



May. 2021 Ver.3.0  
TDK Corporation

## Multilayer Triplexer

For LTE

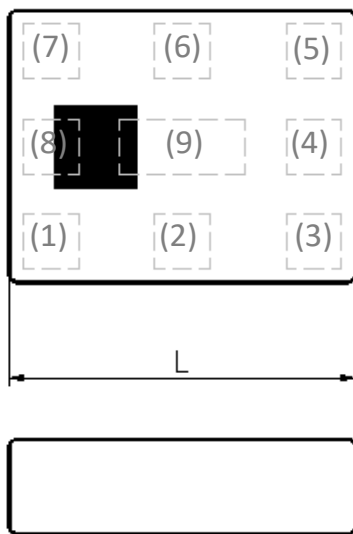
TPX Series      2.5x2.0mm [EIA 1008] TYPE

P/N: **TPX255950MT-7089A1**

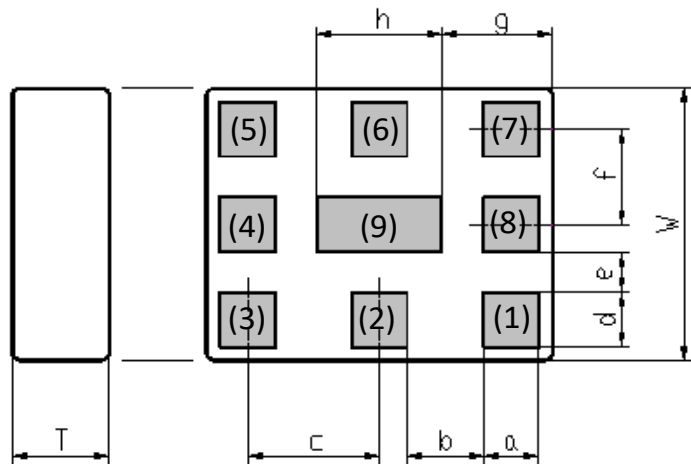
## TPX255950MT-7089A1

### ■ SHAPES AND DIMENSIONS

[Top View]



[Bottom View]



Dimensions (mm)

L	W	T	a	b	c	d	e	f	g	h
2.50	2.00	0.75	0.40	0.55	0.95	0.40	0.30	0.70	0.80	0.90
+/-0.10	+/-0.10	+/-0.05	+/-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
Ag

## TPX255950MT-7089A1

### ■ ELECTRICAL CHARACTERISTICS

( Measurement )

#### Low-Band

Parameter	Frequency (MHz)	TDK Spec		
		Min.	Typ.	Max.
Insertion Loss (dB)	617 to 960	-	0.37	0.60
Insertion Loss (dB) (-40 to +90 °C)	617 to 960	-	-	0.70
VSWR	617 to 960	-	1.24	1.92
VSWR (-40 to +90 °C)	617 to 960	-	-	1.92
Attenuation (dB)	1427 to 1452	11	14.0	-
	1452 to 1496	11	15.0	-
	1710 to 1990	20	25.0	-
	2110 to 2170	20	28.4	-
	2200 to 2400	20	29.3	-
	2500 to 2690	20	25.7	-
	3300 to 3800	20	28.9	-
	3800 to 5000	12	17.6	-
Attenuation (dB) (-40 to +90 °C)	1427 to 1452	10.5	-	-
	1452 to 1496	10.5	-	-
	1710 to 1990	19.5	-	-
	2110 to 2170	19.5	-	-
	2200 to 2400	19.5	-	-
	2500 to 2690	19	-	-
	3300 to 3800	19	-	-
	3800 to 5000	11.5	-	-
5150 to 5950	11	-	-	
Characteristic Impedance (ohm)		50 (Nominal)		

Ta = +25+/-5°C

## TPX255950MT-7089A1

### ■ ELECTRICAL CHARACTERISTICS

( Measurement )

