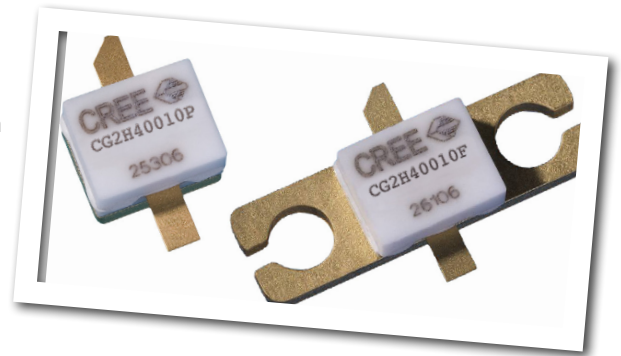


CG2H40010

10 W, DC - 6 GHz, RF Power GaN HEMT

Cree's CG2H40010 is an unmatched, gallium nitride (GaN) high electron mobility transistor (HEMT). The CG2H40010, operating from a 28 volt rail, offers a general purpose, broadband solution to a variety of RF and microwave applications. GaN HEMTs offer high efficiency, high gain and wide bandwidth capabilities making the CG2H40010 ideal for linear and compressed amplifier circuits. The transistor is available in both screw-down, flange and solder-down, pill packages.



Package Types: 440166, & 440196
PN's: CG2H40010F & CG2H40010P

FEATURES

- Up to 8 GHz Operation
- 18 dB Small Signal Gain at 2.0 GHz
- 16 dB Small Signal Gain at 4.0 GHz
- 17 W typical P_{SAT}
- 70 % Efficiency at P_{SAT}
- 28 V Operation

APPLICATIONS

- 2-Way Private Radio
- Broadband Amplifiers
- Cellular Infrastructure
- Test Instrumentation
- Class A, AB, Linear amplifiers suitable for OFDM, W-CDMA, EDGE, CDMA waveforms



Absolute Maximum Ratings (not simultaneous) at 25°C Case Temperature

| Parameter | Symbol | Rating | Units | Conditions |
|---|-----------------|-----------|-------|------------|
| Drain-Source Voltage | V_{DS} | 120 | Volts | 25°C |
| Gate-to-Source Voltage | V_{GS} | -10, +2 | Volts | 25°C |
| Storage Temperature | T_{STG} | -65, +150 | °C | |
| Operating Junction Temperature | T_J | 225 | °C | |
| Maximum Forward Gate Current | I_{GMAX} | 4.0 | mA | 25°C |
| Maximum Drain Current ¹ | I_{DMAX} | 1.5 | A | 25°C |
| Soldering Temperature ² | T_S | 245 | °C | |
| Screw Torque | τ | 60 | in-oz | |
| Thermal Resistance, Junction to Case ³ | $R_{\theta JC}$ | 8.0 | °C/W | 85°C |
| Case Operating Temperature ^{3,4} | T_C | -40, +150 | °C | |

Note:

¹ Current limit for long term, reliable operation

² Refer to the Application Note on soldering at www.cree.com/RF/Document-Library

³ Measured for the CG2H40010F at $P_{DISS} = 14$ W.

⁴ See also, the Power Dissipation De-rating Curve on Page 6.

Electrical Characteristics ($T_C = 25^\circ\text{C}$)

