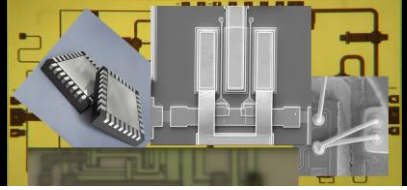
TMC810-1D
3-18 GHz
Low Loss High Power Balun



mmTRON
Unleashing the mmWave Frontier

Product Features

- RF frequency: 3 to 18 GHz
- Insertion Loss: 2 dB
- Amplitude Balance: 0.4 dB
- Phase Balance: 1 deg
- AC Coupled
- High Power Handling
- Die Size: X=1250 um, Y=2170 um, Z=100 um

Application

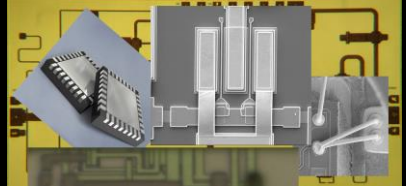
- Instrumentation
- Wireless Communication
- SATCOM
- Radar, EW
- WLAN, WiMax

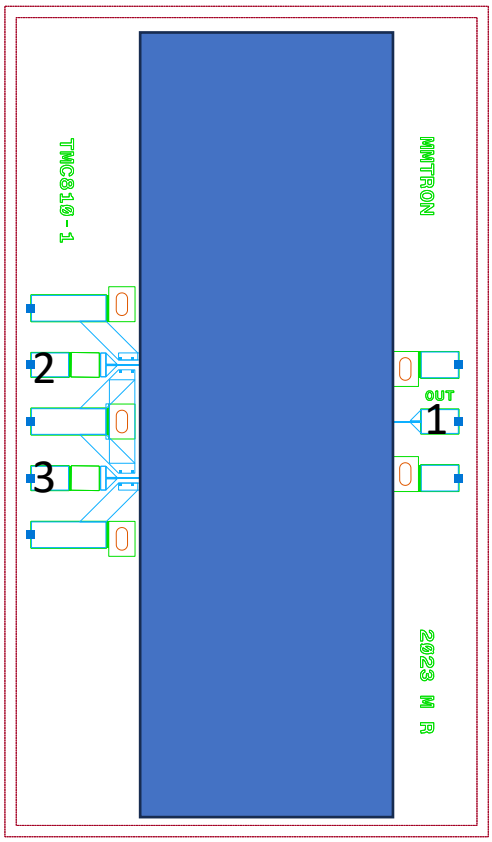
Product Description

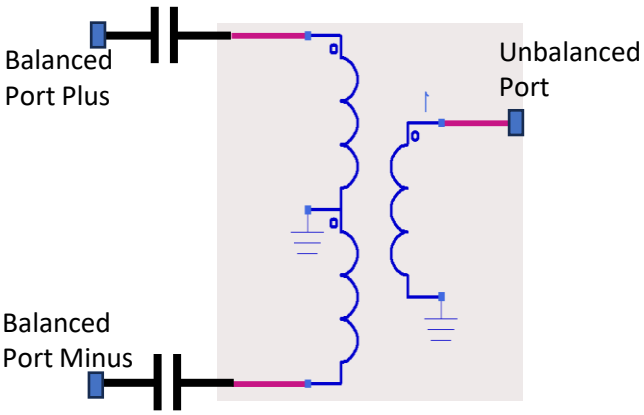
The TMC810-1D is a wideband low loss MMIC balun (balanced to unbalanced transformer) die with an impedance ratio of 1:2 . TMC810-1D is AC coupled thus eliminating the need for decoupling capacitors. It is designed for use in 5G wireless, SATCOM, Instrumentation, high-speed track-and-hold amplifiers, digital-to-analog converters, balanced amplifiers, signal integrity and Military Radar and EW applications. The TMC810-1D is a 50 Ω matched, AC-coupled and ROHS-compliant design. To ensure rugged and reliable operation and moisture protection, the TMC810-1D is designed and fabricated for maximum repeatability with low insertion loss, low amplitude unbalance, low phase unbalance, and excellent common mode rejection. Both bond pad and backside metallization are Au-based that are compatible with ribbon and wedge bonding and high conductivity epoxy and eutectic die attach methods. TMC810-1D is layed out symmetrically and is in die format thus enabling the integration of the balun directly into hybrid modules. The DFN packaged version is available under TMC810-1.

