ULTRA LOW NOISE, HIGH CURRENT

E-PHEMT Transistor

TAV1-541+

50Ω 0.045 to 6 GHz

THE BIG DEAL

- Low Noise Figure, 0.4 dB
- Gain, 24 dB typ. at 0.9 GHz
- High Output IP3, +32 dBm at 2 GHz, 60mA, 4V
- Output Power at 1dB compression, +21 dBm, 60mA, 4V
- Wide bandwidth
- External biasing and matching required

Generic photo used for illustration purposes only

CASE STYLE: TE2769

+RoHS Compliant

The +Suffix identifies RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications

APPLICATIONS

- Cellular
- ISM
- GSM
- WCDMA
- WiMax
- WLAN
- UNII and HIPERLAN

PRODUCT OVERVIEW

TAV1-541+ is a low noise, high IP3 transistor device manufactured using E-PHEMPT* technology enabling it to work with a single positive supply voltage. It has outstanding Noise figure, particularly below 2.5 GHz, and when combining this noise figure with IP3 performance in a single device it makes it an ideal amplifier for multiple applications.

KEY FEATURES

Feature	Advantages
Wideband, 0.045 to 6 GHz	Use in multiple applications: UHF, VHF, communication infrastructure
High Gain, Low noise figure	High Gain limits the effect of noise figure due to previous stages
Small size, 1.18 x 1.42 x 0.85 mm, MCLP package	Small foot print saves space in dense layouts while providing low inductance, repeatable transitions, and excellent thermal contact to the PCB.

* Enhancement mode Pseudomorphic High Electron Mobility Transistor.

REV. A
ECO-011337
TAV1-541+
MCL NY
220106

E-PHEMT Transistor

TAV1-541+

ELECTRICAL SPECIFICATIONS AT T_{AMB}=25°C, FREQUENCY 0.045 TO 6 GHZ

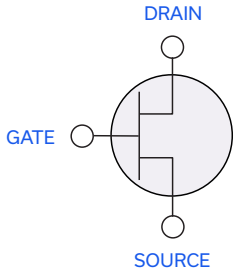
Symbol	Parameter	Condition		Min.	Typ.	Max.	Units
DC Specifications							
V_{GS}	Operational Gate Voltage	V_{DS}=3V, I_{DS}=60 mA		0.37	0.48	0.69	V
V_{TH}	Threshold Voltage	V_{DS}=3V, I_{DS}= 4 mA		0.18	0.26	0.38	V
I_{DSS}	Saturated Drain Current	V_{DS}=3V, V_{GS}=0 V		—	1.0	5.0	uA
G_M	Transconductance	V_{DS} =3V, Gm =$\Delta I_{DS}/\Delta V_{GS}$ ΔV_{GS} = V_{GS2}-V_{GS1} V_{GS1}= V_{GS1} at I_{DS}=60 mA V_{GS2}= V_{GS1} +0.05V		230	392	560	mS
I_{GSS}	Gate leakage Current	V_{GD}=V_{GS}=-3V		—	—	200	µA
RF Specifications[1], Z0=50 Ohms (Figure 1)							
NF	Noise Figure	V_{DS}=3V, I_{DS}=60 mA	f=0.9 GHz	—	0.4	0.9	dB
			f=2.0 GHz		0.6		
			f=3.9 GHz		0.9		
			f=5.8 GHz		1.4		
		V_{DS}=4V, I_{DS}=60 mA	f=2.0 GHz		0.7		
Gain	Gain	V_{DS}=3V, I_{DS}=60 mA	f=0.9 GHz	16.4	24.1	20.4	dB
			f=2.0 GHz		18.6		
			f=3.9 GHz		13.3		
			f=5.8 GHz		9.3		
		V_{DS}=4V, I_{DS}=60 mA	f=2.0 GHz		18.6		
OIP3	Output IP3	V_{DS}=3V, I_{DS}=60 mA	f=0.9 GHz		32		dBm
			f=2.0 GHz		31.4		
			f=3.9 GHz		31.7		
			f=5.8 GHz		31.9		
		V_{DS}=4V, I_{DS}=60 mA	f=2.0 GHz		33.9		
P1dB[2]	Power output at 1 dB Compression	V_{DS}=3V, I_{DS}=60 mA	f=0.9 GHz		18.2		dBm
			f=2.0 GHz		18.4		
			f=3.9 GHz		18.6		
			f=5.8 GHz		18.3		
		V_{DS}=4V, I_{DS}=60 mA	f=2.0 GHz		20.7		

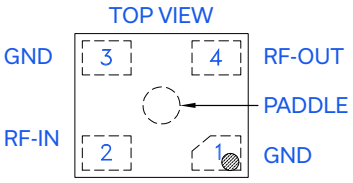
MAXIMUM RATINGS[3]

Symbol	Parameter	Max.	Units
V_{DS} [4]	Drain-Source Voltage	5	V
V_{GS} [4]	Gate-Source Voltage	-5 to 0.7	V
V_{GD} [4]	Gate-Drain Voltage	-5 to 0.7	V
I_{DS} [4]	Drain Current	120	mA
I_{CS}	Gate Current	2	mA
P_{DISS}	Total Dissipated Power	360	mW
P_{IN} [5]	RF Input Power	17	dBm
T_{CH}	Channel Temperature	150	°C
T_{OP}	Operating Temperature	-40 to 85	°C
T_{STD}	Storage Temperature	-65 to 150	°C
Θ_{JC}	Thermal Resistance	160	°C/W

2. Drain current bias is allowed to increase during compression measurement.
3. Operation of this device above any one of these parameters may cause permanent damage
4. Assumes DC quiescent conditions
5. I_{GS} is limited to 2 mA during test.

SIMPLIFIED SCHEMATIC AND PIN DESCRIPTION





Function	Pin Number	Description
RF-IN	2	Gate used for RF input
RF-OUT	4	Drain used for RF output
GND	1,3 and Paddle	Source terminal and Paddle, normally connected to ground.

