TQQ7399

DC - 2700 MHz Through Line

Product Overview

The TQQ7399 is a passive low loss through line that operates from 0 to 2700 MHz. At 2140 MHz, input and output return loss is typical 25 dB and typical insertion loss is 0.15 dB.

The product is housed in an industry standard Pb-free / RoHS-compliant surface-mount leadless package.

6 Pin 3 x 3 mm leadless SMT Package

Typical Performance

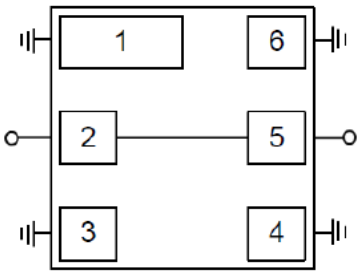
Parameter	Typical Value			Units
Frequency	100	2140	2700	MHz
Insertion Loss	0.15	0.15	0.15	dB
Input / Output Return Loss	25	25	25	dB

Key Features

- DC - 2700 MHz
- 50 Ohm Port Impedance
- Typical Insertion Loss: 0.15 dB at 2140 MHz
- Typical Return Loss: 25 dB at 2140 MHz
- Small Size: 3.00 x 3.00 x 1.02 mm
- Surface Mount Device
- RoHS Compliant, Pb-Free

Performance is typical across frequency. Please reference electrical specification table and data plots for more details.

Functional Block Diagram



Top View

Applications

- RF Bypass Paths
- Microwave Radio
- Test & Measurement
- Scientific Instruments
- General Purpose Wireless

Pin Configuration

Pin No.	Label
2, 5	RF I/O
1, 3, 4, 6	Ground

Ordering Information

Part No.	Description
TQQ7399	DC – 2700 MHz Through Line
TQQ7399EVB01	Evaluation Board

Standard T/R size = 2500 pieces on a 13" reel

Absolute Maximum Ratings

Parameter	Rating
Storage Temperature	−50 to +150 °C
RF Input Power, CW	+20 dBm

Exceeding any one or a combination of the Absolute Maximum Rating conditions may cause permanent damage to the device. Extended application of Absolute Maximum Rating conditions to the device may reduce device reliability.

Recommended Operating Conditions

Parameter	Min	Typ.	Max	Units
T_{CASE}	−40		+105	°C

Electrical specifications are measured at specified test conditions.

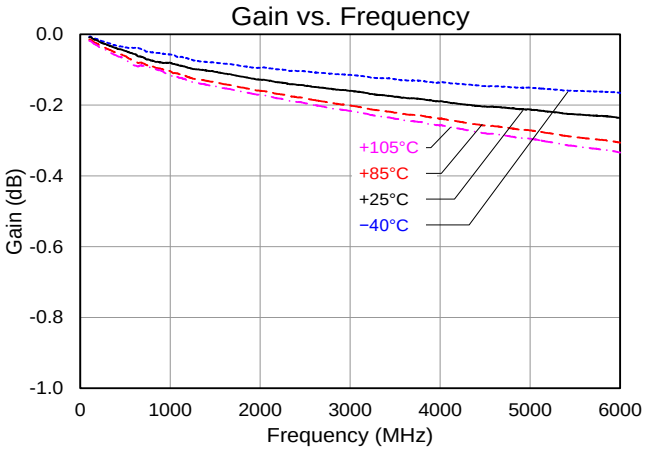
Electrical Specifications Antenna - Transmit

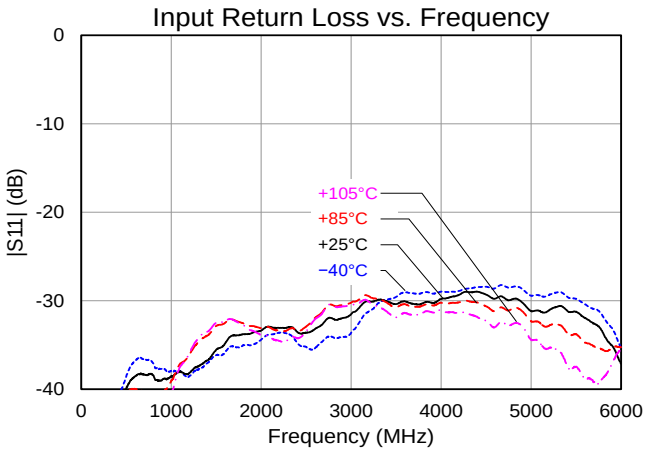
Test conditions unless otherwise noted: Temperature Range = +25 °C, 50Ω

