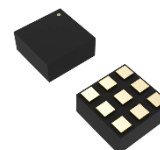


Description

The ASWD-S3-0010 is a low loss, high isolation SP3T reflective RF switch designed for high-performance switching applications. It features $\pm 1\text{kV}$ HBM ESD protection and comes in a compact, low-cost LGA 1.1 x 1.1 x 0.5 mm package. Optimized for applications requiring low insertion loss, small size, and cost efficiency, the ASWD-S3-0010 is ideal for industrial IoT solutions, including Bluetooth (BT), Wi-Fi, GNSS, LoRa, LTE, as well as handsets and general-purpose RF systems. It supports operation up to 2.7 GHz, making it well-suited for high-power applications at low control voltages. The ASWD-S3-0010 is lead-free, RoHS-compliant with Moisture Sensitivity Level (MSL) 3.



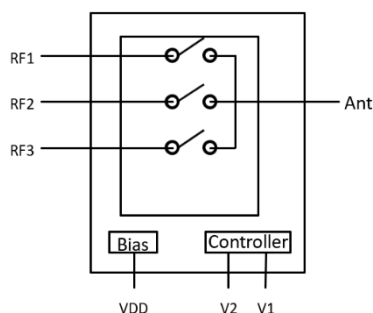
Key Features

- LGA Package: 1.1 x 1.1 x 0.5 mm
- Frequency Range: 0.1 ~ 2.7GHz
- Low Insertion Loss: 0.55 dB Typ.
- High Isolation: 25dB Typ.
- $P_{0.1\text{dB}} = +32\text{ dBm}$ Typ. @ $f = 0.8$ to 2.7 GHz
- Low Control Voltage $V_{\text{CTL_H}} = 1.4\text{ V}$ Min.
Voltage Operation $V_{\text{DD}} = 2.8\text{ V}$ Typ.
- GPIO Control for SP3T
- $\pm 1\text{kV}$ HBM ESD Protection
- [RoHS Compliant | MSL Level 3](#)

Typical Applications

- Multi-band cellular front ends
- Antenna diversity and MIMO switching
- Test and measurement equipment
- Multi-band GNSS receivers
- Software-defined radios and cognitive radio
- Filter bank switching
- TDD Tx/Rx switching in multi-antenna systems

Functional Block Diagram



Ordering Information

Part No.	Description
ASWD-S3-0010	0.1~ 2.7GHz SP3T RF & Antenna Switch with Enhanced ESD Protection on Cut Tape
ASWD-S3-0010 -T	0.1~ 2.7GHz SP3T RF & Antenna Switch with Enhanced ESD Protection on Tape & Reel
ASWD-S3-0010 -EVB	0.1~ 2.7GHz SP3T RF & Antenna Switch with Enhanced ESD Protection EVB

Additional Resources

- [Download STEP File, Package Drawing, 3D PDF](#)

Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ.	Max.	Unit
Supply Voltage	V _{DD}	1.6	-	4.5	V
Control Voltage	V _{CTL}	-	-	V _{DD}	V
Max Input Power	P _{INMAX}	-	-	+33	dBm
Operating Temperature	T _{OP}	-40	-	85	°C
Storage Temperature	T _{STG}	-55	-	150	°C
Moisture Sensitivity Level	-	MSL3			-
Electrostatic Discharge, HBM ¹	V _{ESD}	-	-	±1000	V

1. HBM: ESDA/JEDEC JS-001-2017

Operation of this device outside the parameter ranges given above may cause permanent damage.

Recommended Operating Conditions

Parameter	Min.	Typ.	Max.	Unit
V _{DD}	2.5	2.8	3.6	V
Pin (RFC – RFX), CW, 50 Ω	-	-	33	dBm

Electrical specifications are measured at specified test conditions. Specifications are not guaranteed over all recommended operating conditions.

