Revision History

Rev.	History	Issue Date	Remark
0.1	Initial issue	20160318	Preliminary Randall Lan
1.0	Add Revision History	20180713	Randall Lan
1.1	Features, Specification Summary	20211005	Rick/Chirsty

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TM1008 ~3GHz RF Transistor, Gain Block, Power Driver MMIC

General Description

The TM1008 is a low-cost, low-noise transistor in a M04 package. It can be designed for Low Noise Amplifier, Gain Block and Power Driver. This product can be used in applications where the frequency range is between DC to 3GHz.

Features

- Very low Noise Figure, NF=1.6dB at Frequency=2.45GHz
- Gain Block 18.07 dB at 2.45Ghz
- P_{-1dB} point 15dBm at 2.4Ghz biased at +3.3V
- Very low-cost M04 package

Product Photo

Applications

- Wireless application, e.g. analog and digital cellular telephones
- Cordless telephones (GPS, DECT, PHS, Bluetooth, WLAN, ZigBee)
- RF front end
- Pagers
- CATV, Cable modem

Absolute Maximum Ratings

Parameter	Maximum Rating	Unit
V_{CC} Supply Voltage	0 to 7	V
RF Input Power	10	dBm
Operating Temperature	-40 to +85	°C
Storage Temperature	-55 to +150	°C
I_{CC}	80	mA

Notes:

1. Operation of this device in excess of any maximum rating as specified above may cause permanent damage to the device.
2. **Caution! ESD Sensitive Device.**

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S-parameter

Test Conditions: I_{CC}=5mA, V_{CE} = 3.3V, and Input power=-30dBm, well matched at 2.45GHz

Frequency (MHz)	S11	S21	S12	S22
1000	-0.884	10.823	-36.787	-0.588
1050	-0.9	11.227	-36.131	-0.672
1100	-0.832	11.569	-35.014	-0.739
1150	-0.81	11.533	-34.529	-0.816
1200	-0.811	11.48	-34.195	-0.859
1250	-0.779	11.706	-34.211	-0.964
1300	-0.732	12.117	-33.373	-1.042
1350	-0.763	12.606	-31.983	-1.087
1400	-0.756	13.061	-31.723	-1.215
1450	-0.792	12.932	-30.576	-1.288
1500	-0.824	12.929	-31.119	-1.438
1550	-0.862	13.44	-30.18	-1.549
1600	-0.893	13.988	-29.796	-1.66
1650	-0.979	14.114	-28.907	-1.789
1700	-1.04	14.232	-28.38	-1.979
1750	-1.089	14.419	-27.731	-2.13
1800	-1.262	14.657	-27.915	-2.297
1850	-1.445	15.2	-26.997	-2.472
1900	-1.639	15.745	-26.372	-2.732
1950	-1.834	16.021	-25.454	-2.996
2000	-2.12	16.29	-24.972	-3.35
2050	-2.514	16.637	-24.355	-3.719
2100	-3.023	16.636	-23.787	-4.153
2150	-3.691	17.033	-23.658	-4.718
2200	-4.593	17.718	-22.314	-5.458
2250	-5.746	18.02	-22.017	-6.251
2300	-7.521	17.873	-21.528	-7.326
2350	-9.991	18.18	-21.339	-8.571
2400	-13.882	18.29	-21.035	-10.064
2450	-22.423	18.07	-21.195	-11.63
2500	-23.339	17.726	-21.171	-12.659
2550	-14.376	17.285	-21.559	-12.891
2600	-10.399	16.792	-21.638	-12.086
2650	-7.952	16.071	-22.301	-11.16
2700	-6.265	14.922	-23.373	-10.224
2750	-5.14	14.362	-23.519	-9.614
2800	-4.221	13.881	-23.761	-8.962
2850	-3.629	12.847	-24.897	-8.576
2900	-3.135	11.545	-25.979	-8.23
2950	-2.684	10.773	-26.393	-8.123
3000	-2.425	9.964	-27.298	-7.974
3050	-2.128	9.407	-26.998	-7.9
3100	-1.874	8.835	-26.885	-7.797
3150	-1.704	7.69	-28.418	-7.899
3200	-1.53	6.519	-29.812	-7.846

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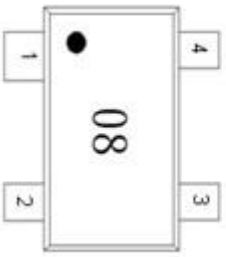
Pin Cinfiguration

