



Jan. 2022 Ver.5.0
TDK Corporation

Multilayer Diplexer

For 699-2170MHz / 2300-2690MHz

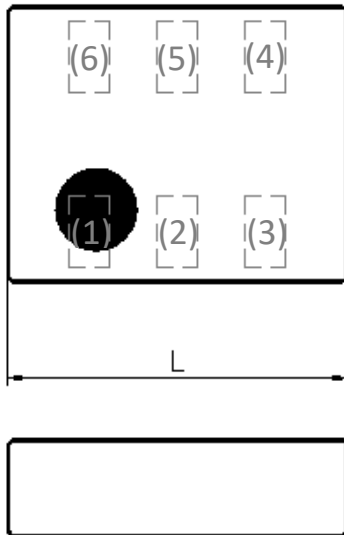
DPX Series 2.5x2.0mm [EIA 1008] TYPE

P/N: **DPX252690DT-5225A1**

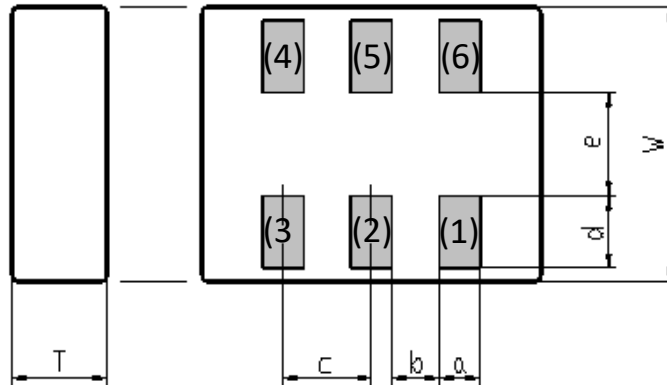
DPX252690DT-5225A1

SHAPES AND DIMENSIONS

[Top View]



[Bottom View]



Dimensions (mm)

| L | W | T | A | B | C | D | E | F |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 2.50 | 2.00 | 0.80 | 0.40 | 0.65 | 0.75 | 0.525 | 0.40 | 0.10 |
| +/-0.10 | +/-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) | Low-Band Port |

| | |
|-----|-------------|
| (4) | GND |
| (5) | Common Port |
| (6) | GND |

TERMINATION FINISH

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

DPX252690DT-5225A1

■ ELECTRICAL CHARACTERISTICS

(Measurement)

Low-Band

| Parameter | Frequency (MHz) | TDK Spec | | |
|--------------------------------|-----------------|--------------|------|------|
| | | Min. | Typ. | Max. |
| Insertion Loss (dB) | 699 to 960 | - | 0.44 | 0.60 |
| | 960 to 1427 | - | 0.54 | 0.75 |
| | 1427 to 1710 | - | 0.62 | 0.85 |
| | 1710 to 1990 | - | 0.79 | 1.00 |
| | 1990 to 2110 | - | 0.91 | 1.50 |
| | 2110 to 2170 | - | 1.62 | 2.50 |
| Return Loss@Common (dB) | 699 to 960 | 10 | 12 | - |
| | 960 to 1710 | 8 | 11 | - |
| | 1710 to 2170 | 10 | 13 | - |
| Return Loss@Low-Band (dB) | 699 to 960 | 10 | 12 | - |
| | 960 to 1710 | 8 | 11 | - |
| | 1710 to 2170 | 10 | 15 | - |
| Attenuation (dB) | 2300 to 2350 | 5 | 12 | - |
| | 2350 to 2500 | 10 | 16 | - |
| | 2500 to 2690 | 10 | 14 | - |
| Characteristic Impedance (ohm) | | 50 (Nominal) | | |

Ta = +25+/-5°C

High-Band

| Parameter | Frequency (MHz) | TDK Spec | | |
|--------------------------------|-----------------|--------------|------|------|
| | | Min. | Typ. | Max. |
| Insertion Loss (dB) | 2300 to 2350 | - | 1.54 | 2.15 |
| | 2350 to 2500 | - | 0.87 | 1.50 |
| | 2500 to 2690 | - | 0.48 | 0.65 |
| Return Loss@Common (dB) | 2300 to 2690 | 10 | 17 | - |
| Return Loss@High-Band (dB) | 2300 to 2690 | 10 | 16 | - |
| Attenuation (dB) | 699 to 960 | 15 | 18 | - |
| | 960 to 1427 | 15 | 19 | - |
| | 1427 to 1710 | 12 | 14 | - |
| | 1710 to 1990 | 8 | 11 | - |
| | 1990 to 2110 | 8 | 11 | - |
| | 2110 to 2170 | 5 | 11 | - |
| Characteristic Impedance (ohm) | | 50 (Nominal) | | |

