

Sub-GHz & 2.4GHz LTCC RF Diplexer



ADID-R-0017

Request Samples



Check Inventory



1.6 x 0.8 x 0.6 mm
RoHS Compliant
MSL Level = 1

Description

This miniature LTCC diplexer enables simultaneous 868/915 MHz and 2.4 GHz operation in an ultra-compact 1.6 x 0.8 x 0.6 mm package. Featuring ultra-low insertion loss of just 0.6 dB and high isolation exceeding 28 dB, it ensures clean signal separation across wide temperature ranges. Capable of handling up to 3W of input power, this RoHS-compliant, MSL Level 1 component is ideal for dual-band IoT sensors, smart meters, wearable medical devices, LoRaWAN + BLE USB dongles, industrial wireless sensors, and small drones where space-efficient multi-band filtering is critical.



Features

- Supporting 868 / 915 MHz & 2.4 GHz simultaneously
- Miniaturized in size: 1.6 x 0.8 x 0.6 mm
- Low insertion loss: 0.6 dB
- High isolation: > 28 dB
- Temperature stability across wide temperature bands
- High-power handling up to 3W
- [RoHS Compliant](#) | [MSL Level 1](#)

Applications

- Amazon Sidewalk / Mioty / Wi-SUN / M-Bus
- LoRa / LoraWAN / Sigfox / Z-Wave
- Dual-band IoT sensors / Smart meters
- Smart Building Gateway
- Smart Meter / Industrial wireless sensors
- USB dongles (LoraWAN + BLE)
- Asset Tracker

Ordering Information

Part Number	Description
ADID-R-0017	Sub-GHz & 2.4GHz LTCC RF Diplexer on Cut Tape
ADID-R-0017-T	Sub-GHz & 2.4GHz LTCC RF Diplexer on Tap & Reel
ADID-R-0017-EVB	Sub-GHz & 2.4GHz LTCC RF Diplexer EVB

Note: Other options not listed may be available upon request via [Abracon online support](#)



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Cave, TX 78738
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Electrical Specifications

Parameters	Specification		Units	Notes
Frequency	868 / 915	2400 - 2500	MHz	-
VSWR ⁽¹⁾	< 1.67		:1	-
Insertion Loss ⁽¹⁾	0.6	0.4	dB	-
Amplitude Ripple ⁽¹⁾	0.3	0.05		-
Group Delay ⁽¹⁾	0.52	0.23	ns	-
Group Delay Ripple ⁽¹⁾	0.01	0.001		-
Attenuation ⁽²⁾ (Reference level from 0 dB)	35	-	dB	2400 – 2500 MHz
	-	32		698 – 960 MHz
Isolation ⁽²⁾	28	35	dB	-
Source Impedance ⁽³⁾ (single ended)	50		Ω	-
Load Impedance ⁽³⁾ (single ended)	50		Ω	-
Power Capacity	3		W	-

Notes: (1) Averaged values of linear S-Parameters at +25°C

(2) Averaged values of linear S-Parameters at +25°C

(3) A matching network is necessary (refer to the Measurement Circuits section)

Mechanical Specifications

Parameters	Specifications
Filter Dimension	1.6 x 0.8 x 0.6 mm
Mounting Type	Surface Mount
Additional Resources	Download STEP File, Package Drawing, 3D PDF

Environmental Specifications

Parameters	Specifications
Operating Temperature	-40°C ~ +85°C
Storage Temperature	-10°C ~ +40°C (70% R.H. max)
Humidity	90% - 95% R.H.
MSL level	1
RoHS Compliant	Yes



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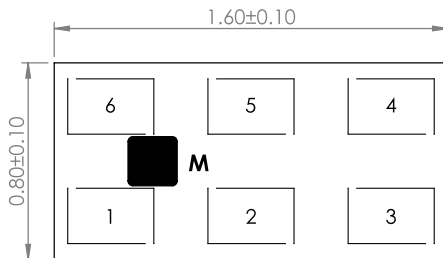


