FUJITSU MEDIA DEVICE
DATA SHEET

DS04-23116-2E

ASSP Mobile Communication Systems

SAW Duplexer
(700 to 1000 MHz)

D5CC Series (D1)

■ DESCRIPTION

The D5CC series of SAW antenna duplexer apply to the frequency range 700 to 1000 MHz.

The SAW filters are fabricated on a piezoelectric-crystal unit ($LiTaO_3$:lithium tantalate) with a large electromechanical dissociation.

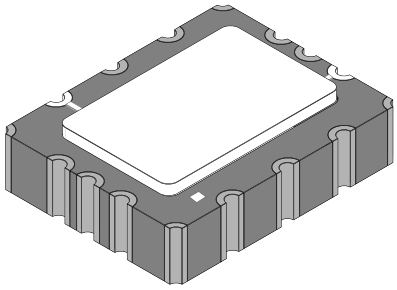
The D5CC series provides small size and light duplexer by using original design, mounting and electrode formation techniques.

D5CC(D1) series are incorporated transmitter filter and receiver filter into a small package and are housed phase circuit in the package. Moreover, I/O of SAW filter is set to impedance 50 Ω, so application requires no external circuits.

■ FEATURES

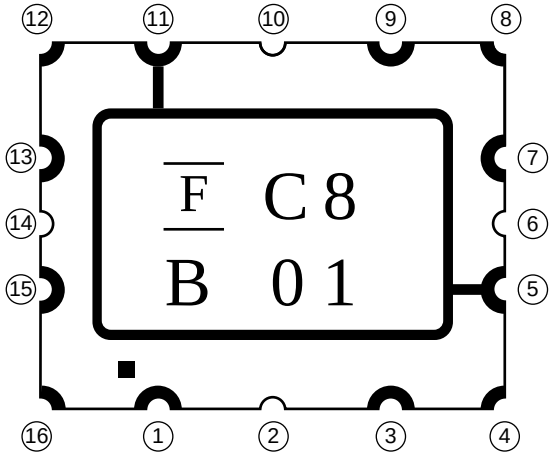
- Ultra compact and light package (0.14cm^3, 9.5 × 7.5 × 2.0 (h) mm Typ.)
- External matching circuits are not required.
- Surface mount package (SMT)
- High handling power resistance (1.2 W Max.)

■ PACKAGE

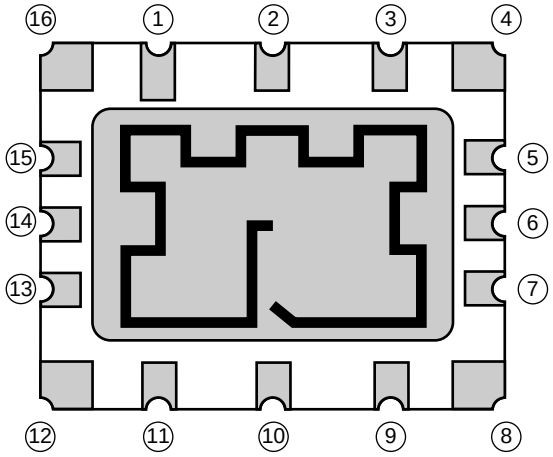


■ PIN ASSIGNMENT

(TOP VIEW)



(BOTTOM VIEW)



■ PIN DESCRIPTION

Pin No.	Pin name	Description
1	GND	Ground Pin
2	ANT	Antenna Pin*
3	GND	Ground Pin
4	GND	Ground Pin
5	GND	Ground Pin
6	Rx	Receiver side Pin
7	GND	Ground Pin
8	GND	Ground Pin
9	GND	Ground Pin
10	ANT	Antenna Pin*
11	GND	Ground Pin
12	GND	Ground Pin
13	GND	Ground Pin
14	Tx	Transmitter side Pin
15	GND	Ground Pin
16	GND	Ground Pin

* : Only one Antenna pin should be connected.
The remaining Antenna pin doesnot have to be connected.

■ ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Rating		Unit
		Min.	Max.	
Operating temperature	Ta	–30	+85	°C
Storage temperature	Tstg	–40	+100	°C
Maximum input power	P_{IN}	—	1.2	W
Input DC voltage	—	–5	+5	V

WARNING: Piezoelectric 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.	Max.	
Operating temperature	Ta	–30	+85	°C

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

Always use piezoelectric 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 FUJITSU representatives beforehand.