Ta = +25+/-5°C

DPX252690DT-5225A1

■ ELECTRICAL CHARACTERISTICS

(Measurement)

Isolation

| Parameter | Frequency (MHz) | TDK Spec | | |
|----------------|-----------------|----------|------|------|
| | | Min. | Typ. | Max. |
| Isolation (dB) | 699 to 960 | 15 | 17 | - |
| | 960 to 1427 | 15 | 18 | - |
| | 1427 to 1710 | 12 | 13 | - |
| | 1710 to 1990 | 8 | 11 | - |
| | 1990 to 2110 | 8 | 12 | - |
| | 2110 to 2170 | 5 | 15 | - |
| | 2300 to 2350 | 5 | 13 | - |
| | 2350 to 2500 | 10 | 17 | - |
| | 2500 to 2690 | 10 | 15 | - |

 $T_a = +25 \pm 5^\circ\text{C}$

■ MAXIMUM RATINGS

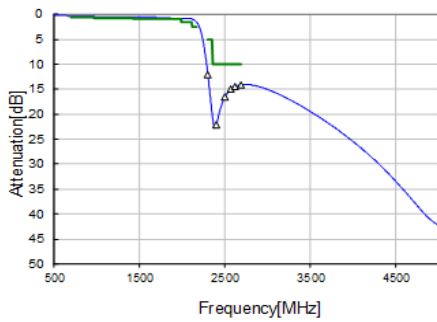
| Parameter | | TDK Spec | Conditions |
|----------------------------|-----------------|---------------|----------------------|
| Operating temperature (°C) | | -40 to +85 °C | |
| Storage temperature (°C) | | -40 to +85 °C | |
| Power Handling (W) *1 | Frequency (MHz) | | |
| | Low-Band | 699 to 960 | 3 CW Duty 50% |
| | | 960 to 1710 | 2 CW Duty 50% |
| | | 1710 to 2170 | 2.5 CW Duty 50% |
| High-Band | 2300 to 2690 | 1 CW Duty 50% | |
| 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

DPX252690DT-5225A1

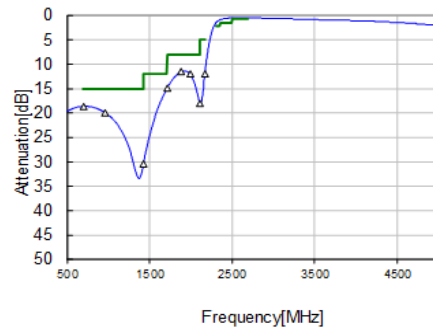
FREQUENCY CHARACTERISTICS

Low band-Port



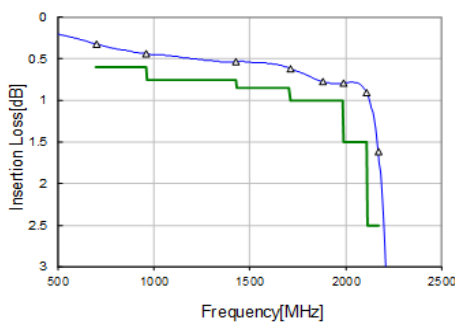
| Attenuation | |
|-------------|----------|
| 2300 MHz | 12.10 dB |
| 2400 MHz | 22.17 dB |
| 2500 MHz | 16.96 dB |
| 2570 MHz | 15.01 dB |
| 2620 MHz | 14.45 dB |
| 2690 MHz | 14.09 dB |
| | |
| | |
| | |
| | |
| | |

