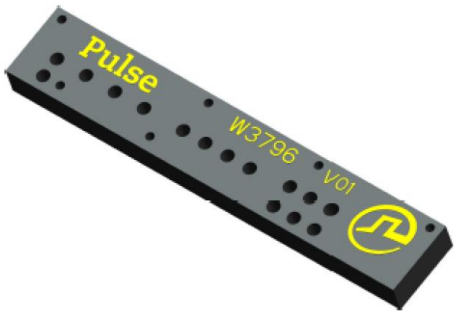
# LTE Surface Mount ANTENNA

# Domino Series

## Part# W3796




The W3796 compact, sleek LTE antenna is part of the Surface Mount Antenna, Domino series of embedded antennas. LTE, also referred to as 4G, is designed to increase traffic capacity and reduce overall power consumption. This sleek multi-band embedded antenna is the ideal option for many LTE applications, offering high efficiency where space is limited. As an added feature, the W3796 also covers the GNSS/GPS band.

## Features

- **Multi-band coverage in a compact design**
- **LTE Frequencies plus GNSS:** 698-960/1695-2200/2300-2700MHz plus added extra band covering 1427.9-1660.5
- **Small, low profile size of 7 x 40 x 3 mm**
- **SMD Solution – single port**
- **Efficiency at 65 – 75%**
- **RoHS compliant and Halogen free**

## Applications

- **4G/LTE applications**
- **Data transmission for IoT applications**
- **High speed data terminals**
- **Routers using LTE frequencies**
- **Hot Spots**
- **Public safety applications**
- **Radio modules**



## For More Information

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## LTE SMD ANTENNA

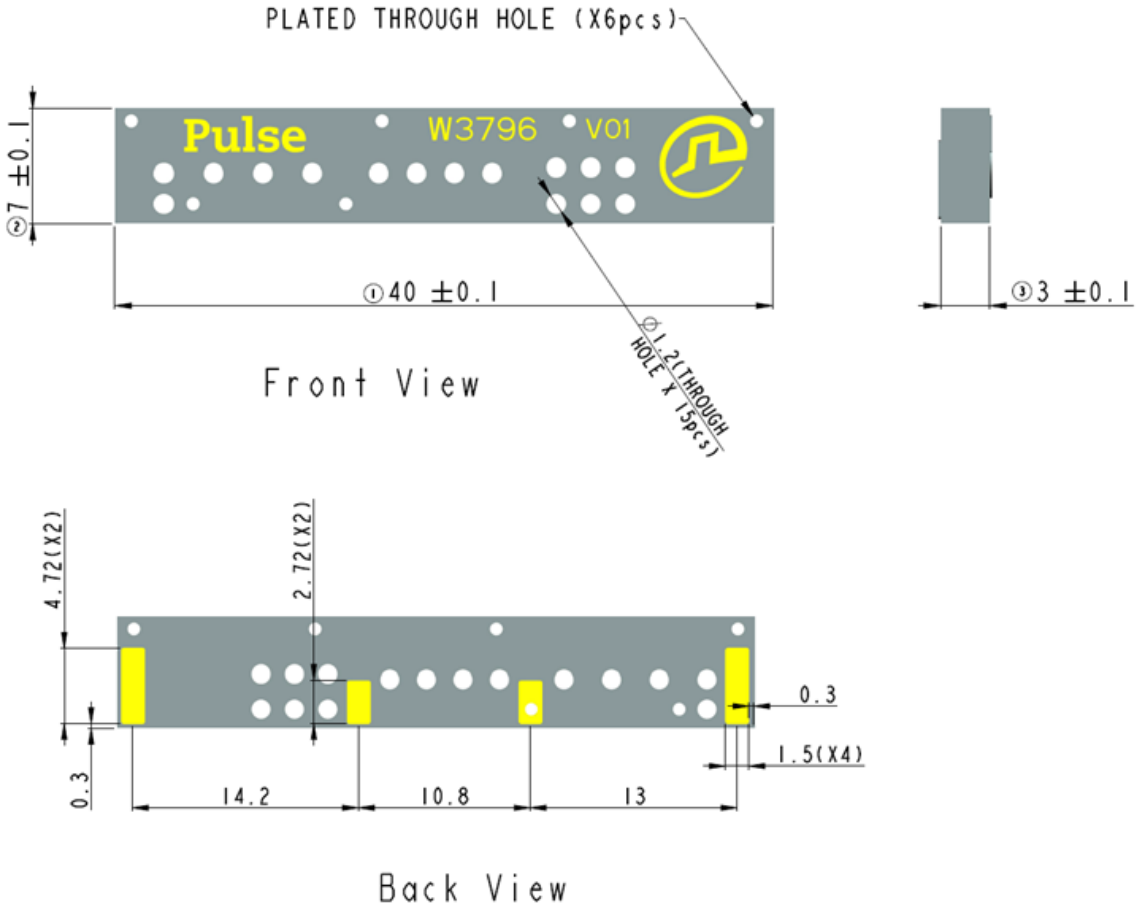
# Part# W3796

| ELECTRICAL SPECIFICATIONS | |
|---|---|
| FREQUENCY (MHz) | 698-960/1427.9-1660.5/1695-2200/2300-2700MHz |
| NOMINAL IMPEDANCE (Ω) | 50 |
| VSWR | 3:01 |
| RETURN LOSS | 6dB |
| TOTAL EFFICENCY (698-960MHz) | 65% |
| TOTAL EFFICENCY (1427.9-1660.5MHz) | 55% |
| TOTAL EFFICENCY (1695-2200MHZ) | 75% |
| TOTAL EFFICENCY (2300-2700MHz) | 70% |
| AVERAGE PEAK GAIN (698-960MHz) | 1.5dBi |
| AVERAGE PEAK GAIN (1427.9-1660.5MHz) | 2dBi |
| AVERAGE PEAK GAIN (1695-2200MHZ) | 5.5dBi |
| AVERAGE PEAK GAIN (2300-2700MHz) | 5dBi |
| AVERAGE GAIN (698-960MHz) | -2.5dBi |
| AVERAGE GAIN (1427.9-1660.5MHz) | -3dBi |
| AVERAGE GAIN (1695-2200MHZ) | -2dBi |
| AVERAGE GAIN (2300-2700MHz) | 1.5dBi |
| MAXIMUM POWER INPUT | 5W |

| ENVIRONMENTAL SPECIFICATIONS | |
|---|---|
| OPERATION TEMPERATURE | -40 TO +85 ° C |
| TEMPERATURE STATIONARY | -40 TO +85 ° C |
| TEMPERATURE CYCLIC | 3 Cycles Rate 15 ° C/min |
| HUMIDITY STATIONARY | 93% RH @ 30° C |
| HUMIDITY CYCLIC | 24 hours |
| DROP TEST | 1 M |

| MECHANICAL SPECIFICATIONS | |
|---|---|
| COLOR | Black |
| SIZE | 40mm (L) * 7mm (W) * 3mm (T) |
| WEIGHT | 1.65 g |
| FIXING SYSTEM | SMT |

