Jan. 2022 Ver.5.0
TDK Corporation

Multilayer Diplexer

For 1447.9-2690MHz / 3300-5000MHz

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

P/N: **DPX255000DT-5089A1**

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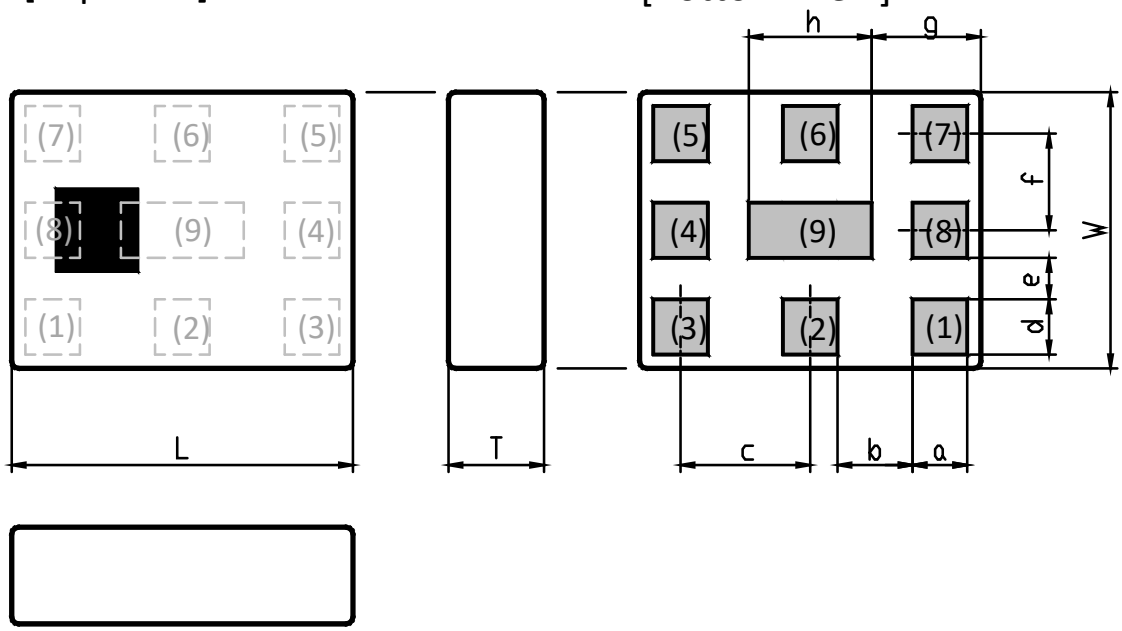
SHAPES AND DIMENSIONS

[Top View] [Bottom View]



Dimensions (mm)

L	W	T	a	b	c	d	e	f	g	h
2.50 +/-0.10	2.00 +/-0.10	0.75 Max	0.40 +/-0.10	0.55 +/-0.15	0.95 +/-0.10	0.40 +/-0.10	0.30 +/-0.10	0.70 +/-0.10	0.80 +/-0.10	0.90 +/-0.10

Terminal functions

(1)	GND
(2)	Common Port
(3)	GND
(4)	GND
(5)	High-Band Port

(6)	GND
(7)	Low-Band Port
(8)	GND
(9)	GND

TERMINATION FINISH

Material
Ag

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■ ELECTRICAL CHARACTERISTICS

(Measurement)

Low-Band

Parameter	Frequency (MHz)	TDK Spec		
		Min.	Typ.	Max.
Insertion Loss (dB)	1447.9 to 2690	-	0.76	0.95
Insertion Loss (dB) (–40 to +85 °C)	1447.9 to 2690	-		1.10
Return Loss (Low-Band Port)	1447.9 to 2690	10	13.9	-
Attenuation (dB)	0 to 960	22	25.0	-
	1164 to 1189	2	4.1	-
	3300 to 3500	18	26.6	-
	3500 to 6000	23	24.7	-
	6000 to 9000	25	29.9	-
	9000 to 12750	10	13.7	-
Characteristic Impedance (ohm)		50 (Nominal)		