Mechanical

Parameter	Specification
IC Dimensions	1.15 x 1.15 x 0.55 mm
EVB Dimensions	34.6 x 30 mm

RF Electrical Specifications

Parameters		Condition	Values			Unit
			Minimum	Typical	Maximum	
Insertion Loss	ANT to RF1-3	0.1-1.0 GHz	-	0.50	0.55	dB
		1.0-2.2 GHz	-	0.55	0.65	
		2.2-2.7 GHz	-	0.65	0.80	
Isolation	ANT to RF1-3	0.1-1.0 GHz	30	35	-	dB
		1.0-2.2 GHz	20	25	-	
		2.2-2.7 GHz	18	20	-	
VSWR	-	0.1-2.7 GHz	-	1.2	1.5	:1
Input P _{0.1dB}	ANT to RF1-3	0.8-2.7 GHz	-	32	-	dBm
2 nd Harmonics	2f ₀	Pin = 26dBm	-	+80	-	dBc
Turn-on switching time (50% of final VC to 10%/90% of final RF power)	t _{sw}	-	-	3.0	-	us

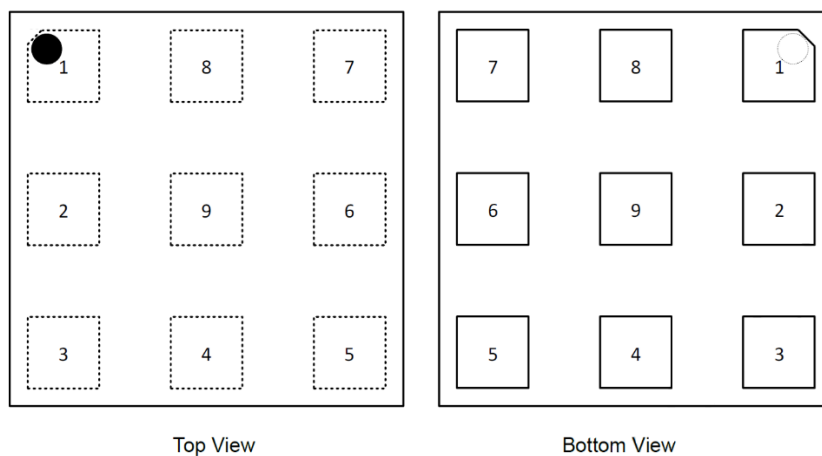
DC Electrical Specifications

Parameter	Symbol	Minimum	Typical	Maximum	Unit
Supply Voltage	V_{DD}	2.5	2.8	3.6	V
Supply Current	I_{DD}	-	30	50	uA
Control Voltage	V_{CTL_H}	1.4	1.8	2.7	V
	V_{CTL_L}	-	-	0.4	V
Control Current	I_{CTL}	-	2	5.0	uA

Control Logic

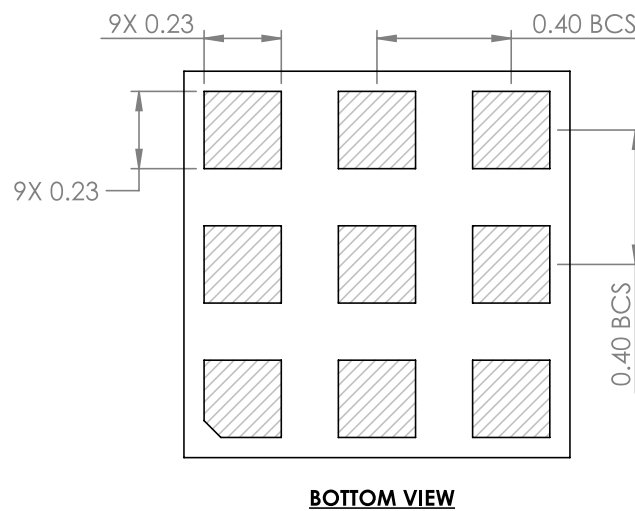
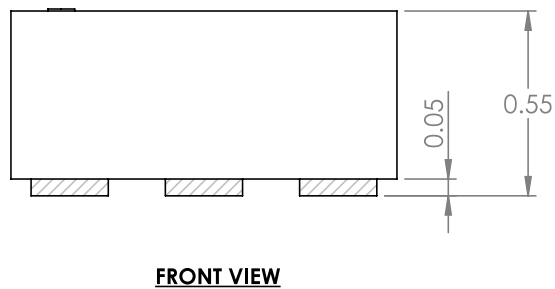
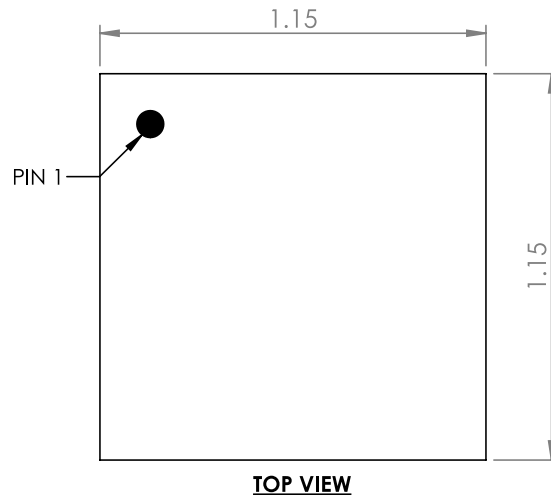
V1	V2	RF1	RF2	RF3
1	0	ON	OFF	OFF
1	1	OFF	ON	OFF
0	1	OFF	OFF	ON

