RFCA1206A5T
MULTILAYER CERAMIC ANTENNA

VENKEL LTD.

FEATURES:

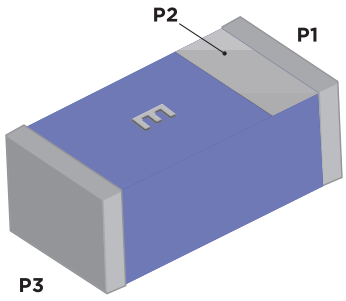
- LTCC process
- High Stability in Temperature/Humidity Change
- Surface mounted devices with a small dimension meet future miniaturization trend

ELECTRICAL CHARACTERISTICS

PARAMETER		VALUE	UNITS
F_C		2.9	GHz
Gain		2 (Typ.)	dBi
VSWR		2 (Max.)	-
Working Frequency Range		2450 ±50	MHz
Power Capacity		3 (Max.)	W
Maximum Input Power		5 (for 5 min.)	W
Operating Temperature Range		-40 to +85	˚C
Polarization		Linear	
Azimuth Beamwidth		Omni-directional	
Matching Component Value	Series 1	6.8	nH
	Series 2	-	-

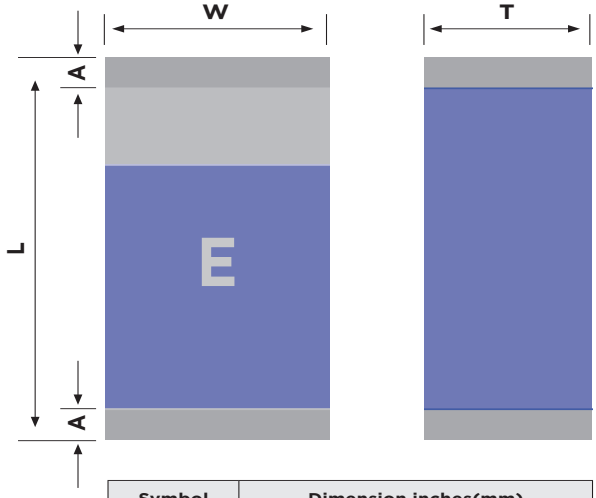
*** This frequency must be adjusted to 2.45GHz with matching circuit.**

