

## Avantek Products

# High Efficiency, Class A, 1 Watt Amplifier 10 to 500 MHz

## Technical Data

### CTO-565

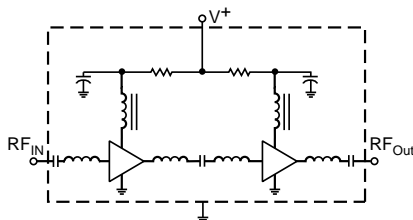
#### Features

- **1 Watt Output Power**
- **Low Current: 450 mA**
- **High Gain: 19.5 dB Typ**
- **18 Volt Bias**
- **Unconditionally Stable**
- **Guaranteed Performance @ 25°C**
- **TO-3**

#### Applications

- **UHF/VHF Transmitters**
- **Communication Circuits**
- **Instrumentation**
- **Mobile Radio**
- **CATV**

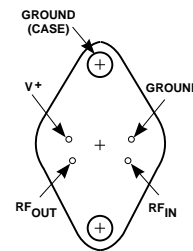
#### Schematic



#### Description

The CTO-565 is a high gain, high efficiency, Class A 1 Watt amplifier designed to provide broad-band power for a wide variety of applications. This two stage hybrid amplifier uses silicon bipolar transistors and incorporates input/output blocking capacitors, bias circuitry, and is matched to 50  $\Omega$  for easy integration with other components (no external components required for operation). Available packaging for this unit is the industry standard TO-3 case.

#### Pin Configuration CTO—TO-3



#### Maximum Ratings

Parameter	Maximum
DC Voltage	+20 Volts
Continuous RF Input Power	+17 dBm
Operating Case Temperature	-55 to +85°C
Storage Temperature	-62 to +150°C

#### Thermal Characteristics

$\theta_{JC}$	45°C/W, 45°C/W <sup>1</sup>
Active Transistor Power Dissipation	1.1 W, 1.3 W <sup>1</sup>
Junction Temperature Above Case Temperature	50°C, 59°C <sup>1</sup>

Note:

