

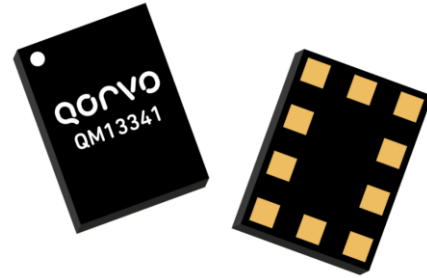
# PRELIMINARY

## QM13341

### 4xSPST (Single-Pole-Single-Throw Switch)

#### Product Overview

QM13341 is the smallest 4xSPST with VRF >45Vp and low RON. Excellent performance in a small solution size enables creation of antenna tuning solutions optimum for 5G applications.

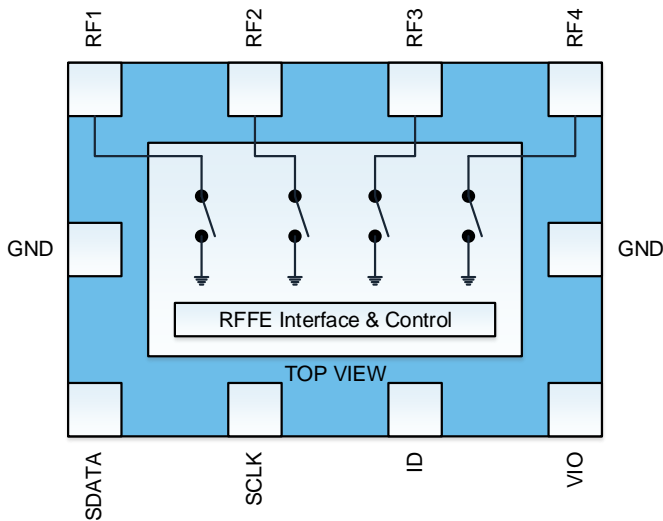


10 Pin 1.1x1.5x0.4 mm Module Package

#### Key Features

- Low RON: 1.2Ω
- Low COFF: 140fF
- High RF voltage handling capability: >45Vp
- 3 unique selectable USID using external pin, ID
- Small size 1.1mm x 1.5mm, module package
- > 2kV HBM ESD Protection on all pins
- RFFE 2.1 capable
- Suitable for all mobile applications including 5G & WiFi

#### Functional Block Diagram



Top View

#### Applications

- Antenna Tuning
- Band Switching
- Impedance Tuning

#### Ordering Information

Part Number	Description
QM13341DK	Design Kit
QM13341SB	5-pc Sample Bag
QM13341SR	100-pc 7" Reel
QM13341TR13-10K	10000-pc 13" Reel

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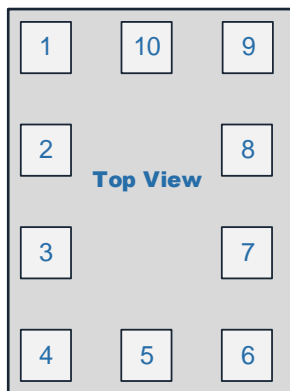
### 4xSPST (Single-Pole-Single-Throw Switch)

#### Electrical Specifications

Test conditions unless otherwise stated: all unused RF ports terminated in 50Ω, Input and Output = 50Ω, T = 25°C, V<sub>IO</sub> = 1.8V, SDATA/SCLK = 1.8 V / 0 V.

PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNITS
Isolation: RF1 – RF3 & RF2 – RF4 OFF-STATE	700 – 915 MHz		65		dB
	915 – 1910 MHz		61		dB
	1910 – 2700 MHz		58		dB
	3300 – 4200 MHz		57		dB
	4200 – 5000 MHz		57		dB
Isolation: RF1 – RF2 & RF3 – RF4 OFF-STATE	700 – 915 MHz		36		dB
	915 – 1910 MHz		32		dB
	1910 – 2700 MHz		28		dB
	3300 – 4200 MHz		25		dB
	4200 – 5000 MHz		24		dB
Second Harmonic	fo = 700MHz; Pin = 23dBm, OFF State		-102		dBm
Third Harmonic			-113		dBm
Second Harmonic	fo = 915MHz; Pin = 35dBm, OFF State		-77		dBm
Third Harmonic			-78		dBm
Second Harmonic	fo = 1910MHz; Pin = 33dBm, OFF State		-73		dBm
Third Harmonic			-76		dBm
Second Harmonic	fo = 2570MHz; Pin = 23dBm, OFF State		-92		dBm
Third Harmonic			-102		dBm

#### Pin Configuration and Description



Top View

PIN	LABEL	DESCRIPTION
1	SDATA	RFFE DATA Line
2	SCLK	RFFE CLOCK Line
3	ID	USID Select
4	VIO	VIO Supply
5	GND	Ground
6	RF4	RF Port 4
7	RF3	RF Port 3
8	RF2	RF Port 2
9	RF1	RF Port 1
10	GND	Ground