CONSTRUCTION



PIN	Connection
1	Feeding
2	Identification Mark
3	Soldering terminal

DIMENSIONS

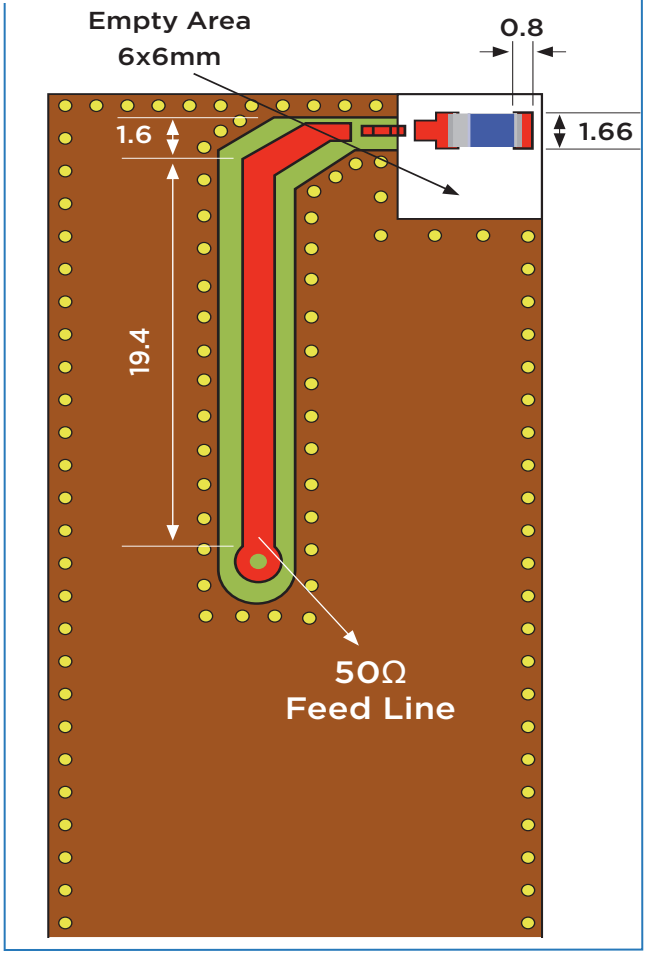


Symbol	Dimension inches(mm)
L	0.126 ± 0.008(3.20 ± 0.20)
W	0.063 ± 0.004(1.60 ± 0.10)
T	0.047 ± 0.004(1.20 ± 0.10)
A	0.010 ± 0.006(0.25 ± 0.15)