■ STANDARD FREQUENCIES

System	Tx freq. (MHz)	Rx freq. (MHz)	Part number	Part symbol	Remarks
AMPS/IS-95/IS-136	824 to 849	869 to 894	FAR-D5CC-881M50-D1C8	C8	

■ ELECTRICAL CHARACTERISTICS

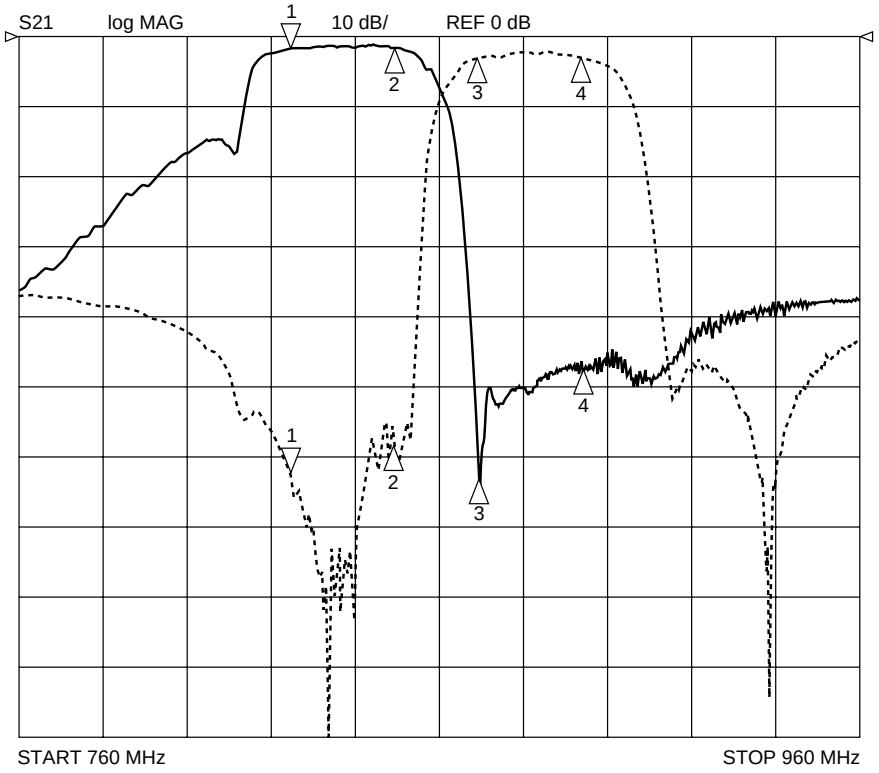
AMPS/IS-136/IS-95

1. Part number : FAR-D5CC-881M50-D1C8

(Ta = –30 °C to +85 °C)

Parameter		Condition	Value			Unit	Remarks
			Min.	Typ.	Max.		
Tx → Antenna	Insertion Loss	824 to 849 MHz	—	2.0	2.5	dB	+15 to +35 °C
			—	—	2.7	dB	–30 to +85 °C
	Inband Ripple	824 to 849 MHz	—	1.0	1.5	dB	
	VSWR (Return loss)	842 to 849 MHz	— (7.4)	1.8 (10.9)	2.5 (—)	— (dB)	
	Absolute Attenuation	779 to 804 MHz	12	17	—	dB	
		869 to 894 MHz	40	46	—	dB	
		1648 to 1698 MHz	6	9	—	dB	
		2472 to 2547 MHz	6	8	—	dB	
Antenna → Rx	Insertion Loss	869 to 894 MHz	—	3.8	4.3	dB	
	Inband Ripple	869 to 894 MHz	—	1.5	2.5	dB	
	VSWR (Return loss)	869 to 894 MHz	— (6.8)	2.3 (8.1)	2.7 (—)	— (dB)	
	Absolute Attenuation	824 to 849 MHz	50	55	—	dB	
		930 to 1200 MHz	40	43	—	dB	
		1200 to 1500 MHz	40	43	—	dB	
		1500 to 1800MHz	40	45	—	dB	
Tx → Rx	Absolute Attenuation (Isolation)	824 to 849 MHz	53	55	—	dB	
		869 to 894 MHz	46	49	—	dB	+15 to +85 °C
			43	—	—	dB	–30 to +15 °C
Maximum Input Power		Ta = +50 °C	1.2 W (continuous wave > 50000 h)				