High band-Port



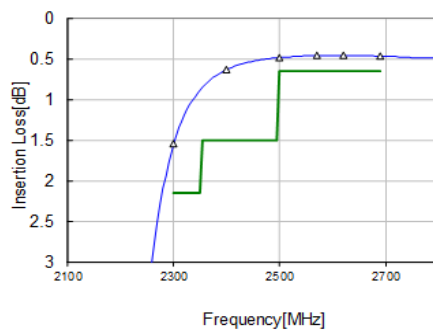
| Attenuation | |
|-------------|----------|
| 699 MHz | 18.62 dB |
| 960 MHz | 19.88 dB |
| 1427 MHz | 30.41 dB |
| 1710 MHz | 14.94 dB |
| 1880 MHz | 11.50 dB |
| 1990 MHz | 11.97 dB |
| 2110 MHz | 17.98 dB |
| 2170 MHz | 11.89 dB |
| | |
| | |
| | |
| | |
| | |

Low band-Port



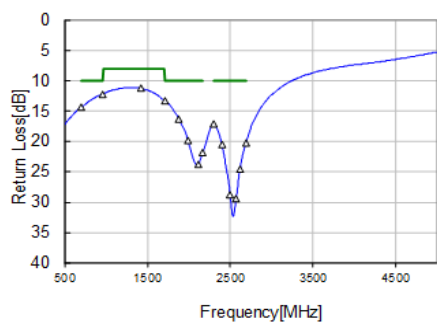
| Insertion Loss | |
|----------------|---------|
| 699 MHz | 0.32 dB |
| 960 MHz | 0.44 dB |
| 1427 MHz | 0.54 dB |
| 1710 MHz | 0.62 dB |
| 1880 MHz | 0.77 dB |
| 1990 MHz | 0.79 dB |
| 2110 MHz | 0.91 dB |
| 2170 MHz | 1.62 dB |

High band-Port



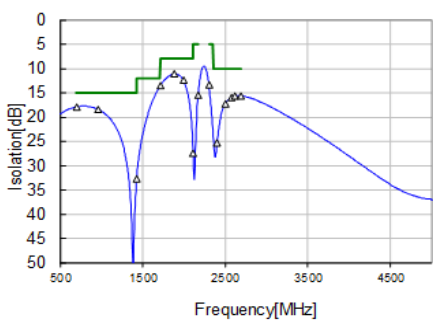
| Insertion Loss | |
|----------------|---------|
| 2300 MHz | 1.54 dB |
| 2400 MHz | 0.63 dB |
| 2500 MHz | 0.48 dB |
| 2570 MHz | 0.46 dB |
| 2620 MHz | 0.45 dB |
| 2690 MHz | 0.46 dB |

Common Port Return Loss



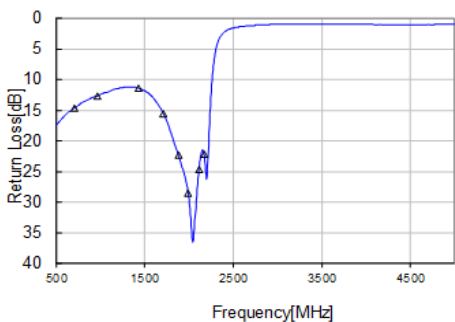
| | |
|----------|----------|
| 699 MHz | 14.34 dB |
| 960 MHz | 12.25 dB |
| 1427 MHz | 11.22 dB |
| 1710 MHz | 13.31 dB |
| 1880 MHz | 16.25 dB |
| 1990 MHz | 19.80 dB |
| 2110 MHz | 23.79 dB |
| 2170 MHz | 21.78 dB |
| 2300 MHz | 17.11 dB |
| 2400 MHz | 20.49 dB |
| 2500 MHz | 28.77 dB |
| 2570 MHz | 29.36 dB |
| 2620 MHz | 24.58 dB |
| 2690 MHz | 20.18 dB |

Isolation



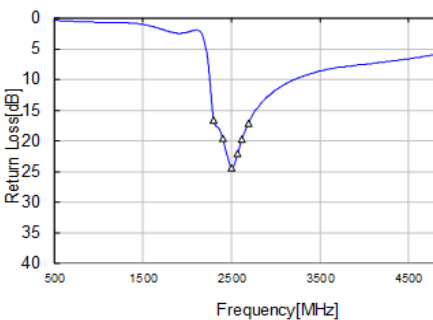
| | |
|----------|---------|
| 699 MHz | 17.9 dB |
| 960 MHz | 18.4 dB |
| 1427 MHz | 32.7 dB |
| 1710 MHz | 13.6 dB |
| 1880 MHz | 11.1 dB |
| 1990 MHz | 12.4 dB |
| 2110 MHz | 27.5 dB |
| 2170 MHz | 15.5 dB |
| 2300 MHz | 13.4 dB |
| 2400 MHz | 25.2 dB |
| 2500 MHz | 17.2 dB |
| 2570 MHz | 15.9 dB |
| 2620 MHz | 15.6 dB |
| 2690 MHz | 15.6 dB |