#### Middle-Band

Parameter	Frequency (MHz)	TDK Spec		
		Min.	Typ.	Max.
Insertion Loss (dB)	1427 to 1452	-	0.88	1.20
	1452 to 1496	-	0.77	0.90
	1710 to 1990	-	0.38	0.60
	2110 to 2170	-	0.33	0.55
	2200 to 2400	-	0.36	0.60
	2500 to 2690	-	0.66	0.90
Insertion Loss (dB) (-40 to +90 °C)	1427 to 1452		-	1.30
	1452 to 1496		-	1.00
	1710 to 1990		-	0.70
	2110 to 2170		-	0.65
	2200 to 2400		-	0.70
	2500 to 2690		-	1.10
VSWR	1427 to 2690	-	1.41	1.92
VSWR (-40 to +90 °C)	1427 to 2690	-	-	1.92
Attenuation (dB)	617 to 960	12	17.8	-
	3300 to 3800	12	15.9	-
	3800 to 5000	12	15.9	-
	5150 to 5950	15	19.2	-
Attenuation (dB) (-40 to +90 °C)	617 to 960	11	-	-
	3300 to 3800	11	-	-
	3800 to 5000	11.5	-	-
	5150 to 5950	14	-	-
Characteristic Impedance (ohm)		50 (Nominal)		

Ta = +25+/-5°C

## TPX255950MT-7089A1

### ELECTRICAL CHARACTERISTICS

( Measurement )

#### High-Band

Parameter	Frequency (MHz)	TDK Spec		
		Min.	Typ.	Max.
Insertion Loss (dB)	3300 to 3800	-	0.58	0.80
	3800 to 5000	-	0.31	0.55
	5150 to 5950	-	0.30	0.80
Insertion Loss (dB) (-40 to +90 °C)	3300 to 3800	-	-	0.90
	3800 to 5000	-	-	0.65
	5150 to 5950	-	-	0.90
VSWR	3300 to 5000	-	1.24	1.92
	5150 to 5950		1.28	1.92
VSWR (-40 to +90 °C)	3300 to 5000	-	-	1.92
	5150 to 5950		-	1.92
Attenuation (dB)	617 to 960	20	24.6	-
	1427 to 2690	12	18.6	-
Attenuation (dB) (-40 to +90 °C)	617 to 960	19.5	-	-
	1427 to 2690	11	-	-
Characteristic Impedance (ohm)		50 (Nominal)		

Ta = +25/+5°C

#### Isolation

Parameter	Frequency (MHz)	TDK Spec			
		Min.	Typ.	Max.	
Isolation (dB)	LB - MB	617 to 960	13	17.2	-
		1427 to 2690	10	13.0	-
	LB - HB	617 to 960	20	24.9	-
		3300 to 3800	19	23.7	-
		3800 to 5150	12	16.3	-
	MB - HB	5150 to 5950	12	16.0	-
		1427 to 2690	14	22.0	-
		3300 to 3800	13	17.8	-
		3800 to 5000	13	17.8	-
	Isolation (dB) (-40 to +90 °C)	LB - MB	617 to 960	11.5	-
1427 to 2690			9.5	-	-
LB - HB		617 to 960	19.5	-	-
		3300 to 3800	17.5	-	-
		3800 to 5150	11.5	-	-
MB - HB		5150 to 5950	10.5	-	-
		1427 to 2690	13	-	-
		3300 to 3800	11.5	-	-
		3800 to 5000	12.5	-	-
		5150 to 5950	14	-	-

Ta = +25/+5°C

## TPX255950MT-7089A1

### ■ MAXIMUM RATINGS

Parameter		TDK Spec	Conditions
Operating temperature (°C)		-40 to +90 °C	
Storage temperature (°C)		-40 to +90 °C	
Power Handling (W) *1	Frequency (MHz)		
Low-Band	617 to 960	3	CW
Middle-Band	1452 to 2690	2	CW
High-Band	3300 to 5950	2	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

# TPX255950MT-7089A1

## FREQUENCY CHARACTERISTICS

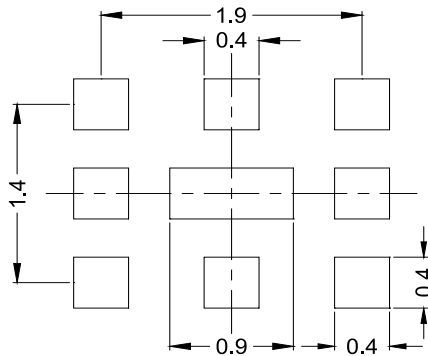


All specifications are subject to change without notice.

