


| FEATURES | APPLICATIONS |  |
|--|--|---|
| <ul style="list-style-type: none"> - ISM - Chip Type - Stable And Reliable Performance - 433.05-434.79MHz, 863-870MHz & 902-928MHz - SMT Process Compatible | <ul style="list-style-type: none"> - ISM 433/868/915 Band - Short Range Devices - IOT Applications - Wireless Alarm and Security Systems - Machine To Machine Communication | |

PART NUMBERING GUIDE

SUNTSU → **S** **AT** **CA** - **9A4A2A** - **IS** **B4** ←

ANTENNA → **AT**

CHIP ANTENNA → **CA**

FREQUENCY BAND (MHz)

B4: 433.05-434.79MHz
863-870MHz
902-928MHz

APPLICATION

IS: ISM

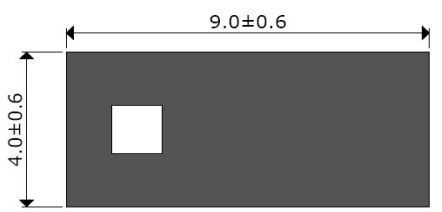
*** PACKAGE SIZE**

9A4A2A: 9.0mm x 4.0mm x 2.0mm

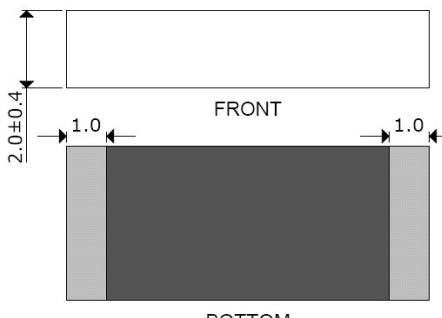
* Where letters denote decimal location A=.0, B=.1, C=.2, etc. Ex: B5=0.15, 3A5=3.05, 9A=9.0
To customize your parameters, contact a Suntsu representative.

| ELECTRICAL PARAMETERS (At 25°C) | UNITS | MIN. | TYP. | MAX | REMARKS |
|---------------------------------|-------|--------|--------|--------|---------------------|
| Frequency Band | MHz | 433.05 | | 434.79 | |
| Impedance | Ω | | 50 | | |
| Polarization | | | Linear | | |
| Peak Gain | dBi | | N/A | | At 433MHz |
| Efficiency | % | | N/A | | At 433MHz |
| VSWR | | | | 2 | At Center Frequency |
| Operating Temperature | °C | -40 | | 85 | |
| Frequency Band | MHz | 863 | | 870 | |
| Impedance | Ω | | 50 | | |
| Polarization | | | Linear | | |
| Peak Gain | dBi | | -5.6 | | At 868MHz |
| Efficiency | % | | 13.9 | | At 868MHz |
| VSWR | | | | 2 | At Center Frequency |
| Operating Temperature | °C | -40 | | 85 | |
| Frequency Band | MHz | 902 | | 928 | |
| Impedance | Ω | | 50 | | |
| Polarization | | | Linear | | |
| Peak Gain | dBi | | -2.9 | | At 915MHz |
| Efficiency | % | | 18 | | At 915MHz |
| VSWR | | | | 2 | At Center Frequency |
| Operating Temperature | °C | -40 | | 85 | |

OUTLINE DRAWING (NOTE: All dimensions are in millimeters [mm], unless otherwise noted. Drawings are not to scale.)