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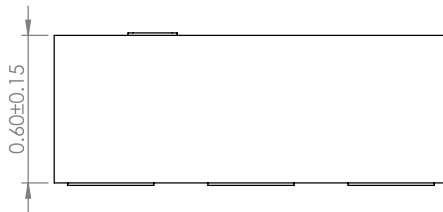
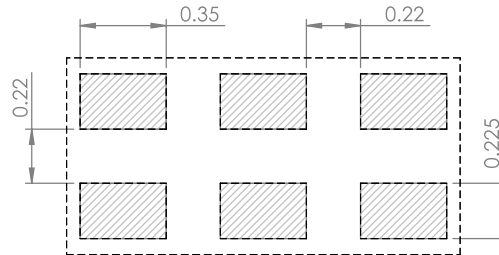
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Product Dimensions

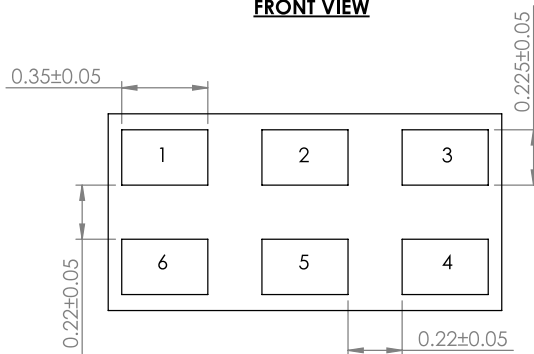


TOP VIEW

RECOMMENDED LAND PATTERN

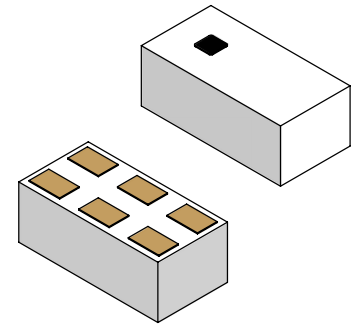


FRONT VIEW



BOTTOM VIEW

Pin #	Function
1	GND
2	Common Port
3	GND
4	Lower Freq. Port
5	GND
6	Higher Freq. Port
M	MARK



Unit: mm

Note: Line width to be designed to match 50Ω characteristic impedances, depending on PCB material and thickness.

The transmission line is Gound Coplanar Waveguide (GCPW). For technical assistance, please contact [Abracon online support](#) through our online support platform.

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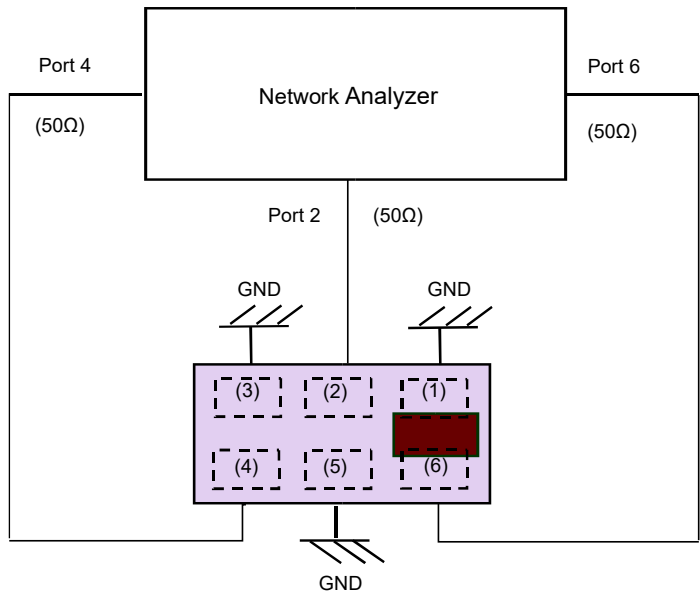


Check Inventory



1.6 x 0.8 x 0.6 mm
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Measurement Circuit



Pin #	Function
(1)	GND
(2)	Common
(3)	GND
(4)	Lower Freq. Band
(5)	GND
(6)	Higher Freq. Band