| Characteristics | Symbol | Min. | Typ. | Max. | Units | Conditions |
|--|--------------|------|-------|--------|----------|--|
| DC Characteristics¹ | | | | | | |
| Gate Threshold Voltage | $V_{GS(th)}$ | -3.8 | -3.0 | -2.3 | V_{DC} | $V_{DS} = 10$ V, $I_D = 3.6$ mA |
| Gate Quiescent Voltage | $V_{GS(Q)}$ | - | -2.7 | - | V_{DC} | $V_{DS} = 28$ V, $I_D = 100$ mA |
| Saturated Drain Current | I_{DS} | 2.9 | 3.5 | - | A | $V_{DS} = 6.0$ V, $V_{GS} = 2.0$ V |
| Drain-Source Breakdown Voltage | V_{BR} | 120 | - | - | V_{DC} | $V_{GS} = -8$ V, $I_D = 3.6$ mA |
| RF Characteristics² ($T_C = 25^\circ\text{C}$, $F_0 = 3.7$ GHz unless otherwise noted) | | | | | | |
| Small Signal Gain | G_{SS} | - | 16.5 | - | dB | $V_{DD} = 28$ V, $I_{DQ} = 100$ mA |
| Power Output ³ | P_{SAT} | - | 16.5 | - | W | $V_{DD} = 28$ V, $I_{DQ} = 100$ mA |
| Drain Efficiency ⁴ | η | - | 75 | - | % | $V_{DD} = 28$ V, $I_{DQ} = 100$ mA, P_{SAT} |
| Output Mismatch Stress | VSWR | - | - | 10 : 1 | Ψ | No damage at all phase angles, $V_{DD} = 28$ V, $I_{DQ} = 100$ mA, $P_{OUT} = 16$ W CW |
| Dynamic Characteristics | | | | | | |
| Input Capacitance | C_{GS} | - | 4.15 | - | pF | $V_{DS} = 28$ V, $V_{gs} = -8$ V, $f = 1$ MHz |
| Output Capacitance | C_{DS} | - | 1.58 | - | pF | $V_{DS} = 28$ V, $V_{gs} = -8$ V, $f = 1$ MHz |
| Feedback Capacitance | C_{GD} | - | 0.186 | - | pF | $V_{DS} = 28$ V, $V_{gs} = -8$ V, $f = 1$ MHz |

Notes:

¹ Measured on wafer prior to packaging.

² Measured in CG2H40010-AMP.

³ P_{SAT} is defined as $I_G = 0.36$ mA.

⁴ Drain Efficiency = P_{OUT} / P_{DC}

Typical Performance

Figure 1. - Small Signal Gain and Return Loss vs Frequency of the CG2H40010 in the CG2H40010-AMP
 $V_{DD} = 28\text{ V}, I_{DQ} = 100\text{ mA}$