- **Typical Characteristics**



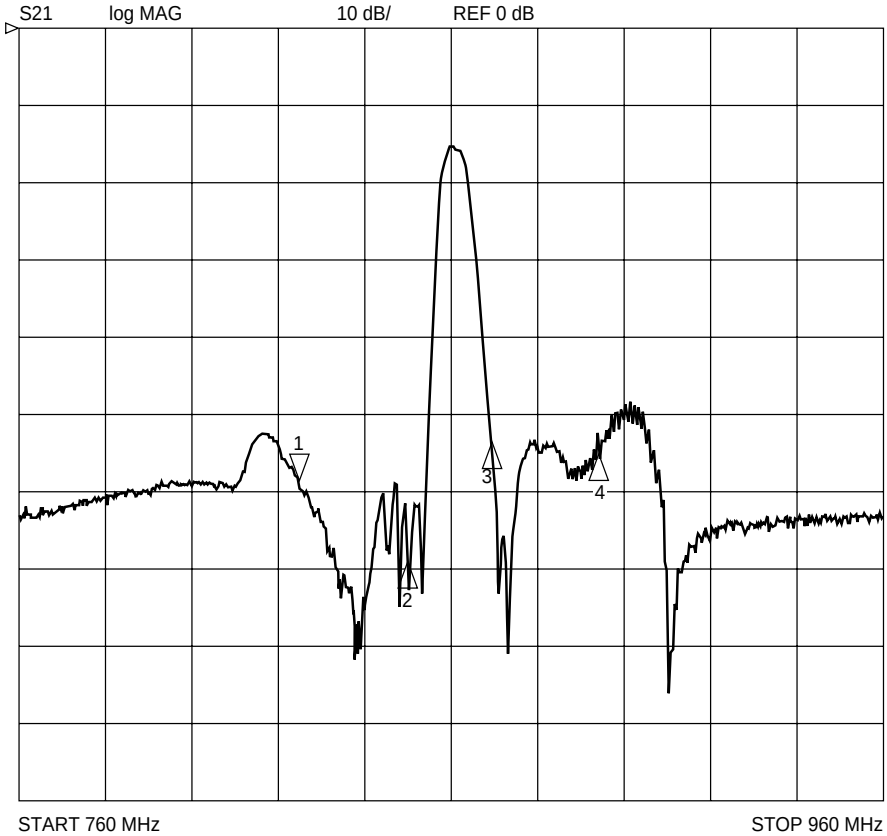
Tx

1 : –1.9803 dB
824 MHz
2 : –1.7331 dB
849 MHz
3 : –61.585 dB
869 MHz
4 : –47.689 dB
894 MHz

Rx

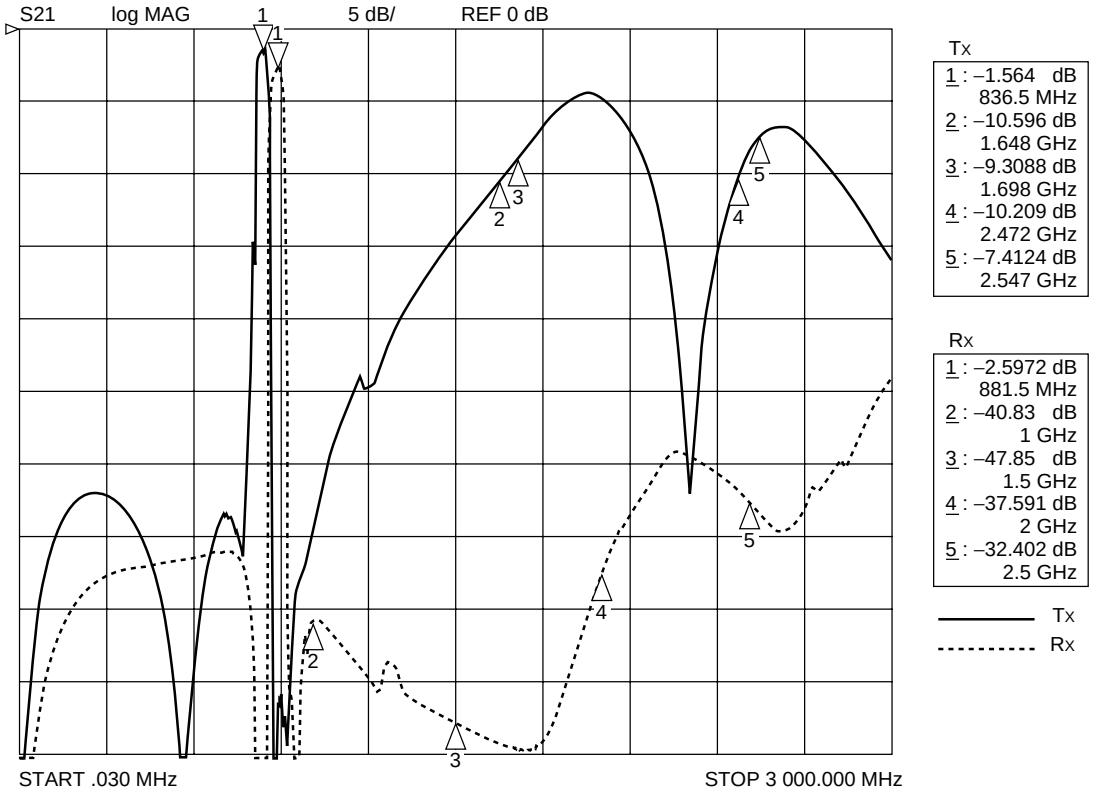
1 : –62.318 dB
824 MHz
2 : –57.892 dB
849 MHz
3 : –3.3498 dB
869 MHz
4 : –3.3633 dB
894 MHz

