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Jul. 2017 Ver.3.0a  
TDK Corporation

## Multilayer Triplexer

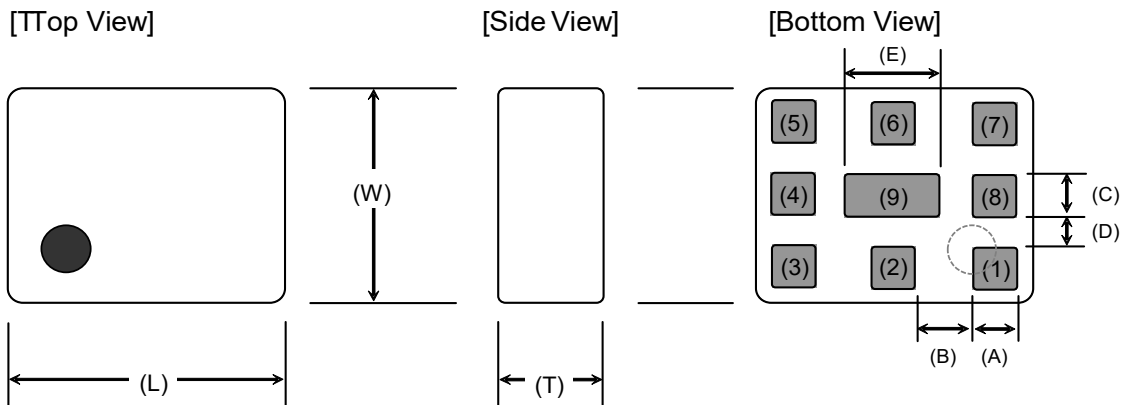
For Band 5+8 / Band 1+3+7 / Band 3GHz~5GHz

TPX Series 2.5x2.0mm [EIA 1008] TYPE

P/N: **TPX255850MT-7013A3**

## TPX255850MT-7013A3

### SHAPES AND DIMENSIONS



Dimensions (mm)

| L       | W       | T       | A       | B       | C       | D       | E       |
|---------|---------|---------|---------|---------|---------|---------|---------|
| 2.50    | 2.00    | 0.90    | 0.40    | 0.55    | 0.40    | 0.30    | 0.90    |
| +/-0.10 | +/-0.10 | +/-0.10 | +/-0.10 | +/-0.10 | +/-0.10 | +/-0.10 | +/-0.10 |

Terminal functions

|     |                  |
|-----|------------------|
| (1) | High-Band Port   |
| (2) | GND              |
| (3) | Middle-Band Port |
| (4) | GND              |
| (5) | Low-Band Port    |

|     |             |
|-----|-------------|
| (6) | GND         |
| (7) | Common Port |
| (8) | GND         |
| (9) | GND         |

### TERMINATION FINISH

| Material |
|----------|
| Au plate |

## TPX255850MT-7013A3

### ■ ELECTRICAL CHARACTERISTICS

( Measurement )

#### Low-Band

| Parameter                                | Frequency (MHz) | TDK Spec     |      |      |
|--|-----------------|--------------|------|------|
|  |                 | Min.         | Typ. | Max. |
| Insertion Loss (dB)                      | 450 to 960      | -            | 0.34 | 0.45 |
|  |                 | -            |      |      |
| Insertion Loss (dB)<br>( -40 to +85 °C ) | 450 to 960      | -            | -    | 0.55 |
|  |                 | -            |      |      |
| VSWR<br>( Low-Band Port )                | 450 to 960      | -            | 1.16 | 1.7  |
|  |                 | -            |      |      |
| Attenuation (dB)                         | 1710 to 2690    | 15           | 18   | -    |
|  | 3400 to 3800    | 20           | 28   | -    |
|  | 5150 to 5850    | 13           | 17   | -    |
| Characteristic Impedance (ohm)           |                 | 50 (Nominal) |      |      |

Ta = +25+/-5°C

#### Middle-Band

| Parameter                                | Frequency (MHz) | Request      |      |      |
|--|-----------------|--------------|------|------|
|  |                 | Min.         | Typ. | Max. |
| Insertion Loss (dB)                      | 1710 to 2690    | -            | 0.58 | 0.75 |
|  |                 | -            |      |      |
| Insertion Loss (dB)<br>( -40 to +85 °C ) | 1710 to 2690    | -            | -    | 0.90 |
|  |                 | -            |      |      |
| VSWR<br>( Middle-Band Port )             | 1710 to 2690    | -            | 1.35 | 1.7  |
|  |                 | -            |      |      |
| Attenuation (dB)                         | 450 to 960      | 15           | 18   | -    |
|  | 3400 to 3800    | 13           | 16   | -    |
|  | 5150 to 5850    | 13           | 17   | -    |
| Characteristic Impedance (ohm)           |                 | 50 (Nominal) |      |      |

Ta = +25+/-5°C

## TPX255850MT-7013A3

### ■ ELECTRICAL CHARACTERISTICS

( Measurement )