Low band-Port Return Loss



| | |
|----------|----------|
| 699 MHz | 14.70 dB |
| 960 MHz | 12.69 dB |
| 1427 MHz | 11.39 dB |
| 1710 MHz | 15.61 dB |
| 1880 MHz | 22.36 dB |
| 1990 MHz | 28.52 dB |
| 2110 MHz | 24.63 dB |
| 2170 MHz | 22.15 dB |

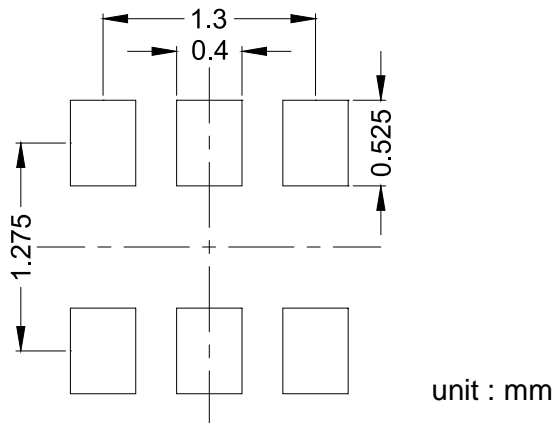
High band-Port Return Loss



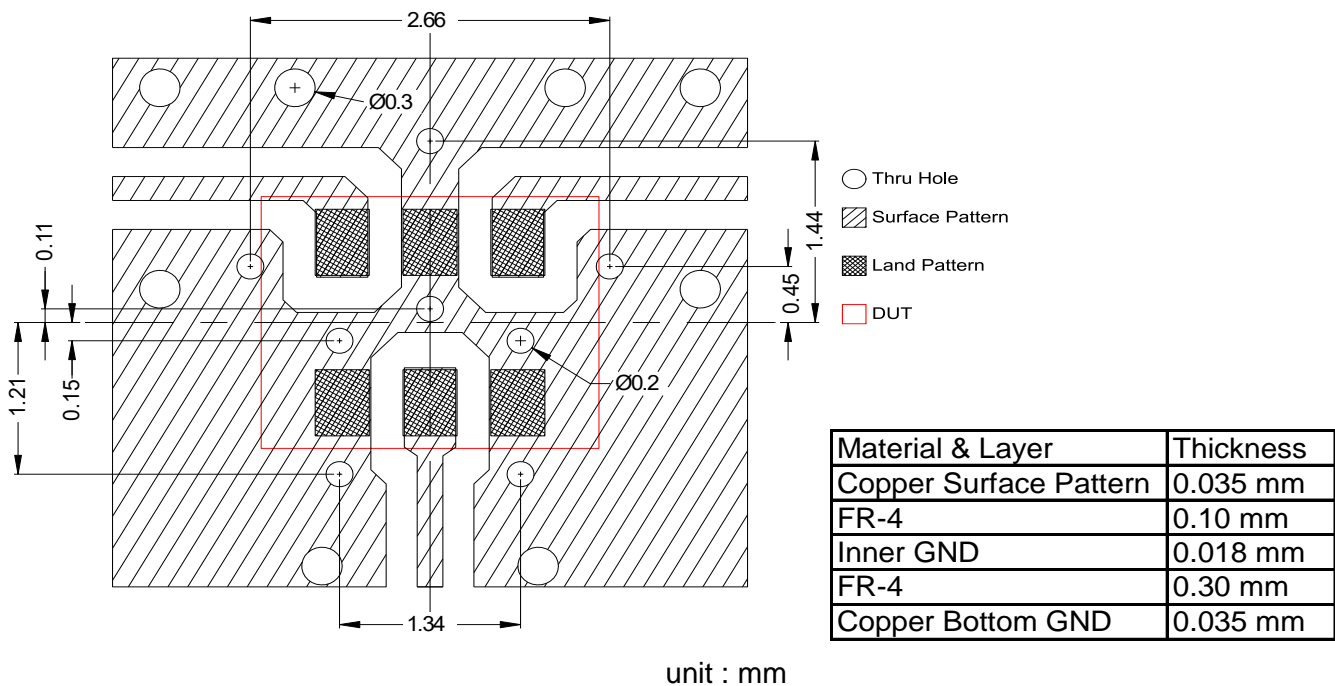
| | |
|----------|----------|
| 2300 MHz | 16.67 dB |
| 2400 MHz | 19.59 dB |
| 2500 MHz | 24.36 dB |
| 2570 MHz | 22.05 dB |
| 2620 MHz | 19.70 dB |
| 2690 MHz | 17.19 dB |