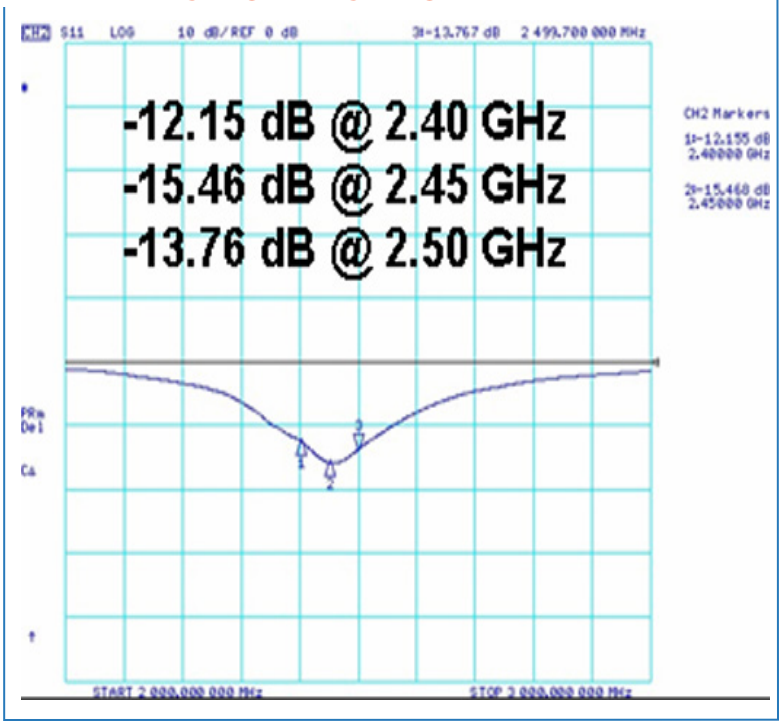
ENVIRONMENTAL INFORMATION

RoHS Status	10 of 10 Compliant
REACH Status	Compliant
Halogen Status	Halogen Free
Conflict Mineral Status	Conflict Mineral Free
Moisture Sensitivity Level (MSL)	1

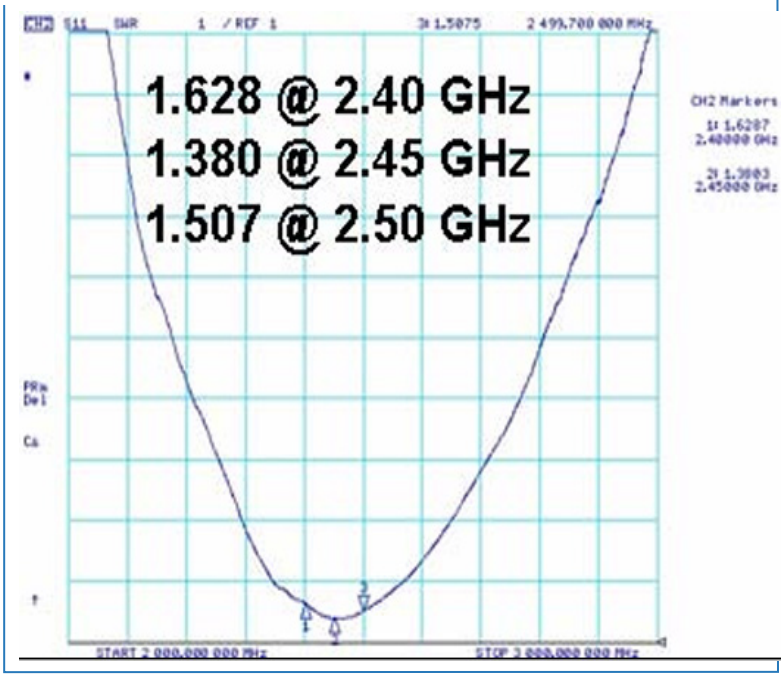
ANTENNA ON TEST BOARD (THICKNESS 1.2MM)