Electrical Performance

	min	Typ	Max	Units
Frequency	3		18	GHz
Excess Insertion Loss		2		dB
Return Loss		10		dB
Common Mode Rejection		35		dB
Amplitude Balance		0.4		dB
Phase Match		1		deg

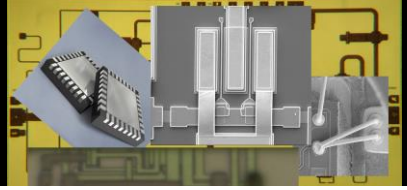


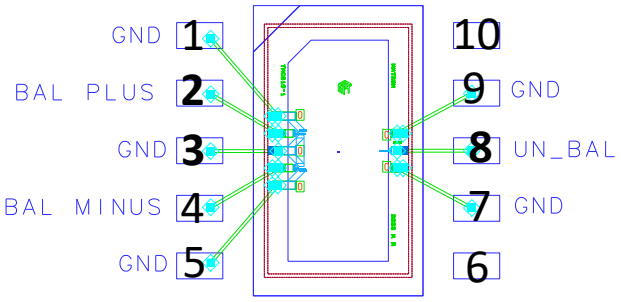


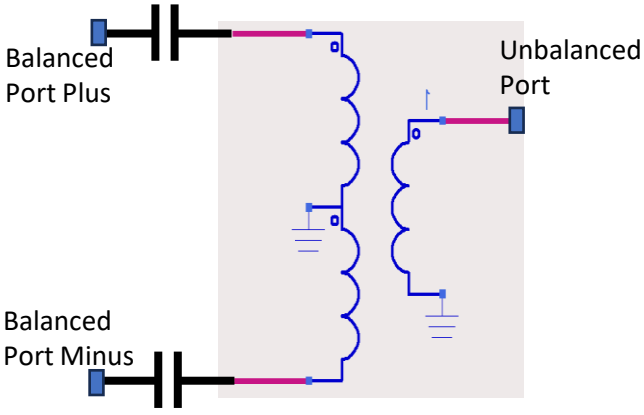


Pad #	Function
1	Unbalanced port
2	Balanced Port Plus
3	Balanced Port Minus

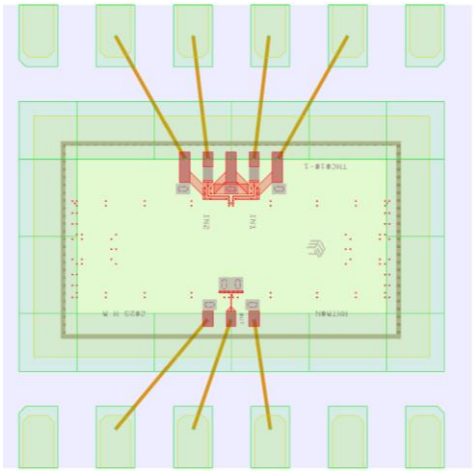
Pads 1, 2, and 3 are open to ground.
The remaining 5 pads are GND.



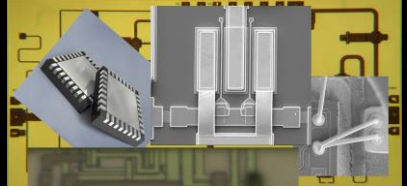




Pad #	Function
8	Unbalanced port
2	Balanced Port Plus
4	Balanced Port Minus
1,3,5,7,9	GND



Packaged Version



- Assembly Techniques
  - The TMC810-1D 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