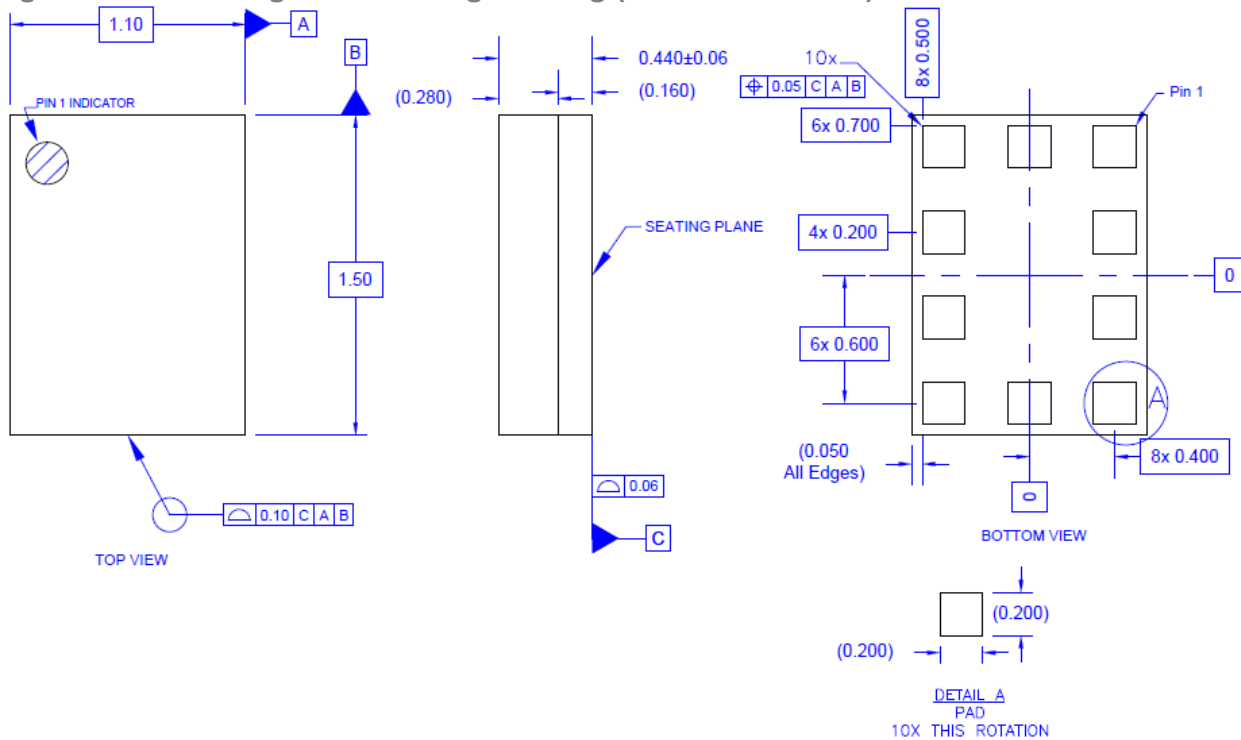
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## PCB Design Requirement

Package Outline Drawing and Branding Drawing (dimension in mm)

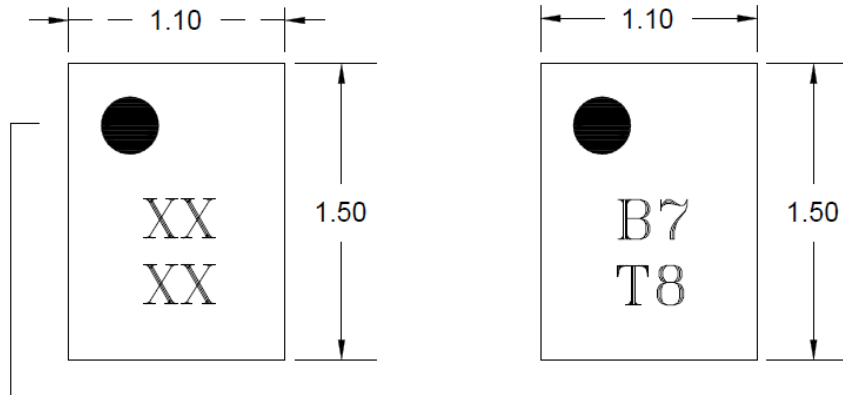


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### 4xSPST (Single-Pole-Single-Throw Switch)

#### Branding Diagram



Pin 1 Indicator  
XXXX is the trace code assigned by sub-con

Example:  
4 digit trace code: B7T8  
Marking on the device: B7  
T8

#### Carriers

##### Tape and Reel

Carrier tape basic dimensions are based on EIA 481. The pocket is designed to hold the part for shipping and loading onto SMT manufacturing equipment, while protecting the body and the solder terminals from damaging stresses. The individual pocket design can vary from vendor to vendor, but width and pitch will be consistent.