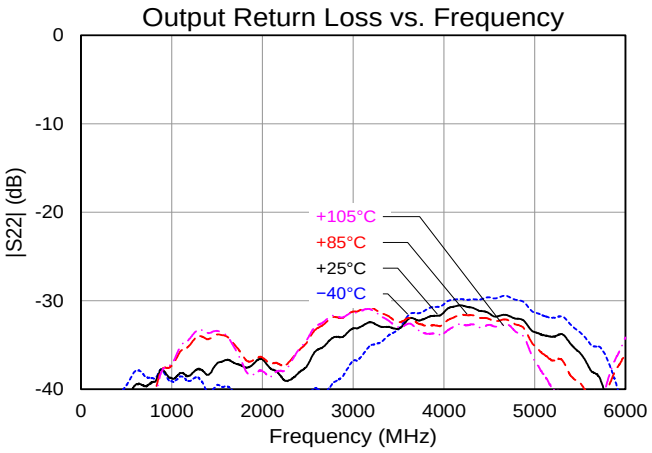
Parameter	Conditions	Min	Typical (4)	Max	Units
Operational Frequency Range		0	-	2700	MHz
Test Frequency		-	2140	-	MHz
Port Impedance	0 to 2700 MHz	-	50	-	Ω
Insertion Loss		-	0.15	0.20	dB
Return Loss	0 to 2700 MHz	-	25	-	dB

Typical Performances

Test conditions unless otherwise noted: Temp = +25 °C, 50 Ω system

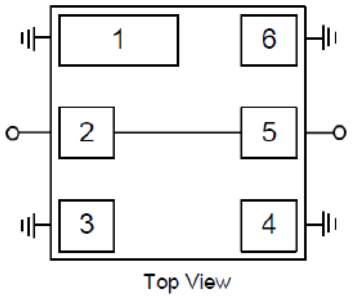




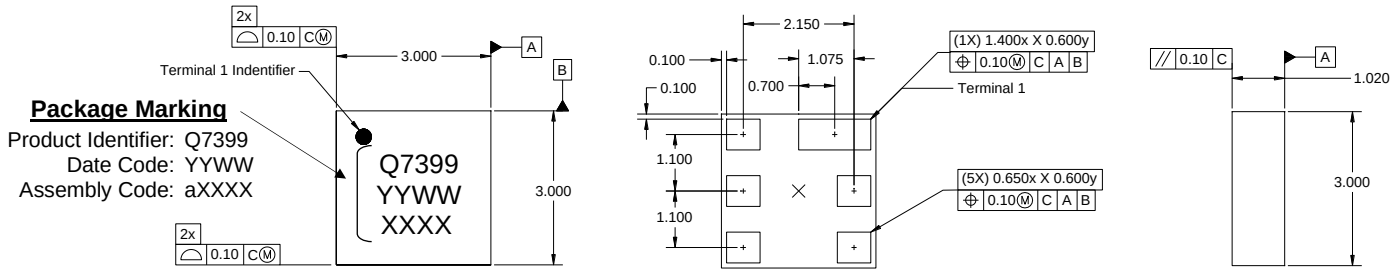


Pin Description & Layout

Pin No.	Symbol	Description
2, 5	RF I/O	RF through path (bi-directional)
1, 3, 4, 6	NC	No electrical connection. Provide grounded land pads for PCB mounting integrity.



Package Marking and Dimensions

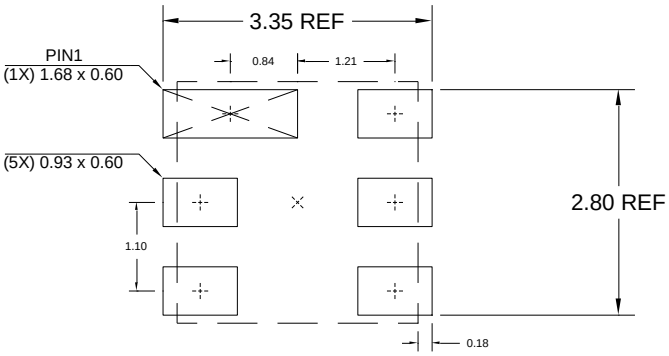


TOP VIEW BOTTOM VIEW SIDE VIEW

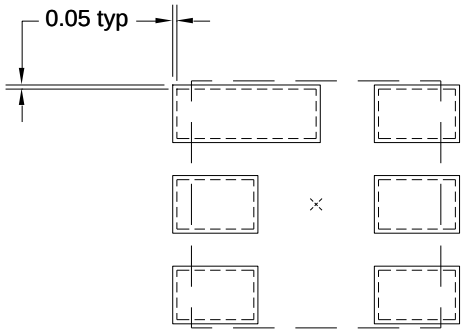
Notes:

1. All dimensions are in millimeters
2. Dimension and tolerance formats conform to ASME Y14.4M-1994.
3. The terminal #1 identifier and terminal numbering conform to JESD 95-1 SPP-012.