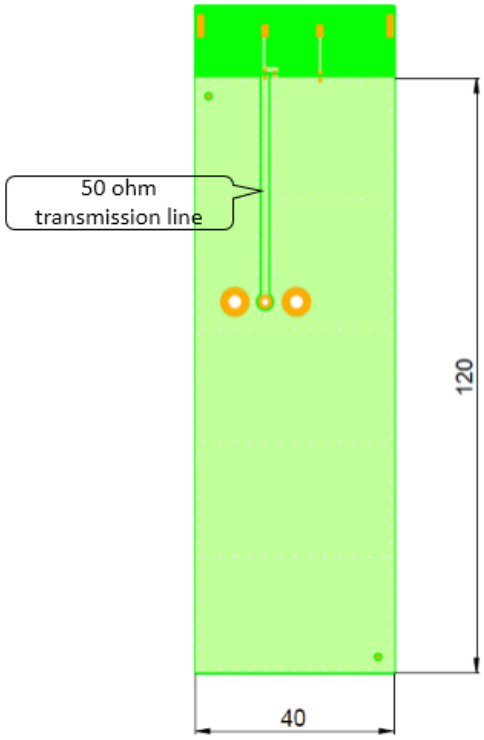
# Part# W3796



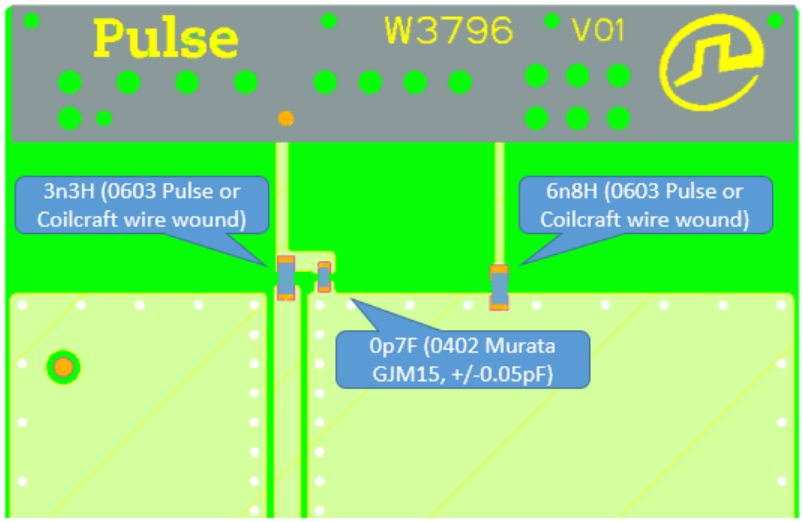

**The Antenna W3796 is in compliance with requirements of ROHS and Halogen Free.**

# Part# W3796

## Reference Test PCB

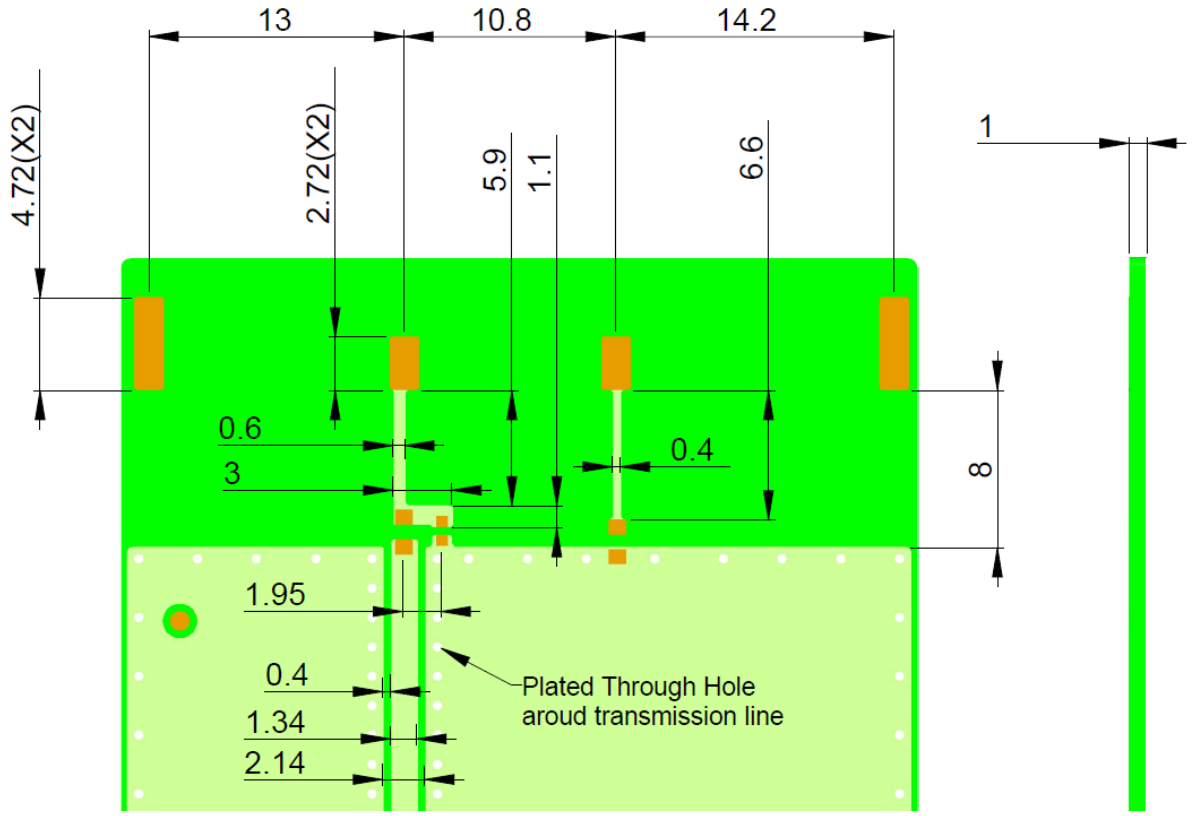



Ground plane dimensions (mm)