Ta = +25+/-5°C

High-Band

Parameter	Frequency (MHz)	TDK Spec		
		Min.	Typ.	Max.
Insertion Loss (dB)	3300 to 5000	-	0.77	0.97
Insertion Loss (dB) (–40 to +85 °C)	3300 to 5000	-		1.12
Return Loss (High-Band Port)	3300 to 5000	12	16.4	-
Attenuation (dB)	100 to 1000	30	42.0	-
	1164 to 1189	28	32.5	-
	1448 to 2690	20	24.3	-
	5100 to 5150	0.5	0.8	-
	5850 to 5950	13	20.7	-
	5950 to 6000	15	29.2	-
	6000 to 9000	20	24.2	-
	9000 to 12750	11	16.0	-
Characteristic Impedance (ohm)		50 (Nominal)		

Ta = +25+/-5°C

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■ ELECTRICAL CHARACTERISTICS

(Measurement)

Common

Parameter	Frequency (MHz)	TDK Spec		
		Min.	Typ.	Max.
Isolation (dB)	100 to 2690	20	24.4	-
	3300 to 6000	18	24.5	-
Return Loss	1447.9 to 2690	10	14.3	-
(Common Port)	3300 to 5000	12	15.7	-
Characteristic Impedance (ohm)		50 (Nominal)		

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	1447.9 to 2690	1	CW
	High-Band	3300 to 5000	1	CW
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

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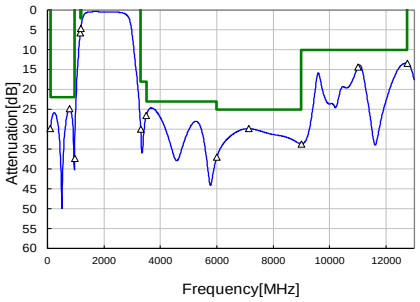
FREQUENCY CHARACTERISTICS

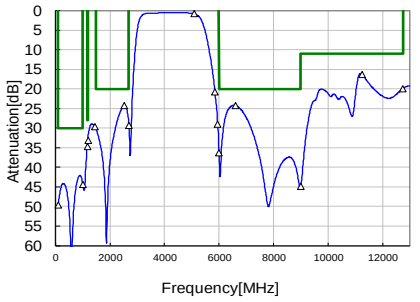
Low band-Port **S21**



Attenuation

100	MHz	29.90 dB
780	MHz	24.90 dB
960	MHz	37.28 dB
1164	MHz	5.80 dB
1189	MHz	4.60 dB
3300	MHz	29.96 dB
3500	MHz	26.57 dB
6000	MHz	37.06 dB
7140	MHz	29.86 dB
9000	MHz	33.67 dB
11000	MHz	14.28 dB
12750	MHz	13.44 dB

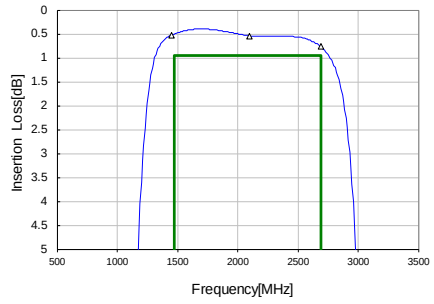
High band-Port **S31**



Attenuation

100	MHz	49.66 dB
1000	MHz	44.34 dB
1164	MHz	34.65 dB
1189	MHz	33.09 dB
1448	MHz	29.65 dB
2510	MHz	24.26 dB
2690	MHz	29.37 dB
5100	MHz	0.83 dB
5850	MHz	20.69 dB
6000	MHz	36.34 dB
6600	MHz	24.25 dB
9000	MHz	44.88 dB
11250	MHz	16.29 dB
12750	MHz	19.88 dB