CHARACTERIZATION TEST CIRCUIT

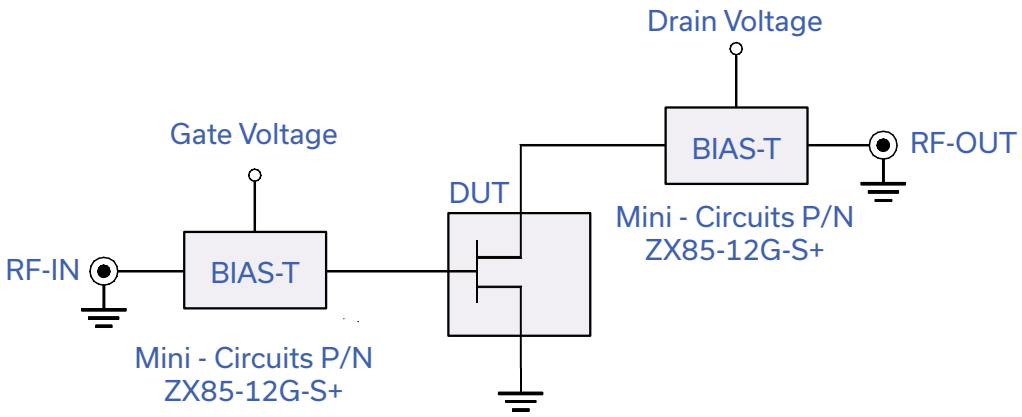
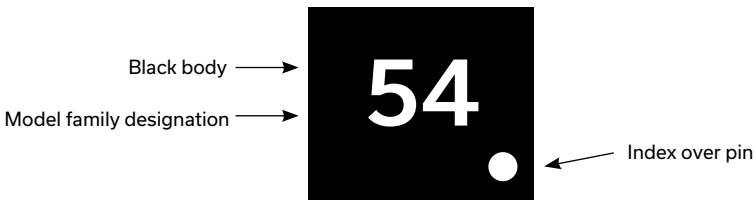


Fig 1. Block Diagram of Test Circuit used for characterization. (DUT soldered on Mini-Circuits Test Board TB-TAV1-541+)

Gain, Output power at 1dB compression (P1 dB), Noise Figure and output IP3 (OIP3) are measured using Keysight/Agilent Network Analyzer PNA-X.

Conditions:
1. Drain voltage (with reference to source, VDS)= 3 or 4V as shown.
2. Gate Voltage (with reference to source, VGS) is set to obtain desired Drain-Source current (IDS) as shown in specification table.
3. Gain: Pin= -25dBm
4. Output IP3 (OIP3): Two tones, spaced 1 MHz apart, 0 dBm/tone at output.
5. No external matching components used.

PRODUCT MARKING



Marking may contain other features or characters for internal lot control

E-PHEMT Transistor TAV1-541+

ADDITIONAL DETAILED TECHNICAL INFORMATION IS AVAILABLE ON OUR DASH BOARD. TO ACCESS CLICK HERE

Performance Data	Data Table Swept Graphs S-Parameter (S2P Files) Data Set (.zip file)
Case Style	TE2769 Plastic package, exposed paddle, lead finish: Matte-Tin plated
Tape & Reel **Standard quantities available on reel**	F90 7" reels with 20, 50, 100, 200, 500,1K,2K or 3K devices
Suggested Layout for PCB Design	98-PL-665
Evaluation Board	TB-TAV1-541+
Environmental Ratings	ENV08T2

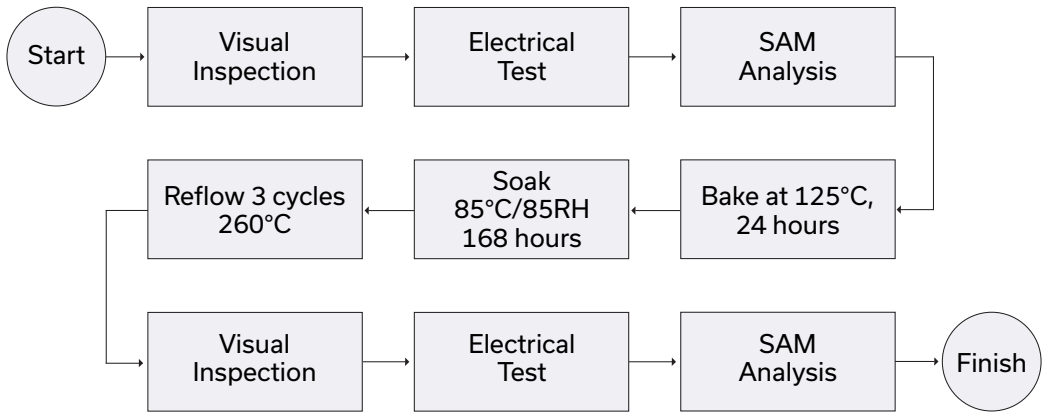
ESD RATING

Human Body Model (HBM): Class 1A (250V to <500V) in accordance with ANSI/ESD STM 5.1 - 2001

MSL RATING

Moisture Sensitivity: MSL1 in accordance with IPC/JEDEC J-STD-020D

MSL TEST FLOW CHART



NOTES

A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.
C. The parts covered by this specification document are subject to Mini-Circuits standard limited warranty and terms and conditions (collectively, "Standard Terms"); Purchasers of this part are entitled to the rights and benefits contained therein. For a full statement of the standard. Terms and the exclusive rights and remedies thereunder, please visit Mini-Circuits' website at www.minicircuits.com/MCLStore/terms.jsp