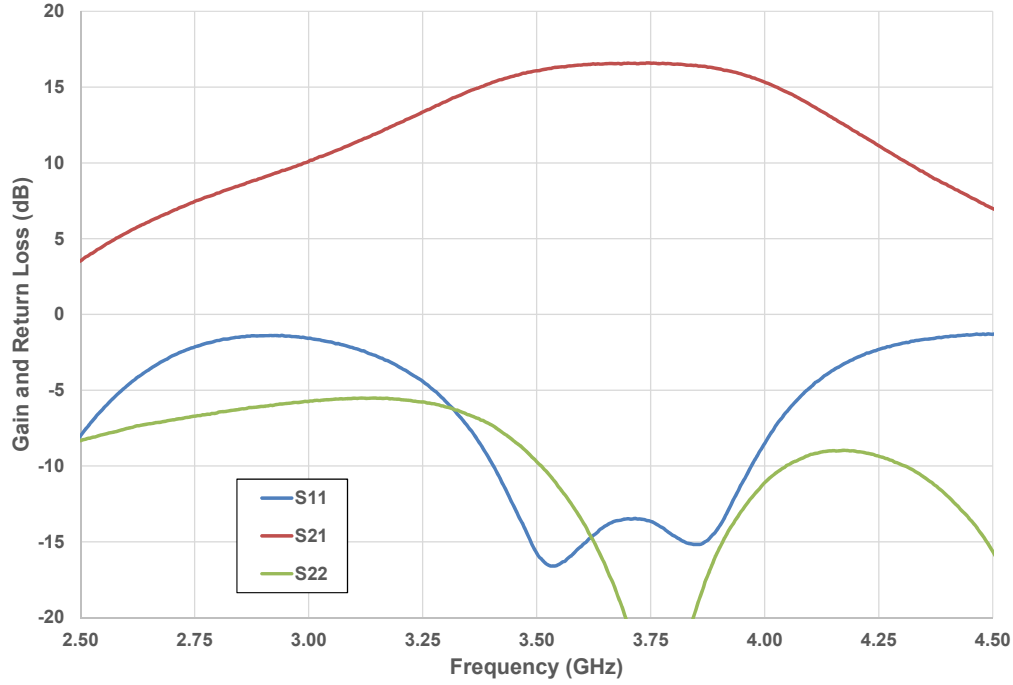
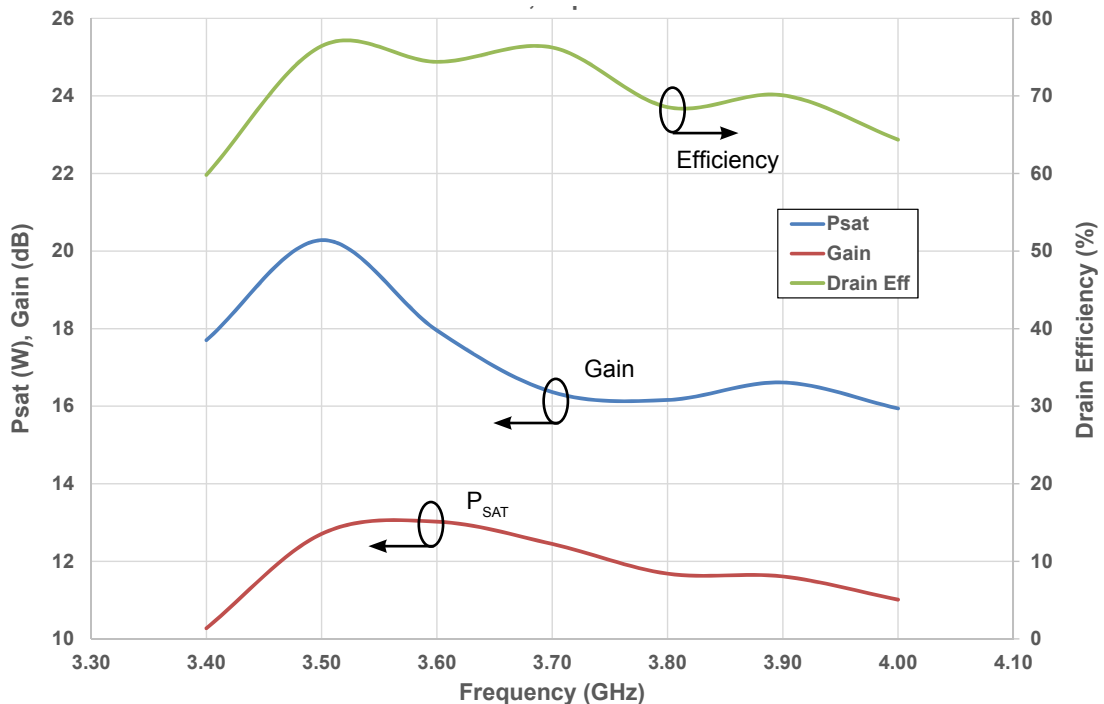
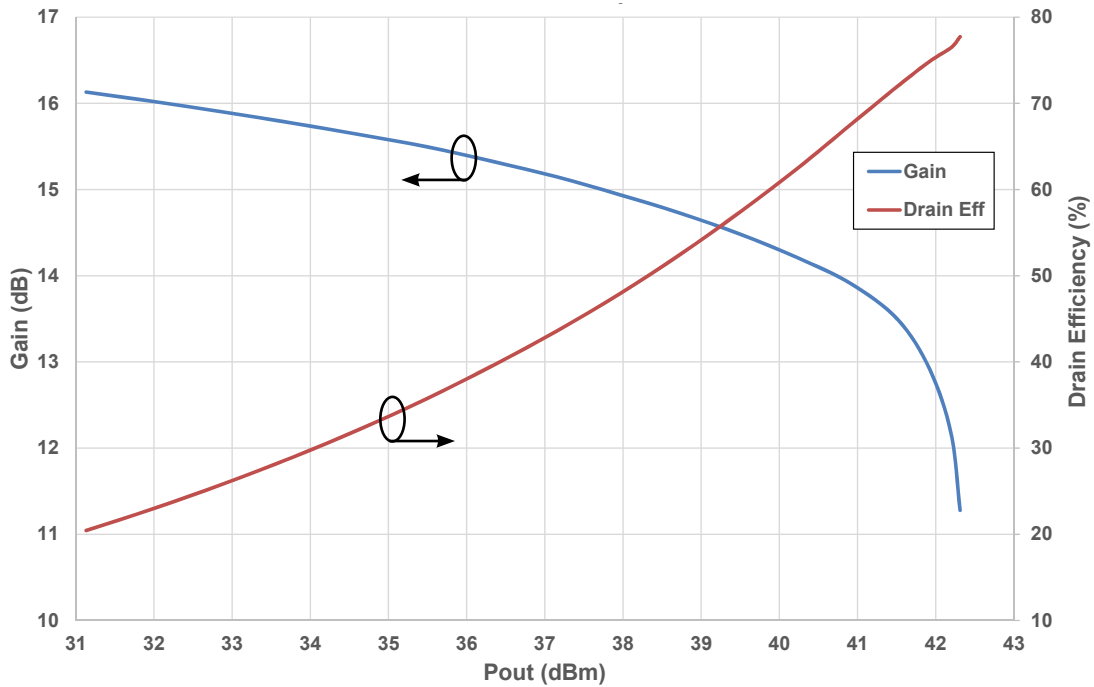