Top

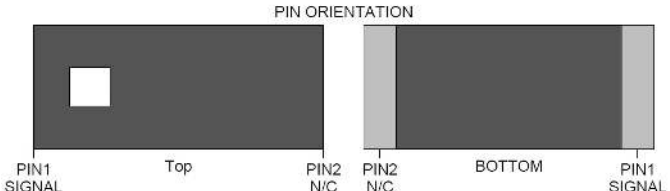


FRONT

BOTTOM



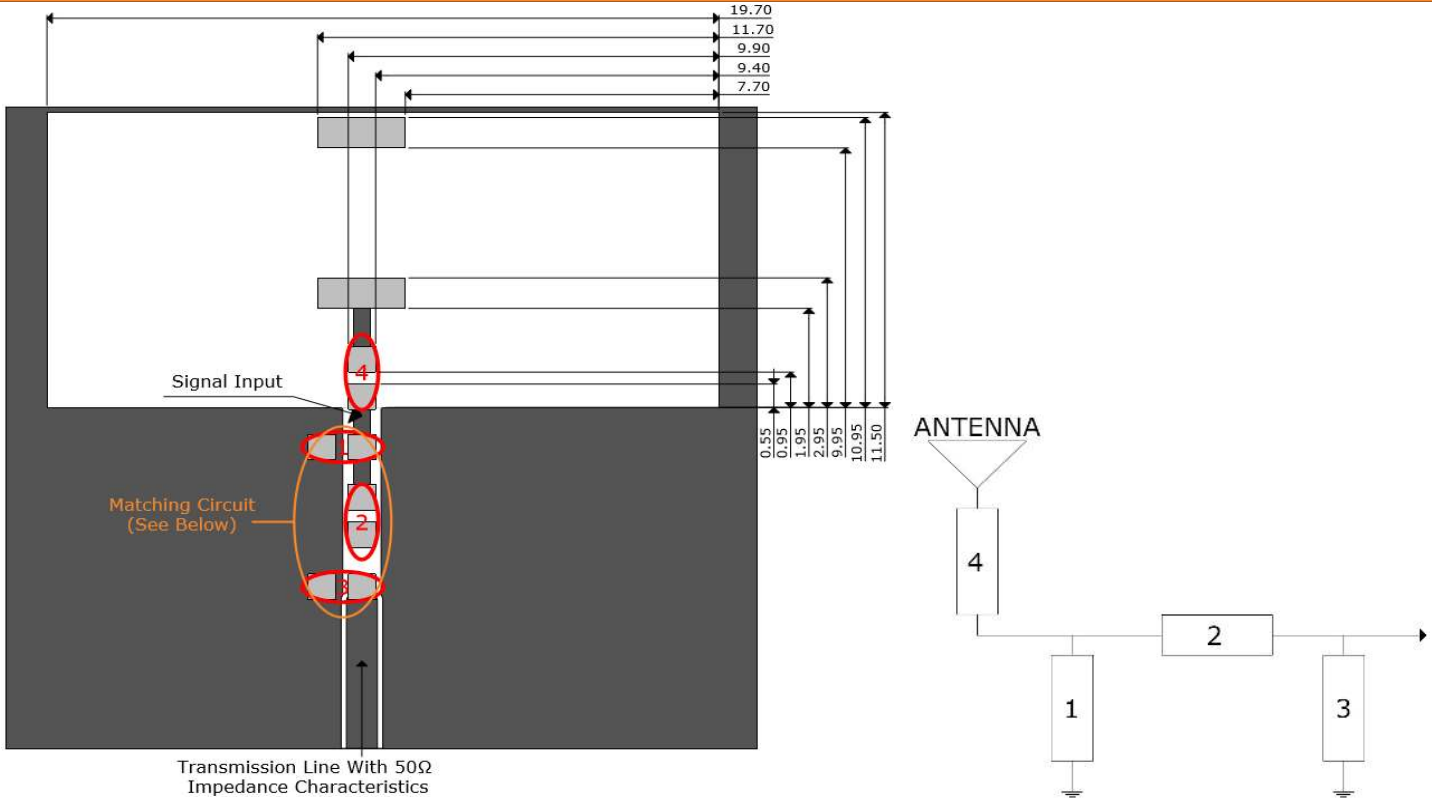
SIDE



PIN ORIENTATION

PIN1 SIGNAL Top PIN2 N/C PIN2 N/C BOTTOM PIN1 SIGNAL

RECOMMENDED LAND PATTERN & FREQUENCY TUNING SCENARIO CIRCUIT (NOTE: All dimensions are in mm, unless otherwise noted. Drawings are not to scale.)