PCB Mounting Pattern



Top view recommended land pattern metallization.



Top view recommended land pattern stencil aperture.

Notes:

1. All dimensions are in millimeters. Angles are in degrees.
2. Use 1 oz. copper minimum for top and bottom layer metal.

Manufacturing Environments

COMPONENT HANDLING

All necessary special handling techniques shall be adopted in order to avoid contamination of metallization / terminations. Examples include use of finger cots, plastic tweezers, etc.

PART PLACEMENT

A placement force of up to 500 grams is applied (using a 2.00 mm or a 0.080-inch diameter rod) to the center of the part while remaining in its tape carrier.

COMPONENT SOLDERABILITY

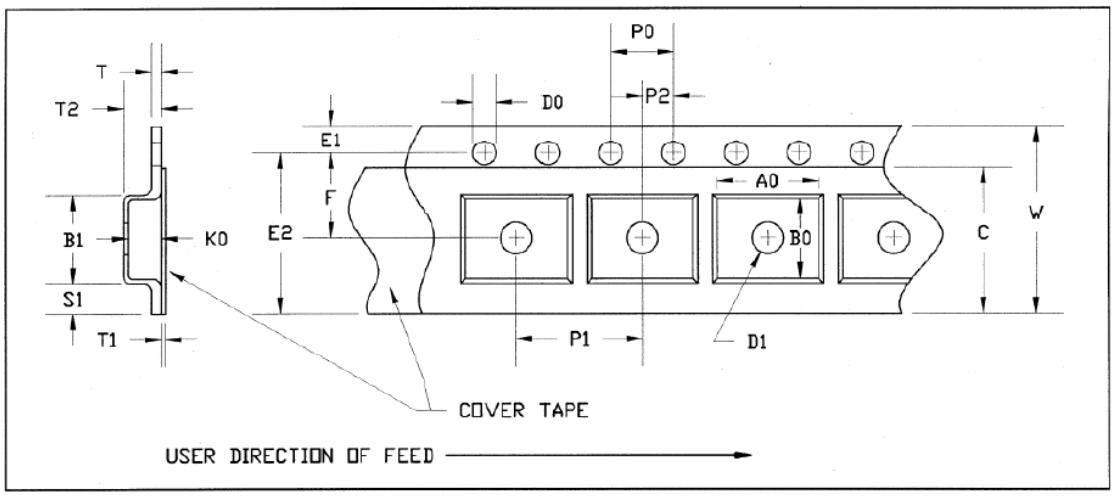
Convection or Infrared Reflow

Part will comply with convection or infrared reflow soldering processes consistent with IPC/JEDEC J-STD-020. Qorvo's actual reflow profile for qualification is provided below:

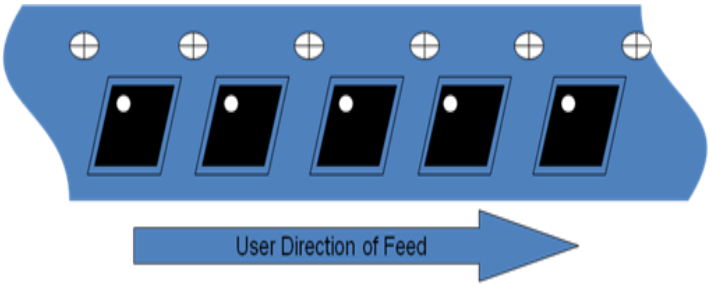
Reflow Parameters	IPC / JEDEC J-STD-020	Qorvo Actual
Average ramp-up rate (217 °C to Peak)	3 °C /second max.	0.57 °C / second
Preheat Time (150 °C to 200 °C)	60 – 180 seconds	150 seconds
Time above 217 °C	60 – 150 seconds	126 seconds
Peak Temperature	260 +0 / −5 °C	259 °C
Time within 5 °C of actual Peak Temperature	20 – 40 seconds	30 seconds
Ramp-down Rate	6 °C / second max.	0.875 °C / second
Time 25 °C to Peak Temperature	8 minutes max.	7 minutes max.

Tape and Reel Information – Carrier and Cover Tape Dimensions

Tape and reel specifications for this part are also available on the Qorvo website.
Standard T/R size = 2500 pieces on a 13” reel.

