.0	8.0	-1	70(60)/30KHz
	RX I LA36	967.5±13.5	3.3	1 to 2.8	24±4.0	8.0	-1	70(60)/30KHz
PHS	I LA01	1660.5±10.0	3.0	0.5 to 2.5	20±5.0	8.0	-6	120(600)/Hz
GSM	I LA22	1166.0±40.0	3.0	0.5 to 2.5	54±5.0	6.0	-8	110(100)/Hz
PCN	I LA62	1732.5±32.5	3.0	0.5 to 2.5	43±5.0	8.0	-8	100(100)/Hz

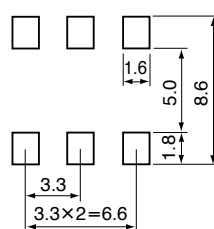
Note : 1) Numbers in the parentheses in the C / N column indicate non-tuning frequency values in KHz.
2) Numbers appearing on the right side of "/" denote frequency bandwidths.

Shapes, dimensions and recommended soldering pads

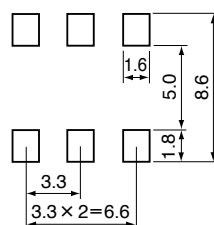


- 1 Vc
- 2 GND
- 3 Vcc
- 4 OUT
- 5 GND
- 6 NC

● Dimensions of soldering pads

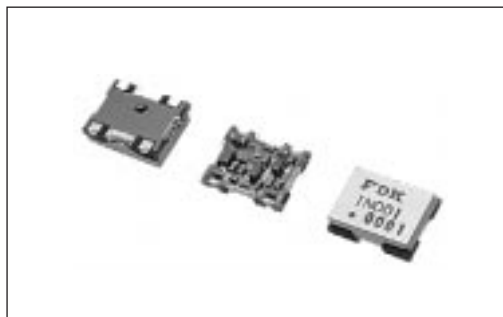


● Dimensions of solder printing mask openings



Unit = mm

IN series VCOs



Features

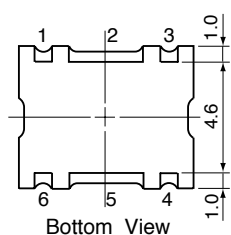
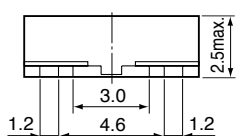
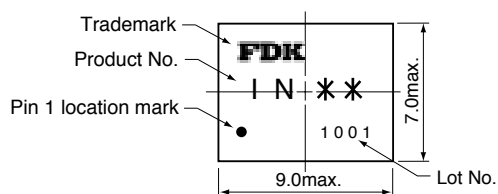
- Triplet-strip lines are incorporated as resonators.
- These VCOs have especially small dimensions.

Specifications

Applications	Model No.	Oscillation frequency (MHz)	Supplied voltage (V)	Controlled voltage range (V)	Controlled voltage sensitivity (MHz / V)	Power consumption (mA max.)	Oscillation output (dBm min.)	C/N (dBC min.)
PHS	IN * *	1660.5±10.0	3.0	0.5 to 2.5	20±5.0	8.0	-6	120(600)/Hz

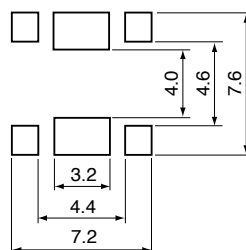
Note : 1) Numbers in the parentheses in the C / N column indicate non-tuning frequency values in KHz.
2) Numbers appearing on the right side of "/" denote frequency bandwidths.