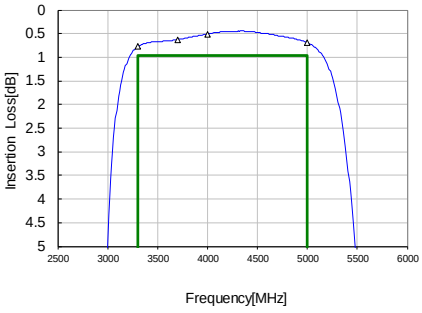
Low band-Port **S21**



Insertion Loss

1447.9	MHz	0.53 dB
2100	MHz	0.54 dB
2690	MHz	0.76 dB

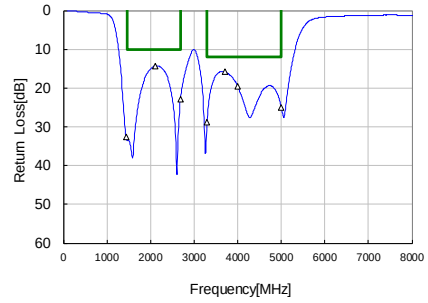
High band-Port **S31**



Insertion Loss

3300	MHz	0.77 dB
3700	MHz	0.62 dB
4000	MHz	0.51 dB
5000	MHz	0.69 dB

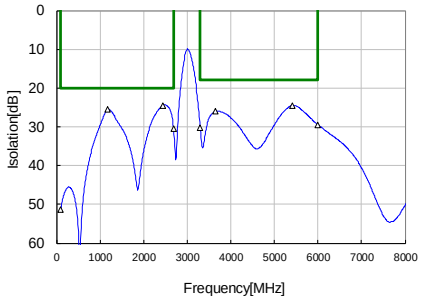
Common Port Return Loss **S11**



1447.9	MHz	32.72 dB
2100	MHz	14.27 dB
2690	MHz	22.87 dB

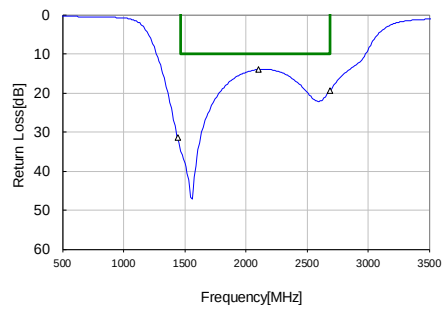
3300	MHz	28.71 dB
3700	MHz	15.74 dB
4000	MHz	19.56 dB
5000	MHz	25.02 dB

Isolation **S23**



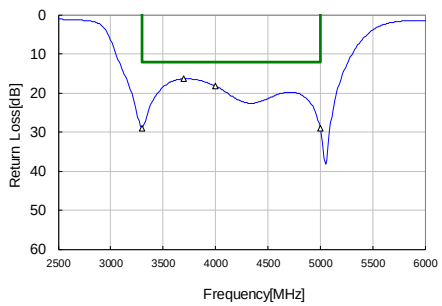
100	MHz	51.3 dB
1180	MHz	25.5 dB
2690	MHz	30.6 dB
3300	MHz	30.2 dB
3650	MHz	26.1 dB
5420	MHz	24.5 dB
6000	MHz	29.5 dB

Low band-Port Return Loss **S22**



1447.9	MHz	31.34 dB
2100	MHz	14.02 dB
2690	MHz	19.31 dB

High band-Port Return Loss **S33**



3300	MHz	29.02 dB
3700	MHz	16.37 dB
4000	MHz	18.33 dB
5000	MHz	29.17 dB

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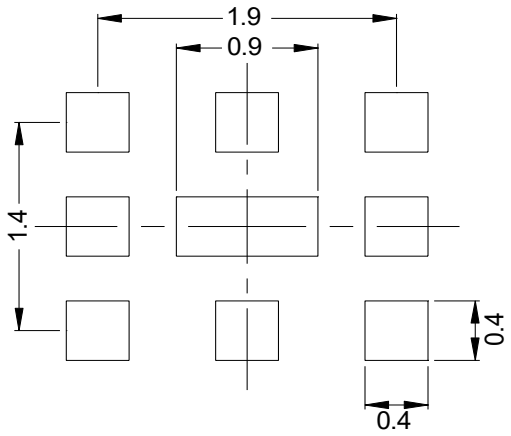
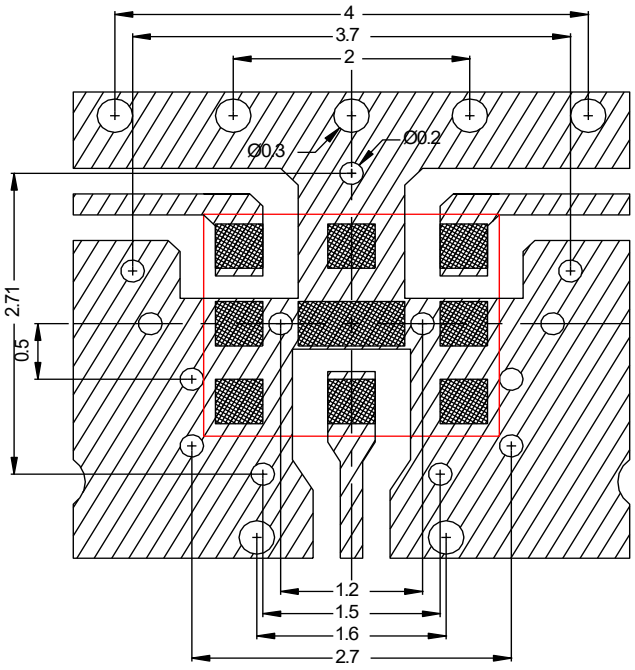
RECOMMENDED LAND PATTERN