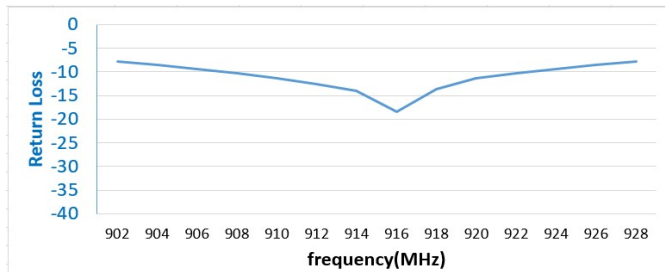
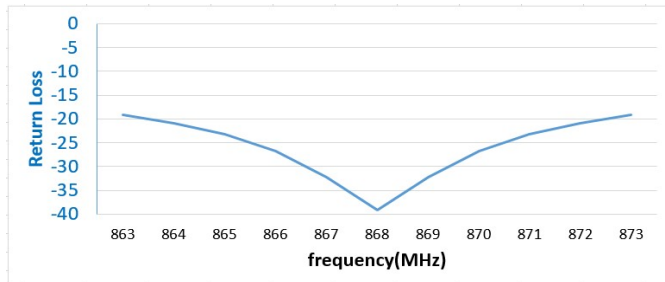
| System Matching Circuit Components (433MHz Band) | | | |
|--|---------------|--------|-----------|
| Location | Description | Vendor | Tolerance |
| 1 | 8.2nH, (0402) | MURATA | ±5% |
| 2 | 39pF, (0402) | MURATA | ±3% |
| 3 | 2.2pF, (0402) | MURATA | ± 0.05pF |
| 4 (Fine Tuning) | 180nH, (0402) | MURATA | ±5% |
| System Matching Circuit Components (868MHz Band) | | | |
| Location | Description | Vendor | Tolerance |
| 1 | 3.6pF, (0402) | MURATA | ± 0.05pF |
| 2 | 5.6nH, (0402) | MURATA | ±5% |
| 3 | 1pF, (0402) | MURATA | ± 0.05pF |
| 4 (Fine Tuning) | 39nH, (0402) | MURATA | ±5% |

| System Matching Circuit Components (915MHz Band) | | | |
|--|---------------|--------|-----------|
| Location | Description | Vendor | Tolerance |
| 1 | N/A | - | - |
| 2 | 18nH, (0402) | MURATA | ±5% |
| 3 | 3.3pF, (0402) | MURATA | ± 0.05pF |
| 4 (Fine Tuning) | 33nH, (0402) | MURATA | ±5% |

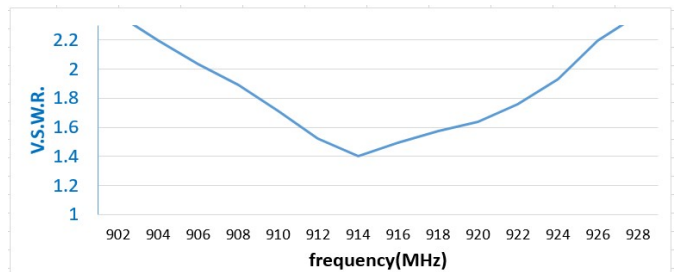
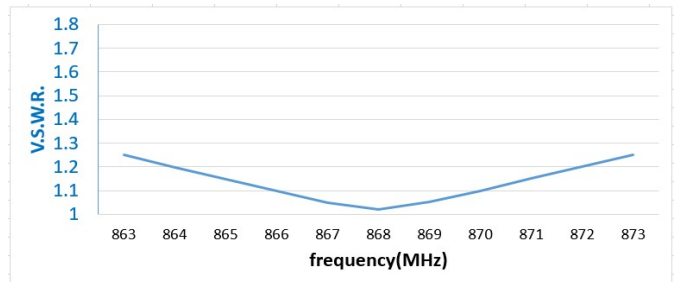
For these suggested values for the matching and tuning of components, the average frequency will be around 433MHz or 868MHz or 915MHz on a standard 51.5 x 20mm² Evaluation board. Please note, these are average reference values which may need to be changed when different circuit boards or manufactures are used.

