TELEDYNE
MICROWAVE SOLUTIONS
Everywhereyoulook™

Thin-Film Cascadable Amplifier 100 to 2000 MHz

Technical Data

UTO/UTC 2025 Series

Features

- **Frequency Range: 100 to 2000 MHz**
- **High Dynamic Range**
- **Medium Gain: 11.0 dB (Typ)**
- **Low Noise: 3.0 dB (Typ)**
- **High Power: +27 dBm (Typ)**
- **Temperature Compensated**

Applications

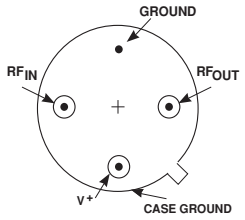
- **Power AMP Driver**
- **High Intercept Requirements**

Description

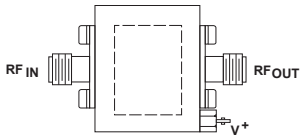
The 2025 Series is a wideband, high-power GaAs FET RF amplifier. The combination of high output power and low noise figure provide a unit with very high dynamic range. Active bias and resistive feedback provide for stability over temperature and bias voltage variations. Input/output blocking capacitors couple the RF through the amplifier, while a low VSWR is maintained through inductive tuning. The 2025 Series amplifiers are available in either the TO-8 hermetic case or connectored TC-1A package.

Pin Configuration

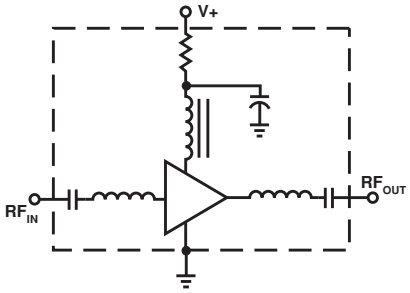
UTO—TO-8T



UTC—TC-1A



Schematic



Maximum Ratings

Parameter	Maximum
DC Voltage	+17 Volts
Continuous RF Input Power	+19 dBm
Operating Case Temperature	–55 to +100°C
Storage Temperature	–62 to +150°C
"R" Series Burn-In Temperature	+100°C

Thermal Characteristics[1]

θ_{JC}	36°C/W
Active Transistor Power Dissipation	1.28 W
Junction Temperature Above Case Temperature	46°C
MTBF (MIL-HDBK-217E, A_{UF} @ 90°C)	217,400 Hrs.