Figure 2. - P_{SAT} Gain, and Drain Efficiency vs Frequency of the CG2H40010F in the CG2H40010-AMP
 $V_{DD} = 28\text{ V}, I_{DQ} = 100\text{ mA}$

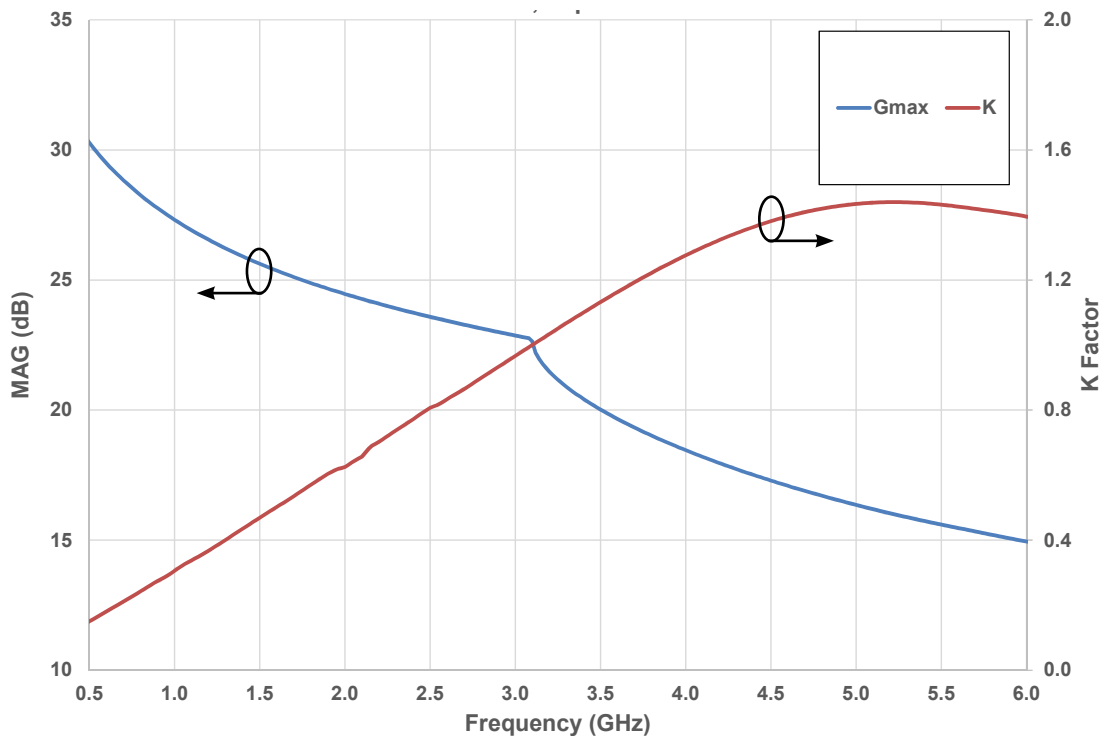


Typical Performance

**Figure 3. - Swept CW Data of CG2H40010F vs. Output Power
Measured in CG2H40010-AMP at 3.7 GHz
 $V_{DD} = 28\text{ V}, I_{DQ} = 100\text{ mA}$**