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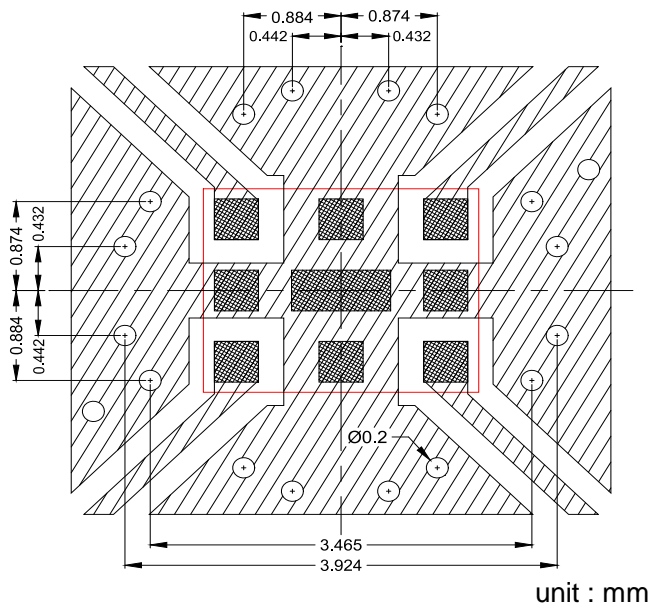
## TPX255950MT-7089A1

### RECOMMENDED LAND PATTERN



Unit: mm

### EVALUATION BOARD



- 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 thru hole which have possibility of influence to the performance are indicated by dimension line.

