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TDK Corporation

Multilayer Triplexer

For 1559-1606MHz / 2400-2500MHz / 4900-5950MHz

TPX Series 2.0x1.25mm [EIA 0805] TYPE

P/N: **TPX205950MT-7052C1**

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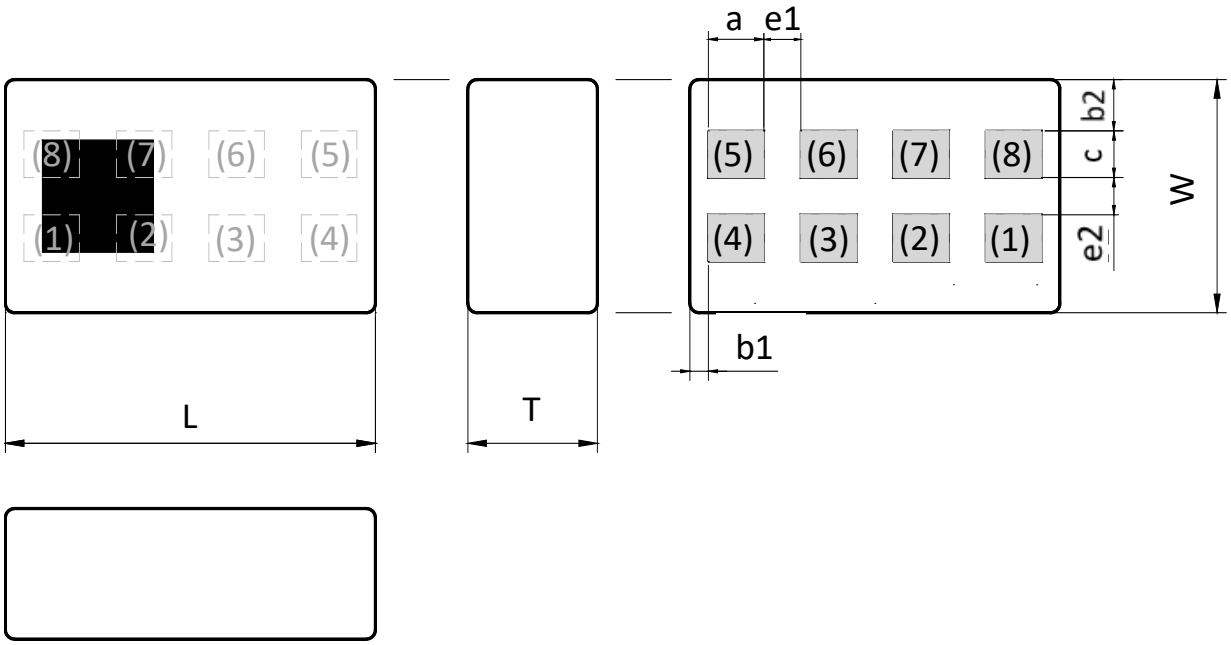
SHAPES AND DIMENSIONS



Dimensions (mm)

L	W	T	a	b1	b2	c	e1	e2
2.00 +/-0.15	1.25 +/-0.15	0.75 Max	0.30 +/-0.05	0.10 +/-0.10	0.275 +/-0.10	0.25 +/-0.05	0.20 +/-0.05	0.20 +/-0.05

Terminal functions

(1)	Low-Band Port
(2)	GND
(3)	Common Port
(4)	GND

(5)	Middle-Band Port
(6)	GND
(7)	High-Band Port
(8)	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)	1559 to 1606	-	0.47	0.65
Insertion Loss (dB) (–40 to +85 °C)	1559 to 1606	-	0.53	0.75
Return Loss (dB)	1559 to 1606	10	20	-
Attenuation (dB)	2400 to 2500	20	31	-
	4900 to 5950	25	29	-
Characteristic Impedance (ohm)		50 (Nominal)		

Ta = +25+/-5°C

Middle-Band

Parameter	Frequency (MHz)	TDK Spec		
		Min.	Typ.	Max.
Insertion Loss (dB)	2400 to 2500	-	0.86	1.04
Insertion Loss (dB) (–40 to +85 °C)	2400 to 2500	-	0.93	1.18
Return Loss (dB)	2400 to 2500	10	14	-
Attenuation (dB)	1560 to 1606	25	37	-
	4800 to 5000	30	35	-
	7200 to 7500	25	41	-
Characteristic Impedance (ohm)		50 (Nominal)		