#### High-Band

| Parameter                                | Frequency (MHz) | Request      |      |      |
|--|-----------------|--------------|------|------|
|  |                 | Min.         | Typ. | Max. |
| Insertion Loss (dB)                      | 3400 to 3800    | -            | 0.73 | 0.90 |
|  | 5150 to 5850    | -            | 0.35 | 0.65 |
| Insertion Loss (dB)<br>( -40 to +85 °C ) | 3400 to 3800    | -            | -    | 1.10 |
|  | 5150 to 5850    | -            | -    | 0.80 |
| VSWR<br>( High-Band Port )               | 3400 to 3800    | -            | 1.38 | 2.0  |
|  | 5150 to 5850    | -            | 1.18 | 2.0  |
| Attenuation (dB)                         | 450 to 960      | 17           | 21   | -    |
|  | 1710 to 2690    | 15           | 18   | -    |
| Characteristic Impedance (ohm)           |                 | 50 (Nominal) |      |      |

Ta = +25+/-5°C

#### Common

| Parameter                      | Frequency (MHz) | Request      |      |      |   |
|--------------------------------|-----------------|--------------|------|------|---|
|                                |                 | Min.         | Typ. | Max. |   |
| Isolation (dB)                 | Middle to High  | 1710 to 2690 | 15   | 18   | - |
|                                |                 | 3400 to 3800 | 13   | 18   | - |
|                                |                 | 5150 to 5850 | 13   | 19   | - |
|                                | Middle to Low   | 450 to 960   | 15   | 19   | - |
|                                |                 | 1710 to 2690 | 15   | 18   | - |
|                                | High to Low     | 450 to 703   | 20   | 24   | - |
|                                |                 | 703 to 803   | 20   | 23   | - |
|                                |                 | 803 to 960   | 17   | 21   | - |
|                                |                 | 3400 to 3800 | 20   | 29   |   |
|                                |                 | 5150 to 5850 | 13   | 17   |   |
| VSWR<br>( Common Port )        | 450 to 960      | -            | 1.19 | 1.7  |   |
|                                | 1710 to 2690    | -            | 1.35 | 1.7  |   |
|                                | 3400 to 3800    | -            | 1.32 | 2.0  |   |
|                                | 5150 to 5850    | -            | 1.13 | 2.0  |   |
| Characteristic Impedance (ohm) |                 | 50 (Nominal) |      |      |   |

Ta = +25+/-5°C

## TPX255850MT-7013A3

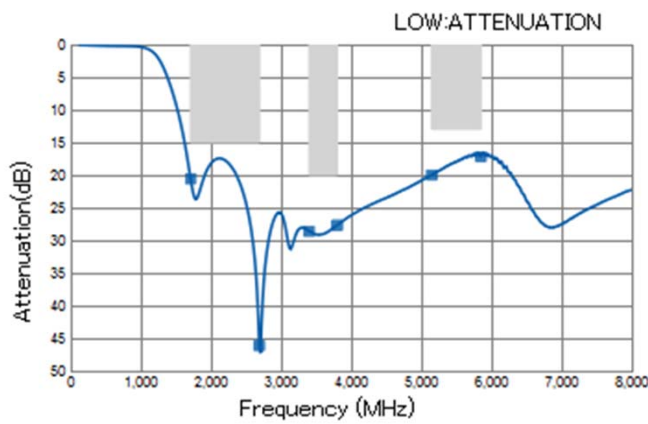
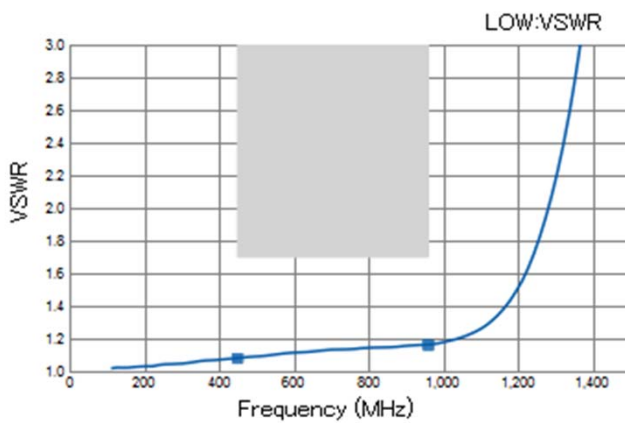
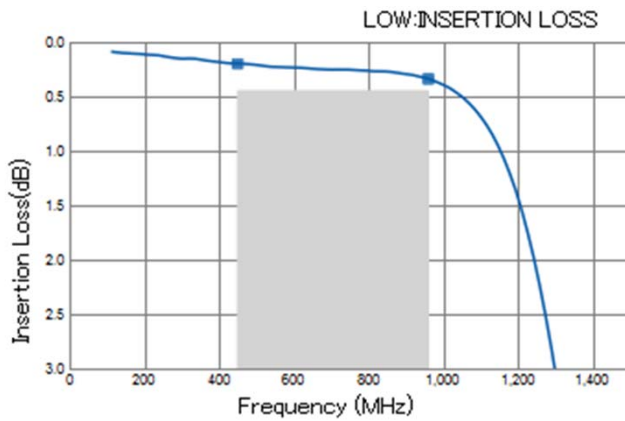
### ■ MAXIMUM RATINGS