Tx
Rx



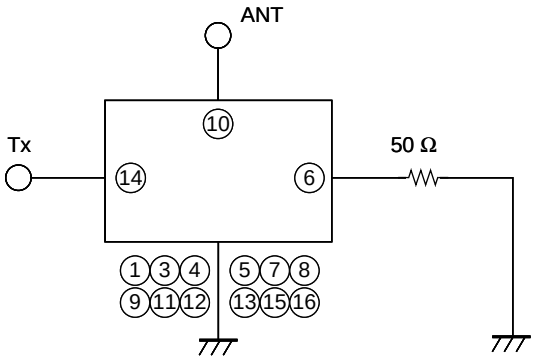
Tx→Rx Isolation

1 : –59.654 dB
824 MHz
2 : –68.072 dB
849 MHz
3 : –53.411 dB
869 MHz
4 : –54.842 dB
894 MHz

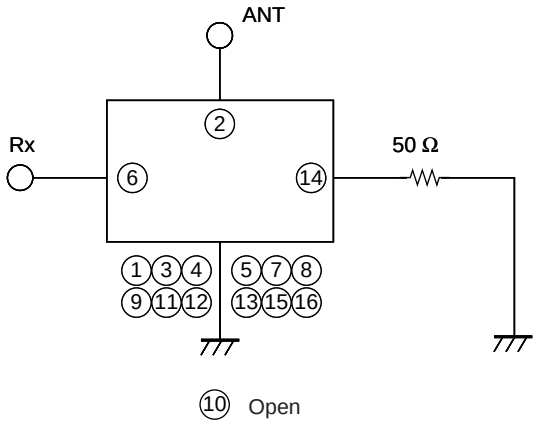

S21 log MAG 1 5 dB/ REF 0 dB
START .030 MHz
STOP 3 000.000 MHz
Tx
1 : –1.564 dB
836.5 MHz
2 : –10.596 dB
1.648 GHz
3 : –9.3088 dB
1.698 GHz
4 : –10.209 dB
2.472 GHz
5 : –7.4124 dB
2.547 GHz
Rx
1 : –2.5972 dB
881.5 MHz
2 : –40.83 dB
1 GHz
3 : –47.85 dB
1.5 GHz
4 : –37.591 dB
2 GHz
5 : –32.402 dB
2.5 GHz
Tx
Rx

■ MEASURMENT CIRCUIT

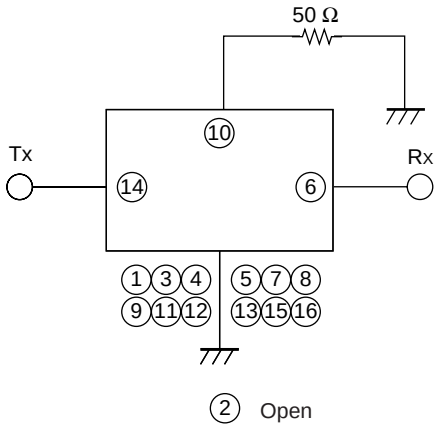
(1) Tx → ANT



(2) ANT → Rx



(3)Tx → Rx



■ PART NUMBER DESIGNATION

[Designation example]

FAR-D5CC- □□□□□□ -D1□□ - □

(1) (2) (3)

(1) Frequency : Specify the nominal center frequency of higher frequency side in six alphanumeric. Enter M (for MHz) at the decimal point. Refer to below example.