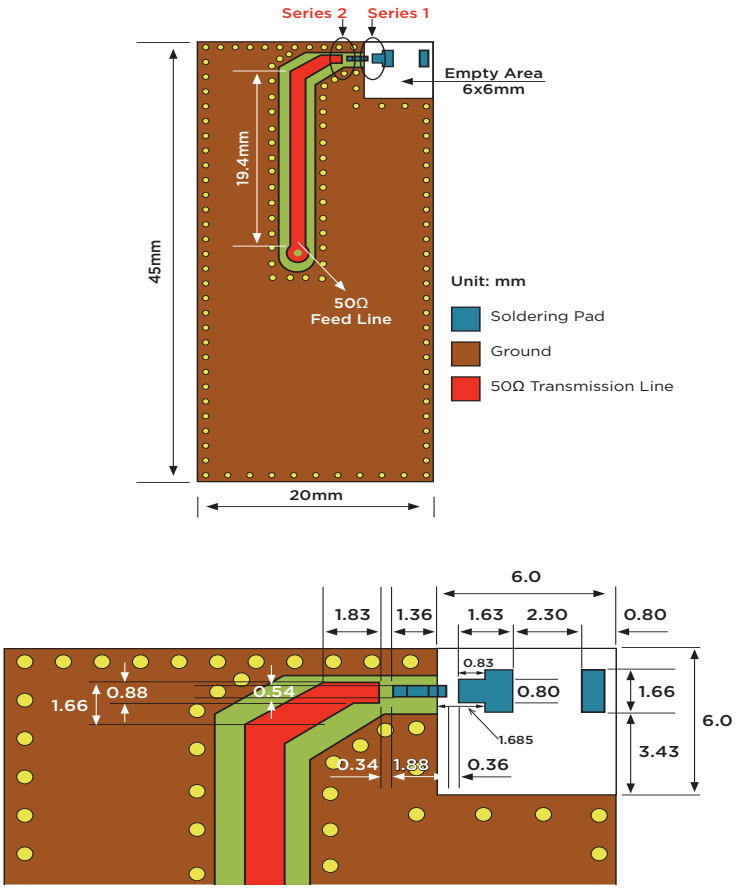
ANTENNA S11 ON TEST BOARD



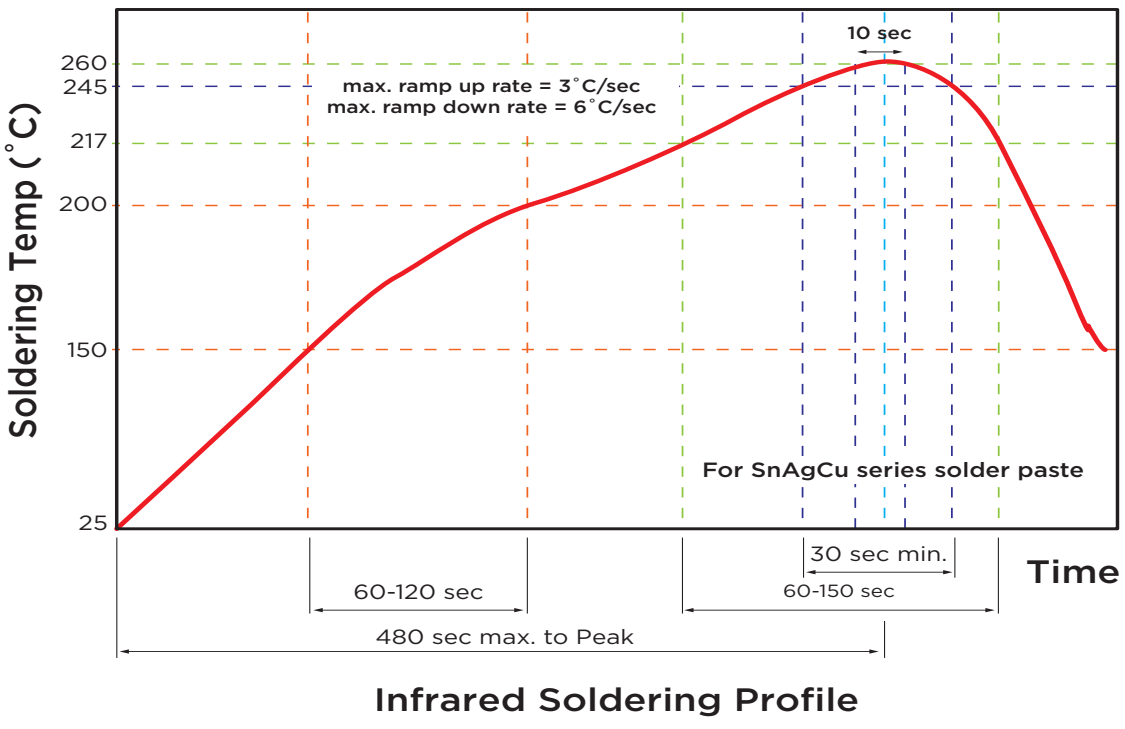
ANTENNA VSWR ON TEST BOARD



SOLDER LAND PATTERN DESIGN

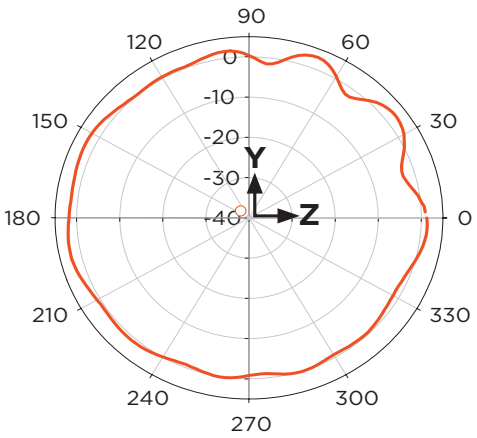