| Parameter                                 |                  | TDK Spec      |      | Conditions                    |
|---|------------------|---------------|------|-------------------------------|
|   |                  | Min.          | Max. |                               |
| Operating temperature (°C)                |                  | -40 to +85 °C |      |                               |
| Storage temperature (°C)                  |                  | -40 to +85 °C |      |                               |
| Power Handling (W)                        | Common Port      | -             | 4    | Duty 50% at 450~960MHz        |
|   |                  | -             | 1    | CW at 1710~2690MHz            |
|   |                  | -             | 1    | CW at 3400~5850MHz            |
|   | Low-Band Port    | -             | 4    | Duty 50%                      |
|   | Middle-Band Port | -             | 1    | CW                            |
|   | High-Band Port   | -             | 1    | CW                            |
| Human Body Model : HBM @Each Port (V)     |                  | -1000         | 1000 | 100pF / 1500ohm               |
| Machine Model : MM @Each Port (V)         |                  | -150          | 150  | 200pF / 0ohm                  |
| Charged Device Model : CDM @Each Port (V) |                  | -500          | 500  | Relative humidity : 60%RH max |

Ambient temperature : +25+/-5°C

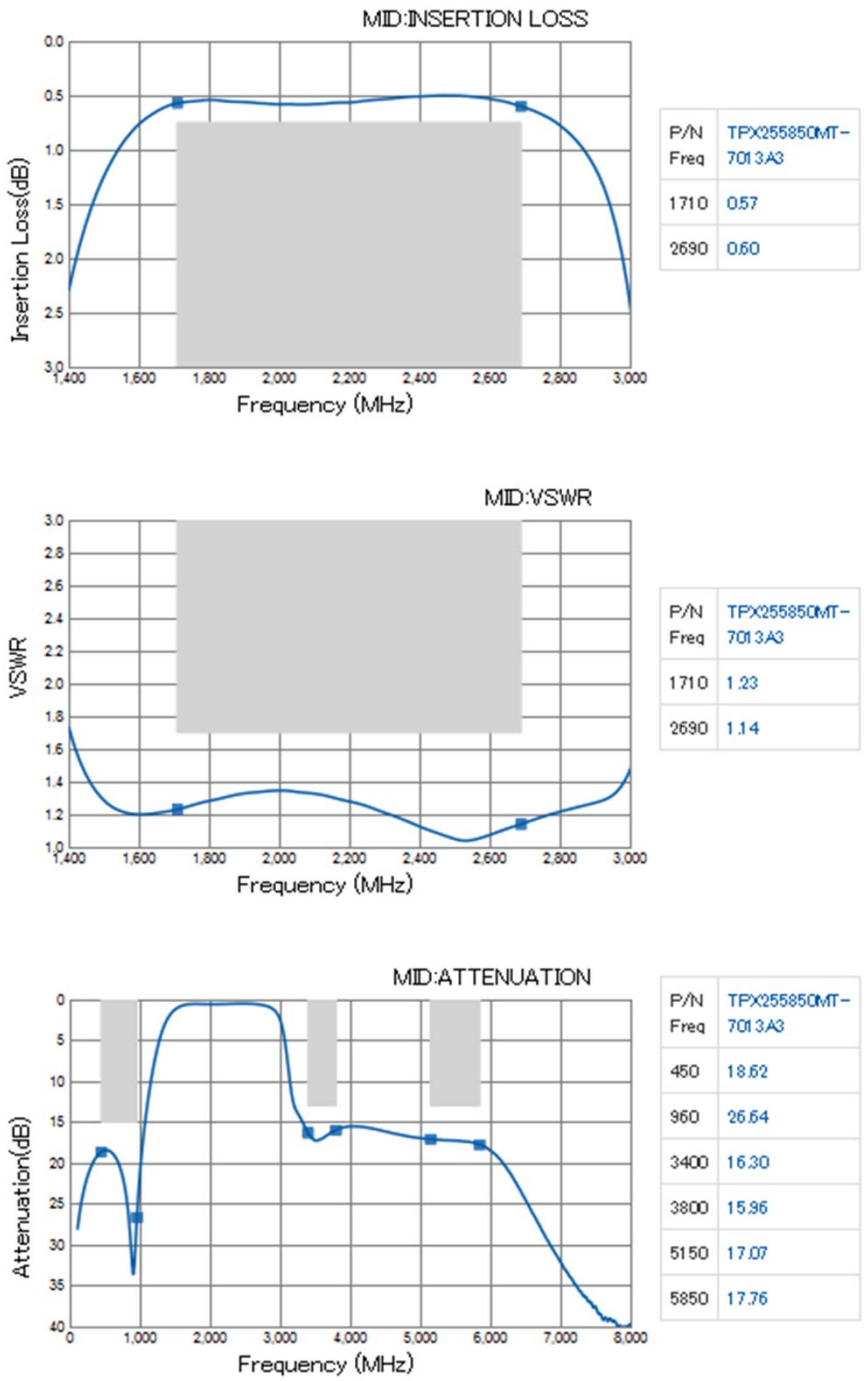
# TPX255850MT-7013A3

## FREQUENCY CHARACTERISTICS



# TPX255850MT-7013A3

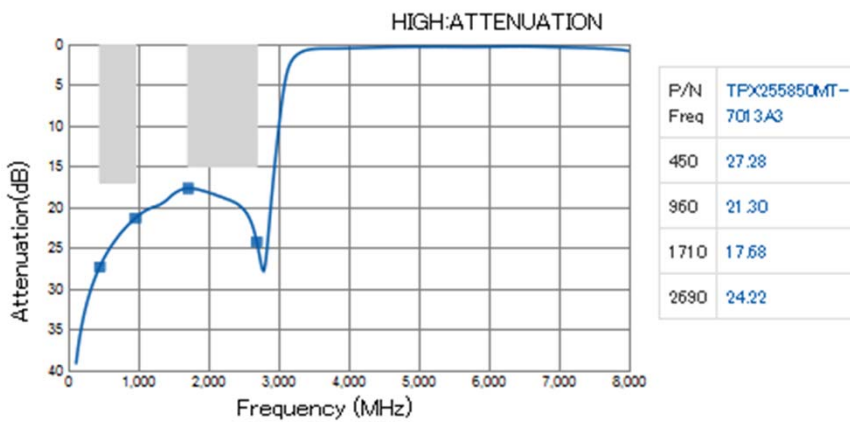
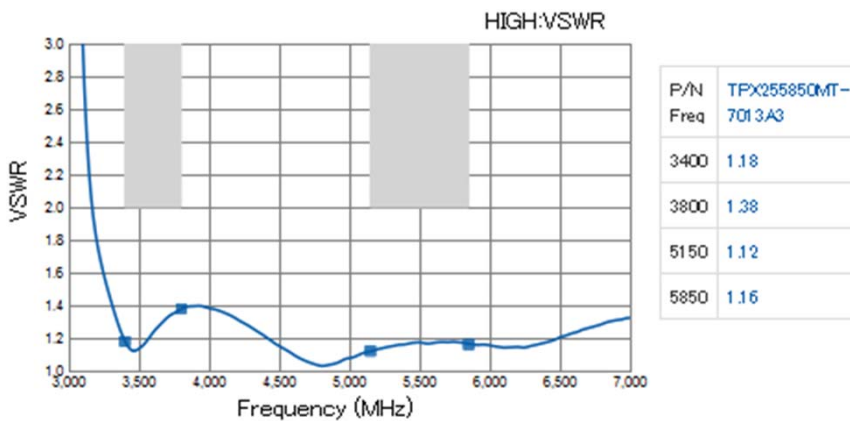
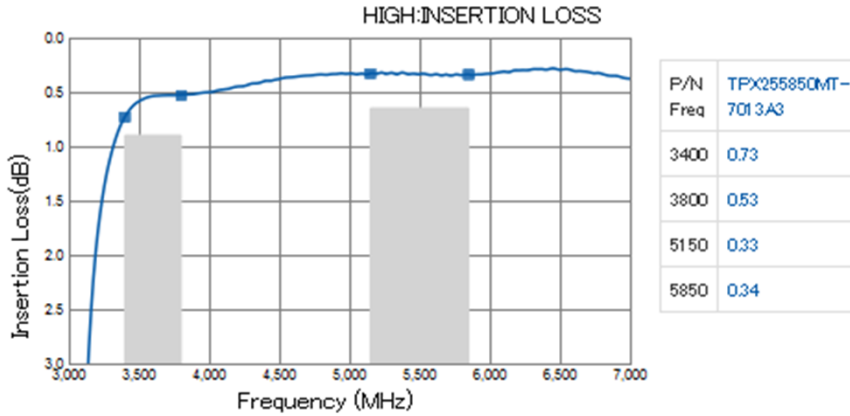
## FREQUENCY CHARACTERISTICS





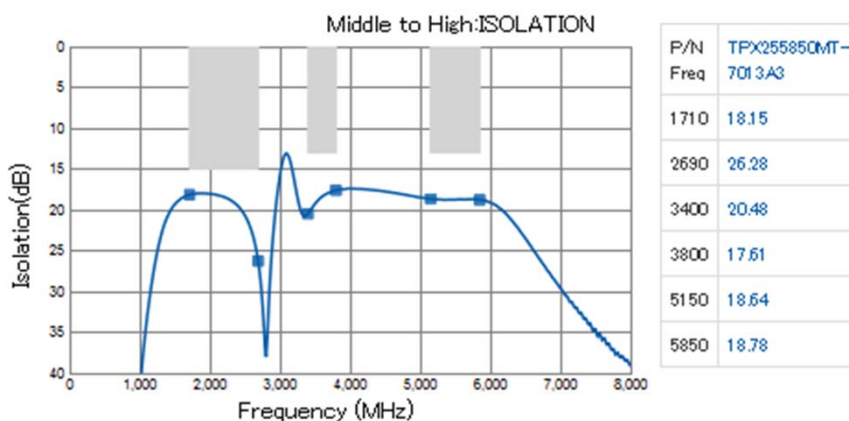
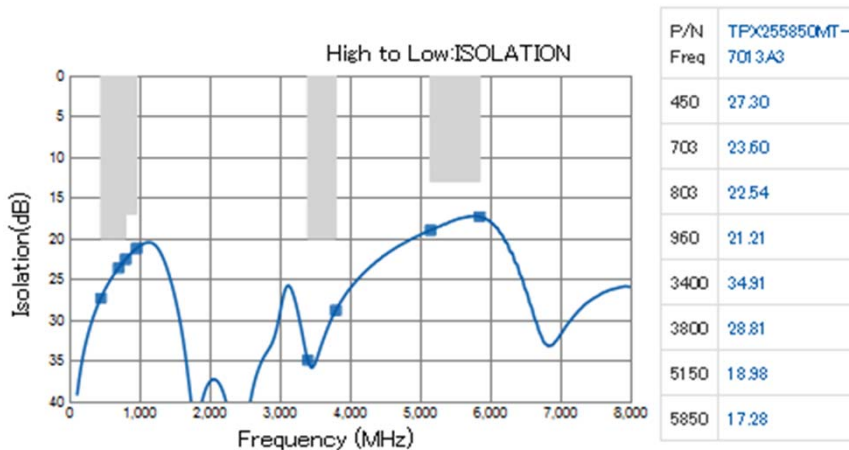
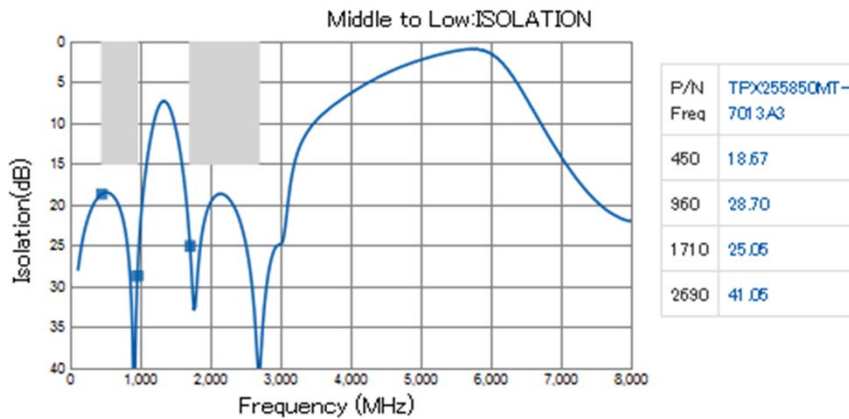
# TPX255850MT-7013A3