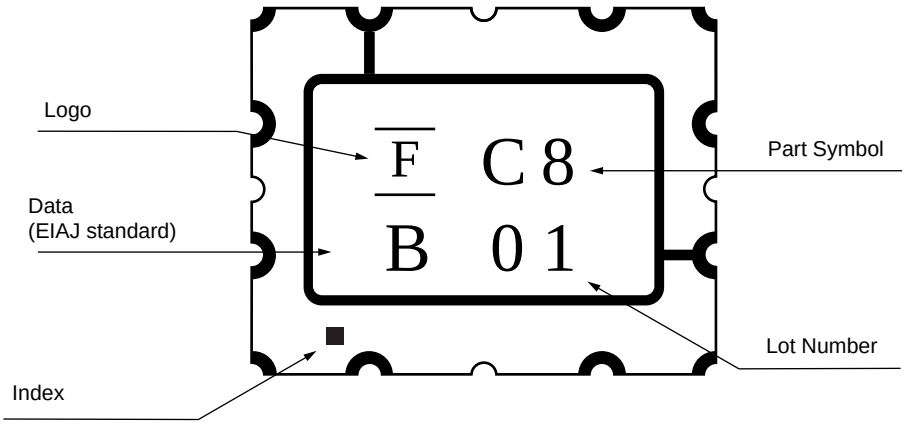
[Example] 881.5 MHz → 881M50

(2) Part symbol : Specified characters from A1 to Z9.