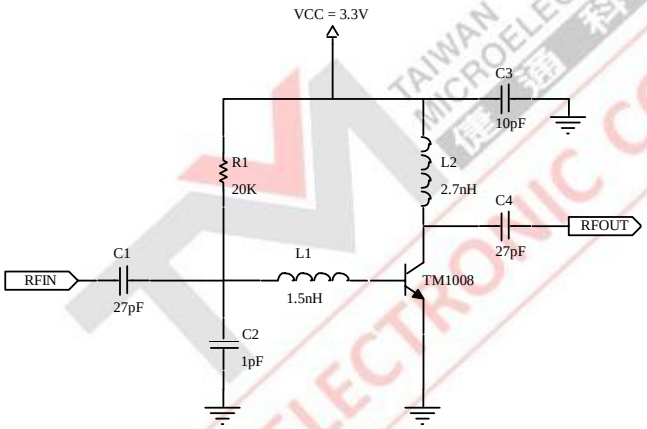
Top View



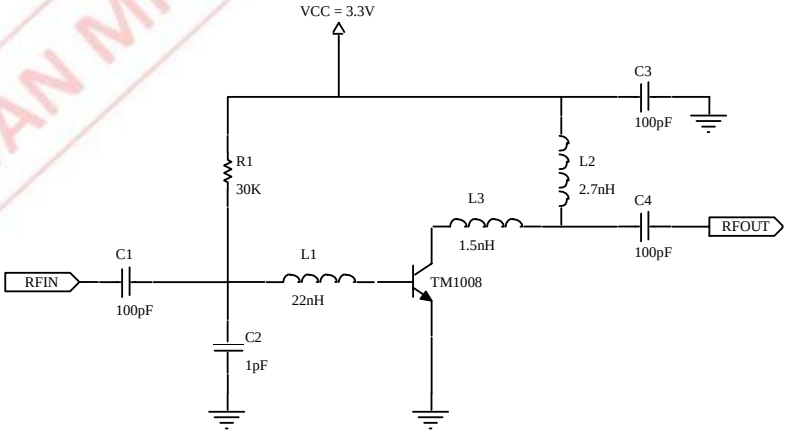
PIN	DESCRIPTION
1	base
2	emitter
3	collector
4	emitter