Ground clearance dimensions (mm) and matching component values

# Part# W3796

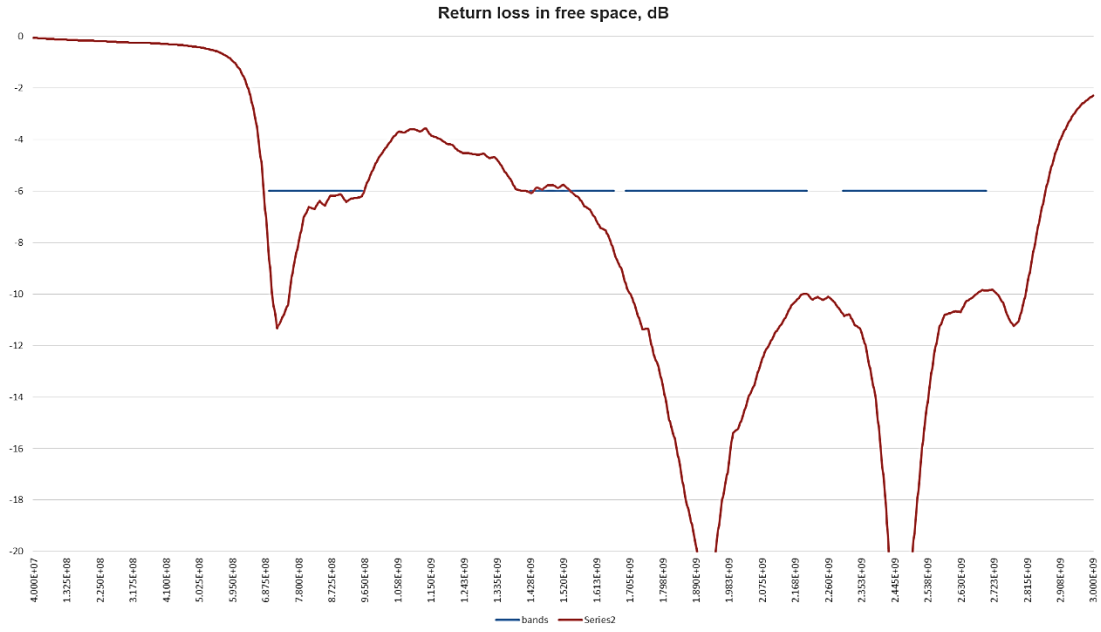


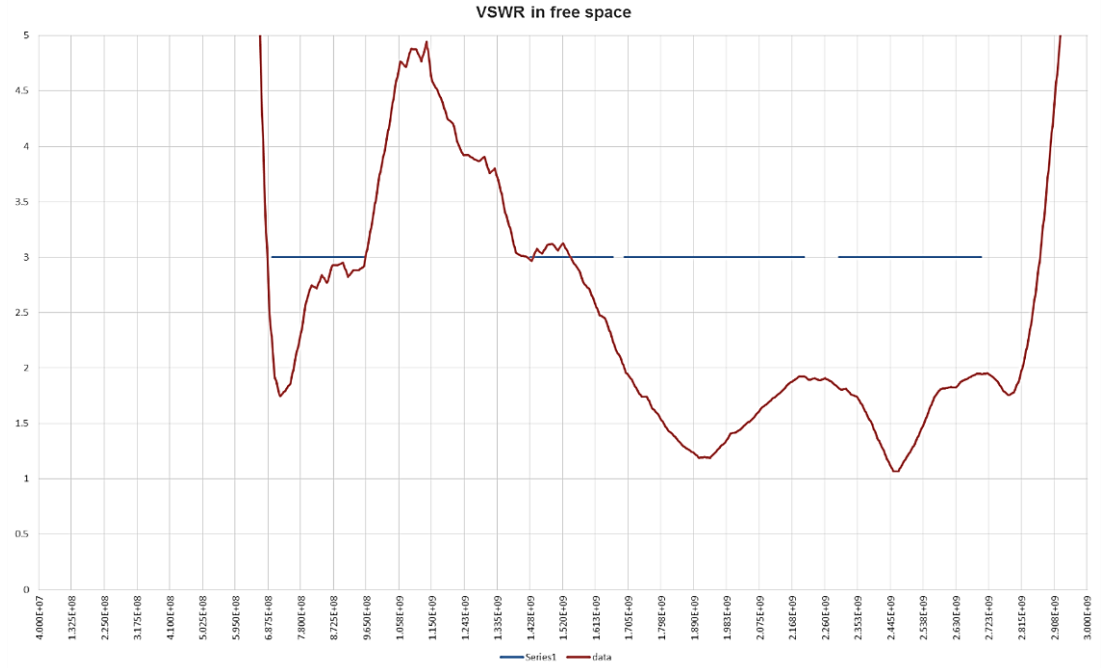

Recommended test board PCB layout for electrical characteristic measurement. Substrate material FR4.