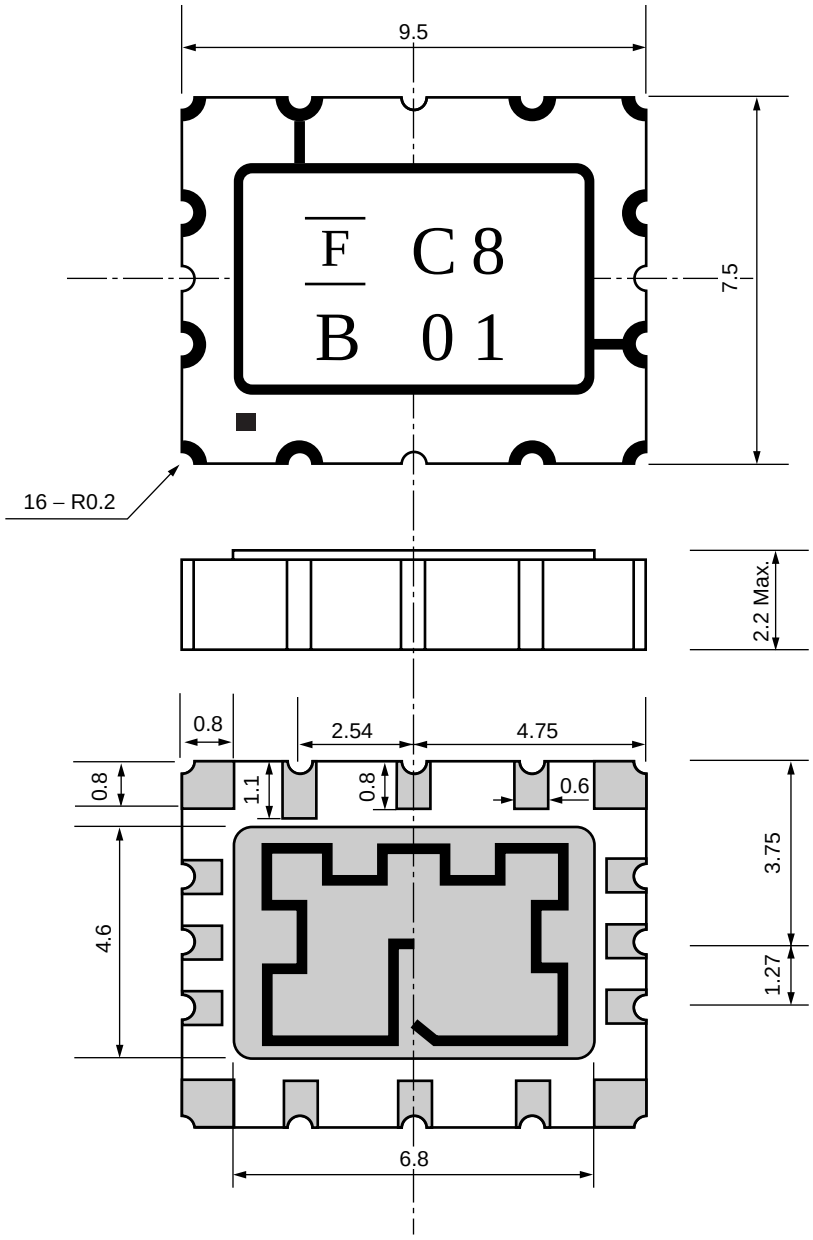
(3) Packing : T : 1 k pcs/reel

Q : 2 k pcs/reel

■ MARKING

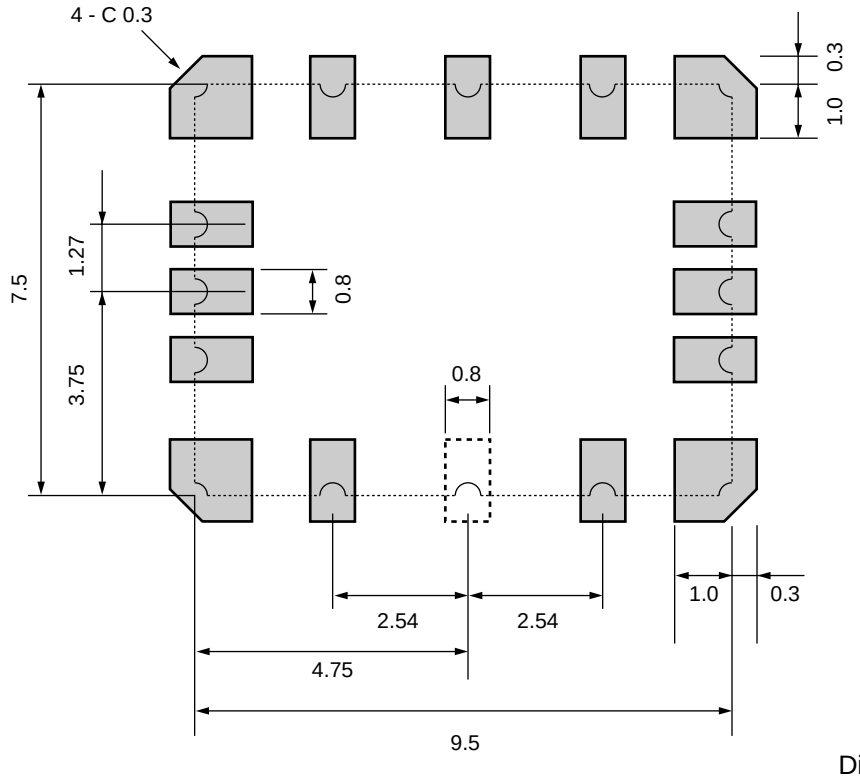

Logo
Data
(EIAJ standard)
Index
F C8
B 01
Part Symbol
Lot Number

■ PACKAGE DIMENSION



Dimensions in mm.