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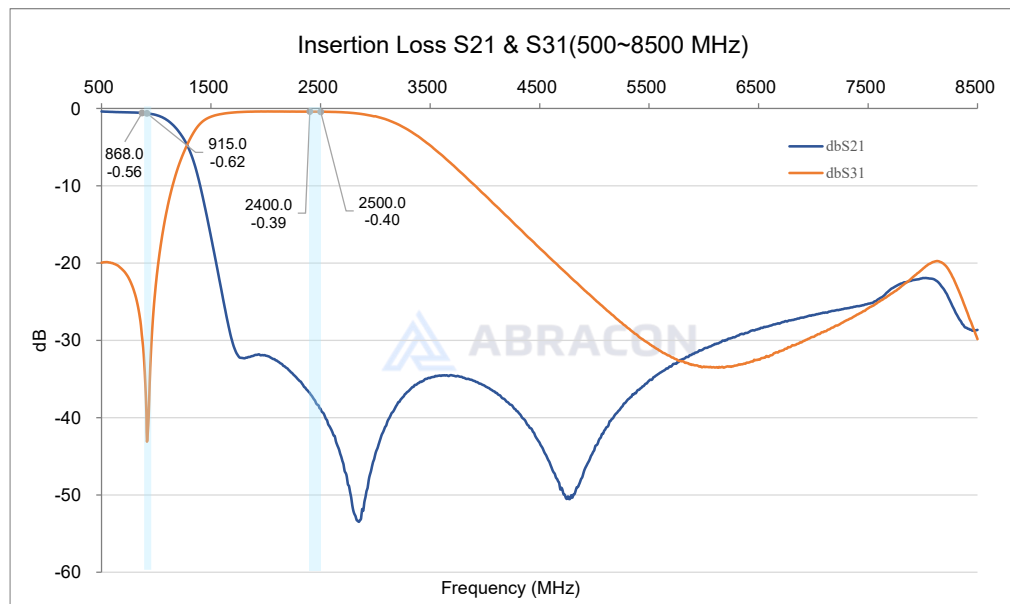
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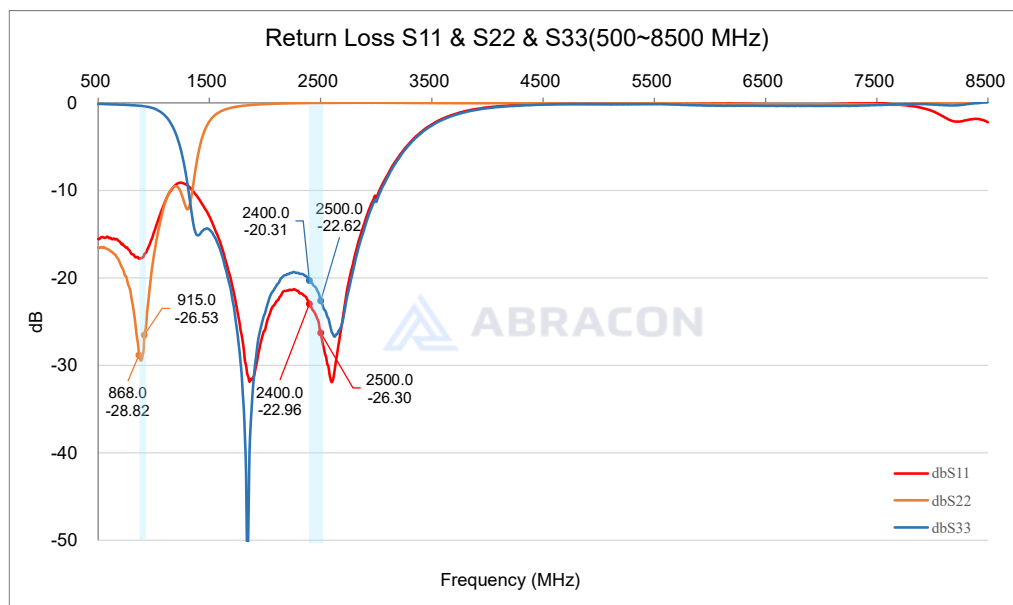
1.6 x 0.8 x 0.6 mm
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Frequency Characteristics