All dimensions are in mm

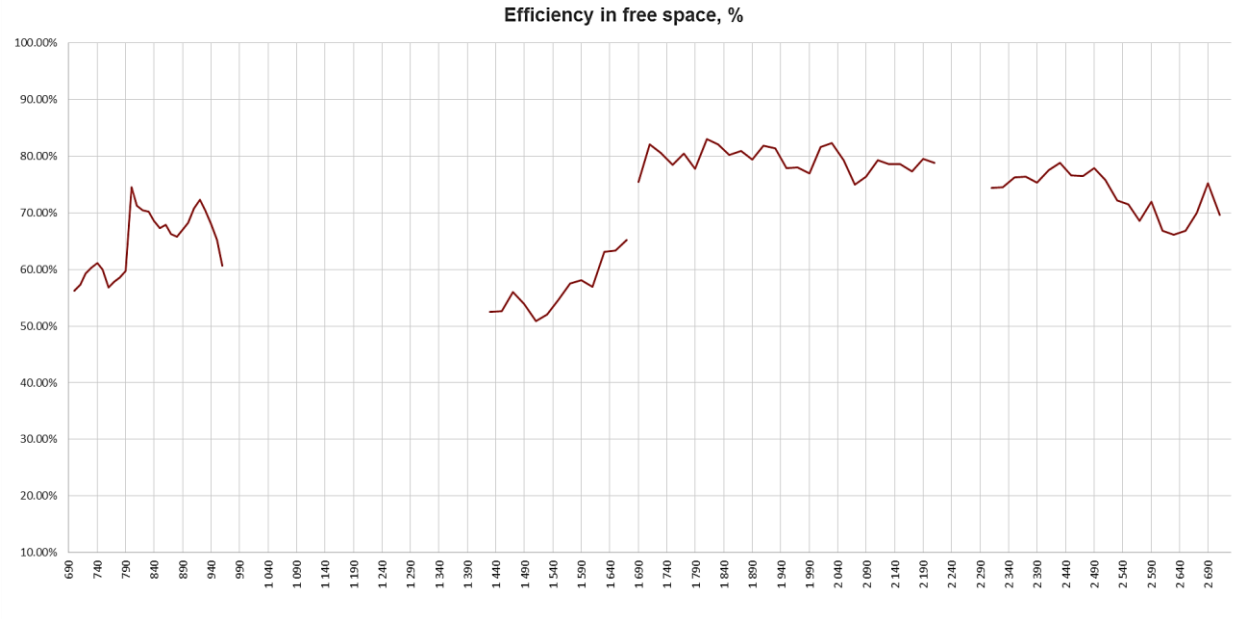
# Part# W3796

## Charts (free space measurements on Pulse reference test PCB)



# Part# W3796


Efficiency in free space, %
100.00%
90.00%
80.00%
70.00%
60.00%
50.00%
40.00%
30.00%
20.00%
10.00%
690
740
790
840
890
940
990
1 040
1 090
1 140
1 190
1 240
1 290
1 340
1 390
1 440
1 490
1 540
1 590
1 640
1 690
1 740
1 790
1 840
1 890
1 940
1 990
2 040
2 090
2 140
2 190
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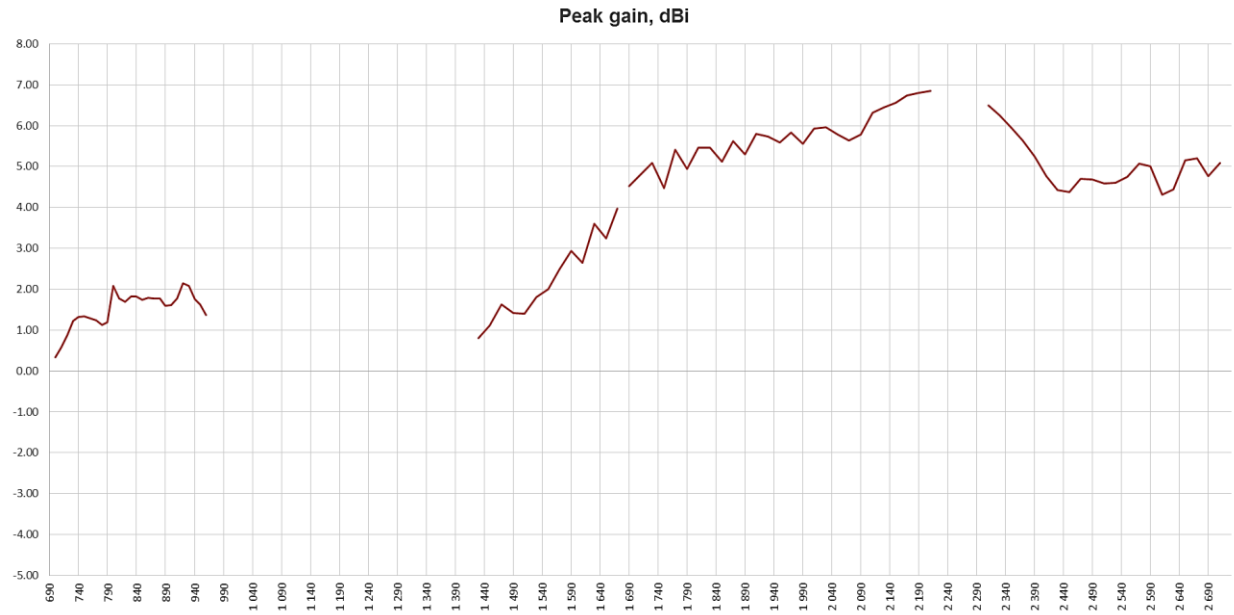
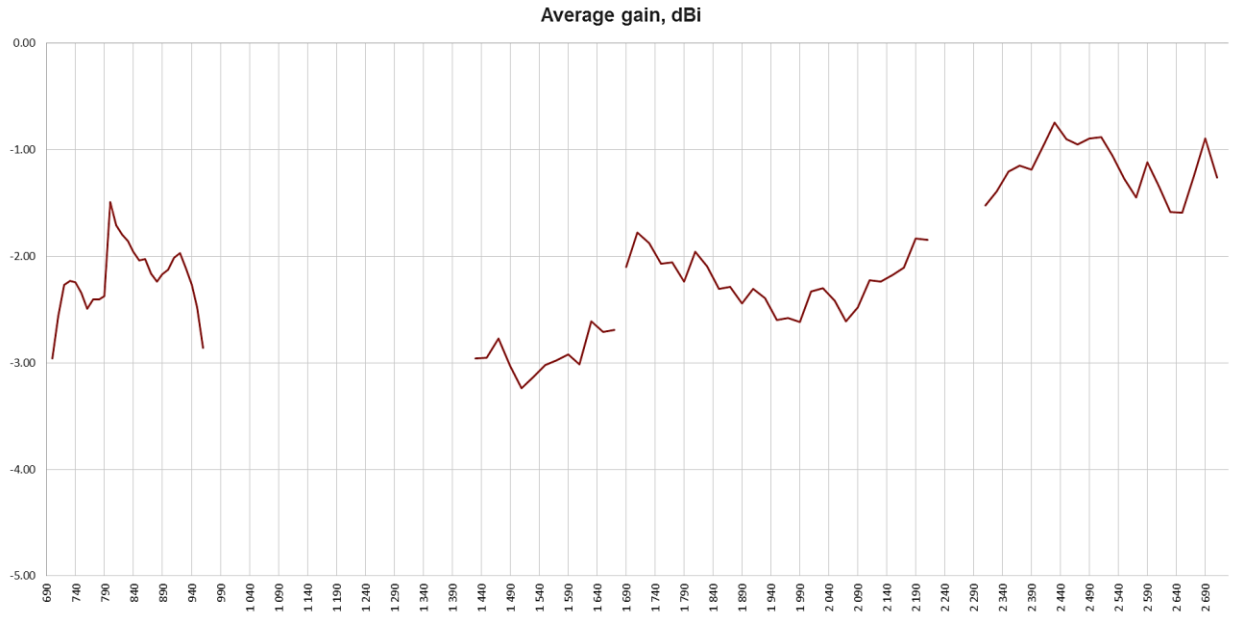
2 290
2 340
2 390
2 440
2 490
2 540
2 590
2 640
2 690