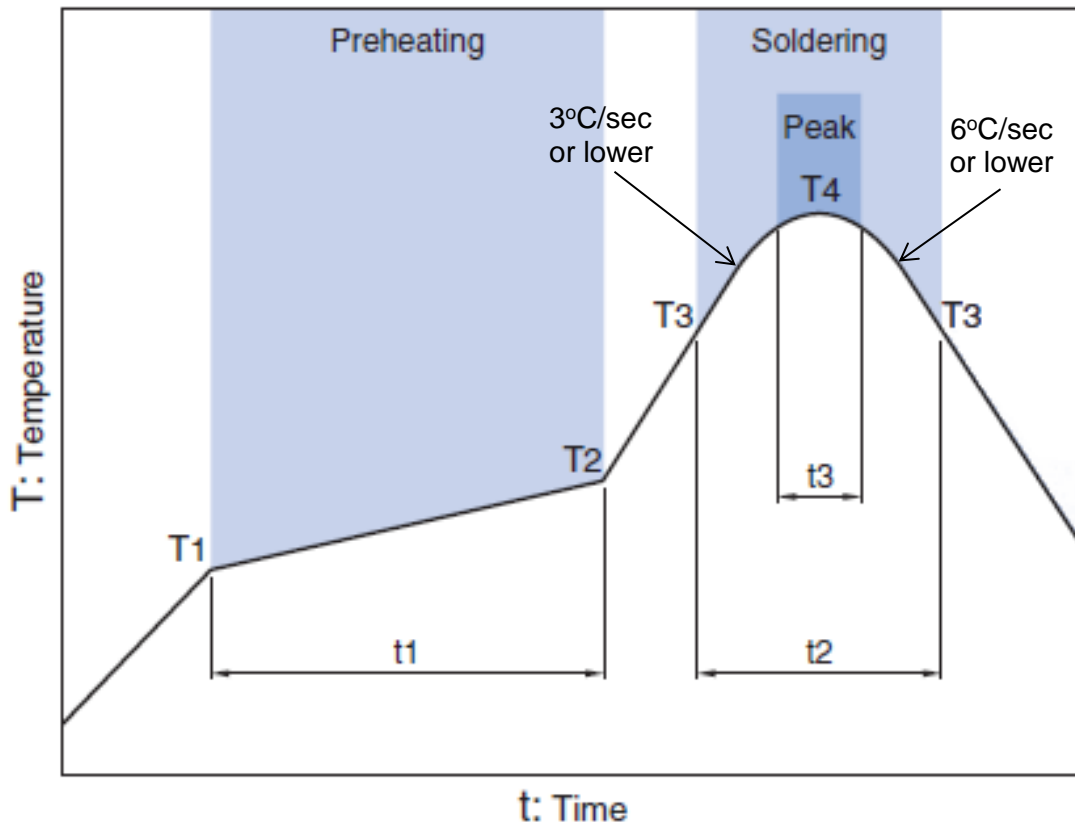
### ENVIRONMENT INFORMATION

RoHS Statement  
RoHS Compliance



## TPX255950MT-7089A1

### 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

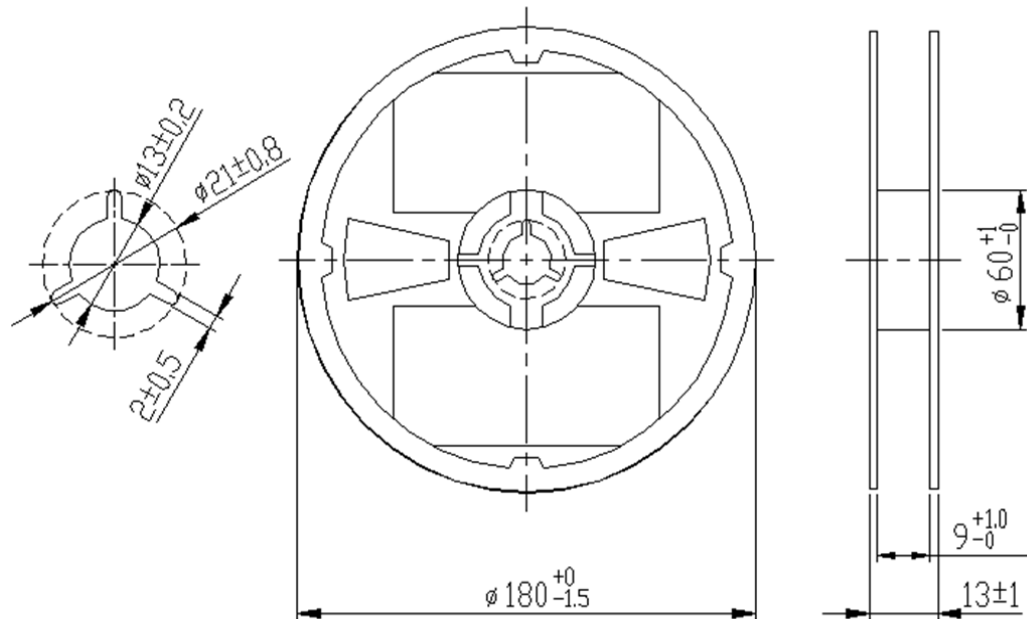
\* t3 : Time within 5°C of actual peak temperature

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)

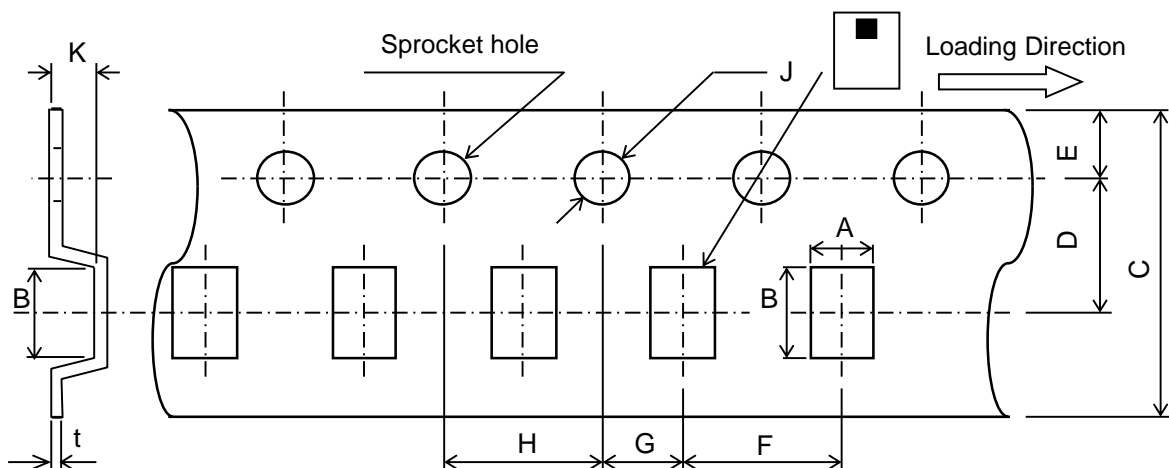
**TPX255950MT-7089A1****PACKAGING STYLE**

## Reel Dimensions



Dimensions in mm

## 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
$\pm 0.05$	$\pm 0.05$	$+0.3/-0.1$	$\pm 0.05$	$\pm 0.1$	$\pm 0.1$	$\pm 0.05$	$\pm 0.1$	$+0.1/-0$	MAX	$\pm 0.05$

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.

 <b>REMINDERS</b>
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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.

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