ELECTRICAL TEST

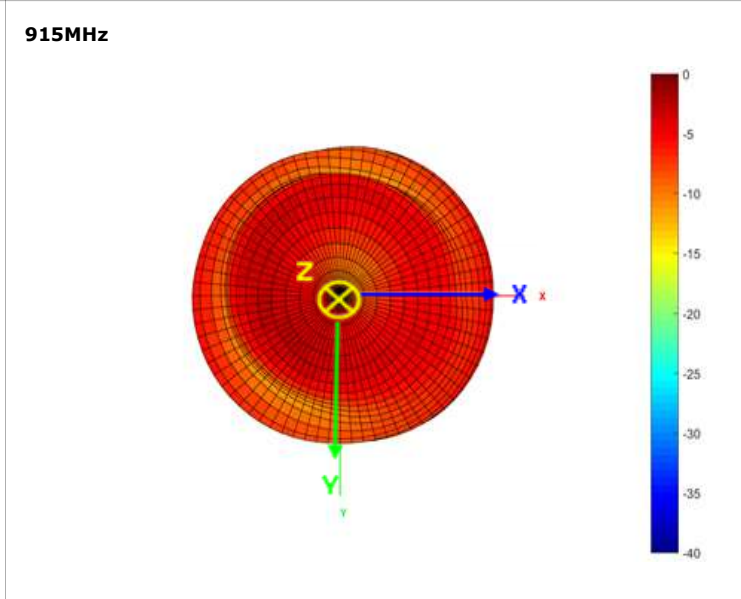
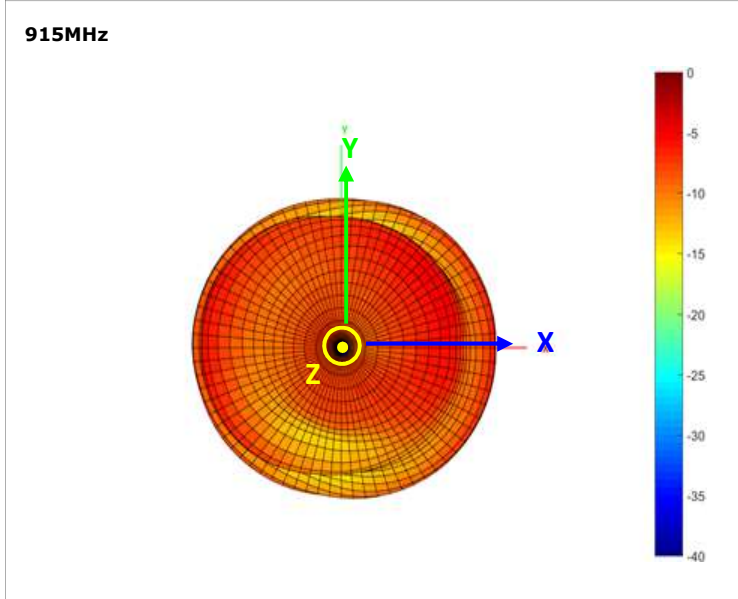
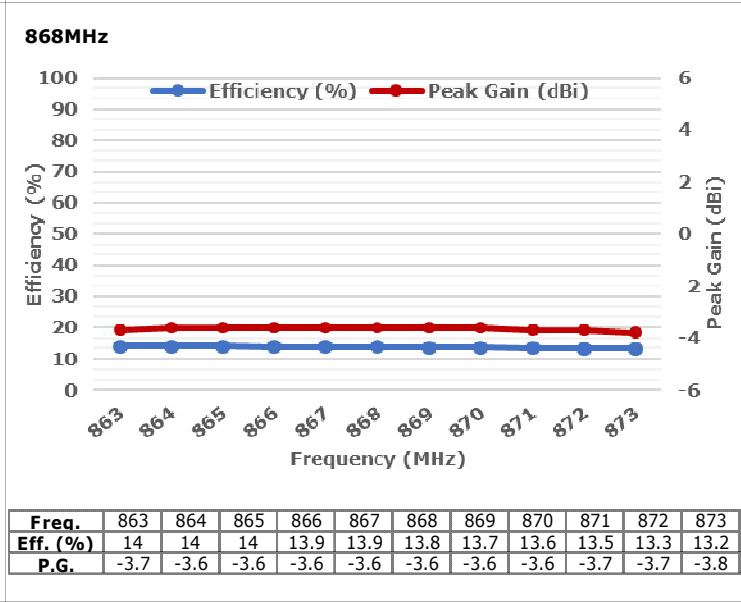