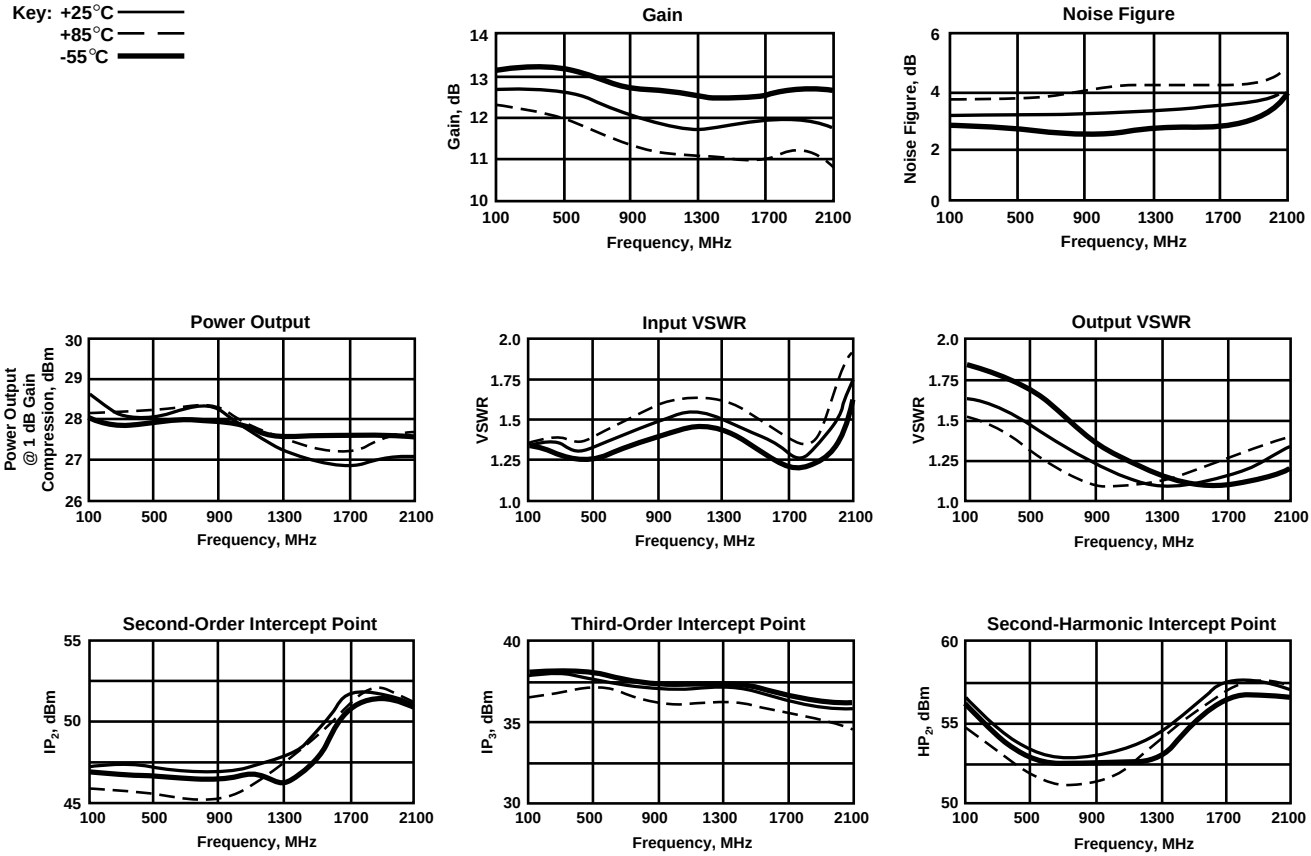
Weight: (typical) UTO—2.1 grams; UTC—21.5 grams

Electrical Specifications

(Measured in 50 Ω system @ +15 VDC nominal unless otherwise noted)

Symbol	Characteristic	Typical	Guaranteed Specifications		Unit
		T_C = 25°C	T_C = 0 to 50°C	T_C = –55 to +85°C	
BW	Frequency Range	100-2000	100-2000	100-2000	MHz
GP	Small Signal Gain (Min.)	11.0	9.5	9.0	dB
—	Gain Flatness (Max.)	±0.3	±1.0	±1.0	dB
NF	Noise Figure (Max.)	3.0	4.5	5.5	dB
P_{1dB}	Power Output @ +1 dB Comp. (Min.)	+27.0	+25.0	+24.0	dBm
—	Input VSWR (Max.)	1.8:1	2.0:1	2.2:1	—
—	Output VSWR (Max.)	1.6:1	2.0:1	2.2:1	—
IP_3	Two Tone 3rd Order Intercept Point	+37.0	+33.0	+32.0	dBm
IP_2	Two Tone 2nd Order Intercept Point	+47.0	—	—	dBm
HP_2	One Tone 2nd Harmonic Intercept Point	+53.0	—	—	dBm
I_D	DC Current	175	—	—	mA

Typical Performance Over Temperature (@ +15 VDC unless otherwise noted)



Automatic Network Analyzer Measurements (Typical production unit @ +25°C ambient)