Pin Configuration



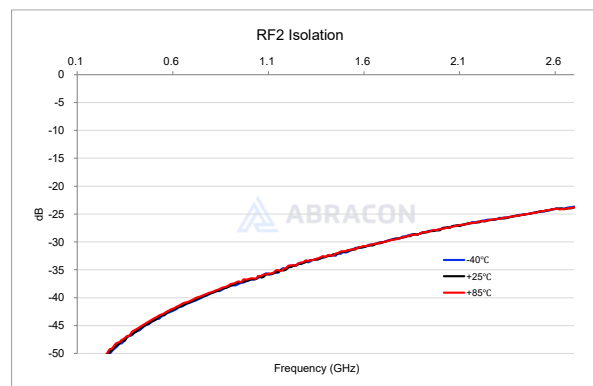
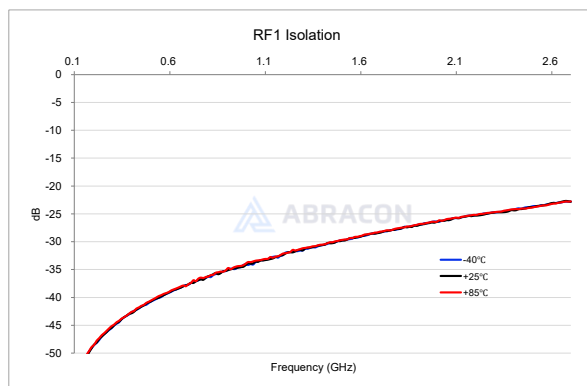
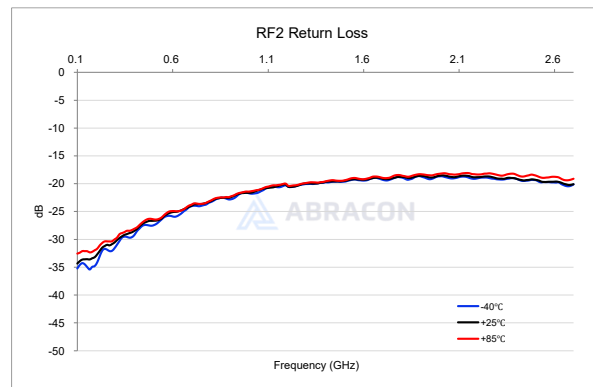
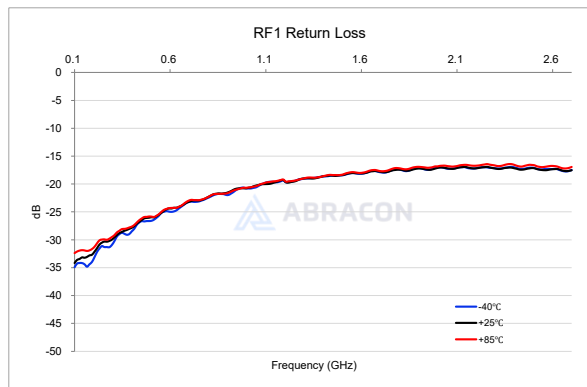
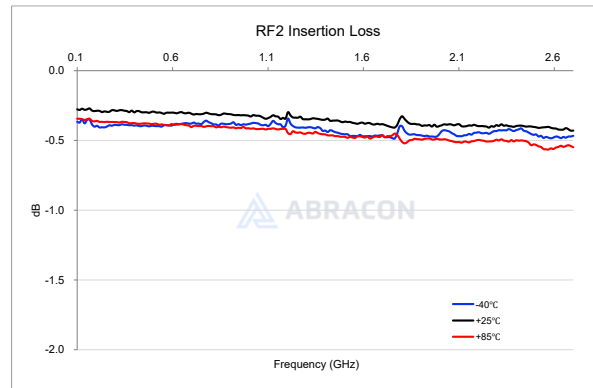
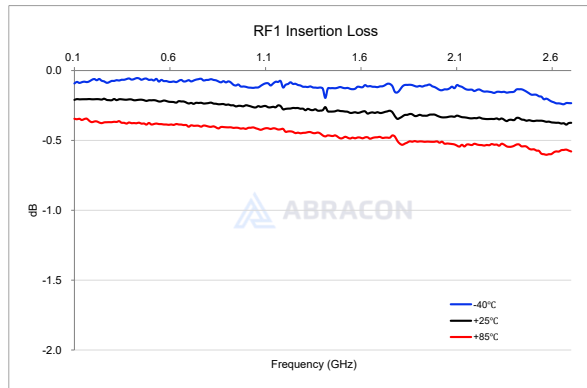
Pin	Name	Description
1	VC1	Control voltage 1
2	RF2	RF2 Port
3	RF1	RF1 Port
4	ANT	RF Common Port (Antenna Port)
5	RF3	RF3 Port
6	GND	Ground
7	VDD	DC Control Voltage
8	VC2	Control voltage 2
9	GND	Ground