Insertion Loss (S21 & S31) 500 – 8500 MHz



Return Loss (S11 & S22 & S33) 500 – 18000 MHz



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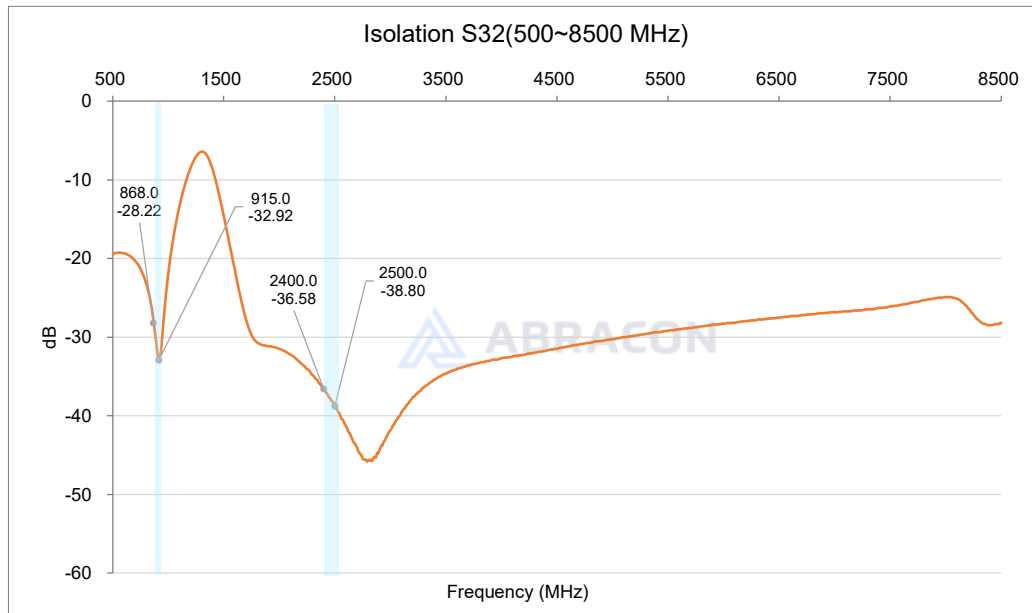


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Isolation (S32) 500 – 18000 MHz



