



Aug. 2022 Ver.2.0
TDK Corporation

Multilayer Diplexer

For 2.4-2.5GHz W-LAN & Bluetooth / 5-7GHz W-LAN

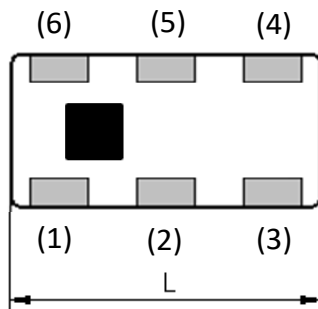
DPX Series 1.6x0.8mm [EIA 0603] TYPE

P/N: **DPX167125DT-8097B1**

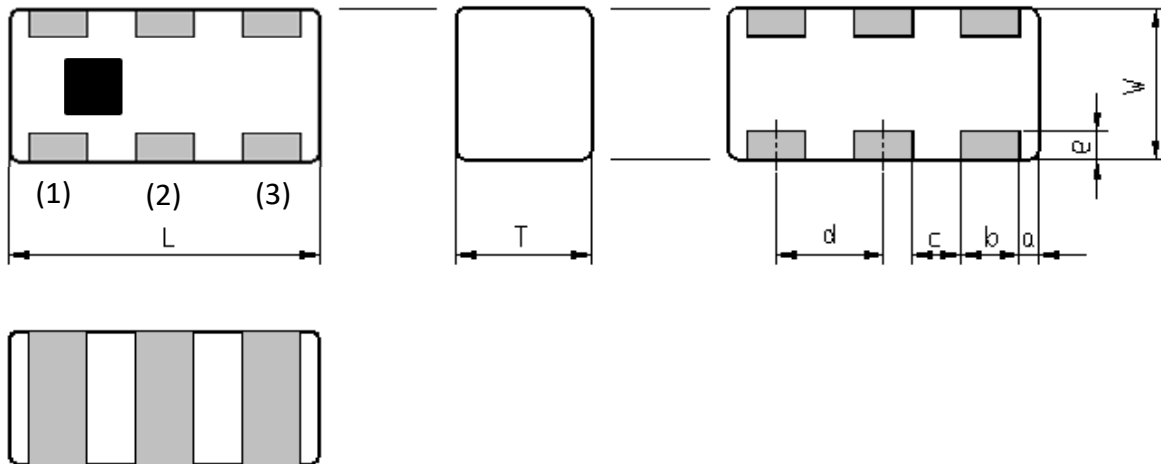
DPX167125DT-8097B1

■ SHAPES AND DIMENSIONS

[Top View]



[Bottom View]



Dimensions (mm)

| L | W | T | a | b | c | d | e |
|---------|---------|---------|---------|---------|---------|---------|---------|
| 1.60 | 0.80 | 0.60 | 0.10 | 0.30 | 0.25 | 0.55 | 0.15 |
| +/-0.10 | +/-0.10 | +/-0.10 | +/-0.10 | +/-0.10 | +/-0.10 | +/-0.10 | +/-0.10 |

Terminal functions

| | |
|-----|-------------|
| (1) | GND |
| (2) | Common Port |
| (3) | GND |

| | |
|-----|----------------|
| (4) | High-Band Port |
| (5) | GND |
| (6) | Low-Band Port |

■ TERMINATION FINISH

| Material |
|----------|
| Sn plate |

DPX167125DT-8097B1

■ ELECTRICAL CHARACTERISTICS

(Measurement)