Application Circuits

- 2.4GHz Low Noise Amplifier



- 1.575GHz Low Noise Amplifier



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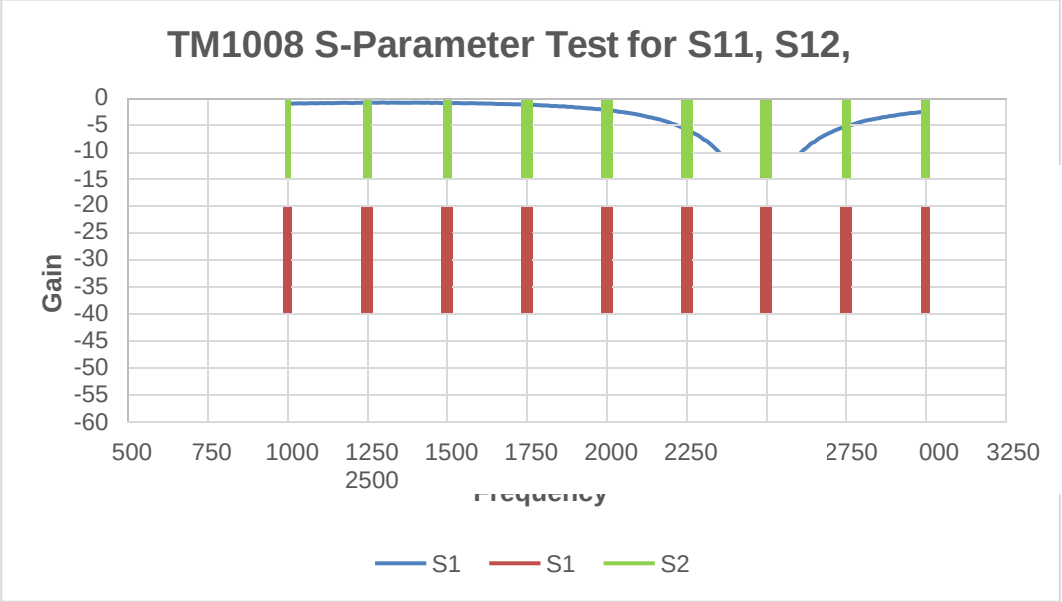
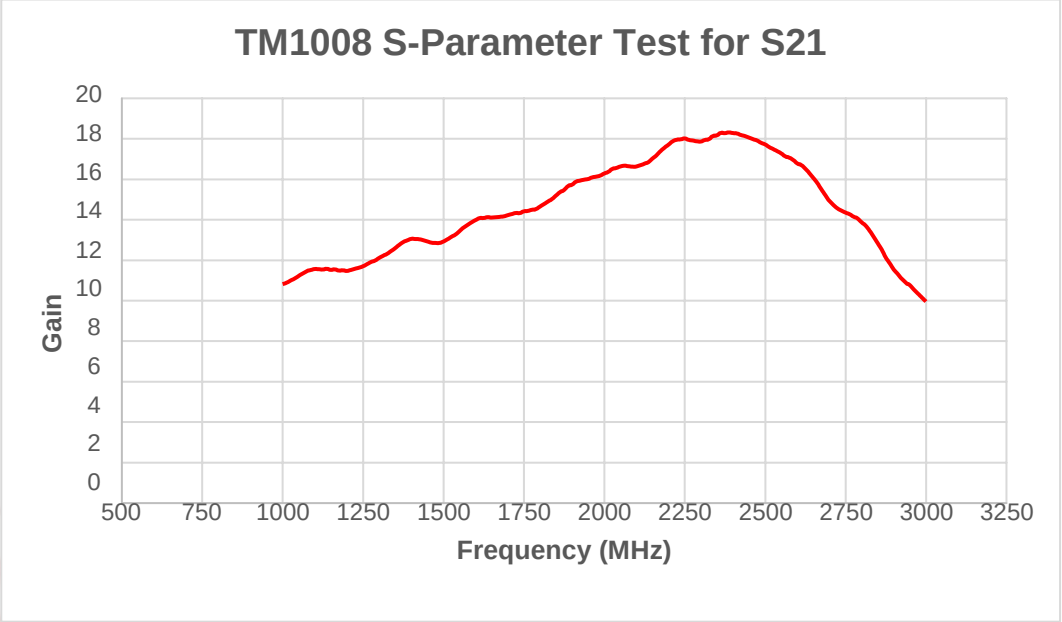
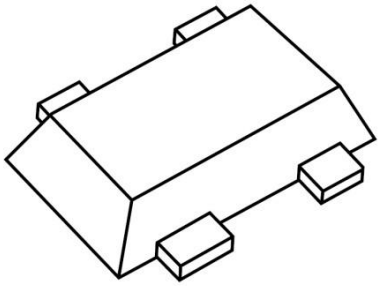
Test Result Using the Application Circuit



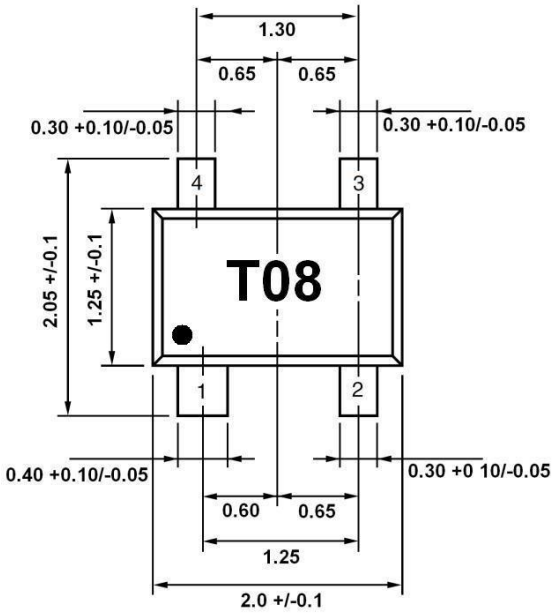


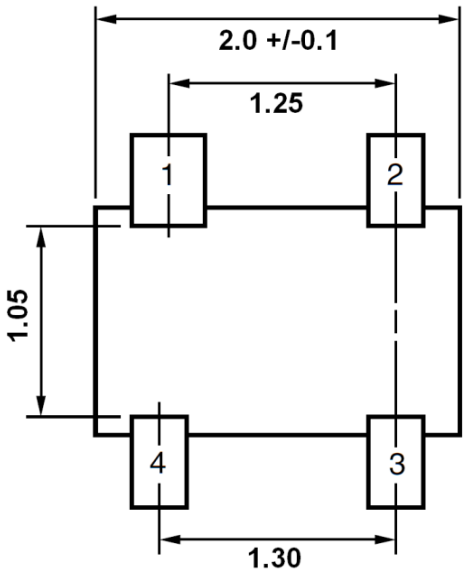
Package Dimensions

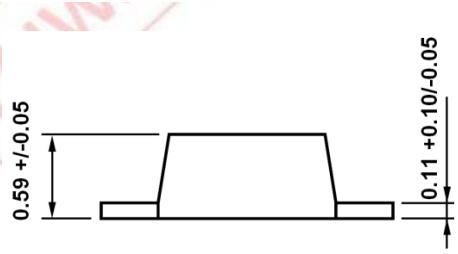
M04 Package Dimensions (Unit：mm)