Typical Performance Data

VDS (V)	IDS (mA) @ VGS=					
	0.20V	0.30V	0.40V	0.50V	0.60V	0.70V
0.00	0.01	0.04	0.08	0.08	0.10	0.09
0.10	0.27	3.65	12.61	18.97	21.95	23.61
0.20	0.29	4.15	18.82	34.57	42.39	46.35
0.30	0.30	4.34	20.58	45.11	60.56	68.02
0.40	0.33	4.50	21.37	50.24	75.24	88.05
0.50	0.34	4.65	21.90	52.30	85.18	105.70
0.60	0.34	4.85	22.33	53.38	90.38	120.00
0.70	0.36	4.99	22.76	54.18	92.66	
0.80	0.38	5.13	23.24	54.89	93.88	
0.90	0.40	5.25	23.62	55.49	94.80	
1.00	0.42	5.38	23.97	56.03	95.53	
1.10	0.43	5.51	24.29	56.51	96.14	
1.20	0.45	5.63	24.61	56.97	96.68	
1.30	0.45	5.75	24.91	57.39	97.18	
1.40	0.47	5.86	25.22	57.82	97.65	
1.50	0.48	5.98	25.50	58.21	98.08	
1.60	0.52	6.10	25.77	58.60	98.49	
1.70	0.53	6.21	26.04	58.97	98.89	
1.80	0.55	6.32	26.32	59.33	99.30	
1.90	0.57	6.45	26.58	59.70	99.68	
2.00	0.55	6.55	26.87	60.08	100.07	
2.10	0.58	6.69	27.17	60.50	100.48	
2.20	0.60	6.82	27.51	60.97	100.97	
2.30	0.63	6.99	27.89	61.47	101.50	
2.40	0.64	7.17	28.29	62.05	102.12	
2.50	0.67	7.34	28.74	62.68	102.78	
2.60	0.70	7.52	29.19	63.32	103.50	
2.70	0.71	7.69	29.65	63.99	104.22	
2.80	0.73	7.90	30.15	64.64	104.94	
2.90	0.76	8.10	30.62	65.31	105.64	
3.00	0.82	8.34	31.13	65.99	106.33	
3.10	0.84	8.56	31.63	66.65	107.02	
3.20	0.87	8.79	32.17	67.32	107.70	
3.30	0.90	9.03	32.72	68.02	108.37	
3.40	0.92	9.30	33.28	68.69	109.02	
3.50	0.95	9.58	33.87	69.41	109.67	
3.60	1.01	9.89	34.46	70.12	110.34	
3.70	1.06	10.20	35.06	70.81	111.00	
3.80	1.10	10.53	35.67	71.53	111.64	
3.90	1.14	10.86	36.29	72.24	112.30	
4.00	1.14	11.21	36.89	72.93	112.96	
4.10	1.30	11.55	37.51	73.65	113.60	
4.20	1.37	11.90	38.13	74.35	114.25	
4.30	1.45	12.26	38.74	75.03	114.88	
4.40	1.54	12.63	39.36	75.76	115.53	
4.50	1.62	13.00	39.99	76.47	116.18	
4.60	1.69	13.38	40.62	77.15	116.80	
4.70	1.78	13.76	41.23	77.86	117.44	
4.80	1.90	14.14	41.86	78.56	118.06	
4.90	1.98	14.53	42.50	79.26	118.67	
5.00	2.07	14.94	43.13	79.96	119.30	

Typical Performance Data

Definitions:
Input Return Loss = -S11 (dB)
Gain(Power Gain) = S21 (dB)
Reverse Isolation = -S12 (dB)
Output Return Loss = -S22 (dB)

TEST CONDITIONS: Vd = 3V @ Temperature = +25°C

FREQ	Gain	Isolation	Input Return Loss	Output Return Loss	Stability		IP-3 Output	1dB Comp. Output	Noise Figure
(MHz)	(dB)	(dB)	(dB)	(dB)	K	Measure	(dBm)	(dBm)	(dB)
70	29.20	44.95	0.01	6.12	0.02	1.51	31.57	17.77	0.57
80	29.17	44.65	0.03	6.13	0.04	1.50	33.61	17.75	0.48
90	29.15	42.76	0.03	6.17	0.01	1.51	32.09	18.02	0.55
100	29.13	42.01	0.04	6.19	0.05	1.50	31.99	18.06	0.46
200	28.78	36.52	0.21	6.50	0.07	1.50	32.61	17.81	0.48
300	28.28	33.31	0.45	6.91	0.11	1.47	32.00	17.73	0.51
400	27.68	31.48	0.72	7.40	0.14	1.45	32.63	17.99	0.51
500	27.00	30.12	1.00	7.93	0.18	1.42	32.41	17.63	0.54
600	26.30	29.13	1.26	8.43	0.21	1.40	32.31	17.94	0.55
700	25.57	28.58	1.53	8.94	0.25	1.39	32.19	18.01	0.61
800	24.89	28.04	1.73	9.38	0.28	1.38	31.42	18.06	0.44