Low-Band

| Parameter | Frequency (MHz) | TDK Spec | | |
|--|-----------------|--------------|------|------|
| | | Min. | Typ. | Max. |
| Insertion Loss (dB) | 617 to 2400 | - | 0.22 | 0.35 |
| | 2400 to 2500 | - | 0.18 | 0.35 |
| | 2500 to 2690 | - | 0.23 | 0.40 |
| Insertion Loss (dB) (-40 to +85 °C) | 617 to 2400 | - | - | 0.40 |
| | 2400 to 2500 | - | - | 0.40 |
| | 2500 to 2690 | - | - | 0.50 |
| VSWR (Common Port) | 617 to 2400 | - | 1.35 | 1.67 |
| | 2400 to 2500 | - | 1.07 | 1.67 |
| | 2500 to 2690 | - | 1.20 | 1.67 |
| VSWR (Low-Band Port) | 617 to 2400 | - | 1.35 | 1.67 |
| | 2400 to 2500 | - | 1.09 | 1.67 |
| | 2500 to 2690 | - | 1.19 | 1.67 |
| Attenuation (dB) | 4800 to 5000 | 20 | 26.2 | - |
| | 5150 to 7125 | 20 | 23.8 | - |
| | 7200 to 7500 | 23 | 32.7 | - |
| | 9600 to 10000 | 23 | 34.3 | - |
| | 12000 to 12500 | 22 | 31.6 | - |
| Characteristic Impedance (ohm) | | 50 (Nominal) | | |

Ta = +25+/-5°C

High-Band

| Parameter | Frequency (MHz) | TDK Spec | | |
|--|-----------------|--------------|------|------|
| | | Min. | Typ. | Max. |
| Insertion Loss (dB) | 5150 to 5925 | - | 0.65 | 0.90 |
| | 5925 to 7125 | - | 0.40 | 0.75 |
| Insertion Loss (dB) (-40 to +85 °C) | 5150 to 5925 | - | - | 1.00 |
| | 5925 to 7125 | - | - | 0.85 |
| VSWR (Common Port) | 5150 to 5925 | - | 1.20 | 1.67 |
| | 5925 to 7125 | - | 1.21 | 1.67 |
| VSWR (High-Band Port) | 5150 to 5925 | - | 1.21 | 1.67 |
| | 5925 to 7125 | - | 1.32 | 1.67 |
| Attenuation (dB) | 617 to 960 | 25 | 28.4 | - |
| | 1427 to 2400 | 25 | 27.2 | - |
| | 2400 to 2500 | 25 | 29.0 | - |
| | 2500 to 2690 | 25 | 29.6 | - |
| | 3300 to 3800 | 20 | 24.4 | - |
| | 3800 to 4200 | 20 | 24.4 | - |
| | 10300 to 14250 | 28 | 32.3 | - |
| 15450 to 21375 | 17 | 30.2 | - | |
| Characteristic Impedance (ohm) | | 50 (Nominal) | | |

Ta = +25+/-5°C

All specifications are subject to change without notice.

TDK Technology - Proprietary and Confidential Information of TDK Group Companies

DPX167125DT-8097B1

ELECTRICAL CHARACTERISTICS

(Measurement)

Isolation

| Parameter | Frequency (MHz) | TDK Spec | | |
|----------------|-----------------|----------|------|------|
| | | Min. | Typ. | Max. |
| Isolation (dB) | 617 to 2400 | 25 | 26.4 | - |
| | 2400 to 2500 | 25 | 28.7 | - |
| | 2500 to 2690 | 25 | 29.5 | - |
| | 5150 to 5925 | 20 | 24.1 | - |
| | 5925 to 7125 | 20 | 25.1 | - |

Ta = +25+/-5°C

MAXIMUM RATINGS

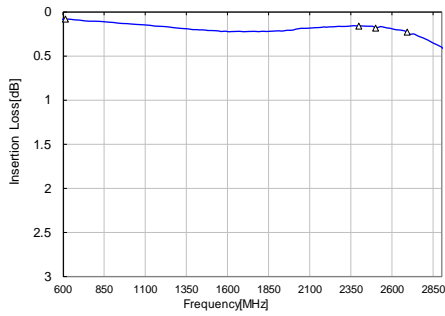
| Parameter | | TDK Spec | Conditions |
|----------------------------|-----------------|---------------|----------------------|
| Operating temperature (°C) | | -40 to +85 °C | |
| Storage temperature (°C) | | -40 to +85 °C | |
| Power Handling (W) *1 | Frequency (MHz) | | |
| | Low-Band | 617 to 2690 | 1 CW Duty 100% |
| | High-Band | 5150 to 7125 | 1 CW Duty 100% |
| Human Body Model : HBM | @Each Port (V) | +/-1000 | 100pF / 1500ohm |
| Machine Model : MM | @Each Port (V) | +/-150 | 200pF / 0ohm |
| Charged Device Model : CDM | @Each Port (V) | +/-500 | Humidity : 60%RH max |