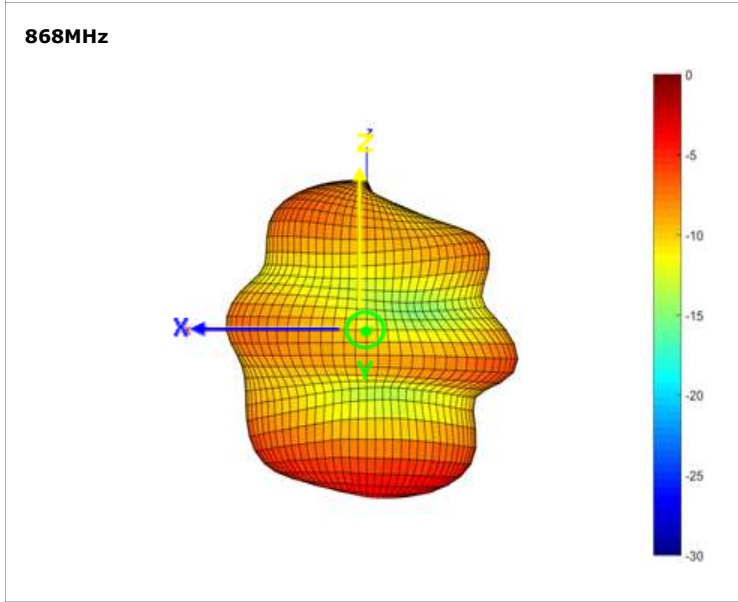
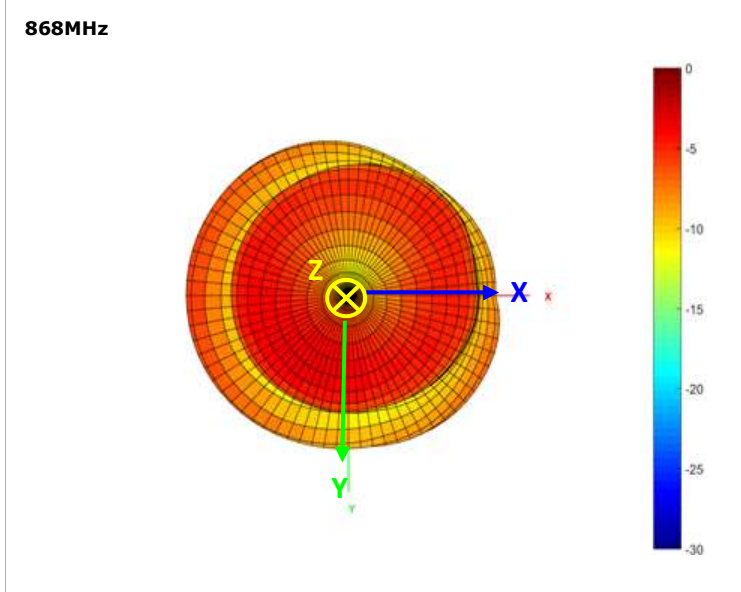
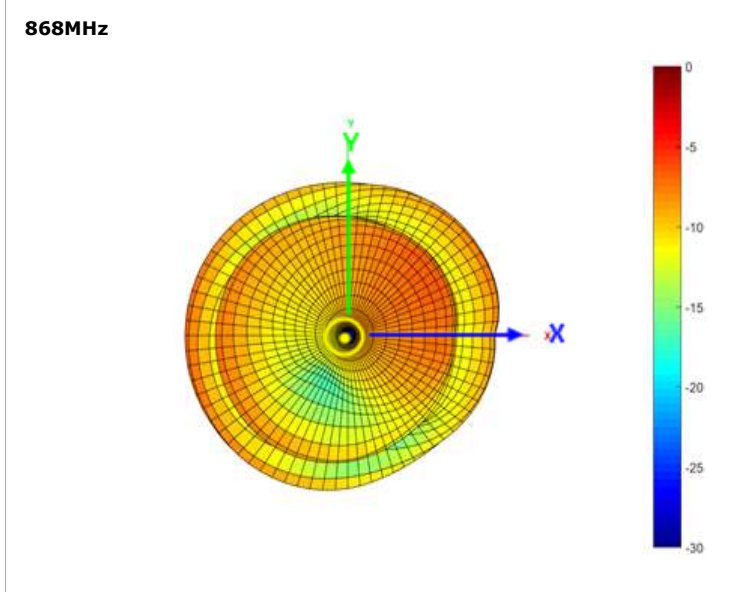
Return Loss