900	24.21	27.67	1.92	9.84	0.32	1.37	31.56	18.07	0.44
1000	23.57	27.34	2.07	10.23	0.35	1.36	32.23	18.27	0.48
1100	22.95	27.10	2.21	10.64	0.38	1.35	32.16	18.05	0.40
1200	22.36	26.84	2.33	11.01	0.41	1.35	31.48	18.04	0.38
1300	21.81	26.59	2.42	11.31	0.44	1.34	31.10	18.09	0.42
1400	21.28	26.38	2.52	11.60	0.47	1.34	31.82	18.16	0.45
1500	20.78	26.27	2.59	11.84	0.50	1.34	31.89	17.97	0.41
1600	20.29	26.10	2.68	12.13	0.53	1.33	32.72	18.43	0.44
1700	19.84	25.95	2.71	12.36	0.56	1.33	31.00	17.99	0.48
1800	19.40	25.75	2.78	12.55	0.58	1.33	32.06	18.42	0.51
1900	18.98	25.62	2.83	12.75	0.61	1.33	32.83	18.19	0.58
2000	18.59	25.48	2.87	12.93	0.63	1.33	31.08	18.25	0.57
2100	18.21	25.38	2.91	13.10	0.66	1.33	32.26	18.50	0.55
2200	17.86	25.26	2.94	13.21	0.68	1.33	32.67	18.32	0.52
2300	17.51	25.07	2.98	13.32	0.70	1.32	31.45	18.28	0.62
2400	17.18	24.96	3.00	13.43	0.72	1.32	32.48	18.67	0.53
2500	16.86	24.87	3.03	13.55	0.74	1.32	31.84	18.32	0.59
2600	16.55	24.72	3.06	13.64	0.76	1.32	31.97	18.49	0.55
2700	16.26	24.56	3.08	13.69	0.77	1.32	30.57	18.42	0.69
2800	15.97	24.44	3.11	13.75	0.79	1.32	31.63	18.42	0.69
2900	15.70	24.31	3.14	13.76	0.81	1.32	32.36	18.53	0.69
3000	15.42	24.18	3.17	13.82	0.83	1.31	32.14	18.43	0.58
3100	15.16	24.07	3.19	13.85	0.84	1.31	32.40	18.37	0.76
3200	14.90	23.97	3.22	13.89	0.86	1.31	32.71	18.39	0.79
3300	14.66	23.82	3.23	13.99	0.87	1.31	32.67	18.64	0.74
3400	14.42	23.68	3.25	14.05	0.89	1.31	32.61	18.56	0.83
3500	14.19	23.54	3.26	14.10	0.90	1.31	32.47	18.58	0.78
3600	13.96	23.45	3.26	14.11	0.91	1.31	31.93	18.67	0.87
3700	13.74	23.35	3.27	14.15	0.93	1.31	32.14	18.37	0.84
3800	13.51	23.21	3.26	14.11	0.94	1.31	31.86	18.44	0.85
3900	13.29	23.10	3.27	14.10	0.95	1.31	32.26	18.41	0.96
4000	13.08	22.99	3.25	14.05	0.96	1.31	31.62	18.15	0.96
4100	12.86	22.90	3.24	14.00	0.97	1.31	32.84	18.56	0.98
4200	12.66	22.78	3.21	13.93	0.98	1.31	31.83	18.35	0.93
4300	12.44	22.67	3.19	13.83	0.99	1.31	32.21	18.42	0.95
4400	12.24	22.58	3.16	13.75	1.00	1.31	31.93	18.46	1.09
4500	12.03	22.48	3.14	13.61	1.01	1.31	31.54	18.14	1.12
4600	11.82	22.39	3.10	13.48	1.02	1.31	32.13	18.47	1.06
4700	11.61	22.30	3.07	13.33	1.03	1.31	32.02	18.48	1.07
4800	11.40	22.24	3.04	13.19	1.04	1.31	31.38	18.19	1.28
4900	11.20	22.18	2.99	13.01	1.04	1.31	31.61	18.46	1.17
5000	10.98	22.11	2.95	12.81	1.05	1.31	32.58	18.48	1.12
5100	10.78	22.06	2.91	12.63	1.06	1.31	31.66	18.29	1.28
5200	10.58	21.96	2.86	12.47	1.06	1.31	31.74	18.16	1.50
5300	10.37	21.93	2.83	12.31	1.07	1.31	31.89	18.18	1.32
5400	10.18	21.85	2.78	12.18	1.08	1.32	31.79	18.00	1.48
5500	9.98	21.79	2.75	12.06	1.09	1.32	30.65	17.76	1.33
5600	9.80	21.71	2.71	11.94	1.09	1.32	31.34	18.08	1.31
5700	9.60	21.70	2.67	11.83	1.10	1.32	32.05	18.07	1.50
5800	9.42	21.60	2.63	11.68	1.10	1.32	31.57	18.11	1.36
5900	9.22	21.57	2.59	11.49	1.11	1.32	31.14	18.26	1.47
6000	9.04	21.51	2.55	11.33	1.11	1.32	31.76	18.16	1.51