Product Dimensions

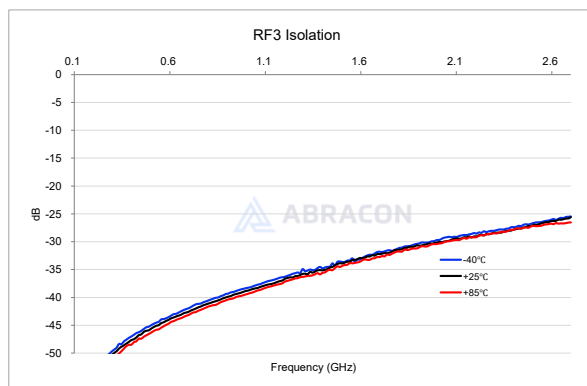
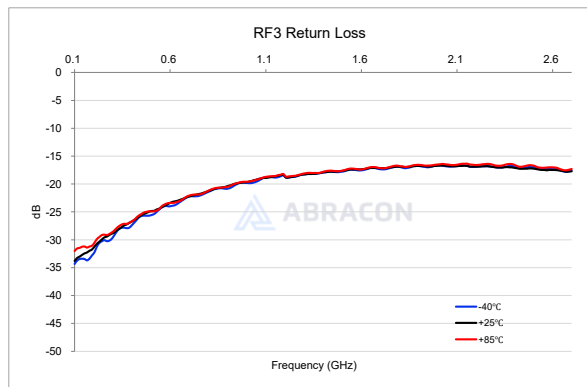
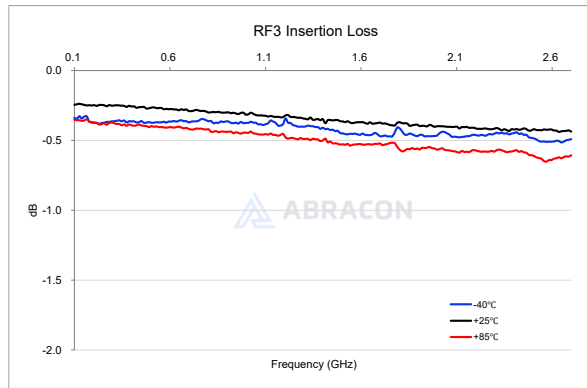


Unit: mm

Performance Plots



Performance Plots

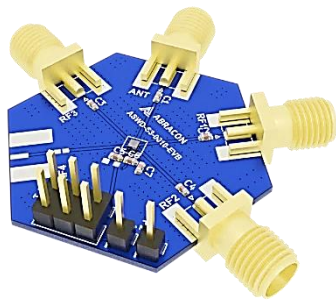
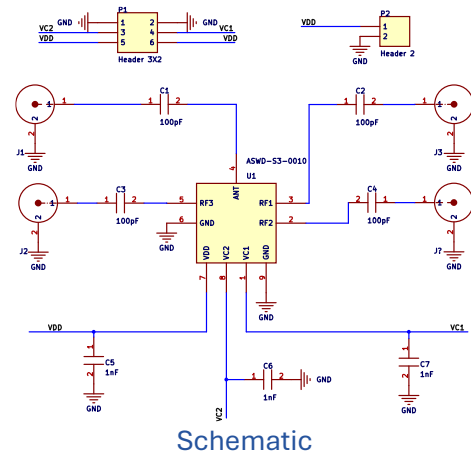
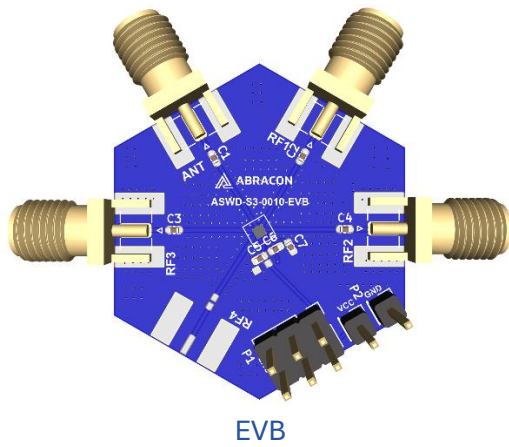