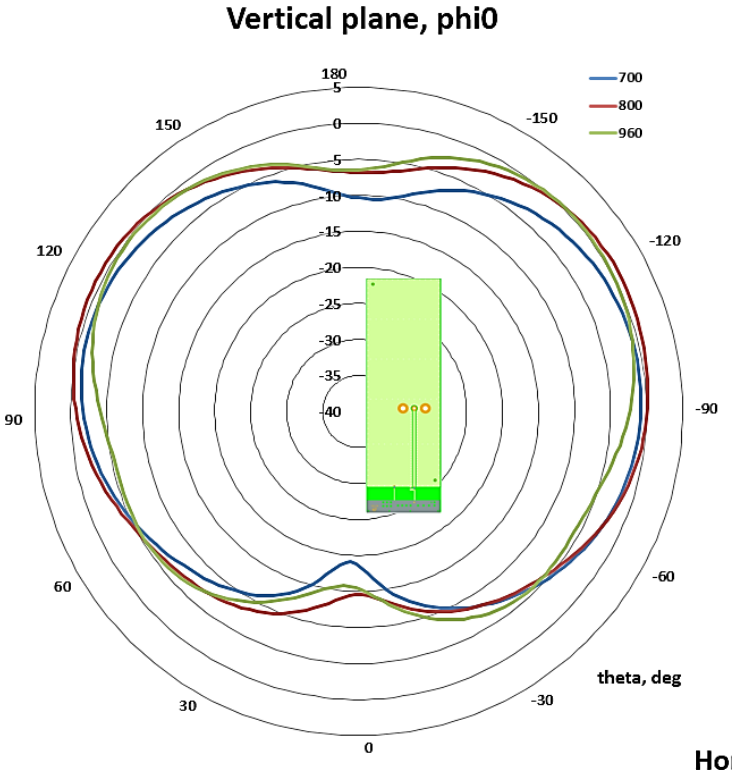

Peak gain, dBi
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
-1.00
-2.00
-3.00
-4.00
-5.00
690
740
790
840
890
940
990
1 040
1 090
1 140
1 190
1 240
1 290
1 340
1 390
1 440
1 490
1 540
1 590
1 640
1 690
1 740
1 790
1 840
1 890
1 940
1 990
2 040
2 090
2 140
2 190
2 240
2 290
2 340
2 390
2 440
2 490
2 540
2 590
2 640
2 690