*1 : Refer to 3GPP TS 38.101-1 V15.2.0

DPX167125DT-8097B1

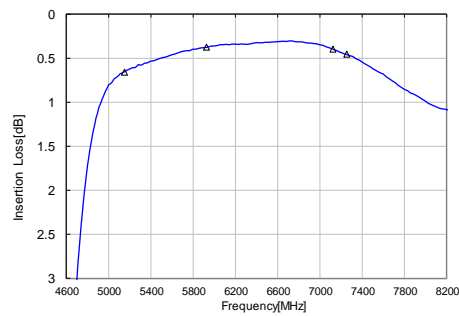
FREQUENCY CHARACTERISTICS

Low-Band Port Insertion Loss S21



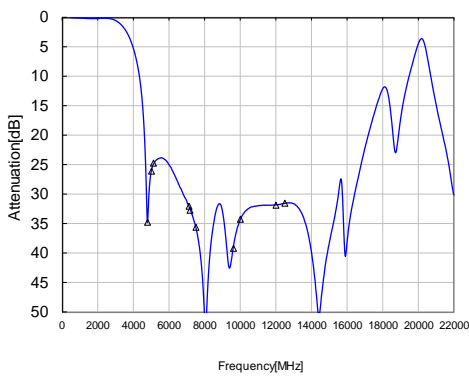
| | |
|----------|---------|
| 617 MHz | 0.08 dB |
| 2400 MHz | 0.15 dB |
| 2500 MHz | 0.18 dB |
| 2690 MHz | 0.23 dB |

High-Band Port Insertion Loss S31



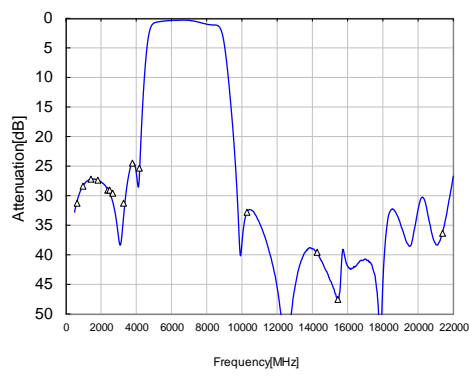
| | |
|----------|---------|
| 5150 MHz | 0.65 dB |
| 5925 MHz | 0.38 dB |
| 7125 MHz | 0.39 dB |
| 7250 MHz | 0.46 dB |

Low-Band Port Attenuation S21



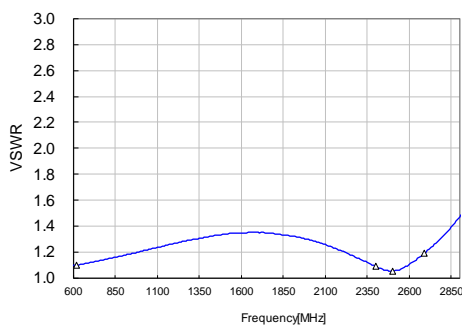
| | |
|-----------|---------|
| 4800 MHz | 34.8 dB |
| 5000 MHz | 26.2 dB |
| 5150 MHz | 24.8 dB |
| 7125 MHz | 32.1 dB |
| 7200 MHz | 32.7 dB |
| 7500 MHz | 35.6 dB |
| 9600 MHz | 39.3 dB |
| 10000 MHz | 34.3 dB |
| 12000 MHz | 31.8 dB |
| 12500 MHz | 31.6 dB |