VSWR

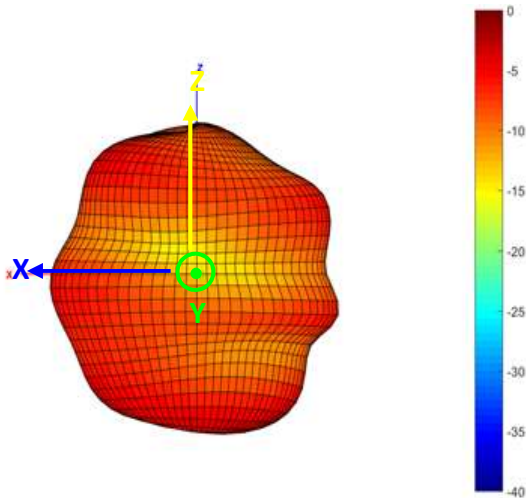


3D RADIATION PATTERN (UNIT: dBi) AND EFFICIENCY vs FREQUENCY

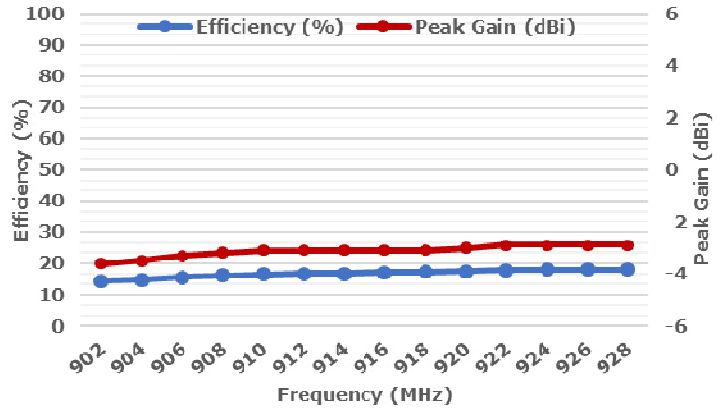


3D RADIATION PATTERN (UNIT: dBi) AND EFFICIENCY vs FREQUENCY (CONT.)