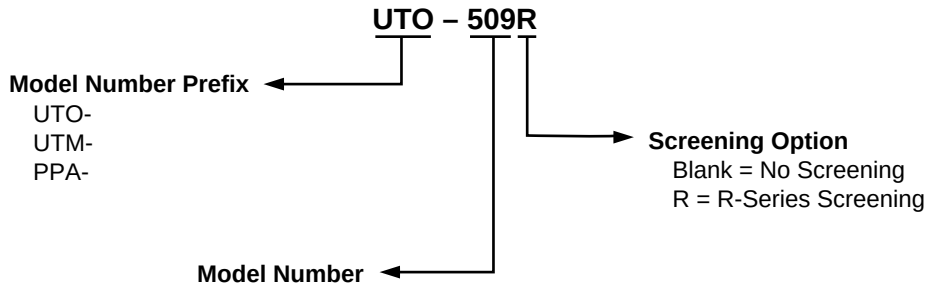
Bias = 15.00 Volts
Current = 174.00 mA

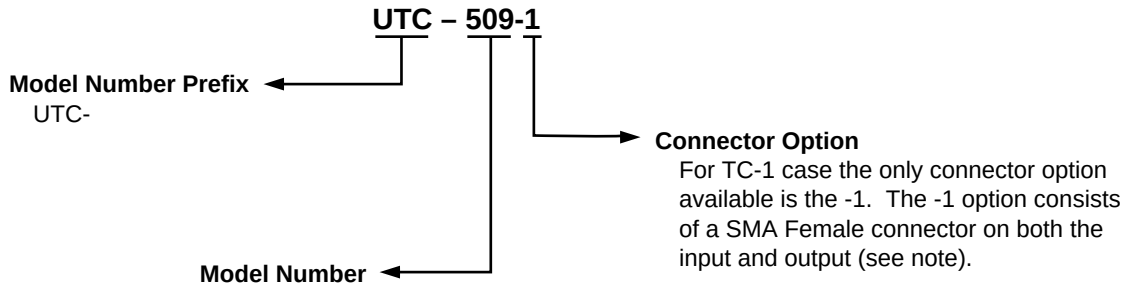
S-Parameters

FREQ	S_{11}		S_{21}		S_{12}		S_{22}			GPDEL	PHASE
GHz	Mag	Ang	dB	Ang	dB	Ang	Mag	Ang	K	ns	DEG
.100	.14	–84.7	12.4	178.2	–19.0	–16.1	.25	–154.60	1.19	.42	4.85
.200	.11	–98.5	12.5	163.1	–19.5	–19.9	.24	179.85	1.25	.42	.24
.300	.11	–106.2	12.4	151.2	–19.7	–25.6	.23	165.70	1.28	.33	–1.20
.400	.12	–113.1	12.4	140.2	–19.8	–32.2	.22	155.30	1.31	.31	–1.81
.500	.14	–119.1	12.3	129.4	–20.0	–38.9	.20	145.84	1.34	.30	–2.10
.600	.15	–126.1	12.2	119.0	–20.2	–46.0	.18	137.12	1.38	.29	–2.07
.700	.17	–131.9	12.0	108.8	–20.3	–52.5	.15	128.88	1.41	.28	–1.78
.800	.18	–138.3	11.9	98.6	–20.5	–59.9	.12	120.30	1.45	.28	–1.56
.900	.20	–144.4	11.8	88.7	–20.7	–67.5	.09	110.25	1.49	.27	–.91
1.000	.21	–151.2	11.7	79.0	–20.8	–75.1	.07	99.02	1.54	.27	–.15
1.100	.22	–158.8	11.6	69.4	–21.1	–83.0	.04	81.92	1.58	.27	.69
1.200	.22	–167.1	11.5	59.6	–21.3	–91.2	.03	47.01	1.63	.27	1.39
1.300	.21	–176.1	11.5	49.6	–21.6	–99.2	.03	5.14	1.68	.28	1.78
1.400	.19	175.1	11.5	39.3	–21.9	–107.6	.05	–20.27	1.74	.29	1.96
1.500	.17	164.3	11.5	28.9	–22.1	–116.2	.06	–33.91	1.79	.29	2.06
1.600	.15	149.9	11.5	18.7	–22.3	–125.5	.07	–42.38	1.84	.28	2.29
1.700	.13	125.3	11.6	8.1	–22.5	–136.7	.06	–41.62	1.87	.29	2.17
1.800	.11	83.3	11.7	–3.9	–23.0	–148.1	.07	–33.15	1.95	.33	.66
1.900	.13	36.2	11.7	–16.8	–23.6	–159.1	.09	–34.26	2.05	.36	–1.81
2.000	.19	3.8	11.7	–30.1	–24.3	–170.1	.11	–42.50	2.18	.37	–4.68
2.100	.27	–17.4	11.5	–44.2	–25.0	178.7	.12	–56.05	2.30		
2.200	.36	–33.7	11.2	–58.9	–25.8	166.6	.13	–74.23	2.43		
2.300	.45	–47.7	10.8	–74.0	–26.9	153.9	.15	–95.76	2.62		
2.400	.53	–60.3	10.1	–89.3	–28.2	141.3	.18	–119.16	2.91		
2.500	.61	–71.9	9.2	–104.3	–29.9	129.0	.22	–140.94	3.37		
2.600	.67	–82.8	8.1	–118.8	–31.9	117.0	.27	–159.57	4.07		
2.700	.72	–93.0	6.8	–132.2	–34.7	105.7	.32	–175.10	5.51		
2.800	.76	–102.5	5.4	–144.2	–38.5	97.0	.36	171.81	8.54		
2.900	.79	–111.7	3.9	–155.0	–45.5	98.9	.40	160.79	19.57		
3.000	.81	–120.4	2.4	–164.1	–50.0	170.3	.42	151.48	34.63		
3.100	.82	–129.1	.9	–171.2	–42.6	–160.6	.43	143.46	16.06		
3.200	.82	–137.8	–.4	–178.6	–38.7	–164.4	.43	136.41	11.60		
3.300	.82	–146.5	–1.6	175.7	–36.0	–172.8	.42	130.31	9.76		
3.400	.82	–155.2	–2.6	170.6	–34.5	179.1	.40	124.76	9.47		
3.500	.82	–164.0	–3.4	165.0	–33.4	169.0	.37	119.78	9.50		
3.600	.82	–173.2	–4.1	159.1	–32.7	159.5	.34	115.25	9.79		
3.700	.82	177.8	–4.7	152.5	–32.1	150.0	.31	111.05	10.15		
3.800	.82	168.4	–5.3	144.9	–31.9	139.3	.29	107.01	10.70		
3.900	.82	159.0	–5.9	136.7	–31.8	129.7	.26	102.96	11.42		
4.000	.83	149.6	–6.5	127.6	–31.9	118.1	.24	99.62	12.38		