High-Band Port Attenuation S31



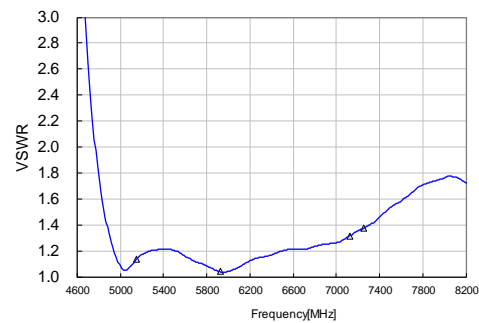
| | |
|-----------|---------|
| 617 MHz | 31.3 dB |
| 960 MHz | 28.4 dB |
| 1427 MHz | 27.2 dB |
| 1800 MHz | 27.4 dB |
| 2400 MHz | 29.0 dB |
| 2500 MHz | 29.0 dB |
| 2690 MHz | 29.6 dB |
| 3300 MHz | 31.3 dB |
| 3800 MHz | 24.4 dB |
| 4200 MHz | 25.4 dB |
| 10300 MHz | 32.7 dB |
| 14250 MHz | 39.6 dB |
| 15450 MHz | 47.6 dB |
| 21375 MHz | 36.4 dB |

Low-Band Port VSWR S22



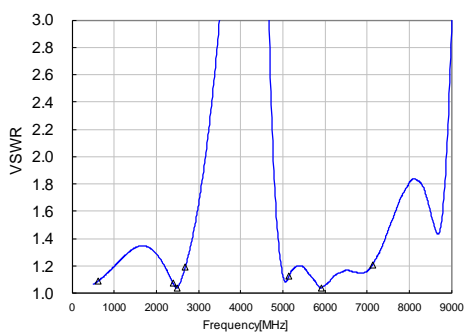
| | |
|----------|---------|
| 617 MHz | 1.10 dB |
| 2400 MHz | 1.09 dB |
| 2500 MHz | 1.05 dB |
| 2690 MHz | 1.19 dB |

High-Band Port VSWR S33



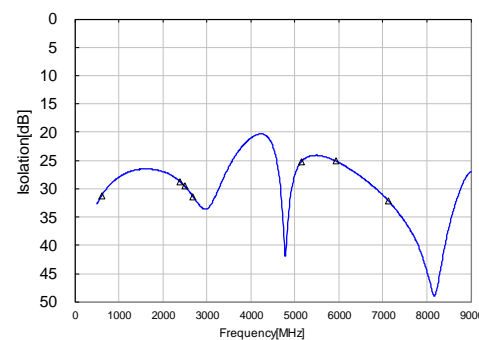
| | |
|----------|---------|
| 5150 MHz | 1.13 dB |
| 5925 MHz | 1.04 dB |
| 7125 MHz | 1.31 dB |
| 7250 MHz | 1.37 dB |

Common Port VSWR S11



| | |
|----------|---------|
| 617 MHz | 1.09 dB |
| 2400 MHz | 1.07 dB |
| 2500 MHz | 1.04 dB |
| 2690 MHz | 1.20 dB |
| 5150 MHz | 1.13 dB |
| 5925 MHz | 1.04 dB |
| 7125 MHz | 1.21 dB |

Isolation S23

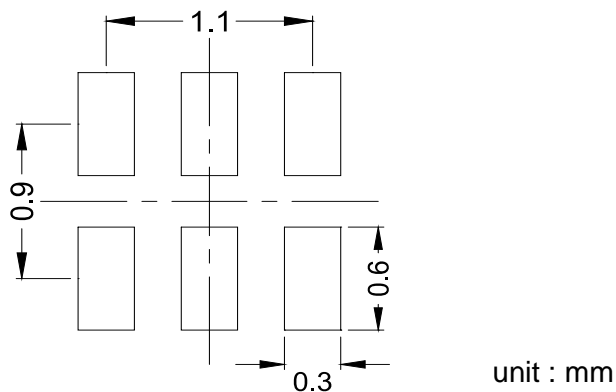


| | |
|----------|---------|
| 617 MHz | 31.2 dB |
| 2400 MHz | 28.8 dB |
| 2500 MHz | 29.6 dB |
| 2690 MHz | 31.4 dB |
| 5150 MHz | 25.2 dB |
| 5925 MHz | 25.1 dB |
| 7125 MHz | 32.1 dB |