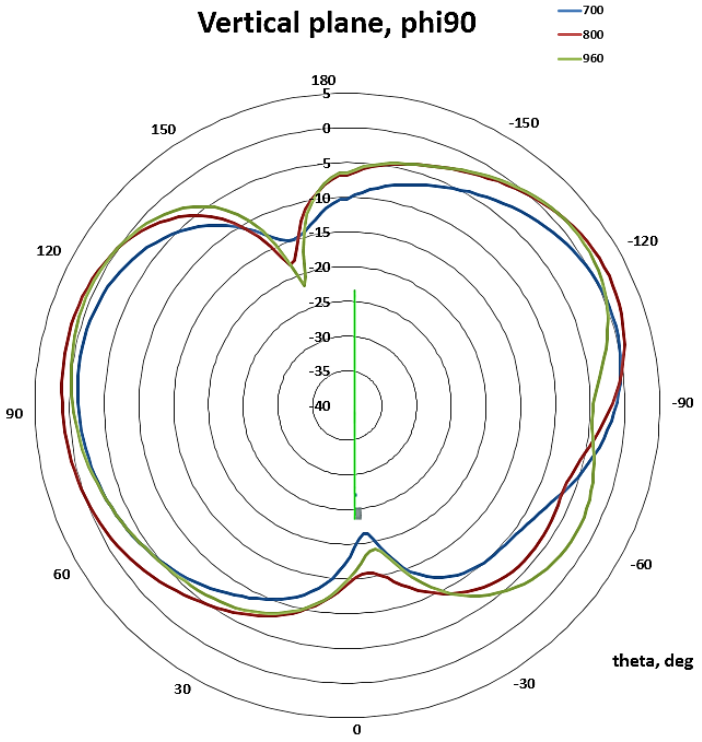
# Part# W3796

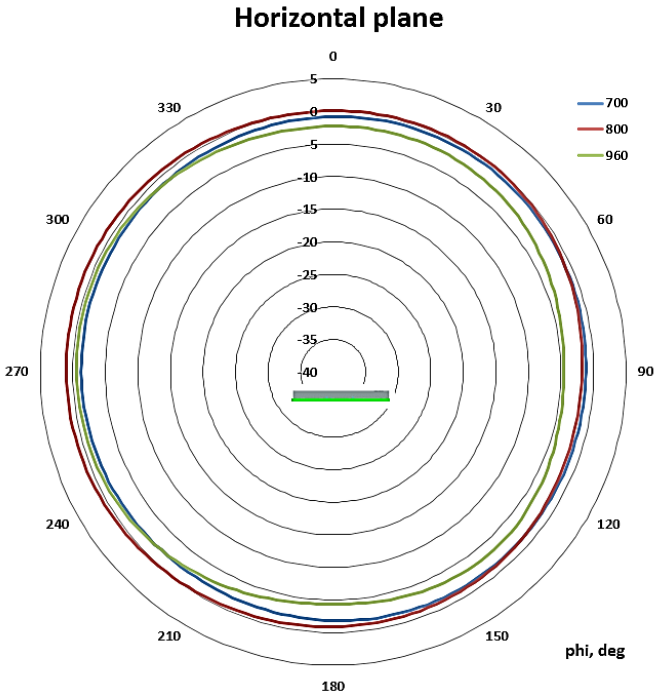

Average gain, dBi
0.00
-1.00
-2.00
-3.00
-4.00
-5.00
690
740
790
840
890
940
990
1 040
1 090
1 140
1 190
1 240
1 290
1 340
1 390
1 440
1 490
1 540
1 590
1 640
1 690
1 740
1 790
1 840
1 890
1 940
1 990
2 040
2 090
2 140
2 190
2 240
2 290
2 340
2 390
2 440
2 490
2 540
2 590
2 640
2 690

# Part# W3796

## PATTERN DATA



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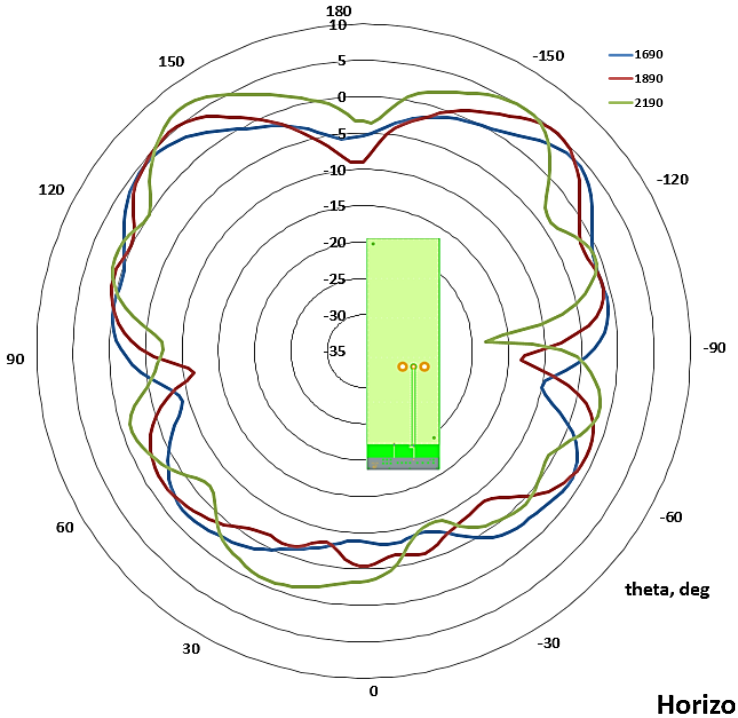
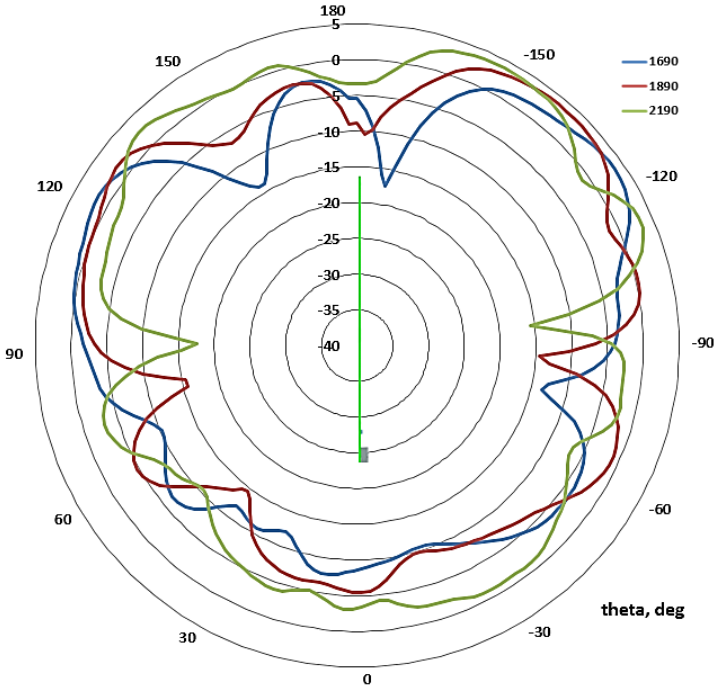
## PATTERN DATA