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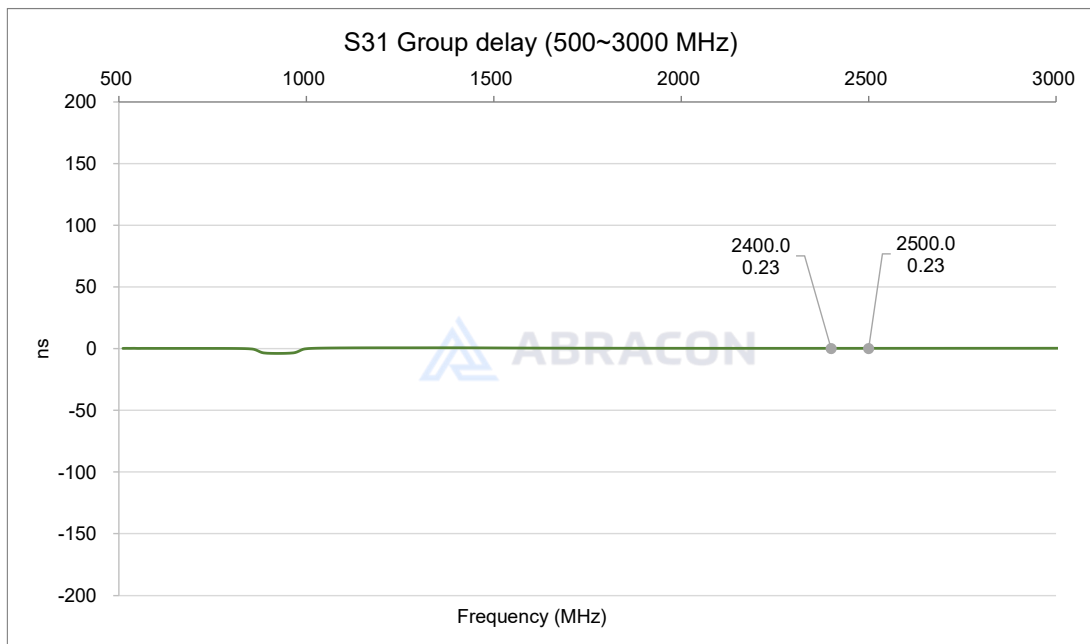
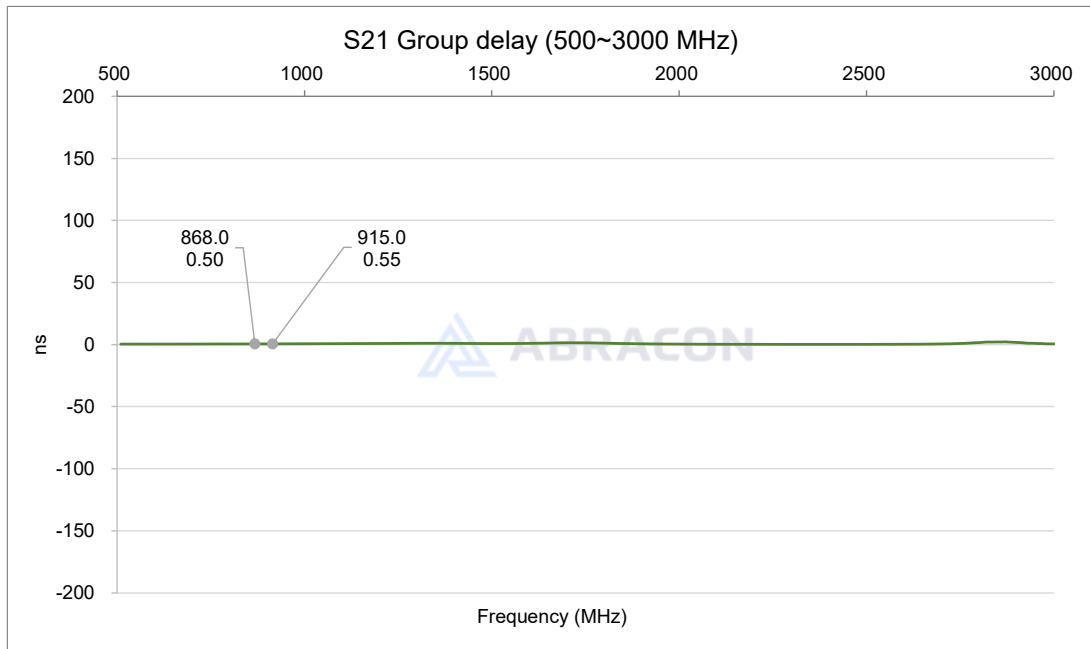