DPX252690DT-5225A1

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.

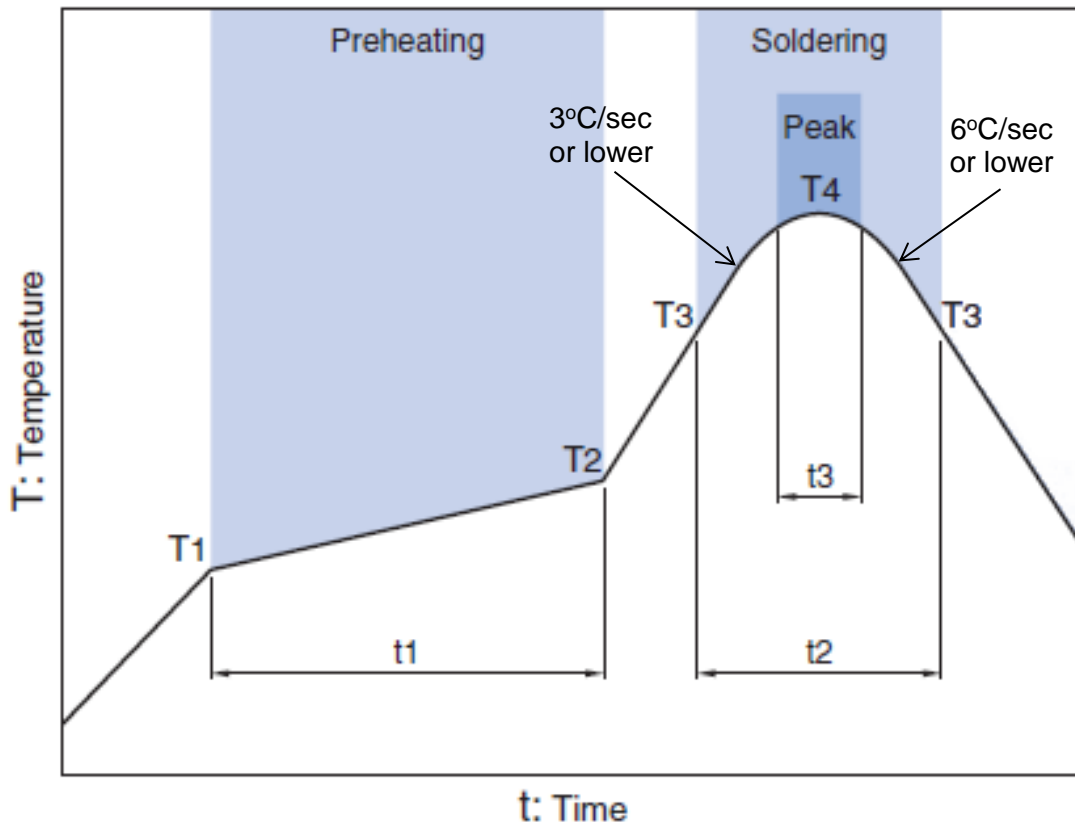
ENVIRONMENT INFORMATION

RoHS Statement
 RoHS Compliance

All specifications are subject to change without notice.
 Before using these products, be sure to request the delivery specifications.