LINEARIZATION RANGE: .10 to 2.00 GHz

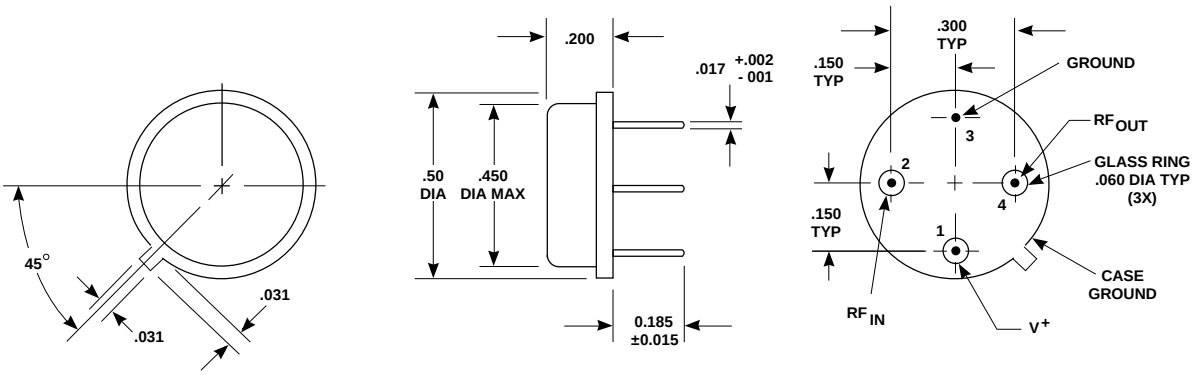
Product Options





Note: R-Series screening is not available in the TC-1 case as the case is non-hermetic.