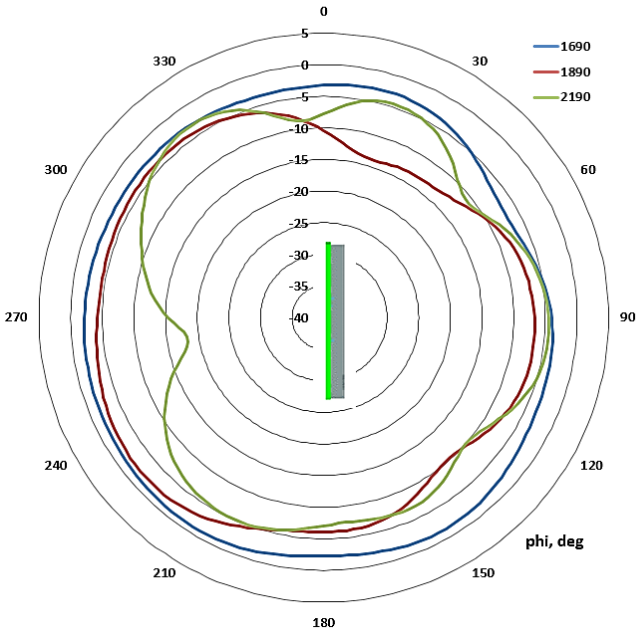
### Vertical plane, phi0




### Vertical plane, phi90



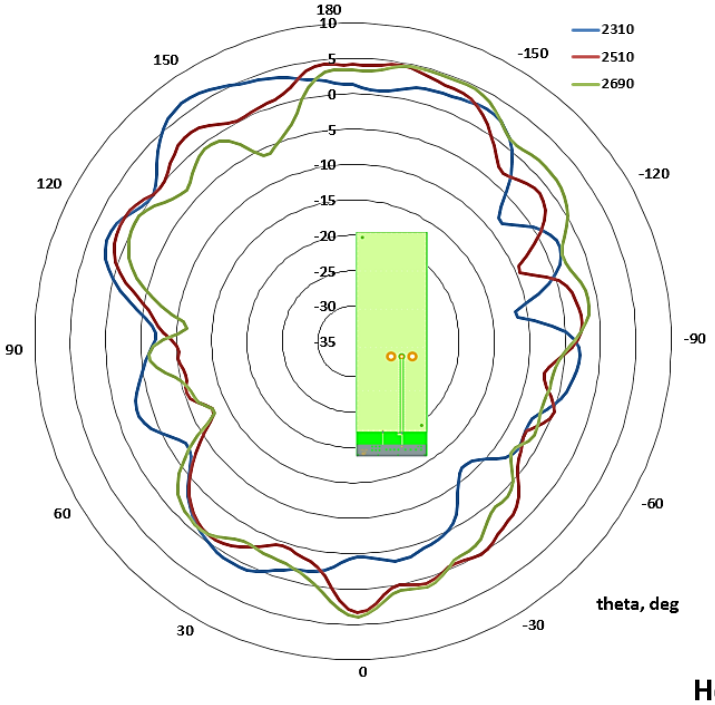

### Horizontal plane



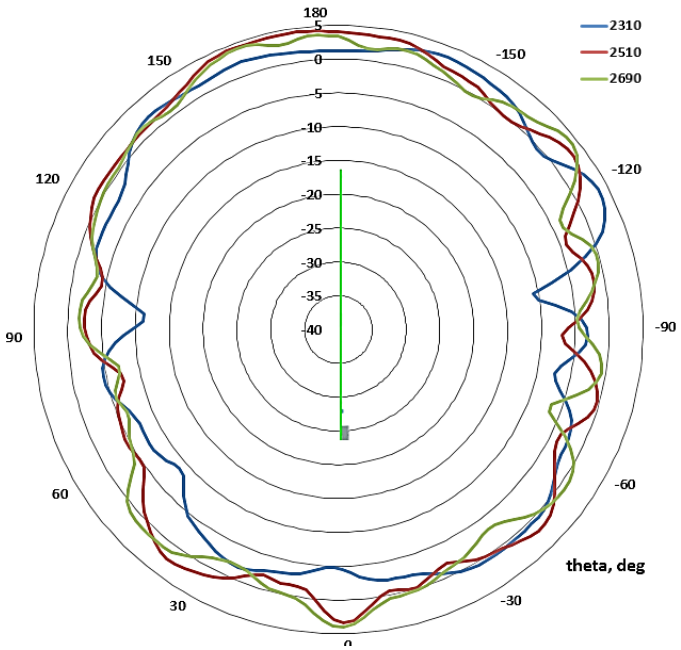
# Part# W3796

## PATTERN DATA

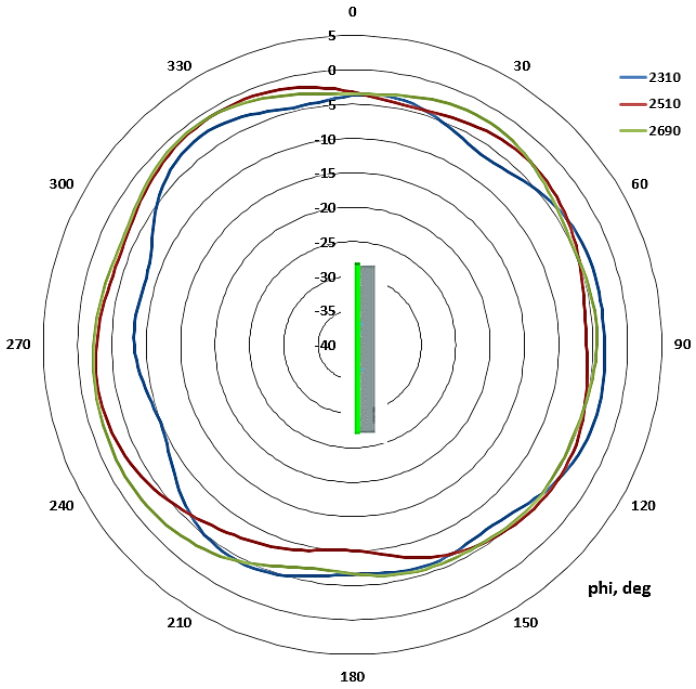
Vertical plane, phi0




Vertical plane, phi90




Horizontal plane



## Recommendation for reflow soldering process

Printing stencil thickness 0,15 - 0,25 mm is recommended for the solder paste. The maximum soldering temperature should not exceed 260°C. The temperature profile recommendations for reflow soldering process is presented in the Figures 1 and 2. The reflow profile presented in figure 1 describes minimum reflow temperatures. The reflow profile presented in figure 2 describes maximum reflow temperatures. located at the center of the coverage area.

| | Method of heat transfer | Controlled hot air convection |
|---|---|---|
| 1 | Average temperature gradient in preheating | 2.5 °C/s |
| 2 | Soak time | 2-3 minutes |
| 3 | Max temperature gradient in reflow | 3 °C/s |
| 4 | Time above 217 °C | Max 30 sec |
| 5 | Peak temperature in reflow | 230 °C for 10 seconds |
| 6 | Temperature gradient in cooling | Max -5 °C/s |