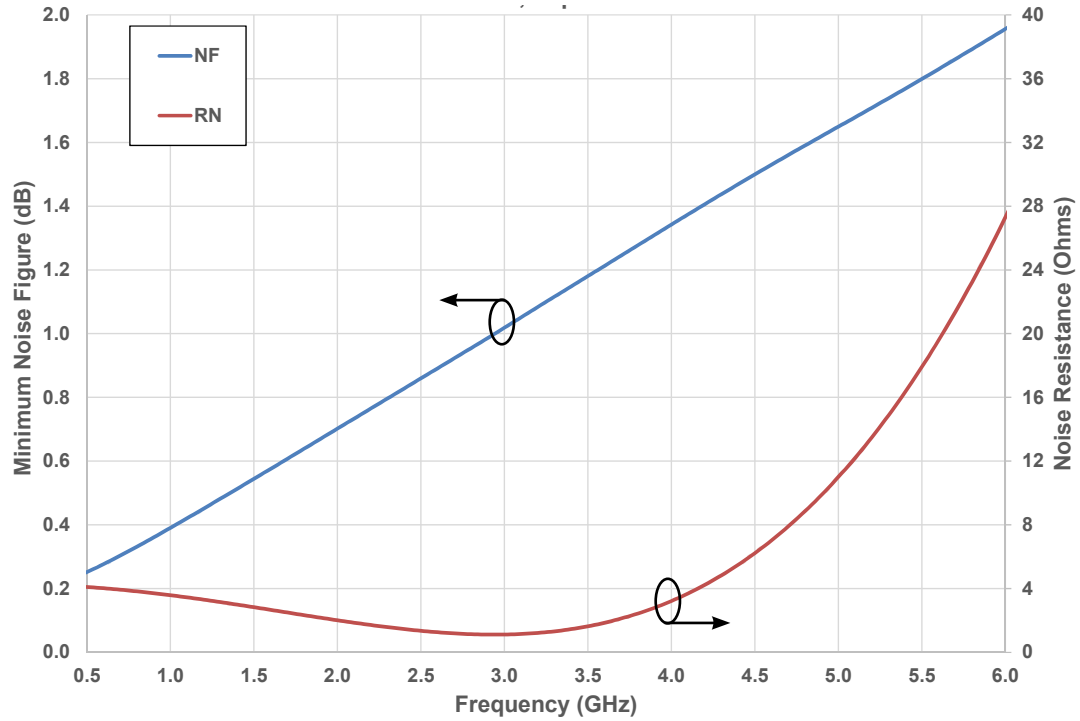


**Figure 4. - Simulated Maximum Available Gain and K Factor of CG2H40010F
 $V_{DD} = 28\text{ V}, I_{DQ} = 100\text{ mA}$**



Typical Noise Performance

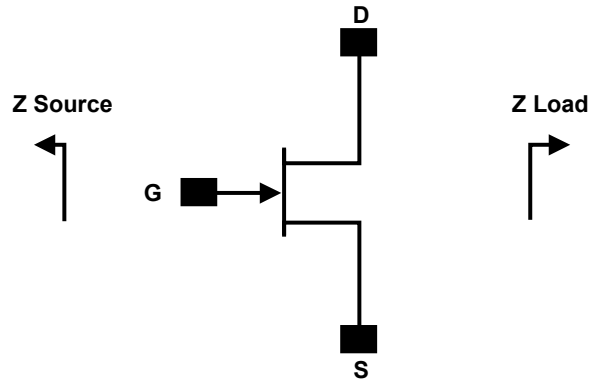
Figure 5. - Simulated Minimum Noise Figure and Noise Resistance vs Frequency of the CG2H40010F
 $V_{DD} = 28\text{ V}, I_{DQ} = 100\text{ mA}$



Electrostatic Discharge (ESD) Classifications

| Parameter | Symbol | Class | Test Methodology |
|---------------------|--------|------------|---------------------|
| Human Body Model | HBM | 1A > 250 V | JEDEC JESD22 A114-D |
| Charge Device Model | CDM | 1 < 200 V | JEDEC JESD22 C101-C |

