

## Product Features

- RF frequency: 27 to 100 GHz
- Insertion Loss: 3.5 dB
- Amplitude Balance: 0.8 dB
- Phase Balance: 1.9 deg
- DC Coupled
- High Power Handling
- Die Size: X=790 um, Y=2170 um, Z=100 um

## Application

- Instrumentation
- Wireless Communication
- SATCOM
- Radar, EW
- WLAN, WiMax

## Product Description

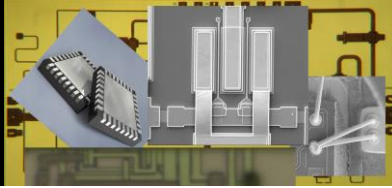
The TMC813D is a wideband low loss MMIC balun (balanced to unbalanced transformer) die with an impedance ratio of 1:2 . TMC813D is designed for use in 5G wireless, SATCOM, Instrumentation, high-speed track-and-hold amplifiers, digital-to-analog converters, balanced amplifiers, signal integrity and Military Radar and EW applications. The TMC813D is a 50  $\Omega$  matched, DC-coupled and ROHS-compliant design. The TMC813D is designed and fabricated for maximum repeatability with low insertion loss, low amplitude unbalance, low phase unbalance, and excellent common mode rejection to ensure rugged and reliable operation and moisture protection. Both bond pad and backside metallization are Au-based and compatible with ribbon and wedge bonding and high conductivity epoxy and eutectic die attach methods. TMC813D is layed out symmetrically and is in die format thus enabling the integration of the balun directly into hybrid modules.

<b>Electrical Performance</b>				
	<b>min</b>	<b>Typ</b>	<b>Max</b>	<b>Units</b>
<b>Frequency</b>	27		100	GHz
<b>Excess Insertion Loss</b>		3.5		dB
<b>Return Loss</b>		10		dB
<b>Common Mode Rejection</b>		30		dB
<b>Amplitude Balance</b>		0.8		dB
<b>Phase Match</b>		1.9		deg

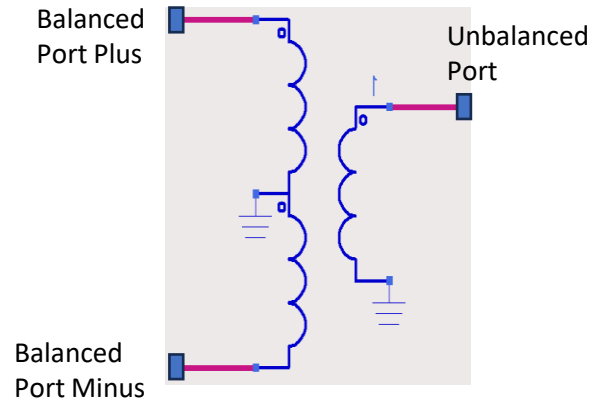
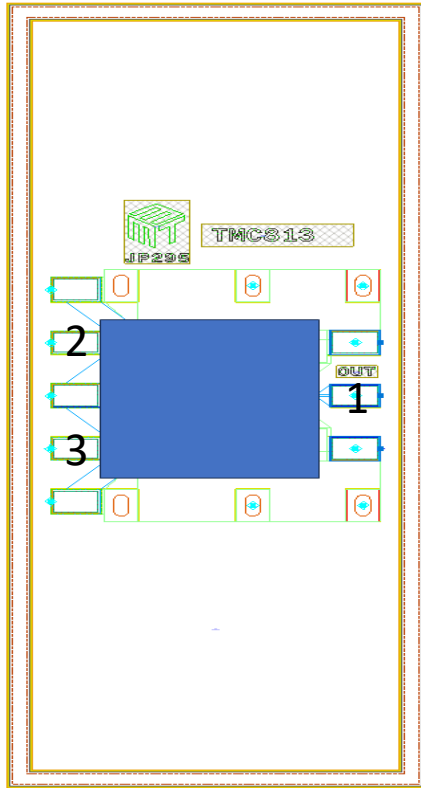
# TMC813D

## 27-100 GHz

### Low Loss Balun

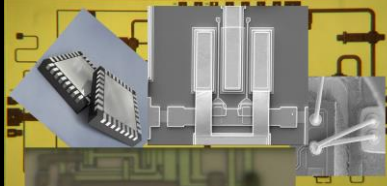


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Pad #	Function
1	Unbalanced port
2	Balanced Port Plus
3	Balanced Port Minus

Pads 1, 2, and 3 are shorted to the ground.  
The remaining 5 pads are GND.



## • Assembly Techniques

- The TMC813D is fabricated using a GaAs-based semiconductor material structure. The die is back-metalized and can be mounted with standard assembly techniques. The mounting surface should be clean and flat.

## • ESD Warning

- III-V MMICs are ESD-sensitive. Preventative ESD measures must be employed in all aspects of storage, handling, and assembly. MMIC ESD precautions, handling considerations, and die-attach and bonding methods are critical factors in successful III-V MMIC performance and reliability.

## • RoHS Compliance

- This part is RoHS compliant, meeting the requirements of the EU Restriction of Hazardous Substances Directive 2002/95/EC, commonly known as RoHS. Six substances are regulated: lead, mercury, cadmium, chromium VI (hexavalent chromium), polybrominated biphenyls (PBB), and polybrominated biphenyl ethers (PBDE). RoHS compliance requires that any residual concentration of these substances is below the Directive's maximum concentration values (MCV): cadmium 100ppm by weight and all others 1000ppm by weight.

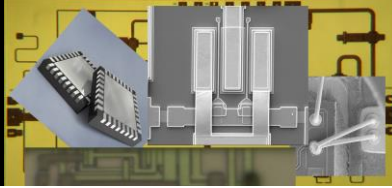
## • Maximum Ratings

Parameter	Function
Operating Temperature	-55 °C to 100 °C
Input RF Power	35 dBm at 25 °C

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## 27-100 GHz

### Low Loss Balun



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