Shapes, dimensions and recommended soldering pads

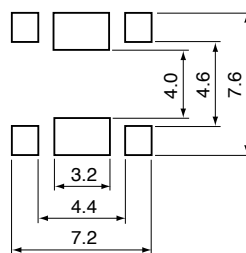


- 1 Vc
- 2 GND
- 3 Vcc
- 4 OUT
- 5 GND
- 6 NC

● Dimensions of soldering pads

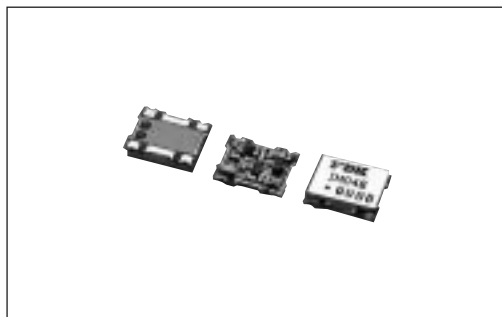


● Dimensions of solder printing mask openings



Unit = mm

IM series VCOs



Features

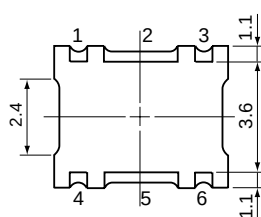
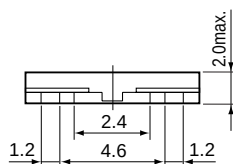
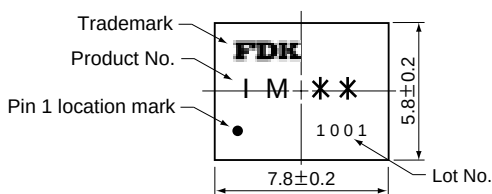
- Triplet-strip lines are incorporated as resonators.
- These VCOs are smaller than IN series VCOs.

Specifications

Applications	Model No.	Oscillation frequency (MHz)	Supplied voltage (V)	Controlled voltage range (V)	Controlled voltage sensitivity (MHz / V)	Power consumption (mA max.)	Oscillation output (dBm min.)	C/N (dBc min.)
GSM	IM **	897.5±17.5	3.2	0.7 to 3.8	19.0±4.0	20.0	+4.0	120(150)/Hz

Note : 1) Numbers in the parentheses in the C / N column indicate non-tuning frequency values in KHz.
2) Numbers in appearing on the right side of "/" denote frequency bandwidths.

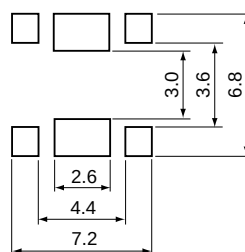
Shapes, dimensions and recommended soldering pads



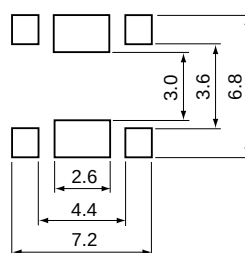
- 1 Vc
- 2 GND
- 3 Vcc
- 4 OUT
- 5 GND
- 6 NC