Typical Performance Data

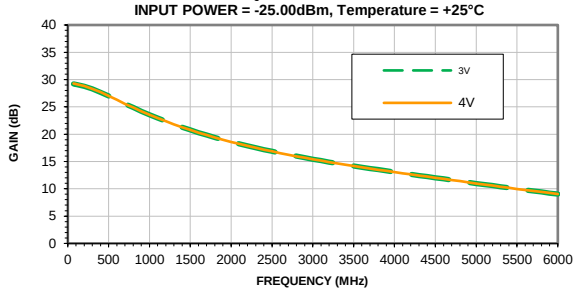
Definitions:
Input Return Loss = -S11 (dB)
Gain(Power Gain) = S21 (dB)
Reverse Isolation = -S12 (dB)
Output Return Loss = -S22 (dB)

TEST CONDITIONS: Vd = 4V @ Temperature = +25°C

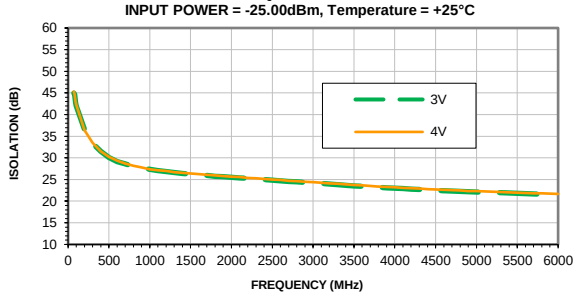
FREQ	Gain	Isolation	Input Return Loss	Output Return Loss	Stability		IP-3 Output	1dB Comp. Output	Noise Figure
(MHz)	(dB)	(dB)	(dB)	(dB)	K	Measure	(dBm)	(dBm)	(dB)
70	29.29	45.34	0.01	5.59	0.01	1.45	29.33	19.19	0.63
80	29.26	44.61	0.03	5.62	-0.01	1.45	29.53	19.29	0.60
90	29.24	42.93	0.03	5.65	0.04	1.44	30.18	19.55	0.69
100	29.21	42.31	0.04	5.69	0.03	1.45	30.21	19.59	0.59
200	28.83	36.36	0.21	6.06	0.07	1.44	31.50	19.62	0.59
300	28.31	33.50	0.44	6.51	0.10	1.44	31.66	19.54	0.56
400	27.70	31.51	0.72	7.05	0.14	1.42	31.25	19.92	0.59
500	27.01	30.24	1.01	7.63	0.18	1.41	31.98	19.73	0.62
600	26.31	29.35	1.26	8.19	0.21	1.40	32.14	20.03	0.63
700	25.58	28.69	1.53	8.76	0.25	1.39	31.96	20.14	0.67
800	24.89	28.14	1.73	9.26	0.28	1.38	32.40	20.21	0.55
900	24.21	27.77	1.92	9.78	0.31	1.37	32.89	20.33	0.51
1000	23.57	27.37	2.07	10.23	0.35	1.36	32.89	20.41	0.57
1100	22.95	27.17	2.21	10.69	0.38	1.36	32.74	20.30	0.46
1200	22.36	26.95	2.33	11.11	0.41	1.36	33.29	20.31	0.49
1300	21.80	26.71	2.42	11.48	0.44	1.36	32.92	20.38	0.47
1400	21.28	26.52	2.52	11.81	0.47	1.35	33.44	20.53	0.51
1500	20.77	26.40	2.59	12.12	0.50	1.35	33.13	20.40	0.47
1600	20.28	26.26	2.68	12.45	0.53	1.35	33.91	20.59	0.55
1700	19.83	26.10	2.72	12.73	0.56	1.35	33.33	20.55	0.58
1800	19.39	25.94	2.78	12.96	0.58	1.35	34.06	20.69	0.60
1900	18.97	25.78	2.83	13.20	0.61	1.35	33.33	20.63	0.68
2000	18.58	25.69	2.87	13.43	0.64	1.35	33.18	20.57	0.71
2100	18.20	25.57	2.91	13.61	0.66	1.35	34.09	20.82	0.63
2200	17.85	25.36	2.94	13.76	0.68	1.35	34.34	20.68	0.65
2300	17.50	25.26	2.98	13.92	0.70	1.35	34.48	20.69	0.72
2400	17.17	25.14	3.00	14.03	0.72	1.35	34.40	20.81	0.64
2500	16.85	25.01	3.02	14.18	0.74	1.35	33.96	20.73	0.66
2600	16.54	24.89	3.05	14.29	0.76	1.34	33.62	20.78	0.72
2700	16.25	24.72	3.08	14.37	0.78	1.34	33.99	20.74	0.78
2800	15.96	24.62	3.11	14.45	0.80	1.34	32.34	20.80	0.76
2900	15.69	24.50	3.14	14.47	0.81	1.34	34.26	20.92	0.83
3000	15.41	24.37	3.17	14.53	0.83	1.34	34.92	20.79	0.68
3100	15.15	24.22	3.18	14.59	0.84	1.34	33.32	20.82	0.84
3200	14.89	24.13	3.21	14.66	0.86	1.33	34.94	20.92	0.93
3300	14.65	24.02	3.23	14.74	0.88	1.33	33.75	20.96	0.87
3400	14.41	23.88	3.25	14.84	0.90	1.33	34.44	20.97	0.89
3500	14.18	23.75	3.25	14.88	0.91	1.33	34.48	20.99	0.88
3600	13.95	23.64	3.26	14.93	0.92	1.33	33.14	21.06	0.95
3700	13.72	23.53	3.27	14.98	0.94	1.33	33.63	20.83	0.91
3800	13.50	23.39	3.27	14.95	0.95	1.33	34.47	20.88	0.96
3900	13.28	23.28	3.27	14.95	0.96	1.33	34.55	20.84	0.98
4000	13.07	23.21	3.25	14.93	0.97	1.33	34.12	20.72	1.04
4100	12.85	23.07	3.24	14.89	0.98	1.33	34.36	20.98	1.10
4200	12.65	22.97	3.21	14.82	0.99	1.33	34.91	20.90	1.16
4300	12.43	22.89	3.19	14.72	1.00	1.33	34.25	20.88	1.04
4400	12.23	22.79	3.16	14.66	1.01	1.33	33.93	20.99	1.07
4500	12.02	22.69	3.14	14.54	1.02	1.33	34.28	20.73	1.08
4600	11.81	22.61	3.10	14.40	1.03	1.33	34.04	20.91	1.26
4700	11.60	22.53	3.06	14.26	1.04	1.34	34.43	20.84	1.20
4800	11.40	22.46	3.03	14.11	1.05	1.34	33.59	20.78	1.27
4900	11.19	22.36	2.99	13.91	1.05	1.34	34.73	20.92	1.47
5000	10.98	22.29	2.95	13.70	1.06	1.34	34.30	20.94	1.29
5100	10.77	22.24	2.91	13.52	1.07	1.34	33.44	20.87	1.36
5200	10.58	22.18	2.85	13.35	1.07	1.34	34.08	20.78	1.22
5300	10.37	22.13	2.83	13.17	1.08	1.34	33.92	20.79	1.53
5400	10.18	22.02	2.77	13.05	1.08	1.35	34.15	20.66	1.53
5500	9.98	21.99	2.74	12.93	1.09	1.35	34.06	20.46	1.63
5600	9.80	21.91	2.70	12.78	1.10	1.35	33.92	20.73	1.49
5700	9.60	21.84	2.67	12.66	1.11	1.35	34.75	20.34	1.50
5800	9.42	21.79	2.63	12.51	1.11	1.35	33.91	20.47	1.56
5900	9.23	21.72	2.59	12.31	1.11	1.35	33.61	20.62	1.75
6000	9.04	21.67	2.55	12.13	1.12	1.35	34.52	20.34	1.53

Typical Performance Curves

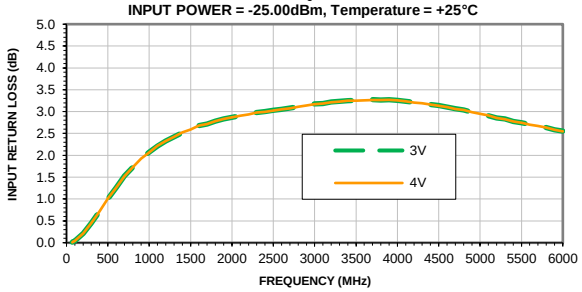
GAIN vs. FREQUENCY & DEVICE VOLTAGE
INPUT POWER = -25.00dBm, Temperature = +25°C



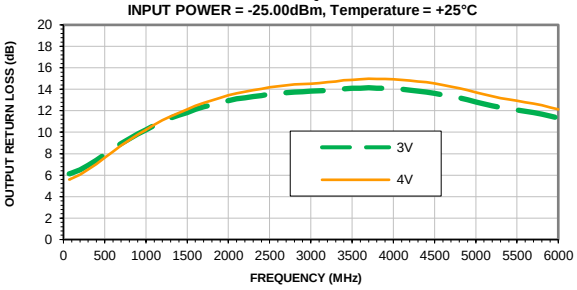
ISOLATION vs. FREQUENCY & DEVICE VOLTAGE
INPUT POWER = -25.00dBm, Temperature = +25°C