## FREQUENCY CHARACTERISTICS



# TPX255850MT-7013A3

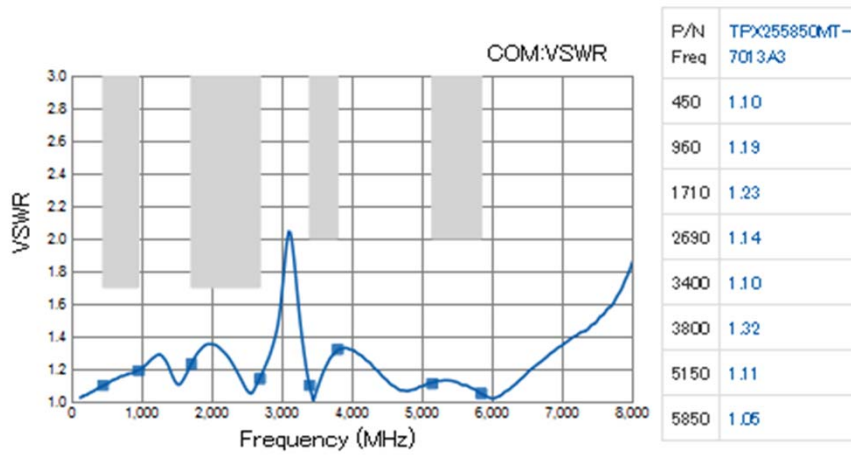
## FREQUENCY CHARACTERISTICS



All specifications are subject to change without notice.

## TPX255850MT-7013A3

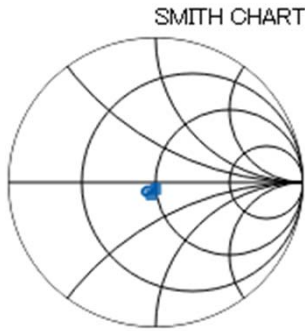
### ■ FREQUENCY CHARACTERISTICS



## TPX255850MT-7013A3

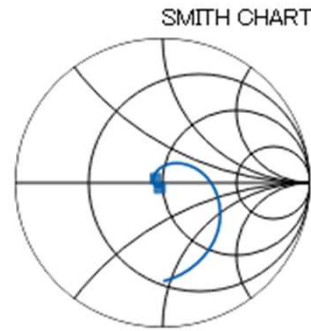
### ■ FREQUENCY CHARACTERISTICS

Low band: S11



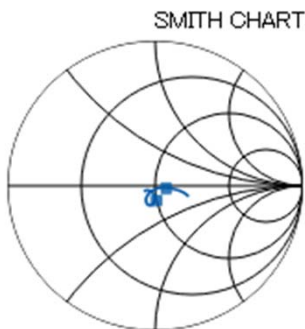
| P/N     | TPX255850MT-7013A3 |
|---------|--------------------|
| Freq    | MHz                |
| Re / Im |                    |
| 450     | -0.01 / -0.04      |
| 960     | -0.04 / -0.08      |

Low band: S22



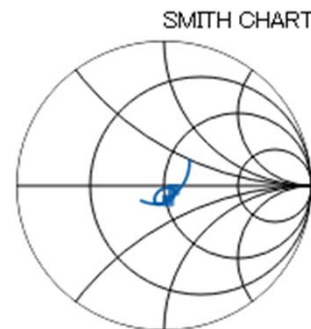
| P/N     | TPX255850MT-7013A3 |
|---------|--------------------|
| Freq    | MHz                |
| Re / Im |                    |
| 450     | -0.03 / -0.03      |
| 960     | -0.06 / 0.04       |