ASWD-S3-0010

0.1~ 2.7GHz SP3T RF & Antenna Switch with Enhanced ESD Protection



Evaluation Board ASWD-S3-0010 -EVB



Bill of Material

Component	Description	Manufacturer	Manufacturer Part	QTY
U1	0.1~ 2.7GHz SP3T RF & Antenna Switch with Enhanced ESD Protection	Abrakon	ASWD-S3-0010	1
C1, C2, C3, C4	Capacitor (100pF)	Murata	GRM0222C0J101GA02	4
C5, C6, C7	Capacitor (1nF)	Murata	GRM022R60J102KE19	3

NOTES:

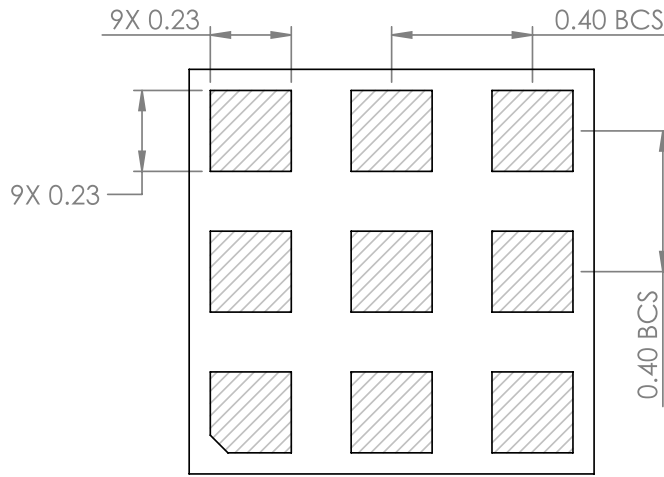
1. Input and output are 50-ohm lines.

Revision:
Initial Release 5/18/2026

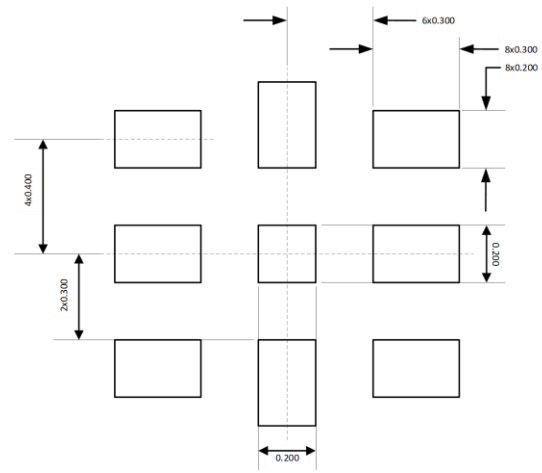
[Disclaimer](#)

Check Inventory [▶](#)
Request Samples [▶](#)

IC Footprint & PCB Land Pattern



Footprint



Land Pattern

Unit: mm

Reflow Profile [JEDEC J-STD-020]