Ta = +25+/-5°C

High-Band

Parameter	Frequency (MHz)	TDK Spec		
		Min.	Typ.	Max.
Insertion Loss (dB)	4900 to 5100	-	0.68	1.00
	5150 to 5950	-	0.76	0.90
Insertion Loss (dB) (–40 to +85 °C)	4900 to 5100	-	0.78	1.10
	5150 to 5950	-	0.86	1.20
Return Loss (dB)	4900 to 5950	10	13	-
Attenuation (dB)	1560 to 1606	30	36	-
	2400 to 2500	33	41	-
	6900 to 7200	3	6	-
	7300 to 7800	7	15	-
	10300 to 11700	20	31	-
	15300 to 16200	12	17	-
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)					
	MB to LB	1559 to 1606	25	30	-
		2400 to 2500	20	30	-
	MB to HB	2400 to 2500	33	39	-
		5150 to 5950	30	36	-
	HB to LB	1559 to 1606	30	37	-
		5150 to 5950	25	30	-
Return Loss (dB)		1559 to 1606	10	18	-
		2400 to 2500	10	15	-
		4900 to 5950	10	14	-
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)		
	Common	1559 to 1606	1	CW
		2400 to 2500	1	CW
		4900 to 5950	1	CW
	Low-Band	1559 to 1606	1	CW
	Middle-Band	2400 to 2500	1	CW
	High-Band	4900 to 5950	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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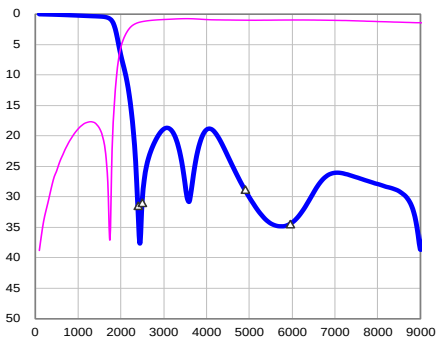
FREQUENCY CHARACTERISTICS

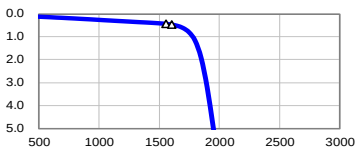
Low - Band

Attenuation



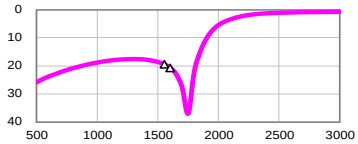
2400 MHz	31.5 dB
2500 MHz	30.9 dB
4900 MHz	28.9 dB
5950 MHz	34.5 dB

Insertion Loss



1559 MHz	0.44 dB
1606 MHz	0.47 dB

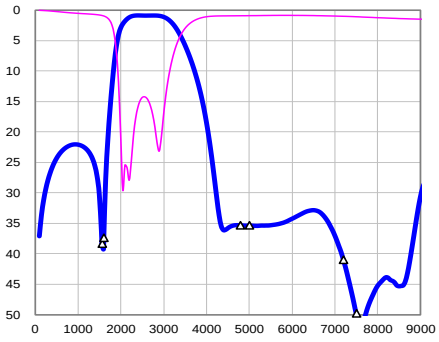
Return Loss



1559 MHz	19.6 dB
1606 MHz	20.9 dB

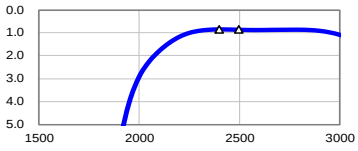
Middle - Band

Attenuation



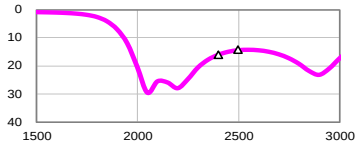
1560 MHz	38.3 dB
1606 MHz	37.4 dB
4800 MHz	35.3 dB
5000 MHz	35.4 dB
7200 MHz	40.9 dB
7500 MHz	49.8 dB