Mid band: S11



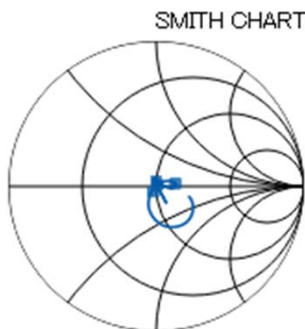
| P/N     | TPX255850MT-7013A3 |
|---------|--------------------|
| Freq    | MHz                |
| Re / Im |                    |
| 1710    | 0 / -0.1           |
| 2690    | 0.07 / -0.01       |

Mid band: S33



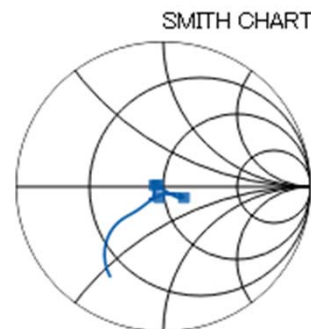
| P/N     | TPX255850MT-7013A3 |
|---------|--------------------|
| Freq    | MHz                |
| Re / Im |                    |
| 1710    | 0.02 / -0.1        |
| 2690    | 0.06 / -0.02       |

High band: S11



| P/N     | TPX255850MT-7013A3 |
|---------|--------------------|
| Freq    | MHz                |
| Re / Im |                    |
| 3400    | -0.03 / -0.03      |
| 3800    | 0.13 / 0.03        |
| 5150    | -0.01 / 0.05       |
| 5850    | 0 / 0.02           |

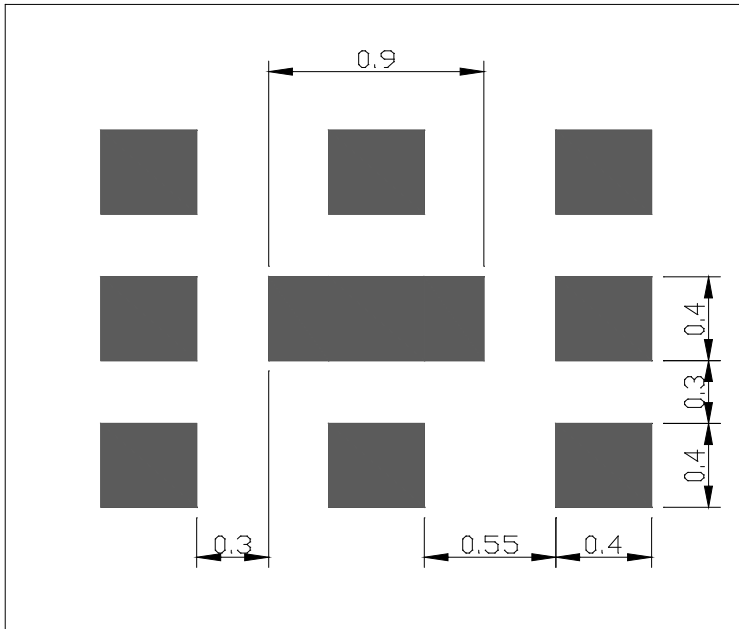
High band: S44



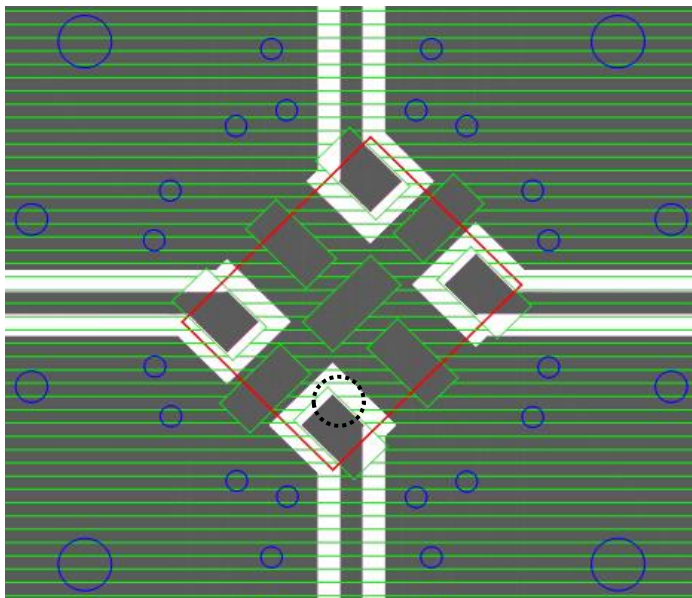
| P/N     | TPX255850MT-7013A3 |
|---------|--------------------|
| Freq    | MHz                |
| Re / Im |                    |
| 3400    | -0.04 / -0.07      |
| 3800    | 0.14 / -0.07       |
| 5150    | -0.05 / 0.02       |
| 5850    | -0.07 / 0.02       |

## TPX255850MT-7013A3

### RECOMMENDED LAND PATTERN



### EVALUATION BOARD



- Thru Hole
- Resist
- Surface
- DUT
- Direction Mark

| Material, Layer        | Thickness |
|------------------------|-----------|
| Top Resist             | Resist    |
| Copper Surface Pattern | 0.035mm   |
| FR-4                   | 0.10mm    |
| Copper Inner GND       | 0.018mm   |
| FR-4                   | 0.30mm    |
| Copper Bottom GND      | 0.035mm   |