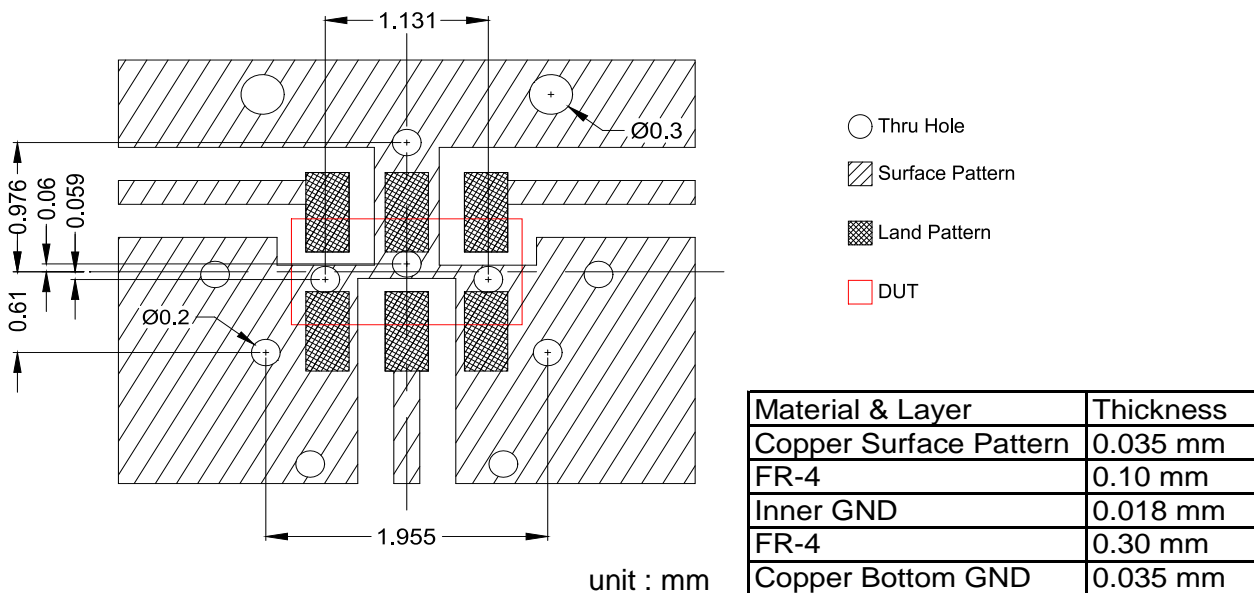
All specifications are subject to change without notice.

DPX167125DT-8097B1

RECOMMENDED LAND PATTERN



EVALUATION BOARD



* Line width should be designed to match 50 ohm characteristic impedance depending on PCB material and thickness.