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Group Delay



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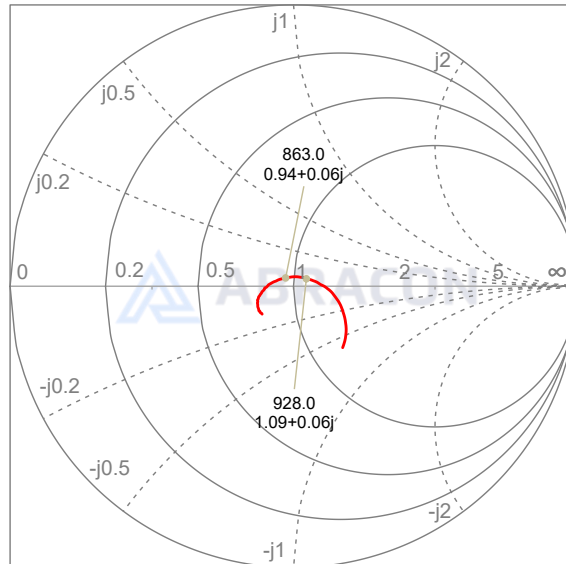
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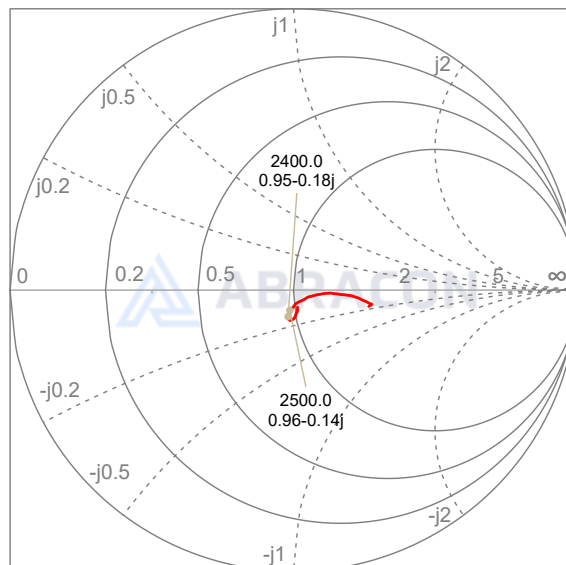
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Smith Chart (S22 & S33)

Smith chart S22 (500~1100MHz)



Smith chart S33 (2000~3000MHz)



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Reflow Profile [JEDEC J-STD-020]

Solder paste: Sn/3.0Ag/0.5Cu

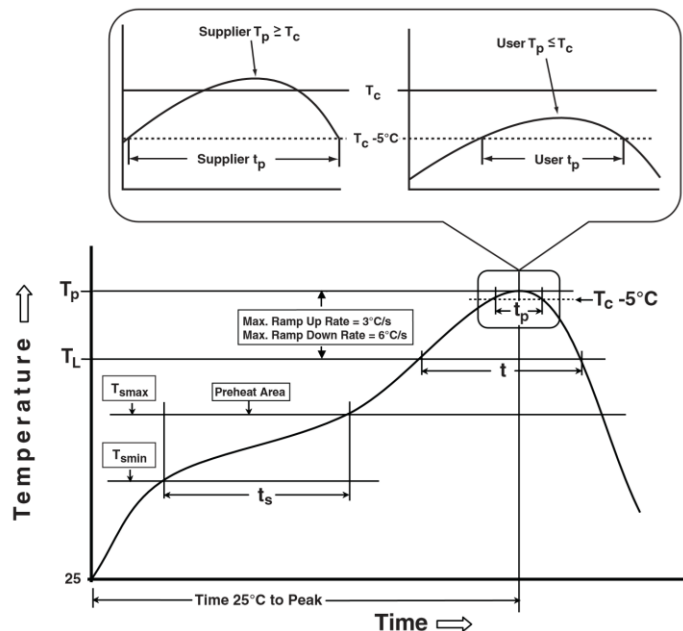


Table 1

SnPb Eutectic Process
Classification Temperatures (T_c)

Package Thickness	Volume mm ³ <350	Volume mm ³ ≥ 350
<2.5mm	235°C	220°C
≥ 2.5mm	220°C	220°C

Table 2

Pb-Free Process
Classification Temperatures (T_c)

Package Thickness	Volume mm ³ <350	Volume mm ³ 350-2000	Volume mm ³ >2000
<1.6mm	260°C	260°C	260°C
1.6mm - 2.5mm	260°C	250°C	245°C
>2.5mm	250°C	245°C	245°C

Profile Feature	Sn-Pb Eutectic Assembly	Pb-Free Assembly
Preheat / soak		
Temperature minimum (T_{smin})	100°C	150°C
Temperature maximum (T_{smax})	150°C	200°C
Time (T_{smin} to T_{smax}) (t_s)	60 – 120 sec.	60 – 90 sec.
Average ramp-up rate (T_{smax} to T_p)	3°C/sec. max	3°C/sec. max
Liquidous temperature (T_L)	183°C	217°C
Time at Liquidous (T_L)	60 – 150 sec.	60 – 150 sec.
Peak package body temperature (T_p)*	See Table 1	See Table 2
Time (T_p)** within 5°C of the specified classification temperature (T_c)	20 sec.	10 sec.
Ramp-down rate (T_p to T_{smax})	6°C/sec. max	6°C/sec. max
Time 25°C to peak temperature	6 min. max	8 min. max
Reflow cycles	2 max	2 max

*Tolerance for peak profile temperature (T_p) is defined as a supplier minimum and a user maximum.