Bottom View







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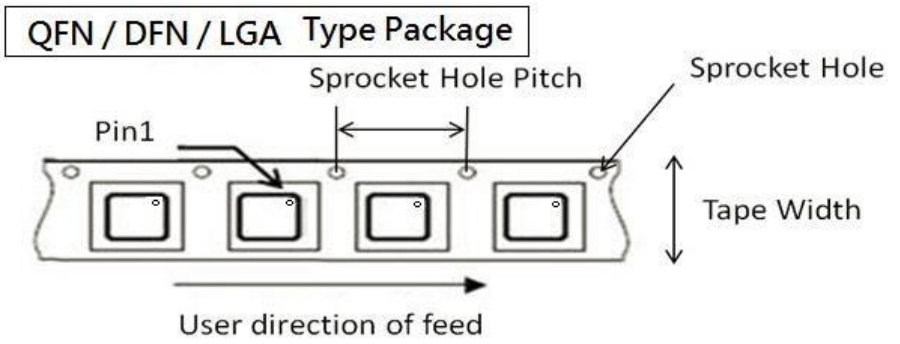
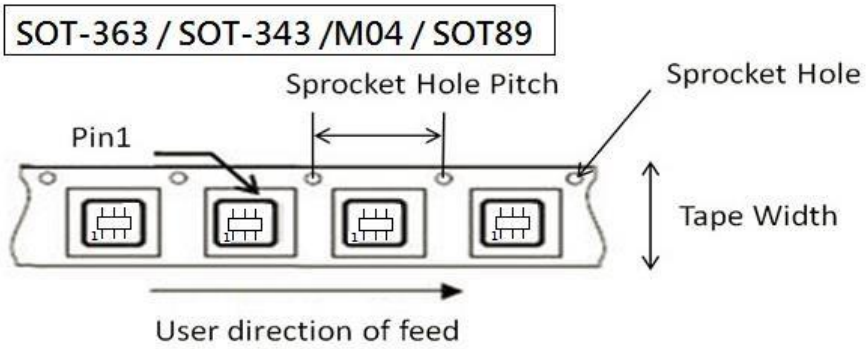
Tape and Reel





Package Type	Reel Size	Tape width (mm)	Sprocket Hole	Sprocket Hole Pitch (mm)	Leader Qty	Trailer Qty	Desiccant (g)
WLCSP 0.69x0.44mm	14"	12±0.03	Φ1.5 +0.1, -0	4.0±0.1	50	50	10
DFN 1.5x1.5mm	7"	12±0.03	Φ1.5 +0.1, -0	4.0±0.1	50	50	10
DFN 2x2mm	7"	12±0.03	Φ1.5 +0.1, -0	4.0±0.1	50	50	10
QFN 2x2mm	7"	12±0.03	Φ1.5 +0.1, -0	4.0±0.1	50	50	10
QFN 3x3mm	7"	12±0.03	Φ1.5 +0.1, -0	4.0±0.1	50	50	10
SOT 343 (M04)	7"	12±0.03	Φ1.5 +0.1, -0	4.0±0.1	50	50	10
SOT 363	7"	12±0.03	Φ1.5 +0.1, -0	4.0±0.1	50	50	10
SOT 89	7"	12±0.03	Φ1.5 +0.1, -0	4.0±0.1	50	50	10

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Handling Precaution

SAFETY INFORMATION ON THIS PRODUCT

Cautions on using this product	The product contains Gallium-Arsenide (GaAs). GsAs vapor and power are hazardous to human health if inhaled or ingested. ● Do not destroy or burn the product. ● Do not cut or cleave off any part of the product. ● Do not crush or chemically dissolve the product. Follow related laws and ordinances for disposal. The product should be excluded from general industrial waste or household garbage.

CAUTION: This device is sensitive to Electro-Static Discharge (ESD). Observe precautions for handling electro-static sensitive devices. Such precautions are described in the ANSI/ESD S20.20,IEC/ST 61340-5, JESD625-A or equivalent standards.

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