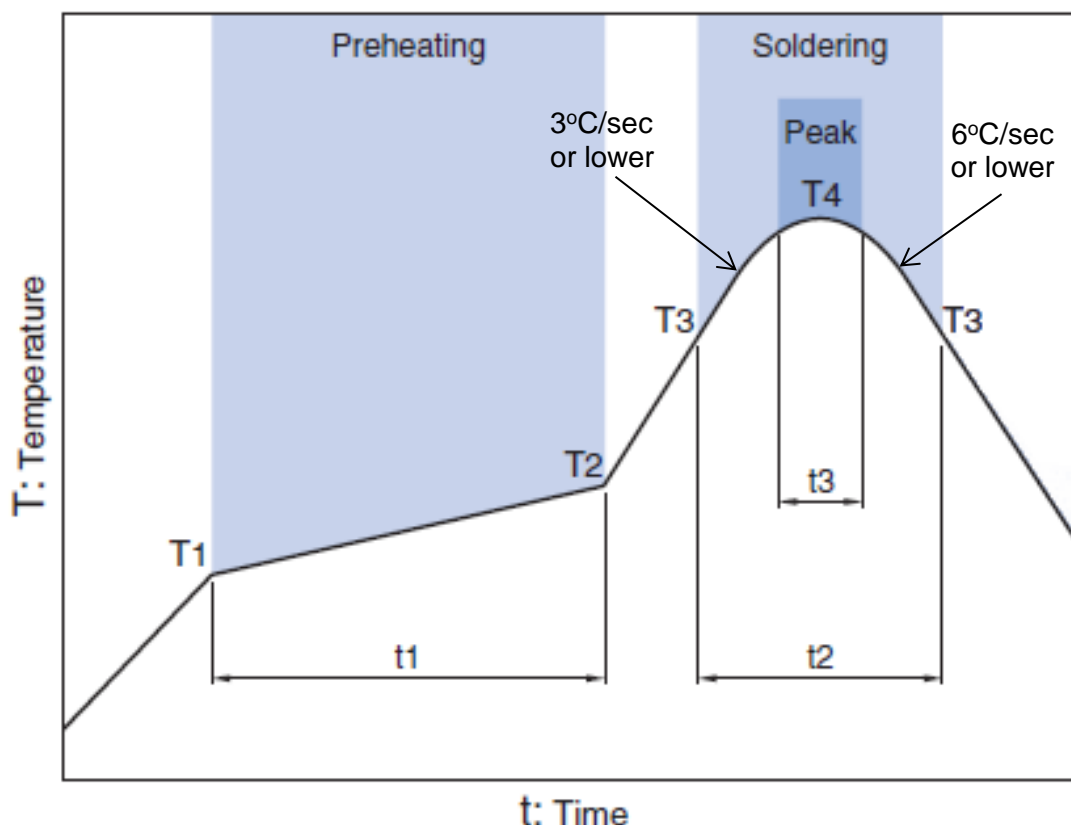
** The position of the through hole which have possibility of influence to the performance are indicated by dimension line.

ENVIRONMENT INFORMATION

RoHS Statement
 RoHS Compliance

DPX167125DT-8097B1

RECOMMENDED REFLOW PROFILE



| Preheating | | | Soldering | | | |
|------------|-------|--------------|--------------------------|--------------|--------------|------------|
| Temp. | | Time | Critical zone (T3 to T4) | | Peak | |
| 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.

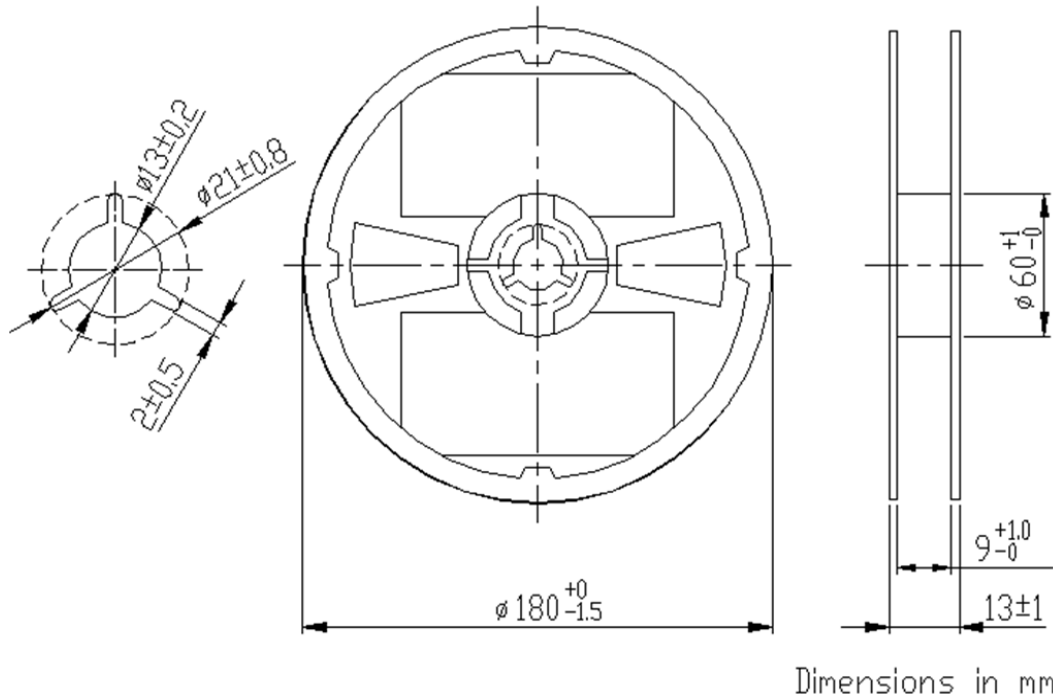
Note: Lead free solder is recommended.
Recommended solder is Sn-3.0Ag-0.5Cu. (M705 by Senju Metal Industry)