Bottom View

● Dimensions of soldering pads

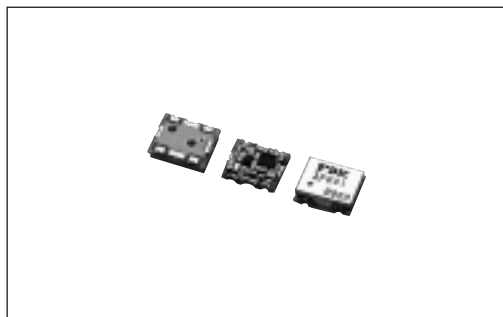


● Dimensions of solder printing mask openings



Unit = mm

IP series VCOs



Features

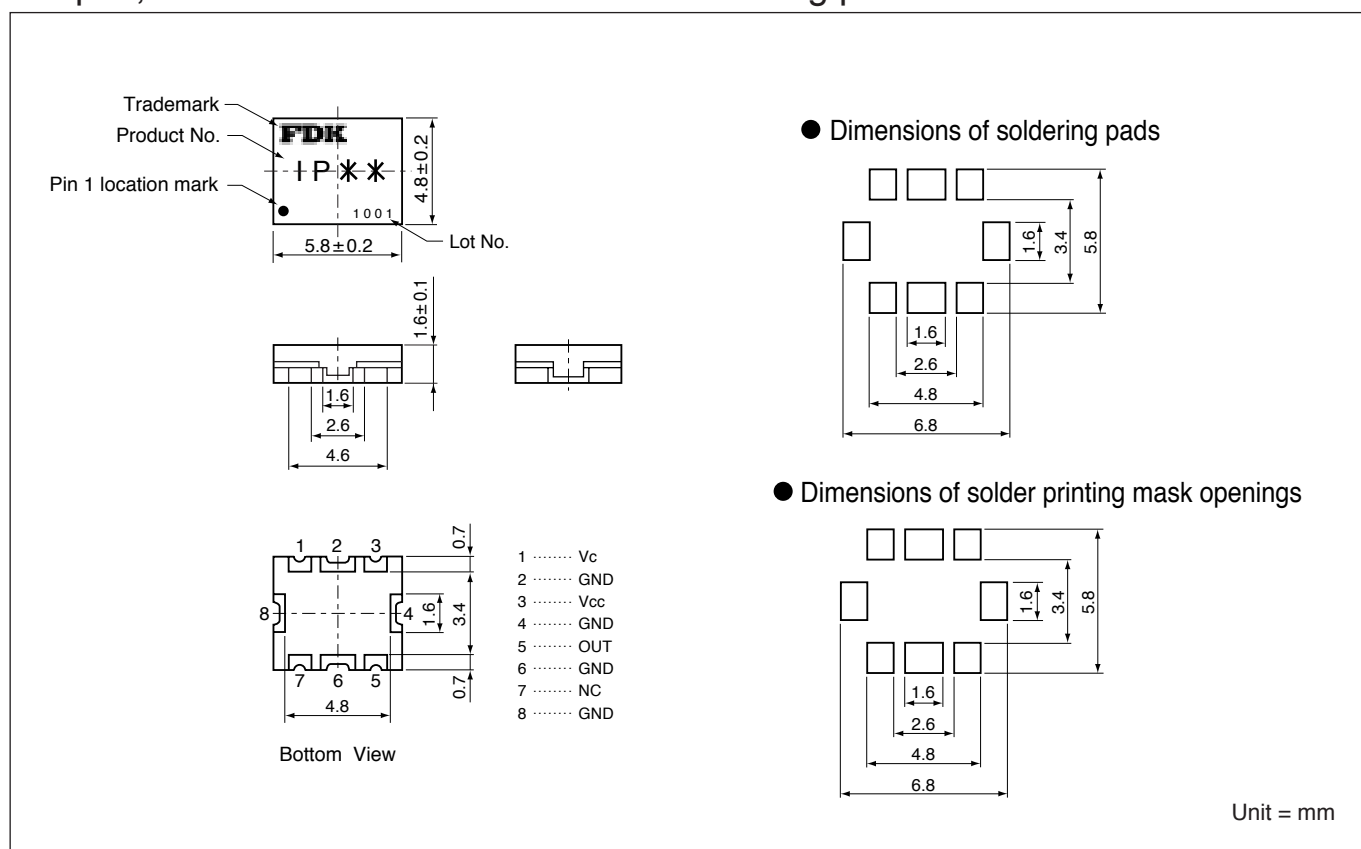
- Triplet-strip lines are incorporated as resonators.
- These VCOs are super small. (Miniature version of IM series)

Specifications

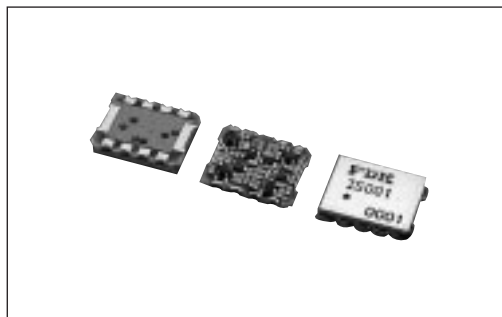
Applications	Model No.	Oscillation frequency (MHz)	Supplied voltage (V)	Controlled voltage range (V)	Controlled voltage sensitivity (MHz / V)	Power consumption (mA max.)	Oscillation output (dBm min.)	C/N (dBc min.)
GSM/PCN	I P * *	1201±39.0	2.7	0.5 to 2.2	68±14	10.0	-2.0	147(20M)/Hz
	I P * *	1559.5±38.5	2.7	0.5 to 2.2	68±14	10.0	-2.0	147(20M)/Hz

Note : 1) Numbers in the parentheses in the C / N column indicate non-tuning frequency values in KHz.
2) Numbers in appearing on the right side of "/" denote frequency bandwidths.