Source and Load Impedances



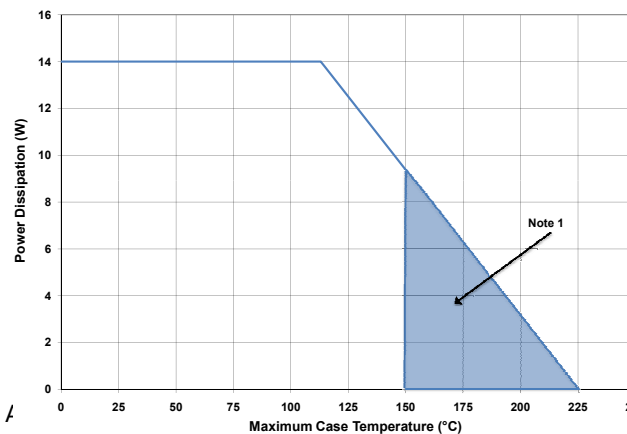
| Frequency (MHz) | Z Source | Z Load |
|-----------------|--------------|--------------|
| 0.50 | 55.3 + j27.6 | 40.9 + j2.34 |
| 1.00 | 30.9 + j17.8 | 26 + j7.7 |
| 1.50 | 20.4 + j5.17 | 27 + j6.5 |
| 2.00 | 16.7 + j0.60 | 18.3 + j5.94 |
| 2.50 | 9.7 - j4.6 | 11.5 + j10.9 |
| 3.00 | 6.6 - j7.75 | 20.6 + j8.75 |
| 3.50 | 5.1 - j11.5 | 15.2 + j3.43 |
| 4.00 | 6.21 - j14.1 | 11.6 - j4.77 |
| 4.50 | 4.89 - j19.8 | 8.58 - j5.11 |
| 5.00 | 5.22 - j25.9 | 10.8 - j6.23 |
| 5.50 | 5.77 - j30.8 | 9.06 - j13.3 |
| 6.00 | 8.04 - j37.2 | 10.2 - j15.3 |

Note 1. $V_{DD} = 28V$, $I_{DQ} = 100mA$ in the 440166 package.

Note 2. Optimized for power, gain, P_{SAT} and PAE.

Note 3. When using this device at low frequency, series resistors should be used to maintain amplifier stability.

CG2H40010 Power Dissipation De-rating Curve

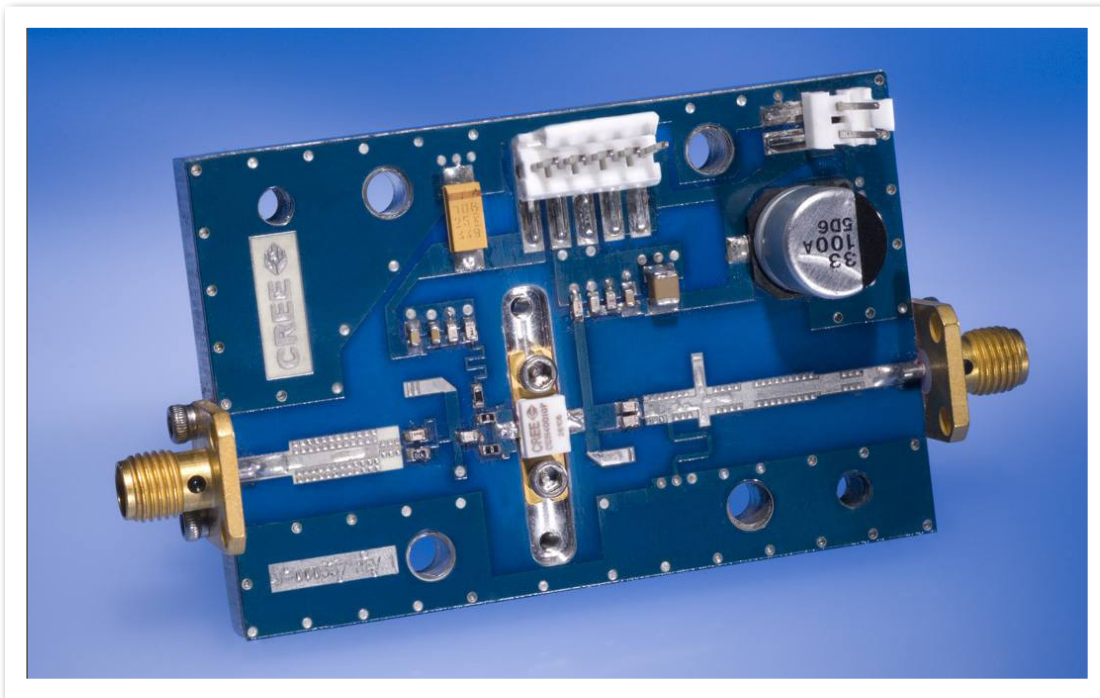


Note 1. $I_{DQ} = 100mA$ (Note 2).