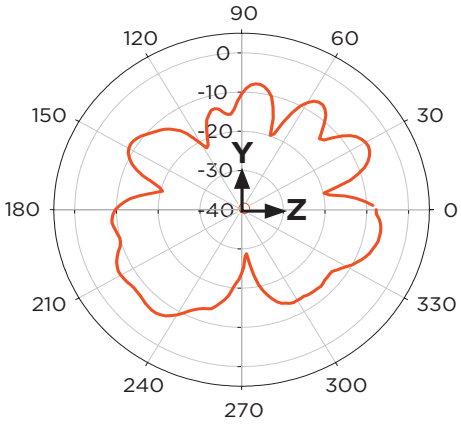
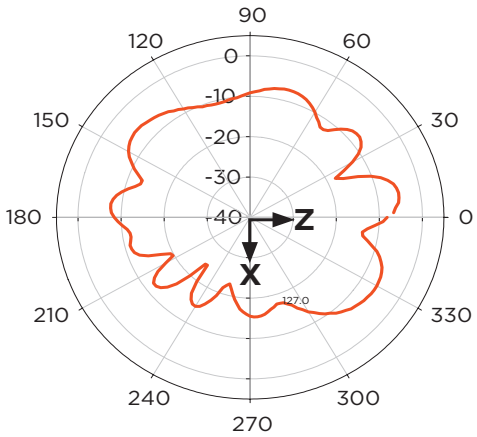
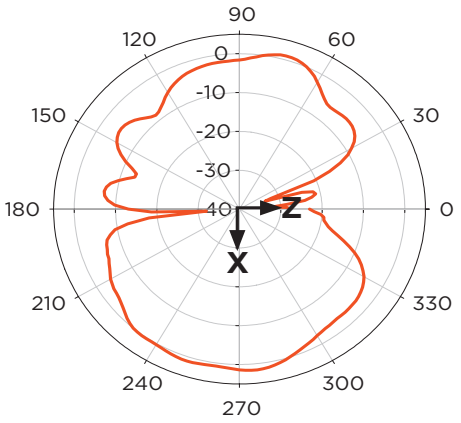
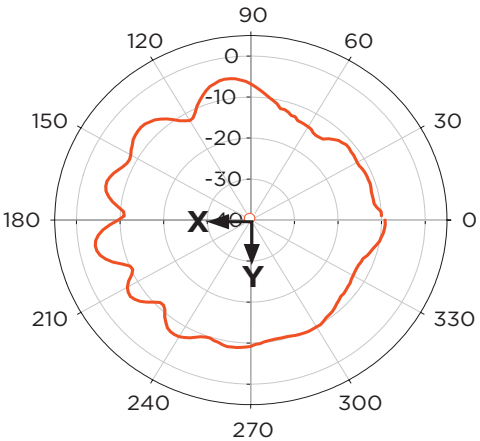
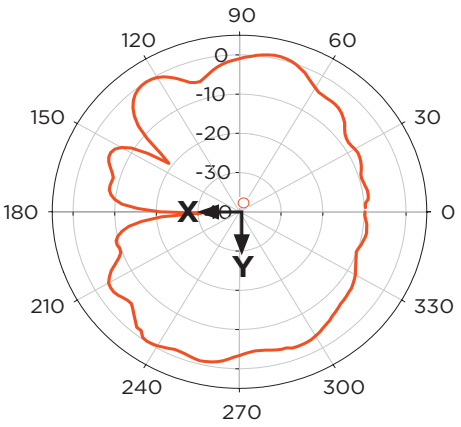