■ RECOMMENDED LAND PATTERN

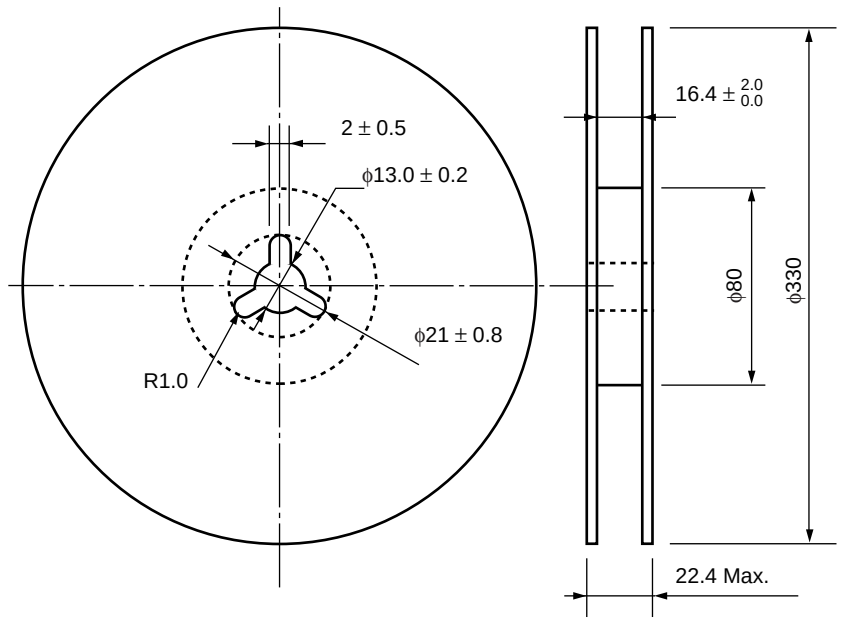


Dimensions in mm.

Note : Only one Antenna pin should be connected.
The remaining Antenna pin does not have to be connected.

■ PACKING : Reel type

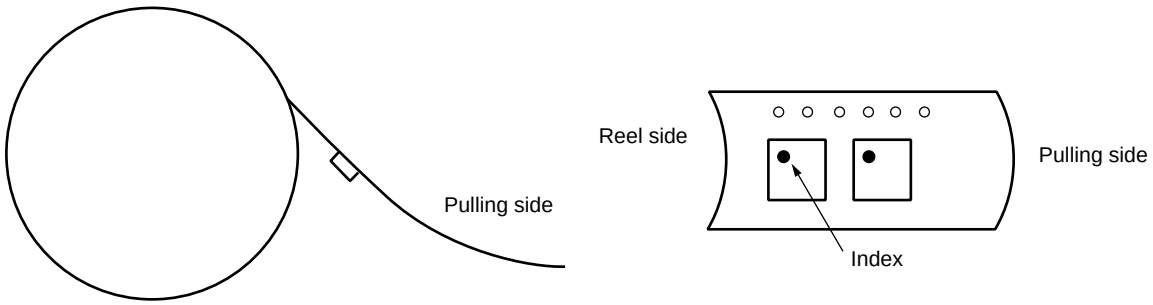
(1) Reel Dimensions



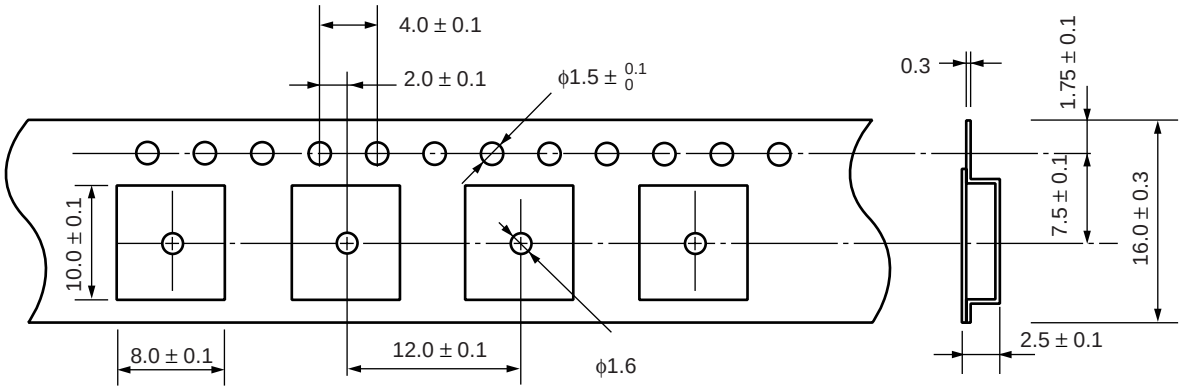
Type	A	Volume
-T	ϕ330	1 k pcs
-Q	ϕ330	2 k pcs

Dimensions in mm.