Insertion Loss



2400 MHz	0.84 dB
2500 MHz	0.86 dB

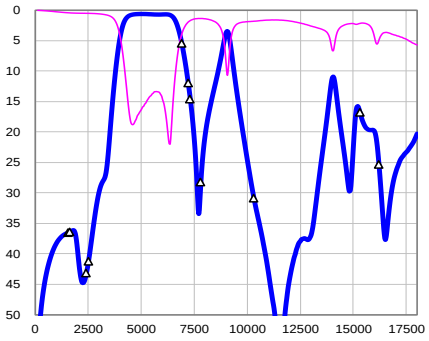
Return Loss



2400 MHz	16.0 dB
2500 MHz	14.4 dB

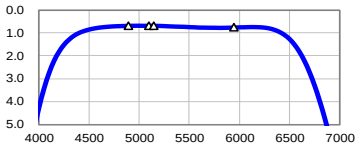
High - Band

Attenuation



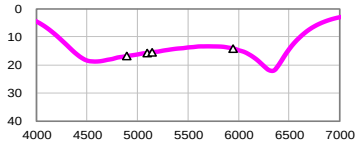
1560 MHz	36.5 dB
1606 MHz	36.4 dB
2400 MHz	43.2 dB
2500 MHz	41.2 dB
6900 MHz	5.5 dB
7200 MHz	11.9 dB
7300 MHz	14.6 dB
7800 MHz	28.2 dB
10300 MHz	30.9 dB
11700 MHz	52.9 dB
15300 MHz	16.8 dB
16200 MHz	25.3 dB

Insertion Loss



4900 MHz	0.68 dB
5100 MHz	0.68 dB
5150 MHz	0.68 dB
5950 MHz	0.76 dB

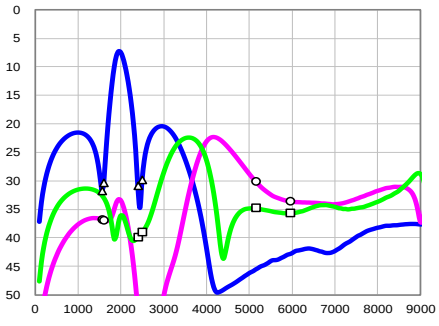
Return Loss



4900 MHz	16.8 dB
5100 MHz	15.8 dB
5150 MHz	15.4 dB
5950 MHz	14.2 dB

Isolation

Isolation



Low - Middle

1559 MHz	31.7 dB
1606 MHz	30.4 dB
2400 MHz	30.9 dB
2500 MHz	29.9 dB

Low - High

1559 MHz	36.8 dB
1606 MHz	36.9 dB
5150 MHz	30.1 dB
5950 MHz	33.6 dB

Middle - High

2400 MHz	39.9 dB
2500 MHz	39.0 dB
5150 MHz	34.8 dB
5950 MHz	35.6 dB

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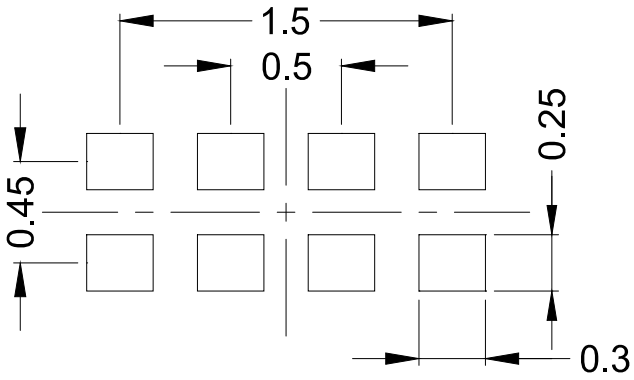
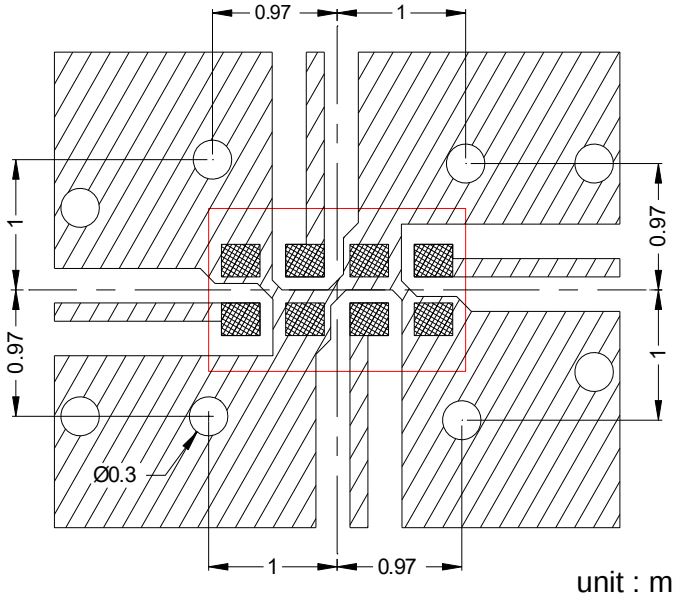
RECOMMENDED LAND PATTERN