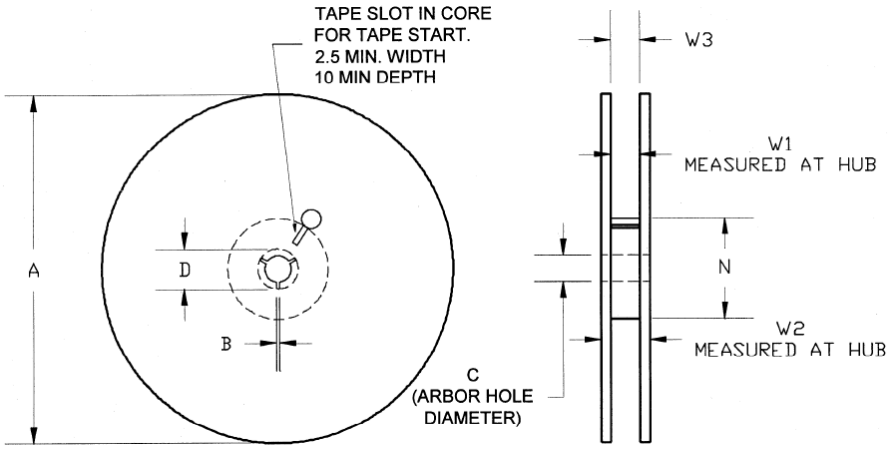


Feature	Measure	Symbol	Size (in)	Size (mm)
Cavity	Length	A0	0.126	3.20
	Width	B0	0.126	3.20
	Depth	K0	0.047	1.20
	Pitch	P1	0.157	4.00
Centerline Distance	Cavity to Perforation - Length Direction	P2	0.079	2.00
	Cavity to Perforation - Width Direction	F	0.217	5.50
Cover Tape	Width	C	0.362	9.20
Carrier Tape	Width	W	0.472	12.0



Tape and Reel Information – Reel Dimensions

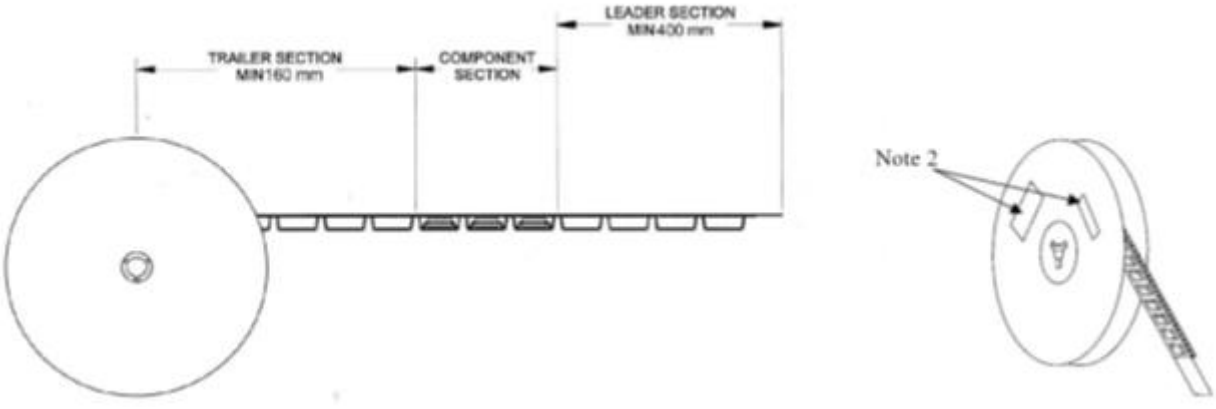
Tape and reel specifications for this part are also available on the Qorvo website.
Standard T/R size = 2500 pieces on a 13” reel.



Feature	Measure	Symbol	Size (in)	Size (mm)
Flange	Diameter	A	12.992	330.0
	Thickness	W2	0.717	18.2
	Space Between Flange	W1	0.504	12.8
Hub	Outer Diameter	N	4.016	102.0
	Arbor Hole Diameter	C	0.512	13.0
	Key Slit Width	B	0.079	2.0
	Key Slit Diameter	D	0.795	20.2

Tape and Reel Information – Tape Length and Label Placement

Standard T/R size = 2500 pieces on a 13” reel.



Notes:

1. Empty part cavities at the trailing and leading ends are sealed with cover tape. See EIA 481.
2. Labels are placed on the flange opposite the sprockets in the carrier tape.

Handling Precautions

Parameter	Rating	Standard
ESD – Human Body Model (HBM)	N/A	ESDA / JEDEC JS-001-2012
MSL – Moisture Sensitivity Level	Level 3	IPC/JEDEC J-STD-020

Caution!
ESD-Sensitive Device

Solderability

Compatible with both lead-free solder (260°C peak reflow temperature) and tin/lead (245°C peak reflow temp.) soldering processes. Solder profiles available upon request.

Contact Plating: ENIG (Electroless Nickel Immersion Gold)

RoHS Compliance

This part is compliant with 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 ($C_{15}H_{12}Br_4O_2$) Free
- PFOS Free

Contact Information

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

Web: www.qorvo.com

Tel: 1-844-890-8163

Email: customer.support@qorvo.com

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