unit : mm

EVALUATION BOARD



unit : mm

Thru Hole
Surface Pattern
Land Pattern
DUT

Material & Layer	Thickness
Copper Surface Pattern	0.035 mm
FR-4	0.10 mm
Inner GND	0.018 mm
FR-4	0.30 mm
Copper Bottom GND	0.035 mm

* Line width should be designed to match 50 ohm characteristic impedance depending on PCB material and thickness.
** The position of the throuh hole which have possibility of influence to the prerformance are indicated by dimension line.

ENVIRONMENT INFORMATION

RoHS Statement
RoHS Compliance

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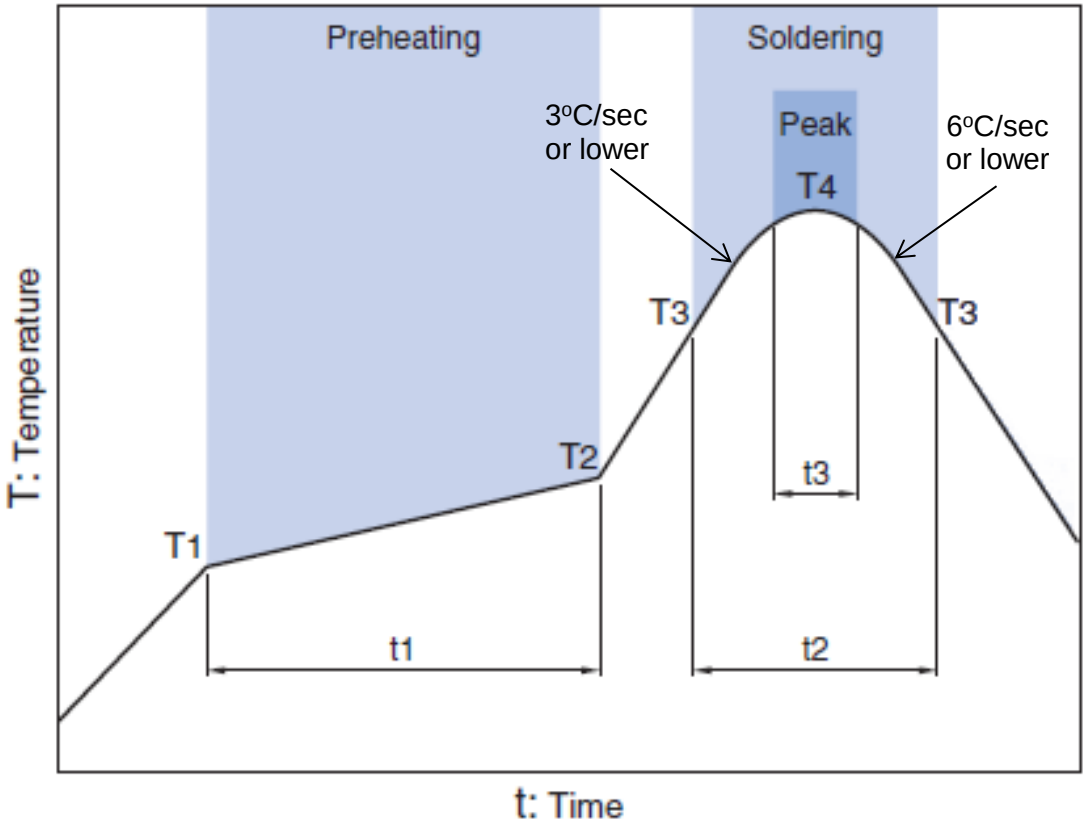
■ RECOMMENDED REFLOW PROFILE



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)