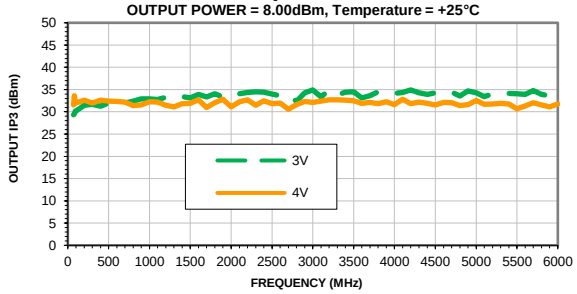
INPUT RETURN LOSS vs. FREQUENCY & DEVICE VOLTAGE
INPUT POWER = -25.00dBm, Temperature = +25°C



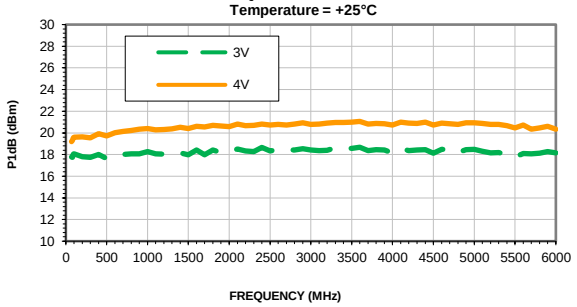
OUTPUT RETURN LOSS vs. FREQUENCY & DEVICE VOLTAGE
INPUT POWER = -25.00dBm, Temperature = +25°C



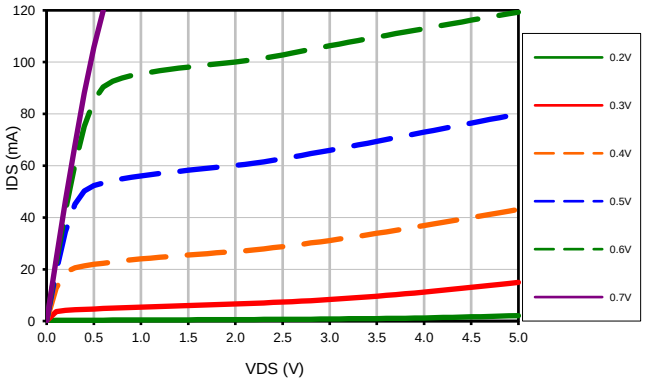
OUTPUT IP3 vs. FREQUENCY & DEVICE VOLTAGE
OUTPUT POWER = 8.00dBm, Temperature = +25°C



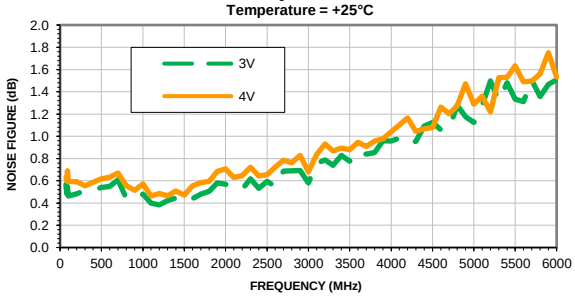
P1dB vs. FREQUENCY & DEVICE VOLTAGE
Temperature = +25°C



I-V (VGS=0.1V PER STEP) (2)