SOLDERING CONDITION

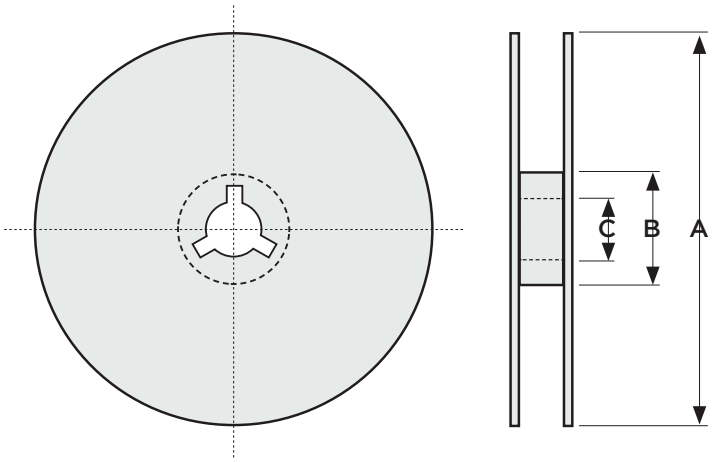


Infrared Soldering Profile

RADIATION PATTERN

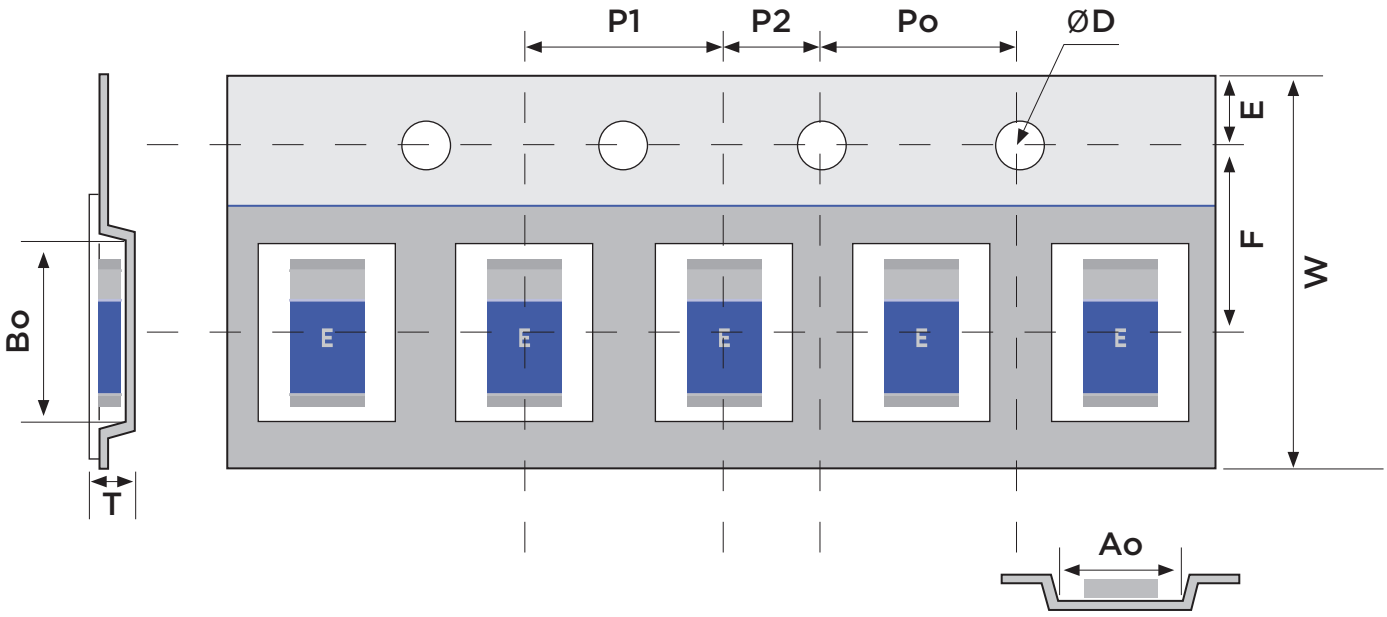
	VERTICAL	HORIZONTAL
Y-Z Plane Average Gain = 0.948dBi	 Peak Gain = 2.93dBi Average Gain = 0.60dBi	 Peak Gain= -5.60dBi Average Gain=-10.19dBi
X-Z Plane Average Gain = -2.147dBi	 Peak Gain = -4.98dBi Average Gain = -9.68dBi	 Peak Gain= 1.61dBi Average Gain=-2.99dBi
X-Y Plane Average Gain = -2.810dBi	 Peak Gain = 3.79dBi Average Gain = 08.89dBi	 Peak Gain= 0.77dBi Average Gain=-4.04dBi

TAPE AND REEL SPECIFICATION



Index	A	B	C
Dimension inches(mm)	Ø 7.01 (Ø 178)	Ø 2.36 (Ø 60)	Ø 0.531 (Ø 13.5)

Taping Quantity: 2000 pieces per 7" reel



Plastic Tape specifications (unit: inches(mm))

Index	Ao	Bo	ØD	T	W
Dimension (mm)	0.071±0.004 (1.81±0.10)	0.135±0.004 (3.42±0.10)	0.061±0.002 (1.55±0.05)	0.050±0.004 (1.26±0.10)	0.323+0.004/-0.012 (8.20+0.1/-0.3)
Index	**E**	**F**	**Po**	**P1**	**P2**
Dimension (mm)	0.069±0.004 (1.75±0.10)	0.138±0.002 (3.50±0.05)	0.157±0.004 (4.00±0.10)	0.157±0.004 (4.00±0.10)	0.079±0.004 (2.00±0.10)