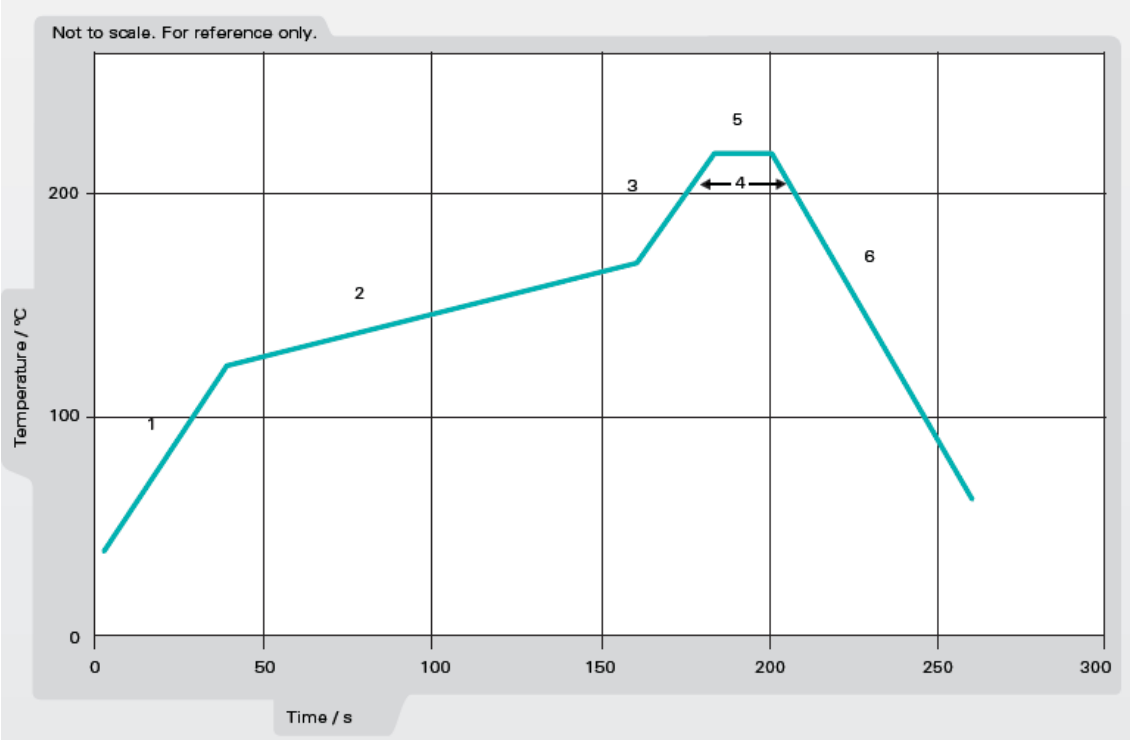



Figure 1. Minimum temperature profile recommendation for reflow soldering process

| | Method of heat transfer | Controlled hot air convection |
|---|---|---|
| 1 | Average temperature gradient in preheating | 2.5 °C/s |
| 2 | Soak time | 2-3 minutes |
| 3 | Max temperature gradient in reflow | 3 °C/s |
| 4 | Time above 217 °C | Max 60 sec |
| 5 | Time above 230 °C | Max 50 sec |
| 6 | Time above 250 °C | Max 10 sec |
| 7 | Peak temperature in reflow | 260 °C for 5 seconds |
| 8 | Temperature gradient in cooling | Max -5 °C/s |

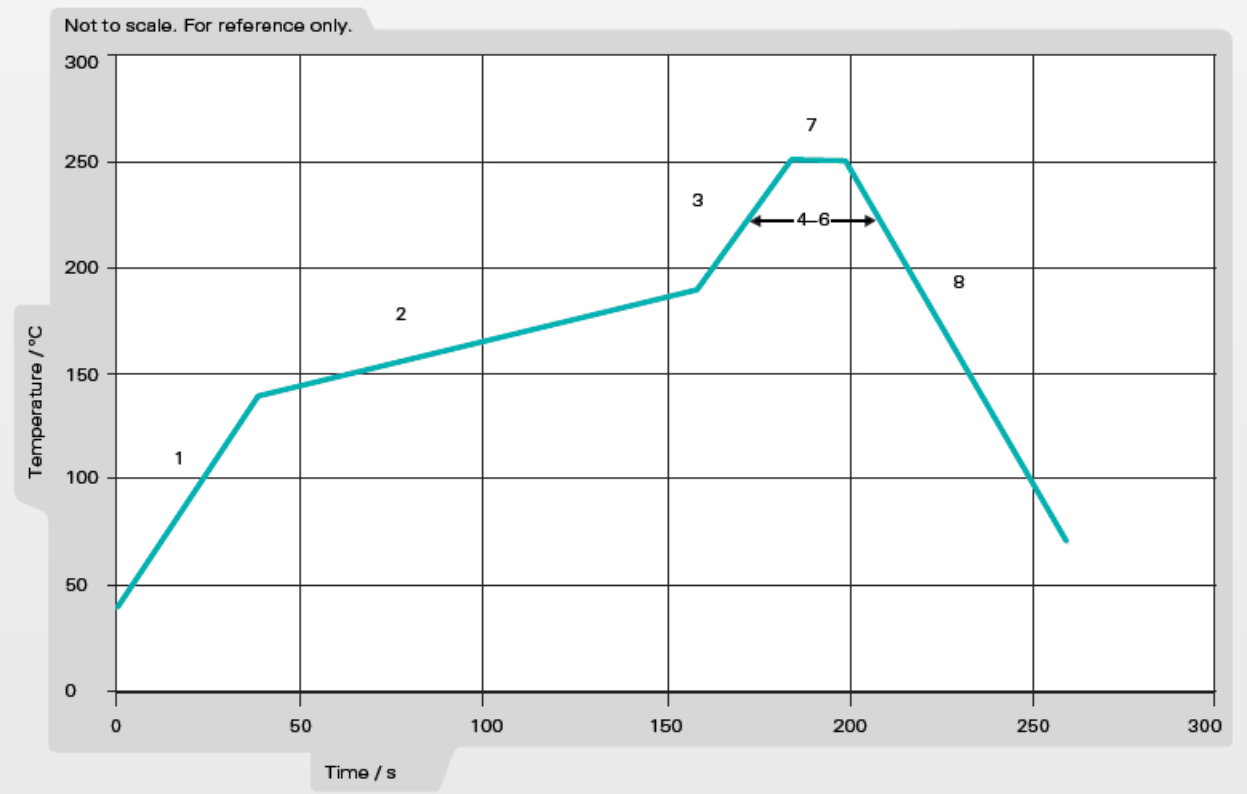



Figure 2. Maximum temperature profile recommendation for reflow soldering process

# Part# W3796

## Package (TAPE & REEL)