unit : mm

EVALUATION BOARD



Thru Hole
Surface Pattern
Land Pattern
DUT

unit : mm

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

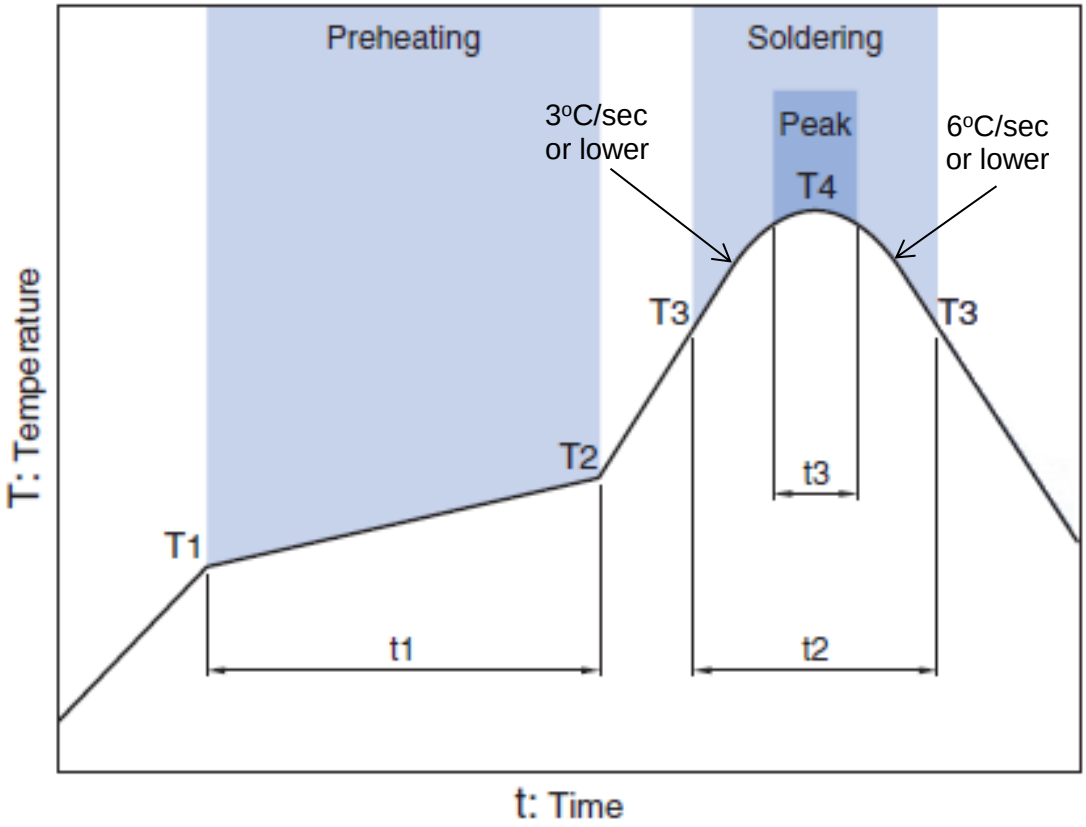
* Line width should be designed to match 50 ohm characteristic impedance depending on PCB material and thickness.
** The position of the throuh hole which have possibility of influence to the prerformance are indicated by dimension line.