ENVIRONMENTAL CHARACTERISTICS

TEST	TEST CONDITION/TEST METHOD	SPECIFICATION
Solderability JIS C 0050-4.6 JESD22-B102D	*Solder bath temperature: 235±5˚C *Immersion time: 2±0.5s Solder: Sn3Ag0.5Cu for lead-free	**At least 95% of a surface of each terminal electrode must be covered by fresh solder.**
Leaching (Resistance to dissolution of metallization) IEC 60068-2-58	*Solder bath temperature: 260±5˚C *Leaching immersion time: 30±0.5s Solder: SN63A	**Loss of metallization on the edges of each electrode shall not exceed 25%**
Resistance to soldering heat JIS C 0050-5.4	*Preheating temperature: 120~150˚C, 1 minute. *Solder temperature: 270±5˚C *Immersion time: 10±1s Solder: Sn3Ag0.5Cu for lead-free Measurement to be made after keeping at room temperature for 24±2hrs	**No mechanical damage.** **Electrical specification shall satisfy the descriptions in electrical characteristics under the operational temperature range within -40~85˚C.** **Loss of metallization on the edges of each electrode shall not exceed 25%**
Drop Test JIS C 0044 Customer's specification.	*Height: 75cm *Test Surface: Rigid surface of concrete or steel. *Times: 6 surfaces for each units; 2 times for each side	**No mechanical damage.** **Electrical specification shall satisfy the descriptions in electrical characteristics under the operational temperature range within -40~85˚C.**
Vibration JIS C 0040	*Frequency: 10Hz~55Hz~10Hz(1min) *Total amplitude: 1.5mm *Test times: 6hrs. (Two hrs each in three mutually perpendicular directions)	**No mechanical damage.** **Electrical specification shall satisfy the descriptions in electrical characteristics under the operational temperature range within -40~85˚C.**
Adhesive Strength of Termination JIS C 0051-7.4.3	*Pressurizing force: 5N(≤0603); 10N(>0603) *Test time: 10±1s	**No remarkable damage or removal of the termination.**
Bending test JIS C 0051-7.4.1	The middle part of substrate shall be pressurized by means of the pressurizing rod at a rate of about 1mm/s per second until the deflection becomes 1mm/s and then pressure shall be maintained for 5±1s. Measurement to be made after keeping at room temperature for 24±2hrs	**No mechanical damage.** **Electrical specification shall satisfy the descriptions in electrical characteristics under the operational temperature range within -40~85˚C.**
Temperature cycle JIS C 0025	1. 30±3 minutes at -40˚C±3˚C 2. 10~15 minutes at room temperature 3. 30±3 minutes at +85˚C±3˚C 4. 10~15 minutes at room temperature Total 100 continuous cycles Measurement to be made after keeping at room temperature for 24±2hrs	**No mechanical damage.** **Electrical specification shall satisfy the descriptions in electrical characteristics under the operational temperature range within -40~85˚C.**
High temperature JIS C 0021	*Temperature: 85˚C±2˚C *Test duration: 1000+24/-0hrs Measurement to be made after keeping at room temperature for 24±2hrs	**No mechanical damage.** **Electrical specification shall satisfy the descriptions in electrical characteristics under the operational temperature range within -40~85˚C.**
Humidity (steady conditions) JIS C 0022	*Humidity: 90% to 95% R.H. *Temperature: 40±2˚C *Time: 1000+24/-0 hrs Measurement to be made after keeping at room temperature for 24±2hrs *500hrs measuring the first data then 1000hrs data	**No mechanical damage.** **Electrical specification shall satisfy the descriptions in electrical characteristics under the operational temperature range within -40~85˚C.**
Low Temperature JIS C 0020	*Temperature: 40±2˚C *Test duration: 1000+24/-0 hrs Measurement to be made after keeping at room temperature for 24±2hrs	**No mechanical damage.** **Electrical specification shall satisfy the descriptions in electrical characteristics under the operational temperature range within -40~85˚C.**