**Tolerance for time at peak profile temperature (t_p) is defined as a supplier minimum and a user maximum.

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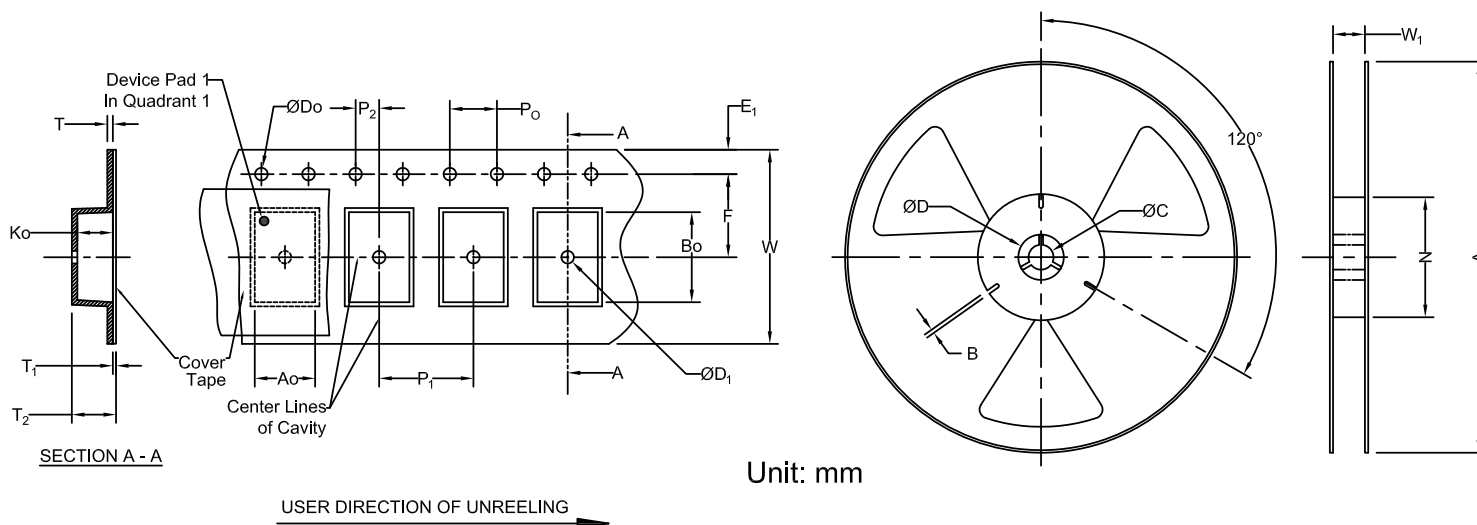
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Packaging

Tape & Reel Dimension 1608(0603)



Carrier Tape Specifications (mm)

Do	E ₁	P ₀	P ₂	T	F	P ₁	W	A ₀	B ₀	Reel Qty
1.5±0.1	1.75±0.10	4.00±0.10	2.00±0.05	0.75±0.10	3.50±0.05	4.00±0.10	8.00±0.30	1.0±0.10	1.8±0.10	4,000

Reel Specifications (mm)

A	N	B	C
Φ178±2.0	Φ58.0±2.0	Φ2.45±0.20	Φ13.5±0.20

ATTENTION: Abracon LLC's products are Commercial-Off-The-Shelf ('COTS'), which are designed, intended, and validated for use in commercial, industrial, and automotive applications. The customer is responsible for testing and verifying the performance of an Abracon solution to meet their system-level requirements.



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