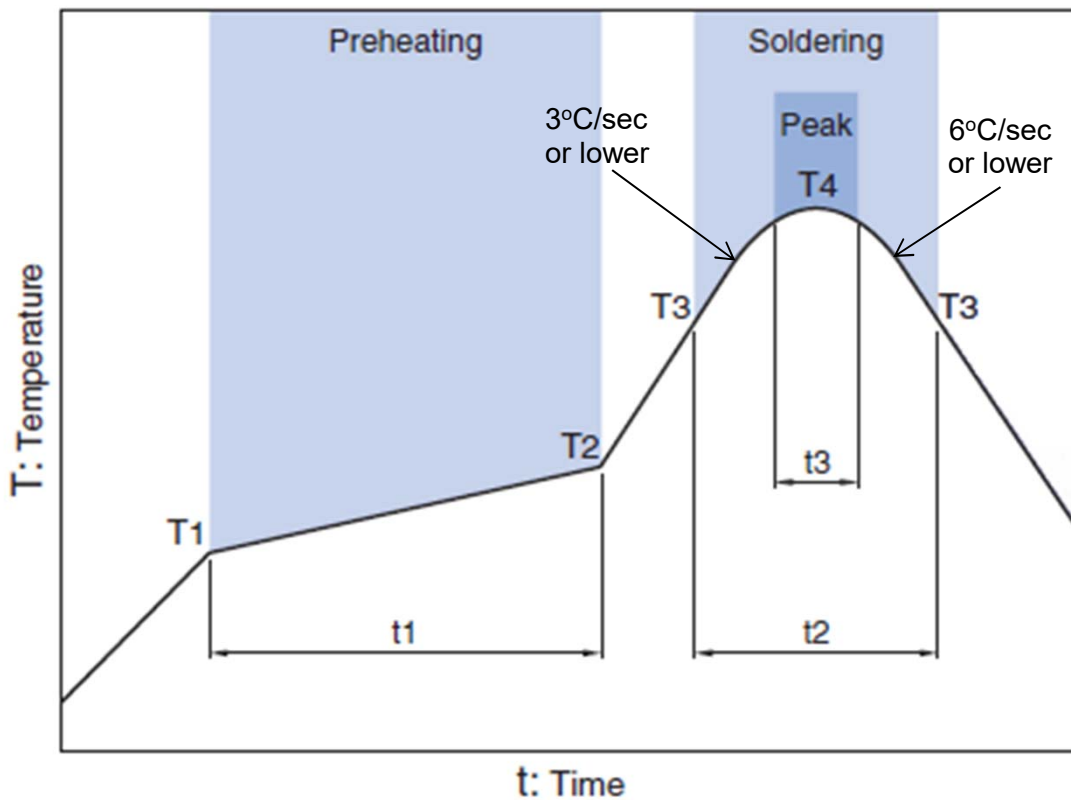
### ENVIRONMENT INFORMATION

RoHS Statement  
 RoHS Compliance

TDK Corporation

## TPX255850MT-7013A3

### RECOMMENDED REFLOW PROFILE



| Preheating |       |              | Soldering                |              |              |            |
|------------|-------|--------------|--------------------------|--------------|--------------|------------|
|            |       |              | Critical zone (T3 to T4) |              | Peak         |            |
| Temp.      | Temp. | Time         | Temp.                    | Time         | Temp.        | Time       |
| T1         | T2    | t1           | T3                       | t2           | T4           | t3 *       |
| 150°C      | 200°C | 60 to 120sec | 217°C                    | 60 to 120sec | 240 to 260°C | 30 sec Max |

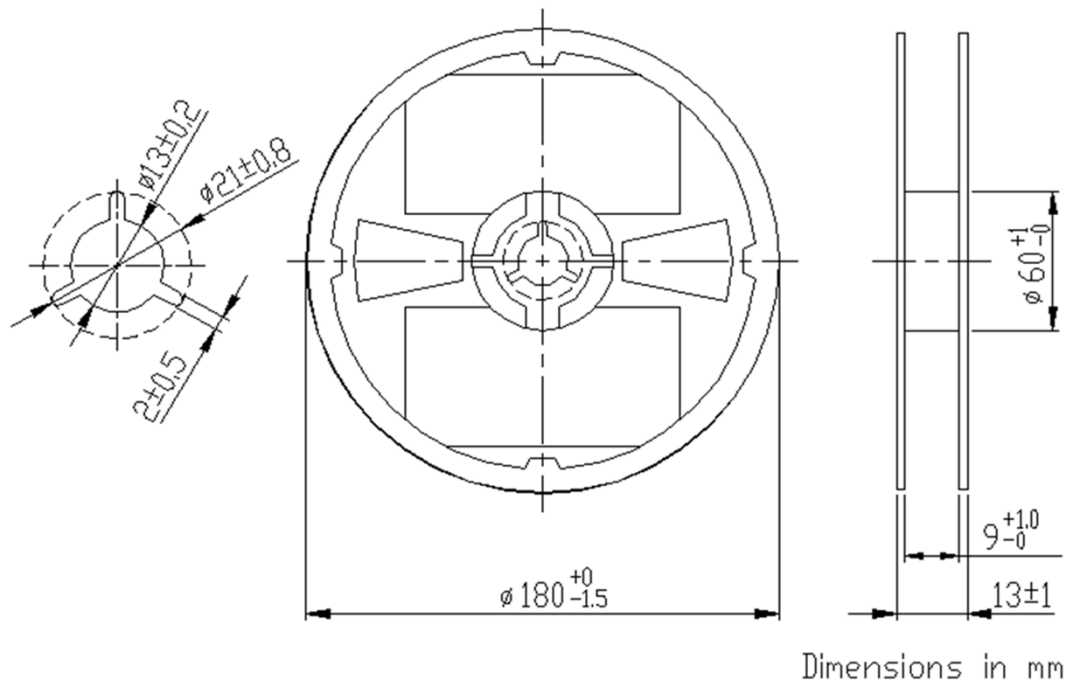
\* t3 : Time within 5°C of actual peak temperature