1. Values refer to first and second stages, respectively.

**Weight:** (typical) CTO—14.5 grams

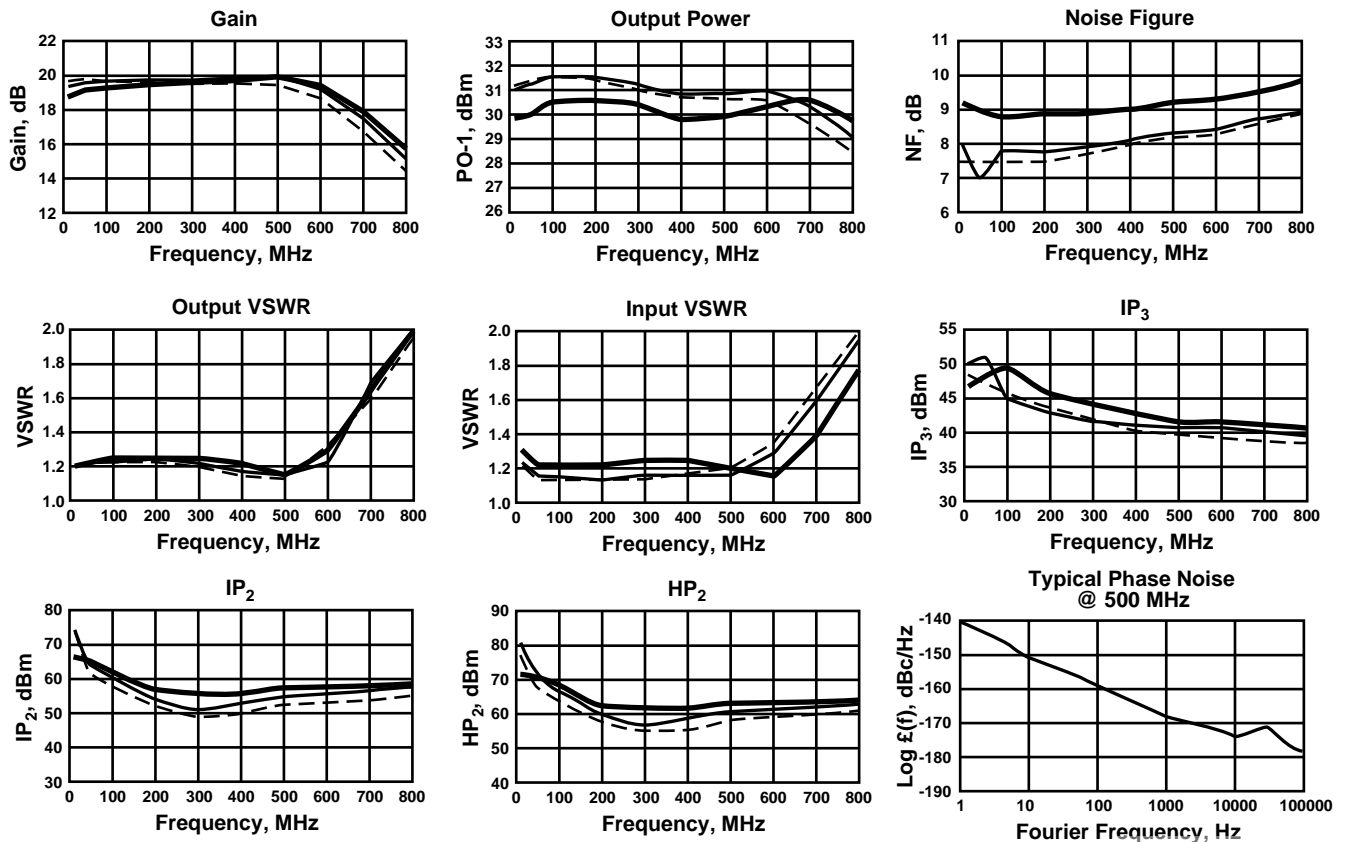
## Electrical Specifications

$T_C=25^\circ\text{C}$  (Measured in  $50\ \Omega$  system  $V_{CC}=+18\text{V}$  unless otherwise noted)