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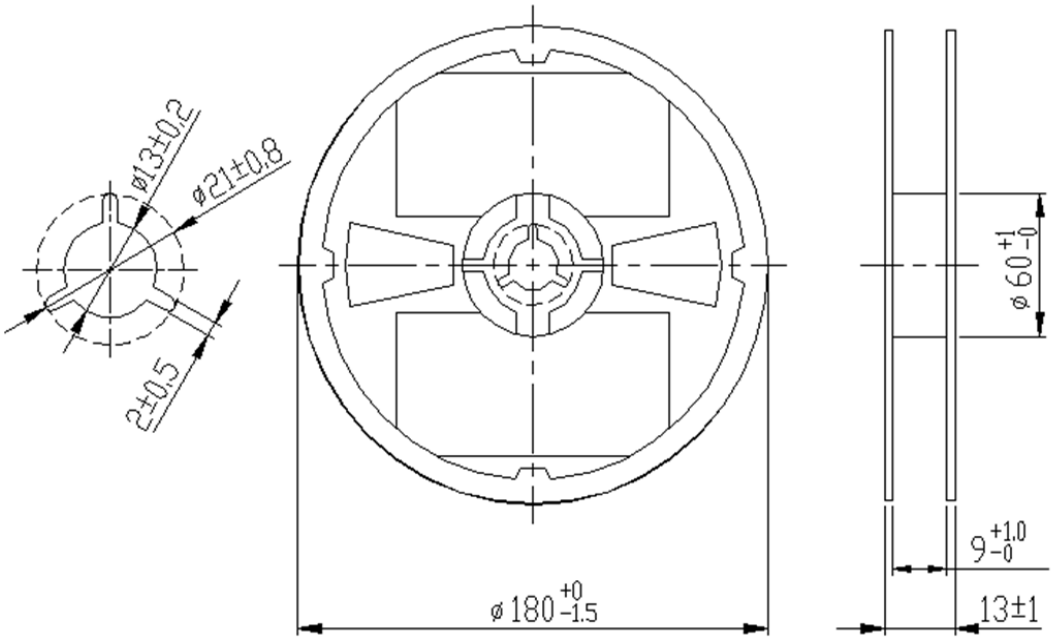
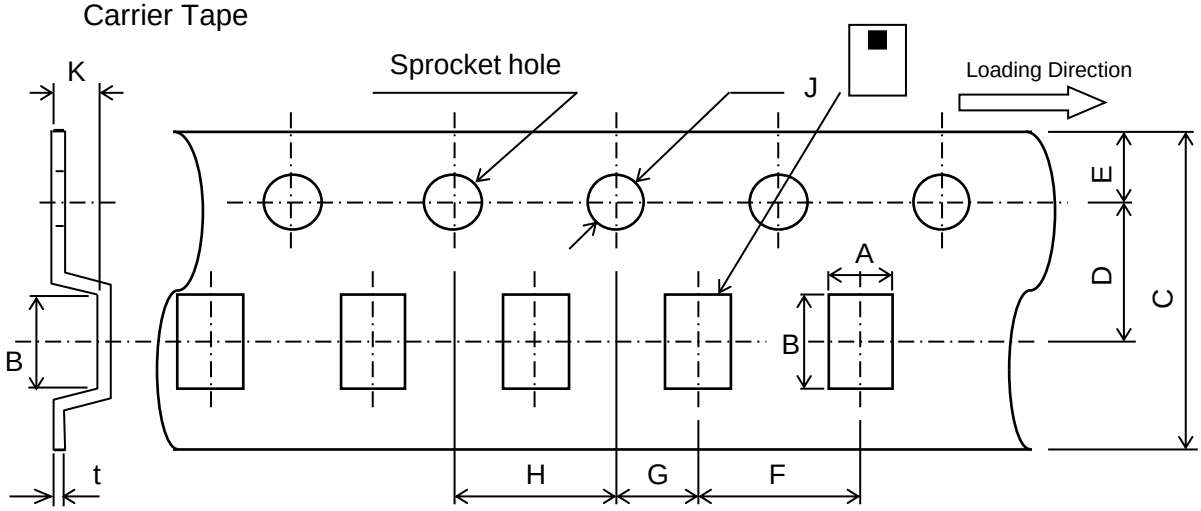
■ PACKAGING STYLE

Reel Dimensions



Dimensions in mm

Carrier Tape



Dimensions (mm)

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