The maximum number of reflow is 3.

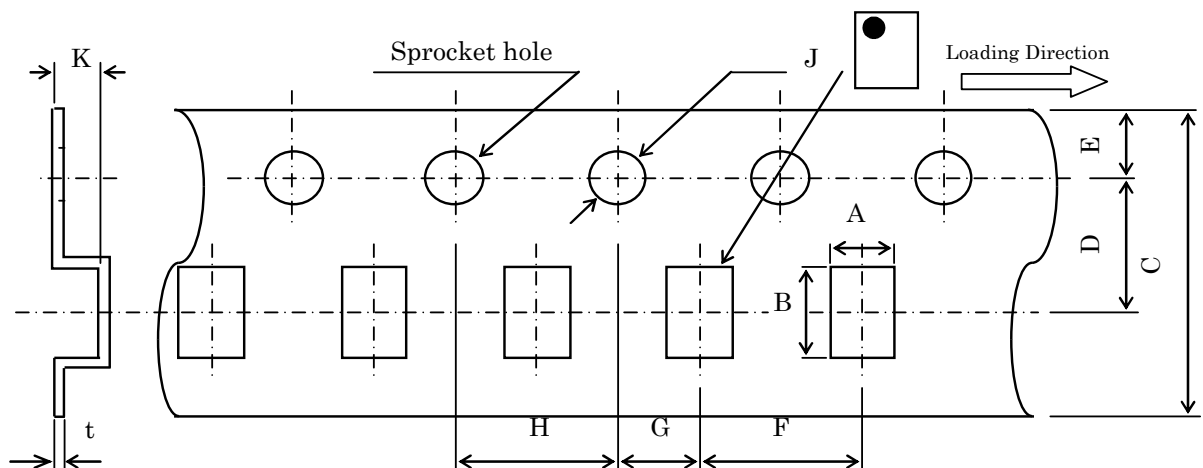
Note: Lead free solder is recommended.  
Recommended solder is Sn-3.0Ag-0.5Cu. (M705 by Senju Metal Industry)

**TPX255850MT-7013A3****PACKAGING STYLE**

## Reel Dimensions



## Carrier Tape



## Dimensions (mm)

| A       | B       | C         | D       | E      | F      | G       | H      | J       | K    | t       |
|---------|---------|-----------|---------|--------|--------|---------|--------|---------|------|---------|
| 2.2     | 2.7     | 8.0       | 3.5     | 1.75   | 4.0    | 2.0     | 4.0    | 1.5     | 1.15 | 0.25    |
| +/-0.05 | +/-0.05 | +0.3/-0.1 | +/-0.05 | +/-0.1 | +/-0.1 | +/-0.05 | +/-0.1 | +0.1/-0 | MAX  | +/-0.05 |

| STANDARD PACKAGE QUANTITY<br>( pieces/reel ) |
|--|
| 2,000  |

## REMINDERS FOR USING THESE PRODUCTS

Before using these products, be sure to request the delivery specifications.

### SAFETY REMINDERS

Please pay sufficient attention to the warnings for safe designing when using these products.

|  |
|--|
|  <b>REMINDERS</b> |
|--|

The products listed on this specification sheet are intended for use in general electronic equipment (AV equipment, telecommunications equipment, home appliances, amusement equipment, computer equipment, personal equipment, office equipment, measurement equipment, industrial robots) under a normal operation and use condition.

The products are not designed or warranted to meet the requirements of the applications listed below, whose performance and/or quality require a more stringent level of safety or reliability, or whose failure, malfunction or trouble could cause serious damage to society, person or property. Please understand that we are not responsible for any damage or liability caused by use of the products in any of the applications below or for any other use exceeding the range or conditions set forth in this specification sheet.

1. Aerospace/Aviation equipment
2. Transportation equipment (cars, electric trains, ships, etc.)
3. Medical equipment
4. Power-generation control equipment
5. Atomic energy-related equipment
6. Seabed equipment
7. Transportation control equipment
8. Public information-processing equipment
9. Military equipment
10. Electric heating apparatus, burning equipment
11. Disaster prevention/crime prevention equipment
12. Safety equipment
13. Other applications that are not considered general-purpose applications

When using this product in general-purpose applications, you are kindly requested to take into consideration securing protection circuit/equipment or providing backup circuits, etc., to ensure higher safety.