Solder paste: Sn/3.0Ag/0.5Cu

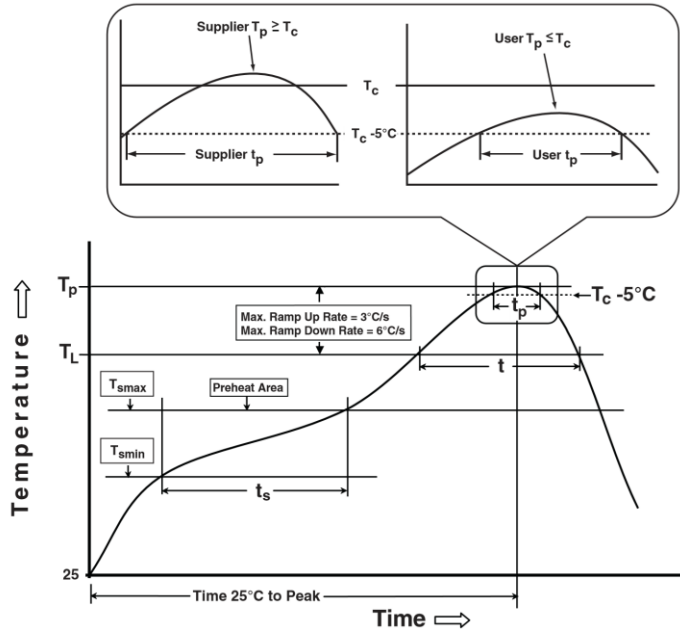


Table 1

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

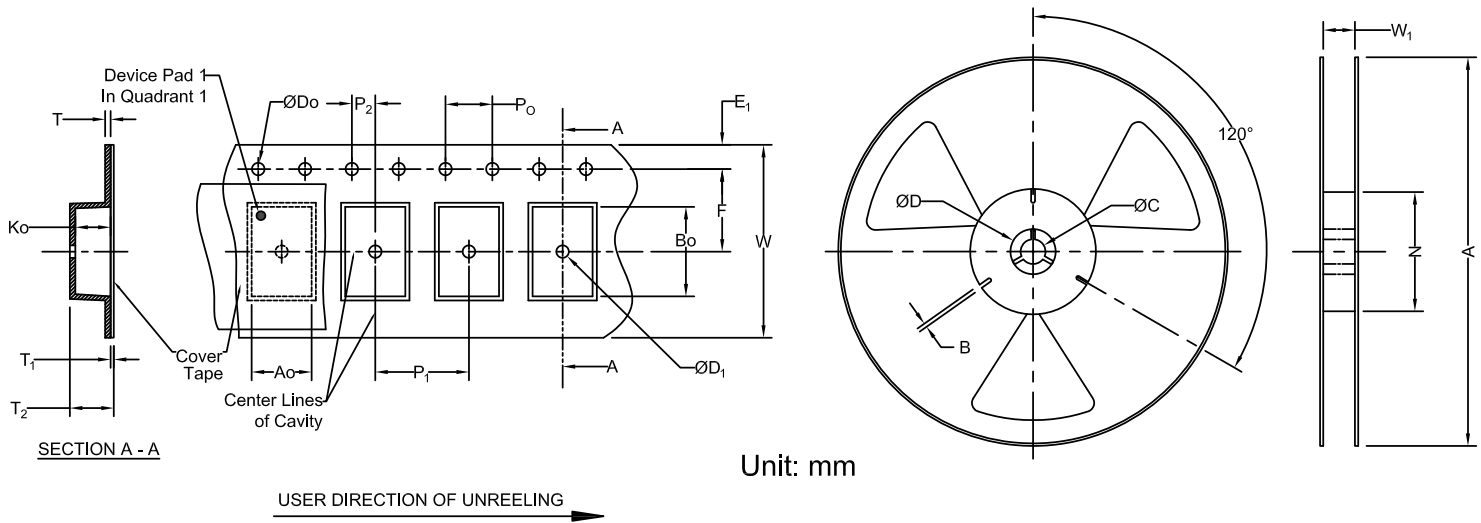
Profile Feature	Sn-Pb Eutectic Assembly	Pb-Free Assembly
Preheat / soak		
Temperature minimum (T _{smin})	100°C	150°C
Temperature maximum (T _{smax})	150°C	200°C
Time (T _{smin} to T _{smax}) (t _s)	60 – 120 sec.	60 – 120 sec.
Average ramp-up rate (T _{smin} to T _p)	3°C/sec. max	3°C/sec. max
Liquidous temperature (T _L)	183°C	217°C
Time at Liquidous (T _L)	60 – 90 sec.	60 – 90 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})	3°C/sec. max	3°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.

Packaging

Tape & Reel Dimension



Carrier Tape Specifications (mm)

E1	D0	P0	P2	F	P1	W	A0	B0	K0	Reel Qty
1.75 ± 0.1	1.50 ± 0.1	4.0 ± 0.10	2.0 ± 0.05	3.5 ± 0.05	4.0 ± 0.1	8.0 +0.3 /-0.1	1.29 ± 0.05	1.3 ± 0.05	0.6 ± 0.05	3,000

Reel Specifications (mm)

A	W ₁	N	B	C	D
178 ± 1	0.5 +2/-1	51.5 ± 0.5	2.2 ± 0.2	13.0 +0.25/-0.2	22