Carrier tape is wound or placed onto a shipping reel either 330 mm (13 inches) in diameter or 178 mm (7 inches) in diameter. The center hub design is large enough to ensure the radius formed by the carrier tape around it does not put unnecessary stress on the parts.

Prior to shipping, moisture sensitive parts (MSL level 2a-5a) are baked and placed into the pockets of the carrier tape. A cover tape is sealed over the top of the entire length of the carrier tape. The reel is sealed in a moisture barrier ESD bag with the appropriate units of desiccant and a humidity indicator card, which is placed in a cardboard shipping box. It is important to note that unused moisture sensitive parts need to be resealed in the moisture barrier bag. If the reels exceed the exposure limit and need to be rebaked, most carrier tape and shipping reels are not rated as bakeable at 125°C. If baking is required, devices may be baked according to section 4, table 4-1, of Joint Industry Standard IPC/JEDEC J-STD-033.

The Table below provides useful information for carrier tape and reels used for shipping the devices described in this document.

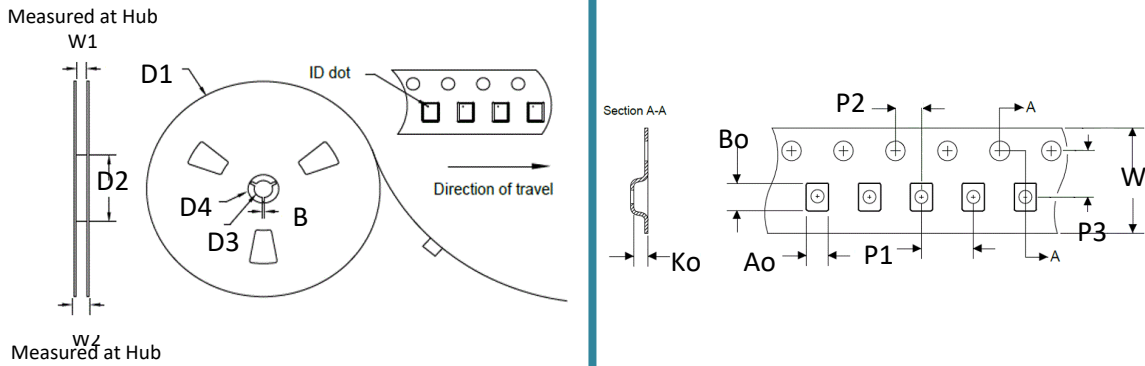
Qorvo Part Number	Reel Diameter Inch (mm)	Hub Diameter Inch (mm)	Width (mm)	Pocket Pitch (mm)	Feed	Units Per Reel
QM13341TR13-10K	13 (330)	4 (102)	8	4	Single	10000
QM13341SR	7 (178)	2.5 (63)	8	4	Single	100

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#### Tape and Reel



Feature	Measure	Symbol	Size (mm)
Flange	Diameter	D1	330.0
	Thickness	W2	14.2
	Space Between Flange	W1	8.8
Hub	Outer Diameter	D2	102.0
	Arbor Hole Diameter	D3	13.0
	Key Slit Width	B	2.0
	Key Slit Diameter	D4	20.2

Feature	Measure	Symbol	Size (mm)
Cavity	Length	Ao	1.30
	Width	Bo	1.70
	Depth	Ko	0.60
	Pitch	P1	4.0
Centerline Distance	Cavity to Perforation (Length)	P2	2.0
	Cavity to Perforation (Width)	P3	3.5
Carrier Tape	Width	W	8.0

(Unless otherwise specified, all dimension tolerances per EIA-481)

#### Handling Precautions

Parameter	VALUE	Standard
ESD – Human Body Model (HBM)	Class 1C	ESDA/JEDEC JS-001-2012



Caution!

ESD sensitive device

#### Solderability

Compatible with both lead-free (260 °C max. reflow temperature) and tin/lead (245 °C max. reflow temperature) soldering processes.

Package lead plating: Electrolytic plated Au over Ni

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#### RoHS Compliance

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This part is compliant with the 2011/65/EU RoHS directive (Restrictions on the Use of Certain Hazardous Substances in Electrical and Electronic Equipment), as amended by Directive 2015/863/EU.

This product also has the following attributes:

- Lead free
- Halogen Free (Chlorine, Bromine)
- Antimony Free
- TBBP-A (C<sub>15</sub>H<sub>12</sub>Br<sub>4</sub>O<sub>2</sub>) Free
- SVHC Free



#### Contact Information

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For the latest specifications, additional product information, worldwide sales and distribution locations:

**Web:** [www.qorvo.com](http://www.qorvo.com)

**Tel:** 1-844-890-8163

**Email:** [customer.support@qorvo.com](mailto:customer.support@qorvo.com)

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