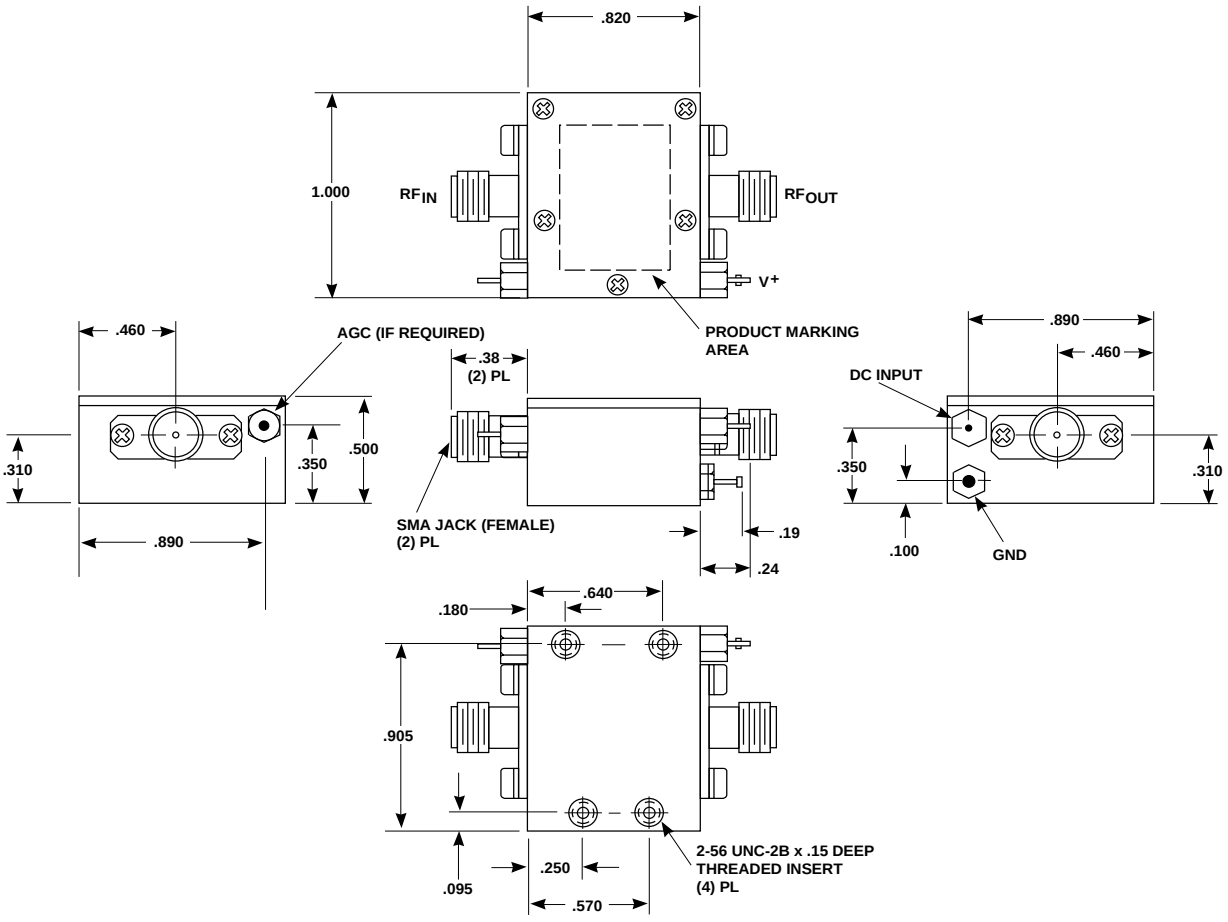
Case Drawings
TO-8T



APPROXIMATE WEIGHT 2.1 GRAMS

NOTES (UNLESS OTHERWISE SPECIFIED):
1. DIMENSIONS ARE SPECIFIED IN INCHES
2. TOLERANCES: xx ± .02
   xxx ± .010

Case Drawings
TC-1



TYPICAL WEIGHT WITH CONNECTORS = 21.5 GRAMS

NOTES: 1. THE TC-1 CASE IS A NON-HERMETIC CASE.
2. THE ONLY CONNECTOR OPTION AVAILABLE FOR THE TC-1 CASE IS THE –1, SMA FEMALE CONNECTORS AT BOTH INPUT AND OUTPUT PORTS.

NOTES (UNLESS OTHERWISE SPECIFIED):
1. DIMENSIONS ARE SPECIFIED IN INCHES
2. TOLERANCES: xx ±.02
xxx ±.010

Contact Teledyne Microwave Solutions:
650-691-9800
650-962-6845 fax

Check for updates:
www.teledynemicrowave.com