Shapes, dimensions and recommended soldering pads



IS series VCOs



Features

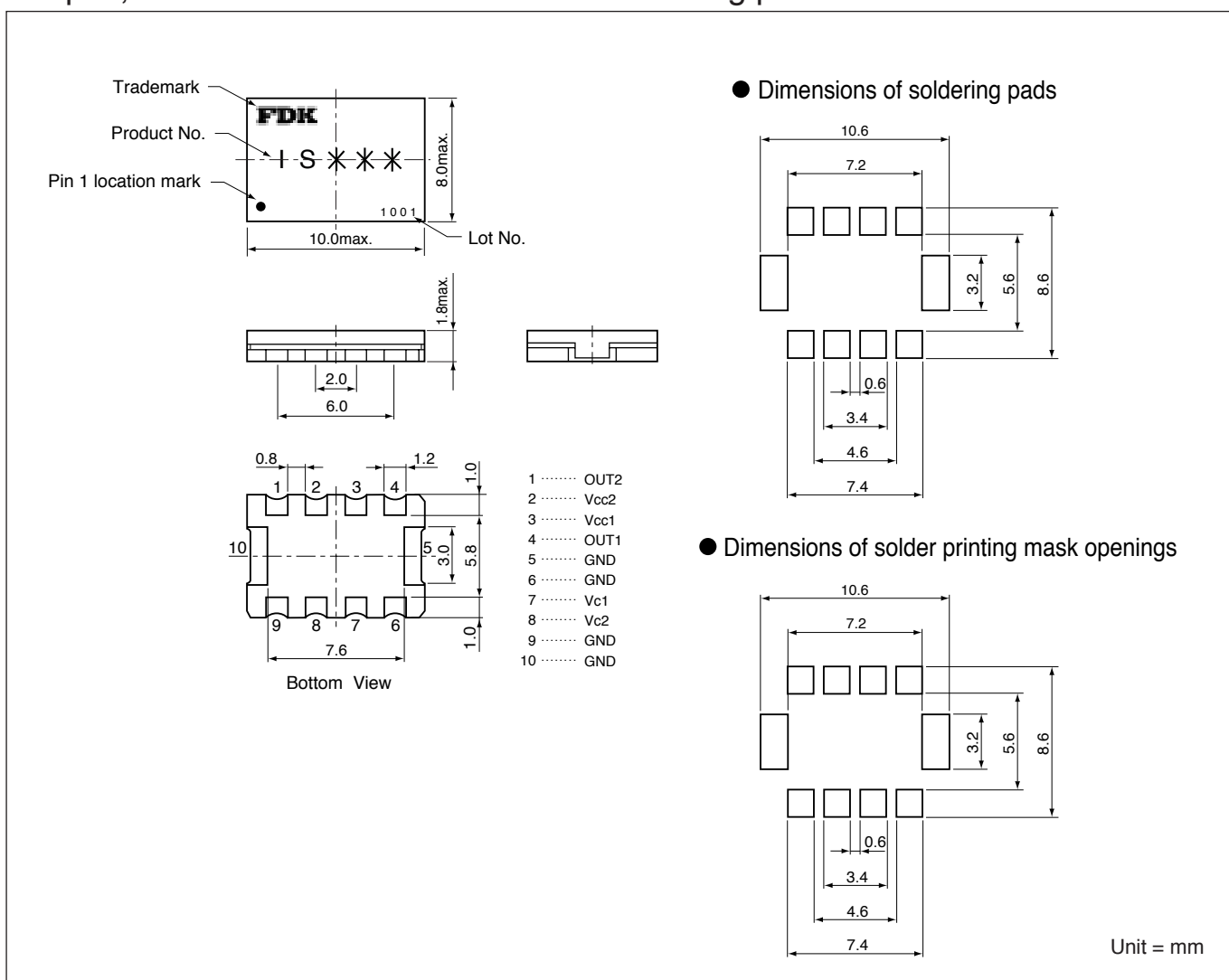
- Two VCOs are packed in one.
- High packaging density has been achieved.

Specifications

Applications	Model No.	Oscillation frequency (MHz)	Supplied voltage (V)	Controlled voltage range (V)	Controlled voltage sensitivity (MHz / V)	Power consumption (mA max.)	Oscillation output (dBm min.)	C/N (dBc min.)
GSM900	IS **	897.5±17.5	2.7	0.5 to 2.2	37±7.0	50.0	+11.0	162(20M)/Hz
DCS1800	IS **	1747.5±37.5	2.7	0.5 to 2.2	75±15	50.0	+ 8.0	151(20M)/Hz

Note : 1) Numbers in the parentheses in the C / N column indicate non-tuning frequency values in KHz.
2) Numbers in appearing on the right side of " / " denote frequency bandwidths.