NOISE FIGURE vs. FREQUENCY & DEVICE VOLTAGE
Temperature = +25°C

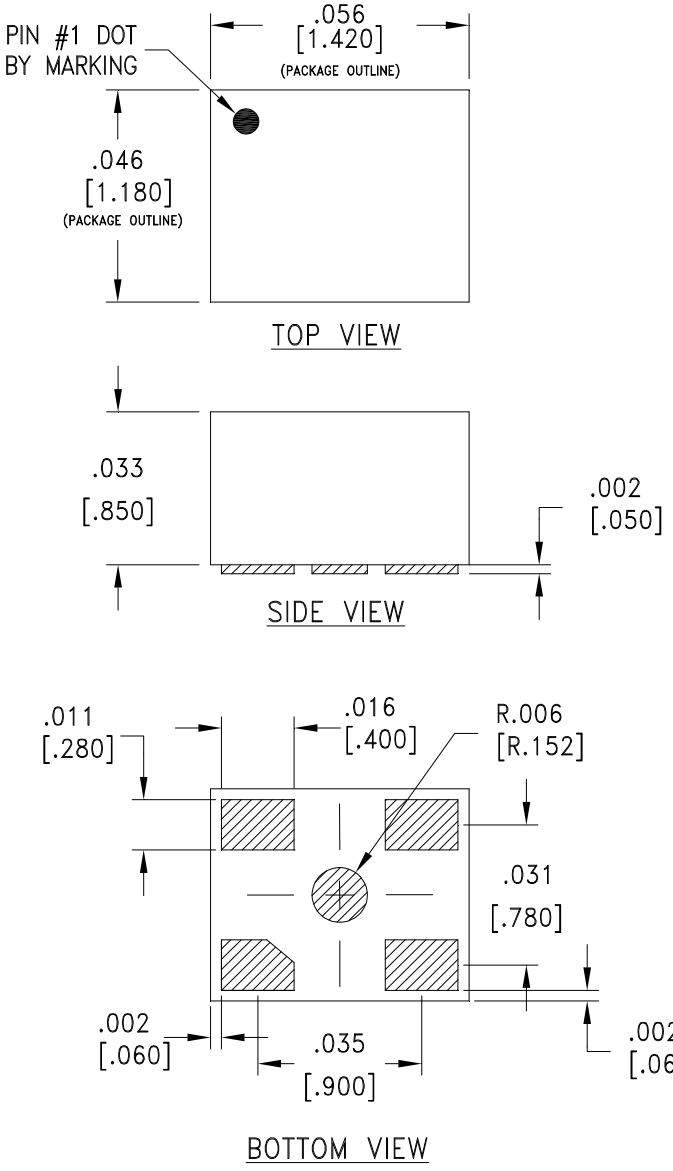


(1) Includes test board loss

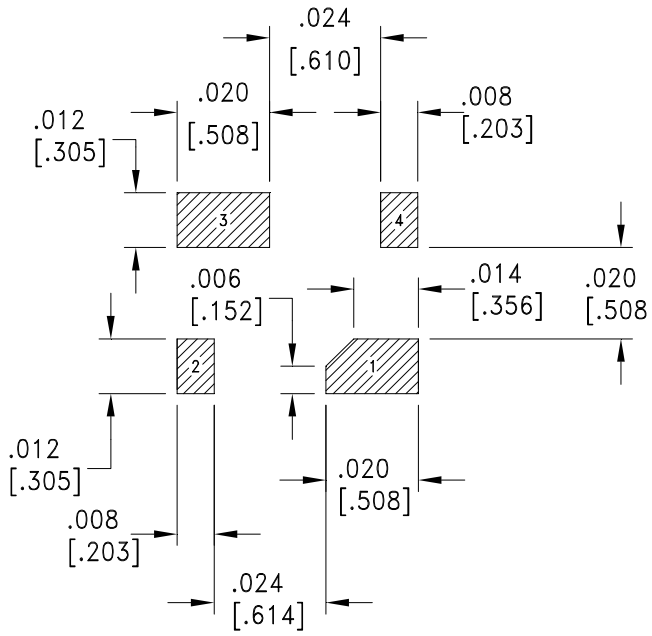
Case Style TE

Outline Dimensions

TE2769



PCB Land Pattern



Suggested Layout,
Tolerance to be within ±.002

Weight: .0047 grams

Dimensions are in inches (mm). Tolerances: 2 Pl. ± .01; 3 Pl. ± .005

Notes:

1. Case material: Plastic.
2. Termination finish:

   For RoHS Case Styles: Matte-Tin plate.

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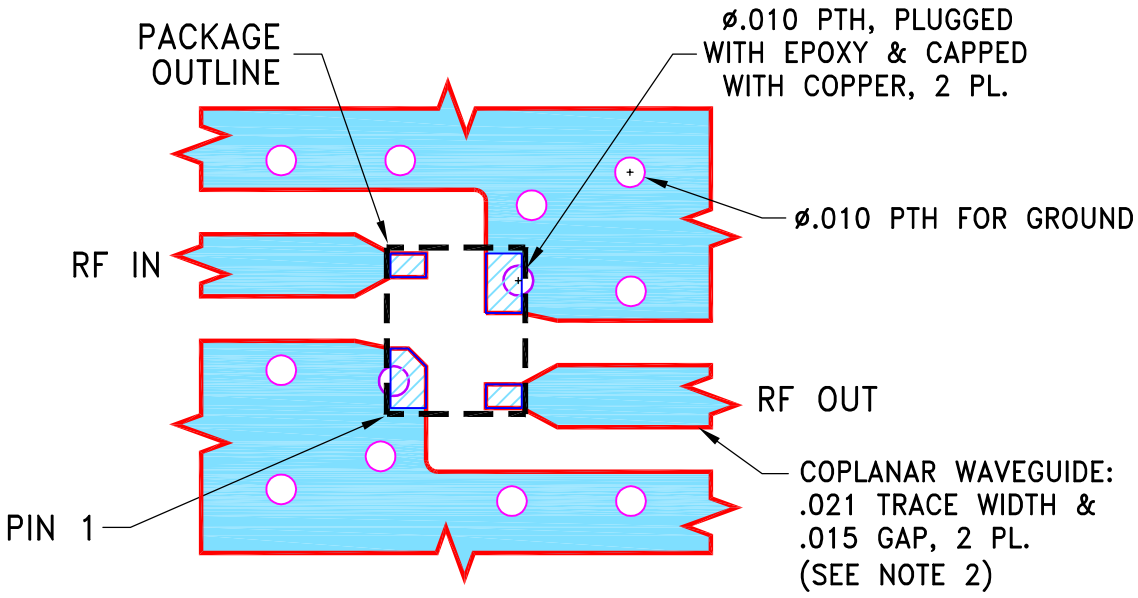
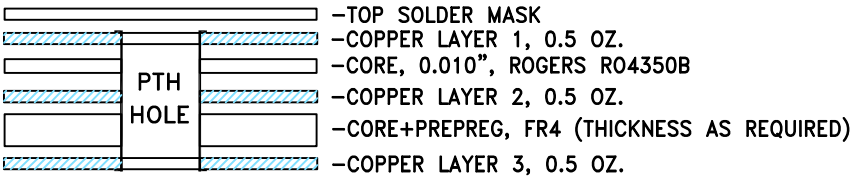
THIRD ANGLE PROJECTION

REVISIONS					
REV	ECN No.	DESCRIPTION	DATE	DR	AUTH
OR	ECO-001106	NEW RELEASE	12/18/19	ITG	GH

SUGGESTED MOUNTING CONFIGURATION FOR TE2769 CASE STYLE



STACK-UP DIAGRAM



1. TOTAL FINISHED THICKNESS 0.065" ± 10%.
2. PTH HOLES PRESENT FROM COPPER LAYER 1 TO 3.

NOTES:

1. PCB IS MULTILAYER PCB, SEE STACK-UP DIAGRAM.
2. TRACE WIDTH & GAP ARE SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS .010±.001". COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH & GAP MAY NEED TO BE MODIFIED.
3. UNIT FOOT PRINT IS OPTIMIZED FOR PERFORMANCE AND IS DIFFERENT FROM CASE STYLE TE2769 RECOMMENDATIONS.
4. LAYERS 2 & 3 OF THE PCB ARE CONTINUOUS GROUND PLANE.

DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER).

DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK.