915MHz



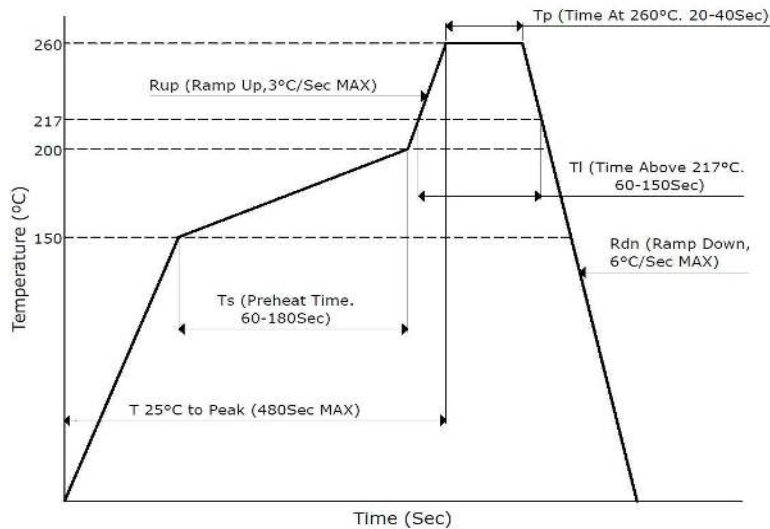
915MHz



| Freq. | 902 | 904 | 906 | 908 | 910 | 912 | 914 | 916 | 918 | 920 | 922 | 924 | 926 | 928 |
|----------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Eff. (%) | 14.4 | 14.8 | 15.5 | 16.1 | 16.4 | 16.6 | 16.7 | 17.0 | 17.2 | 17.5 | 17.8 | 18 | 18 | 18 |
| P.G. | -3.6 | -3.5 | -3.3 | -3.2 | -3.1 | -3.1 | -3.1 | -3.1 | -3.1 | -3 | -2.9 | -2.9 | -2.9 | -2.9 |

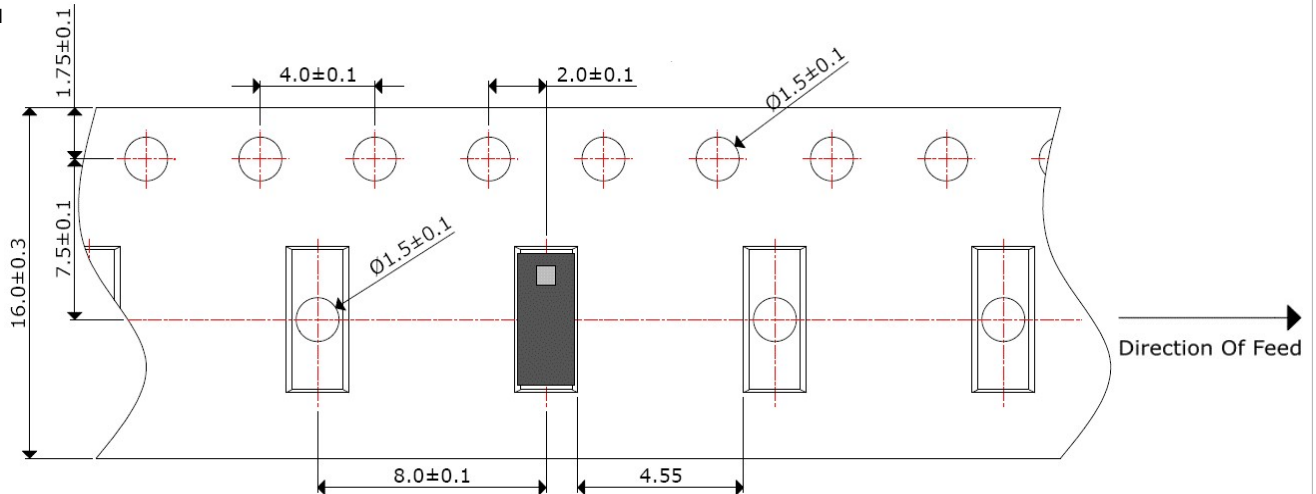
SOLDERING CONDITIONS

Typical Soldering Profile For Lead-Free Process



PACKAGING - TAPE AND REEL (NOTE: All dimensions are in mm, unless otherwise noted. Drawings are not to scale.)

3,000Pcs / Reel



ENVIRONMENTAL & MECHANICAL SPECIFICATIONS

| | |
|-----------------------|---|
| High Temperature Test | 85°C for 500 hours, and then to normal temperature/humidity for 24hours. |
| Low Temperature Test | -30°C for 500 hours, and then to normal temperature/humidity for 24hours. |
| Humidity Test | 85°C / 90-95% for 96 hours, and then to normal temperature/humidity for 24hours. |
| Thermal Shock Test | -30°C for 30 min and +85°C for 30 min. 5 cycles, then expose to normal temperature/humidity for 24 hours or more. |
| Vibration Test | 5 to 200 to 5Hz, swept in 10min, 4.5G at max(2mm amplitude), in X and Y directions for 2 hours each and in Z direction for 4 hours. |