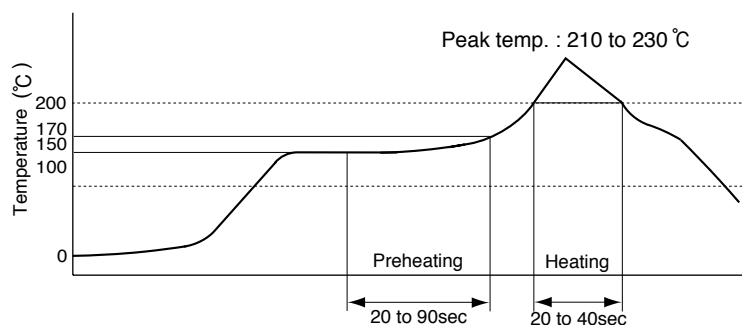
Shapes, dimensions and recommended soldering pads



Recommended reflow soldering temperatures/Shipment packaging

Recommended reflow soldering temperatures

● IF, IL, IN, IM, IP and IS series

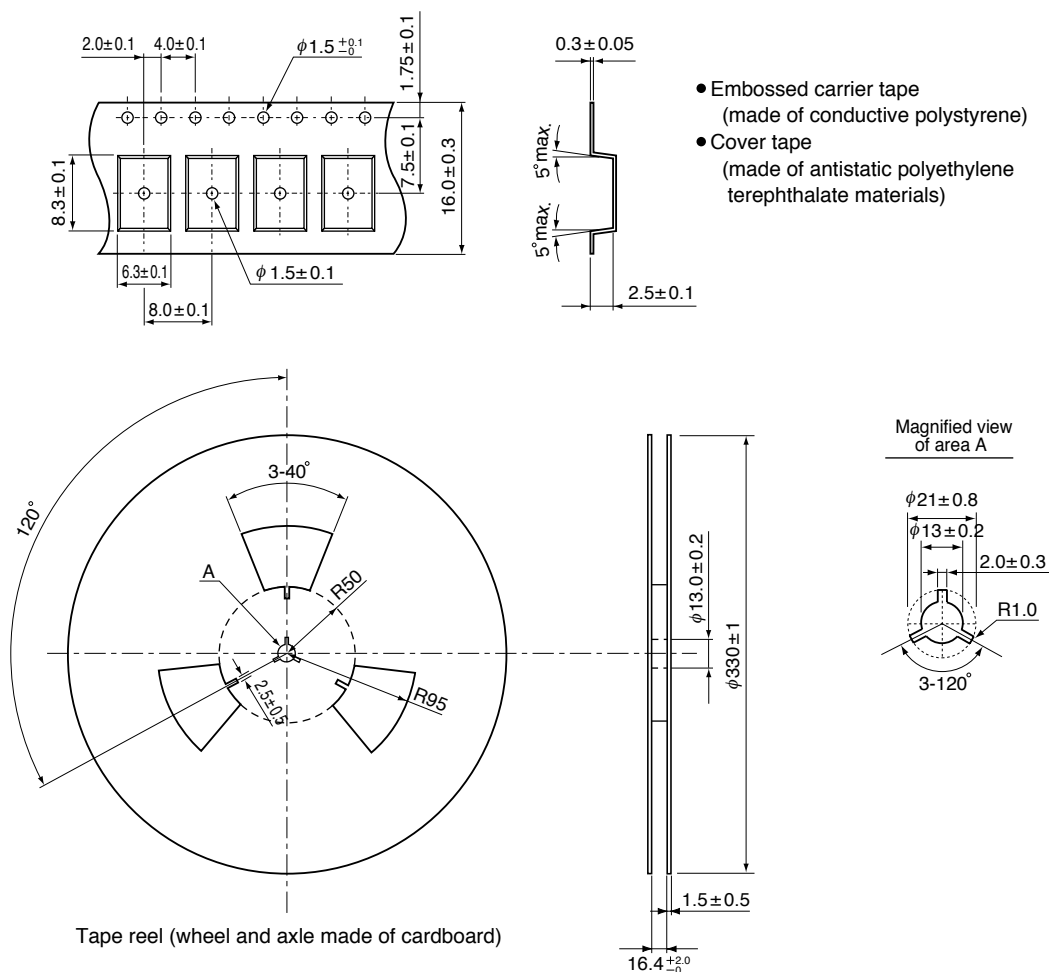


(Warning)

- The VCOs must be vibration-free during reflow soldering.
- Do not turn the VCOs upside down for reflow soldering.

Shipment packaging

● IM series as an example





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