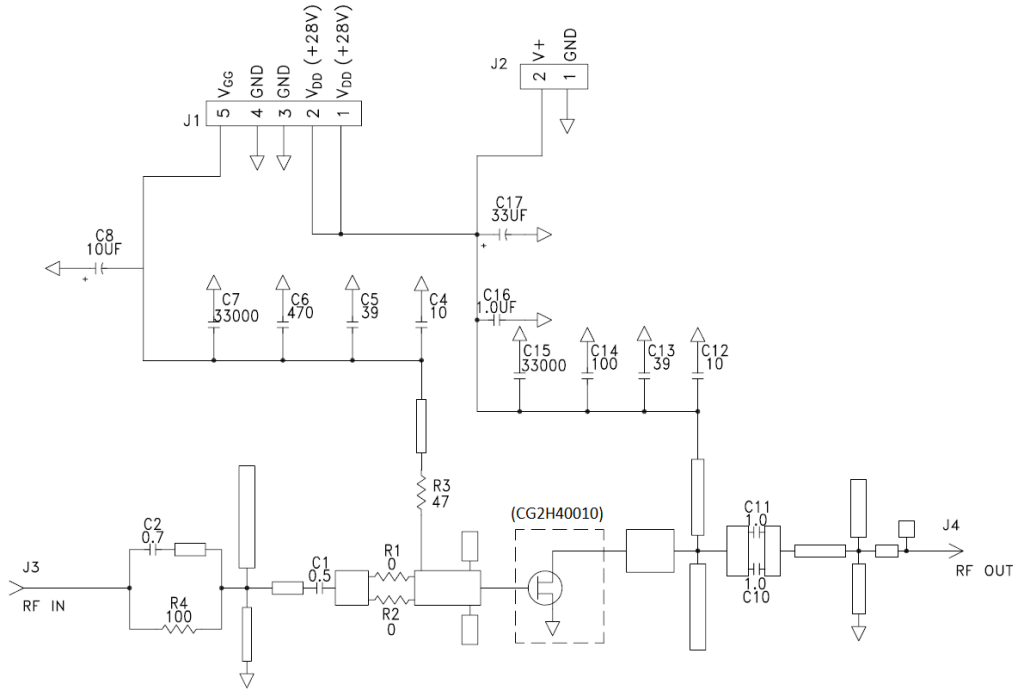
CG2H40010-AMP Demonstration Amplifier Circuit Bill of Materials

| Designator | Description | Qty |
|------------|-------------------------------------|-----|
| R1,R2 | RES,1/16W,0603,1%,0 OHMS | 1 |
| R3 | RES,1/16W,0603,1%,47 OHMS | 1 |
| R4 | RES,1/16W,0603,1%,100 OHMS | 1 |
| C6 | CAP, 470PF, 5%,100V, 0603 | 1 |
| C17 | CAP, 33 UF, 20%, G CASE | 1 |
| C16 | CAP, 1.0UF, 100V, 10%, X7R, 1210 | 1 |
| C8 | CAP 10UF 16V TANTALUM | 1 |
| C14 | CAP, 100.0pF, +/-5%, 0603 | 1 |
| C1 | CAP, 0.5pF, +/-0.05pF, 0603 | 1 |
| C2 | CAP, 0.7pF, +/-0.1pF, 0603 | 1 |
| C10,C11 | CAP, 1.0pF, +/-0.1pF, 0603 | 2 |
| C4,C12 | CAP, 10.0pF,+/-5%, 0603 | 2 |
| C5,C13 | CAP, 39pF, +/-5%, 0603 | 2 |
| C7,C15 | CAP,33000PF, 0805,100V, X7R | 2 |
| J3,J4 | CONN SMA STR PANEL JACK RECP | 1 |
| J2 | HEADER RT>PLZ.1CEN LK 2 POS | 1 |
| J1 | HEADER RT>PLZ .1CEN LK 5POS | 1 |
| - | PCB, RO4350B, Er = 3.48, h = 20 mil | 1 |
| Q1 | CG2H40010F or CG2H40010P | 1 |