DPX252690DT-5225A1

RECOMMENDED REFLOW PROFILE



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

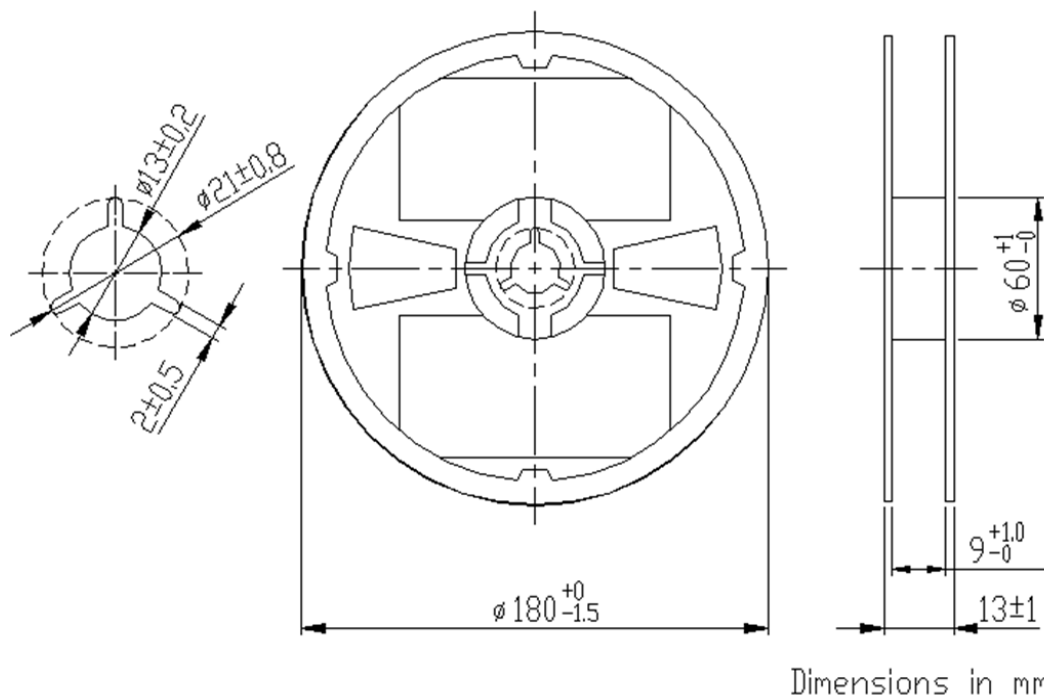
* t3 : Time within 5°C of actual peak temperature

The maximum number of reflow is 3.

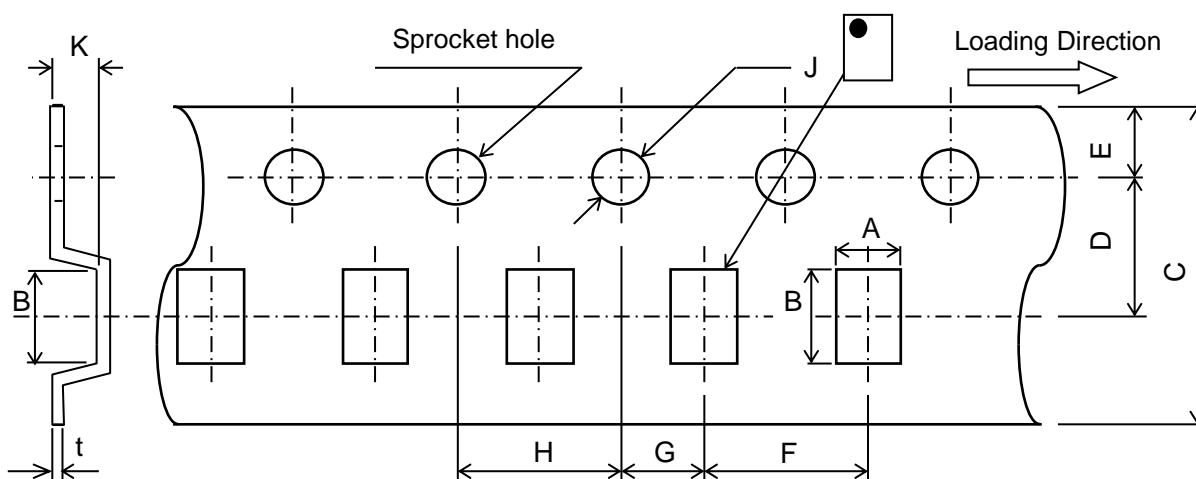
Note: Lead free solder is recommended.
Recommended solder is Sn-3.0Ag-0.5Cu. (M705 by Senju Metal Industry)

DPX252690DT-5225A1**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**(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.

REMINDERS

The products listed on this catalog 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 catalog.

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

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.