ENVIRONMENT INFORMATION

RoHS Statement
RoHS Compliance

TDK Corporation

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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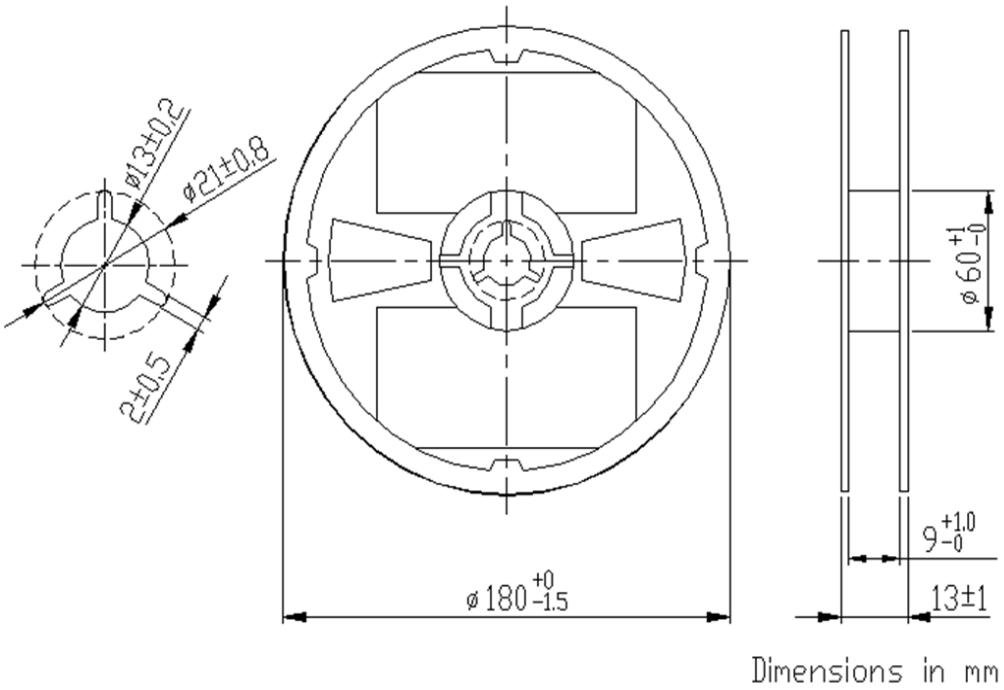
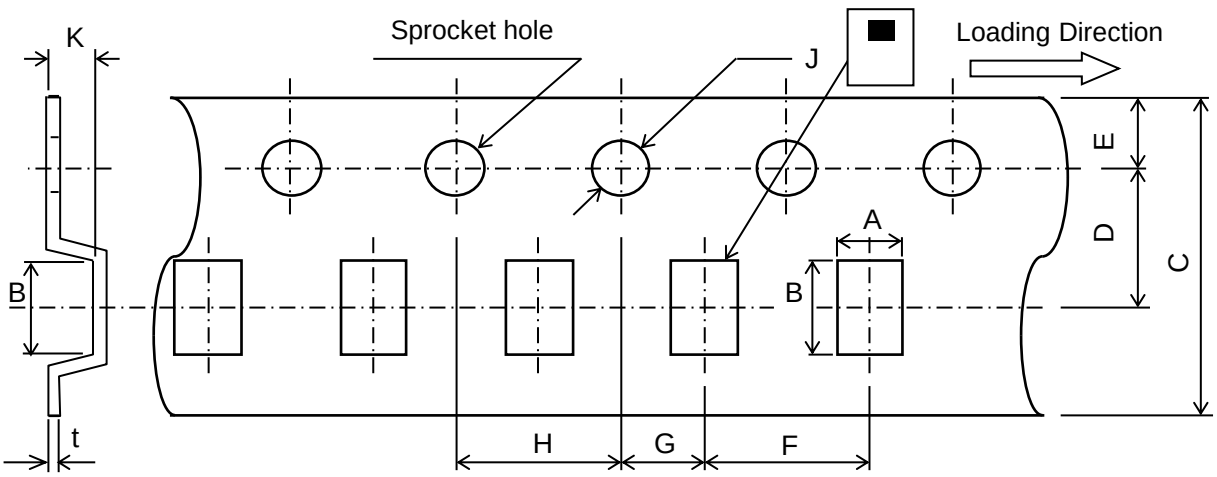
■ PACKAGING STYLE

Reel Dimensions



Carrier Tape



Dimensions (mm)

A	B	C	D	E	F	G	H	J	K	t
1.45 +/-0.05	2.2 +/-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	0.95 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.