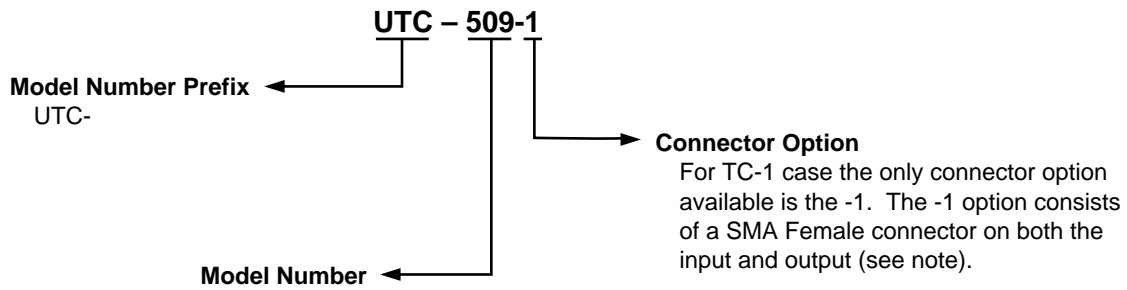
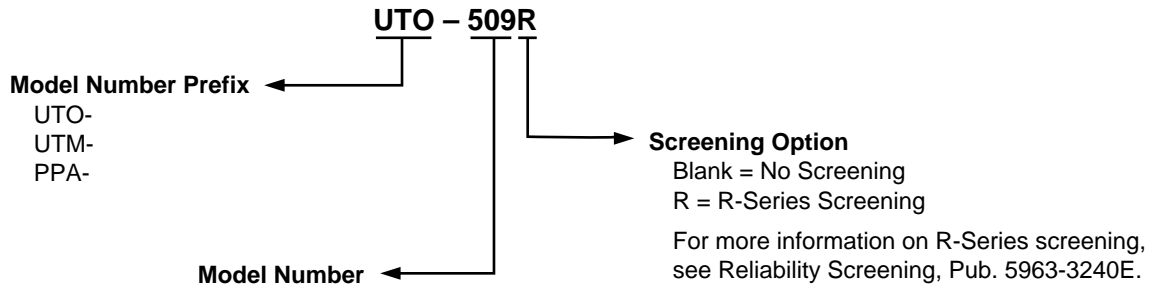
Symbol	Characteristic	Min.	Typ.	Max.	Unit
BW	Frequency Range	10	—	500	MHz
GP	Small Signal Gain (Min.)	17.5	19.5	—	dB
—	Gain Flatness (Max.)	—	$\pm 0.3$	$\pm 0.7$	dB
NF	Noise Figure (Max.)	—	8	10	dB
$P_{1\text{dB}}$	Power Output @ +1 dB Comp. (Min.)	+29.5	+30.5	—	dBm
—	Input VSWR (Max.)	—	1.3:1	2.0:1	—
—	Output VSWR (Max.)	—	1.3:1	2.0:1	—
$IP_3$	Two Tone 3rd Order Intercept Point	—	+41	—	dBm
$IP_2$	Two Tone 2nd Order Intercept Point	—	+51	—	dBm
$HP_2$	One Tone 2nd Harmonic Intercept Point	—	+57	—	dBm
$I_D$	DC Current	—	450	—	mA
—	3 Tone Intermodulation Distortion ( $F_1=250\ \text{MHz}, +15\ \text{dBm}$ ; $F_2=254\ \text{MHz}, +6\ \text{dBm}$ ; $F_3=255\ \text{MHz}, +13\ \text{dBm}$ )	—	-61	—	dBc
—	Phase Noise @ 500 MHz; 1 kHz Offset	—	-165	—	dBc/Hz

## Typical Performance Over Temperature (@ +18 VDC unless otherwise noted)

Key: +25°C —  
+85°C - -  
-55°C —

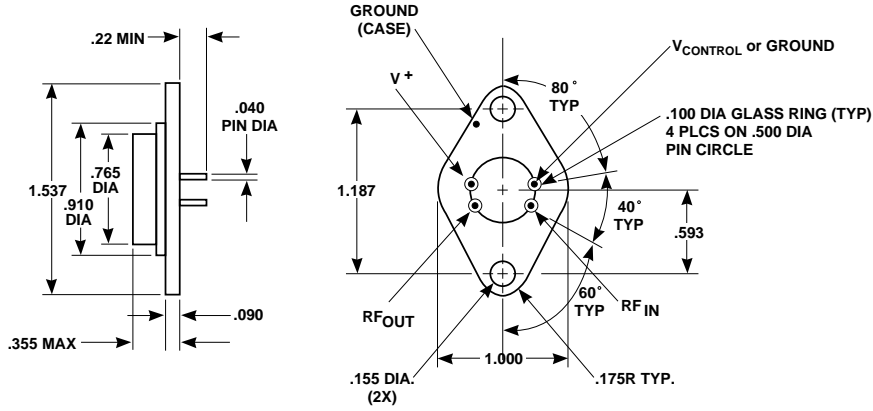


### Product Options



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

**Case Drawings  
TO-3**



APPROXIMATE WEIGHT 14.5 GRAMS

**NOTES (UNLESS OTHERWISE SPECIFIED):**

1. DIMENSIONS ARE SPECIFIED IN INCHES
2. TOLERANCES: xx ± .02  
xxx ± .010

For more information:

United States\*

Europe\*

Far East/Australasia: (65) 290-6305

Canada: (416) 206-4725

Japan: (81 3) 3331-6111

\*Call your local HP sales office listed in your telephone directory. Ask for a Components representative.

Data Subject to Change  
Copyright © 1995 Hewlett-Packard Co.