UNLESS OTHERWISE SPECIFIED		INITIALS	DATE
DIMENSIONS ARE IN INCHES	DRAWN	ITG	12/18/19
TOLERANCES ON:	CHECKED	GF	12/18/19
2 PL DECIMALS ±	APPROVED	GH	12/18/19
3 PL DECIMALS ± .005			
ANGLES ±			
FRACTIONS ±			

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ASHEETA1.DWG REV:A DATE:01/12/95

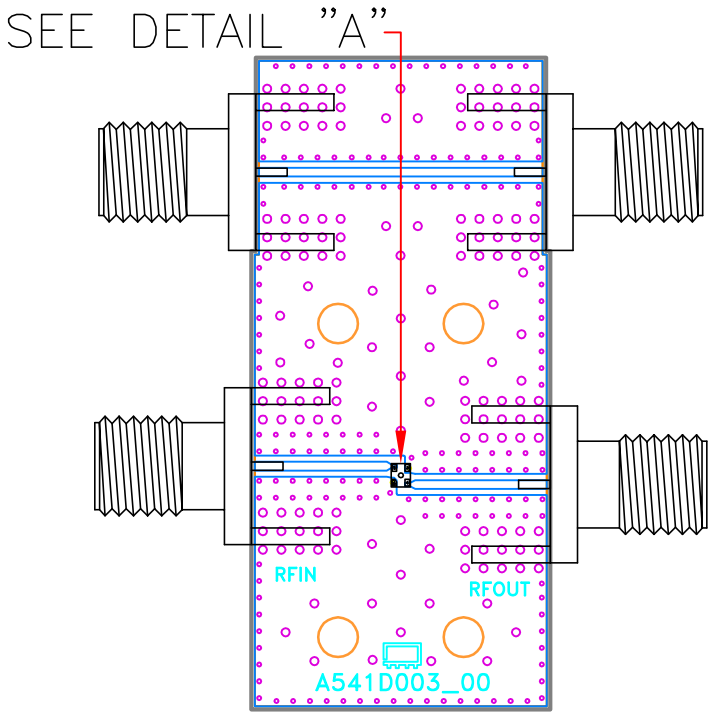
Mini-Circuits® 13 Neptune Avenue Brooklyn NY 11235

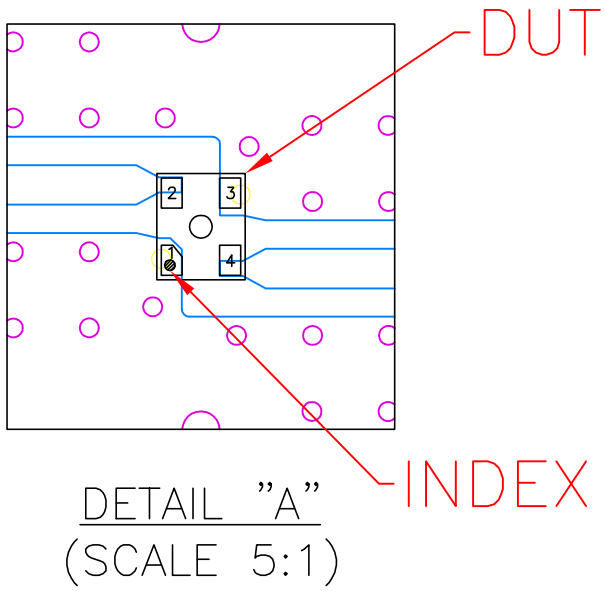
PL, TE2769, TB-TAVI-541+

SIZE	CODE IDENT	DRAWING NO:	REV:
A	15542	98-PL-665	OR

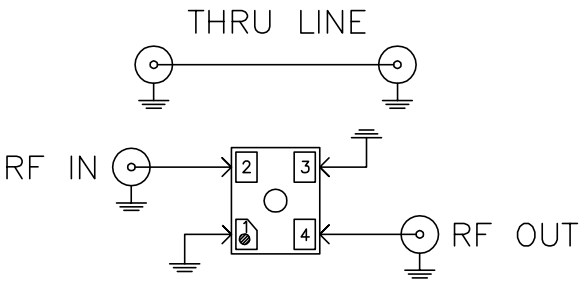
FILE:	SCALE:	SHEET:
98PL665	15:1	1 OF 1

Evaluation Board and Circuit





DETAIL "A"
(SCALE 5:1)



SCHEMATIC DIAGRAM
(SCALE 5:1)

Function	Pad
RF IN	2
RF OUT	4
GND	1,3

Notes:

1. 50 Ohm SMA Female Connectors.
2. PCB Material: Roger RO4350B or equivalent, Dielectric constant=3.5, Thickness=0.01 inch

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Environmental Specifications **ENV08T2**

All Mini-Circuits products are manufactured under exacting quality assurance and control standards, and are capable of meeting published specifications after being subjected to any or all of the following physical and environmental test.

Specification	Test/Inspection Condition	Reference/Spec
Operating Temperature	-45° to 85°C or -40° to 85°C Ambient Environment	Individual Model Data Sheet
Storage Temperature	-65° to 150° C Ambient Environment	Individual Model Data Sheet
Thermal Shock	-55° to 100°C, 100 cycles	MIL-STD-202, Method 107, Condition A-3, except +100°C
Mechanical Shock	1.5Kg, 0.5 ms, 5 shock pulses, Y1 direction only	MIL-STD-883, Method 2002, Condition B, except Y1 direction only
Vibration (Variable Frequency)	50g peak	MIL-STD-883, Method 2007, Condition B
Autoclave	15 psig, 100% RH, 121°C, 96 hours	JESD22-A102, Condition C
HAST	130°C, 85% RH, 96 hours	JESD22-A110
Solderability	10X Magnification	J-STD-002, Para 4.2.5, Test S, 95% Coverage
Solder Reflow Heat	Sn-Pb Eutetic Process: 240°C peak Pb-Free Process: 260°C peak	J-STD-020, Table 4-1, 4-2 and 5-2; Figure 5-1
Moisture Sensitivity: Level 1	Bake at 125°C for 24 hours Soak at 85°C/85% RH for 168 hours, Reflow 3 cycles at 260°C peak	J-STD-020
Marking Resistance to Solvents	Isopropyl alcohol + mineral spirits at 25°C; terpene defluxer at 25°C; distilled water + proylene glycol monomethyl ether +	MIL-STD-202, Method 215

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All Mini-Circuits products are manufactured under exacting quality assurance and control standards, and are capable of meeting published specifications after being subjected to any or all of the following physical and environmental test.

Specification	Test/Inspection Condition	Reference/Spec
	monoethanolamine at 63°C to 70°C	

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