GENERAL TECHNICAL INFORMATION

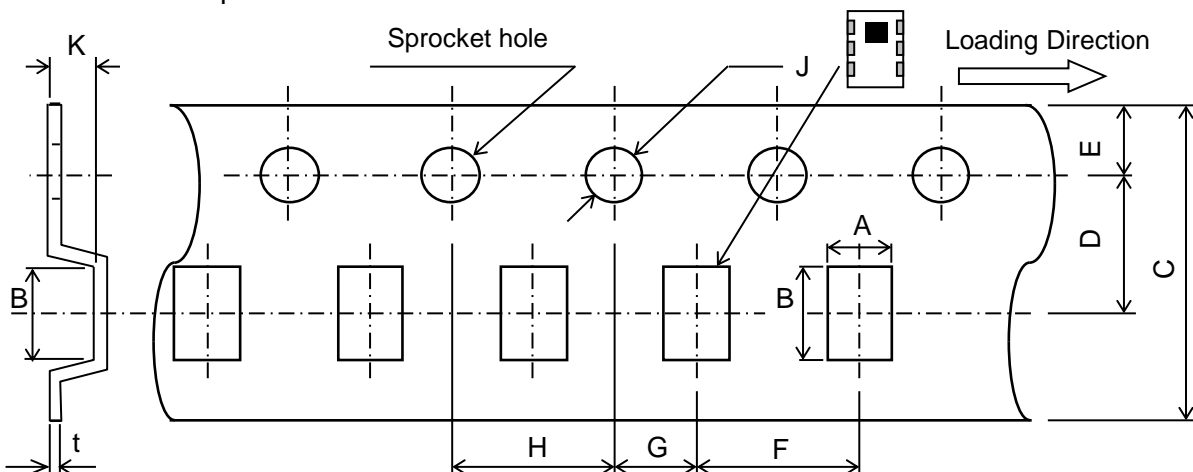
https://product.tdk.com/en/system/files?file=dam/doc/product/rf/rf/coupler/general_tech_info/rf_general-technical-info_02_en.pdf

DPX167125DT-8097B1**PACKAGING STYLE**

Reel Dimensions



Carrier Tape



Dimensions (mm)

| A | B | C | D | E | F | G | H | J | K | t |
|------------|------------|-------------|------------|-----------|-----------|------------|-----------|-----------|-----|------------|
| 0.97 | 1.8 | 8.0 | 3.5 | 1.75 | 4.0 | 2.0 | 4.0 | 1.5 | 0.8 | 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 (pieces/reel) |
|--|
| 4,000 |

All specifications are subject to change without notice.

TDK Technology - Proprietary and Confidential Information of TDK Group Companies

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.

| |
|--|
|  REMINDERS |
|--|

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.