(2) Packing Style



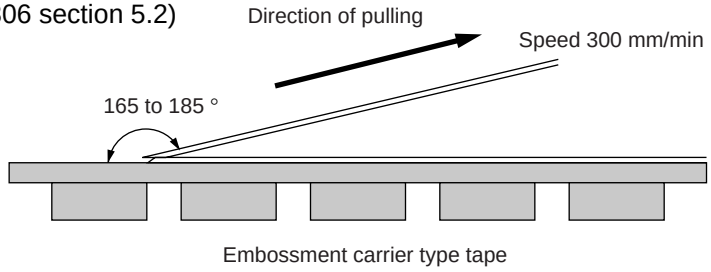
(3) Tape Dimensions



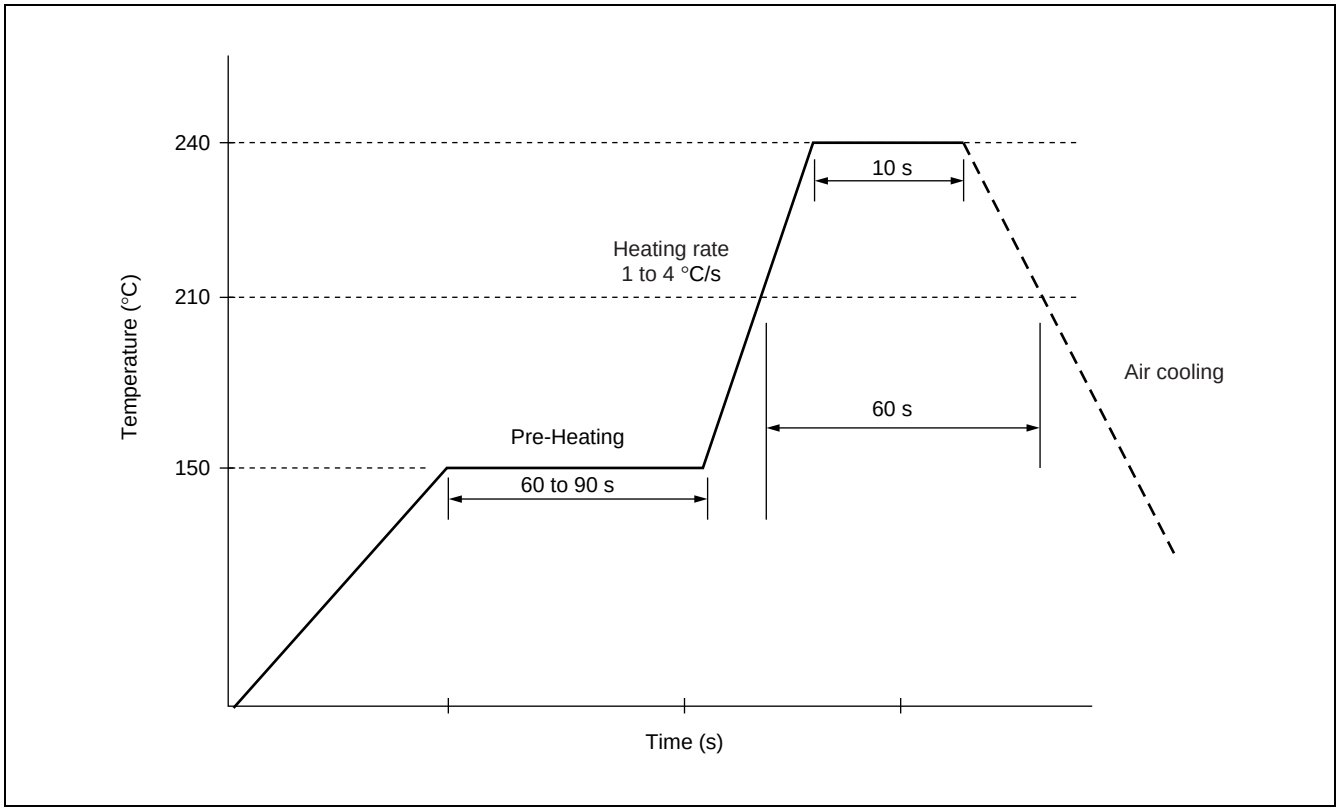
Dimensions in mm.

(4) Peel strength of top cover tape

Peel off by the force of 0.1 N to 0.7 N under the condition at the right.
(Conforms to JIS C 0806 section 5.2)



■ RECOMMENDED REFLOW PROFILE



■ NOTE

Mass-produced product order is accepted by a unit of 1000.

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