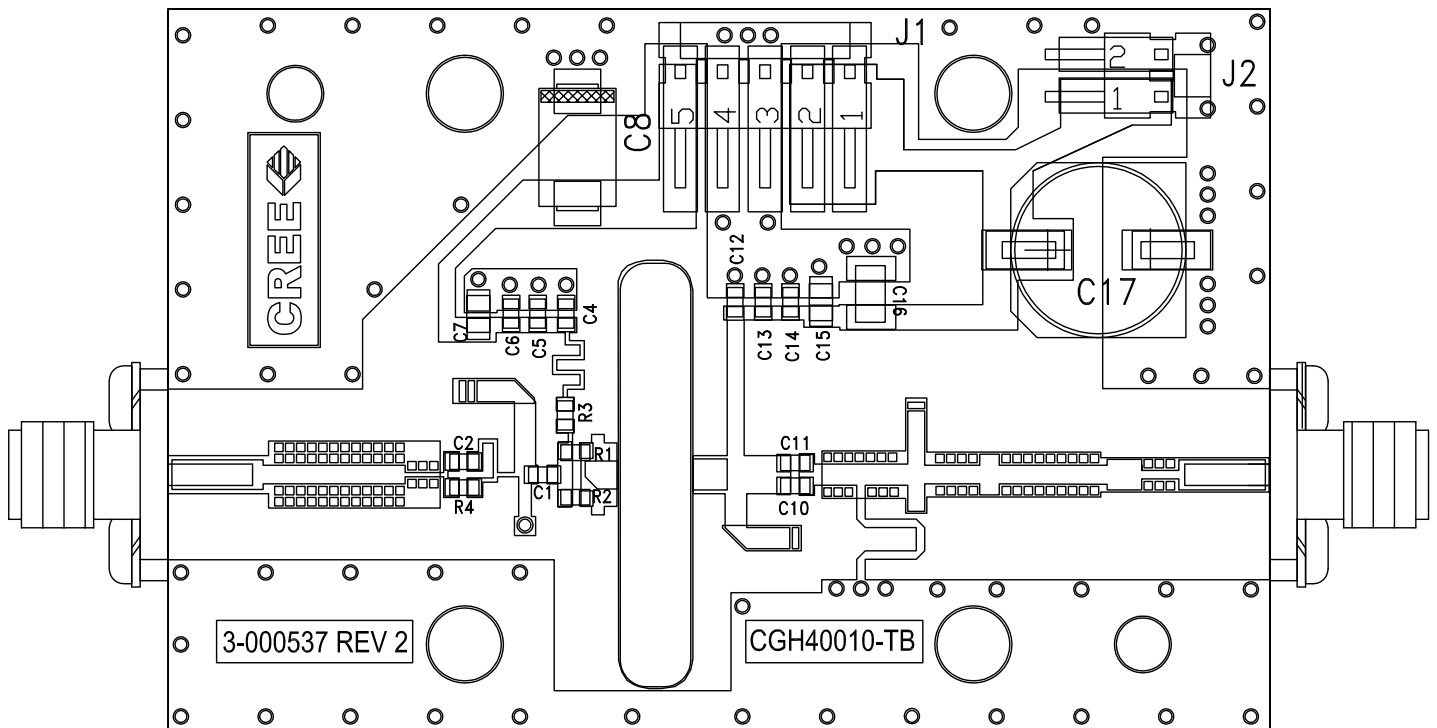
CG2H40010-AMP Demonstration Amplifier Circuit



CG2H40010-AMP Demonstration Amplifier Circuit Schematic



CG2H40010-AMP Demonstration Amplifier Circuit Outline



Typical Package S-Parameters for CG2H40010
 (Small Signal, $V_{DS} = 28\text{ V}$, $I_{DQ} = 100\text{ mA}$, angle in degrees)

| Frequency | Mag S11 | Ang S11 | Mag S21 | Ang S21 | Mag S12 | Ang S12 | Mag S22 | Ang S22 |
|-----------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0.50 | 0.872 | -116.75 | 21.365 | 110.57 | 0.0279 | 24.89 | 0.417 | -103.52 |
| 0.60 | 0.860 | -126.97 | 18.584 | 103.99 | 0.0290 | 19.19 | 0.407 | -112.55 |
| 0.70 | 0.851 | -135.13 | 16.376 | 98.45 | 0.0298 | 14.53 | 0.401 | -119.61 |
| 0.80 | 0.845 | -141.80 | 14.600 | 93.64 | 0.0302 | 10.60 | 0.398 | -125.24 |
| 0.90 | 0.841 | -147.38 | 13.151 | 89.35 | 0.0306 | 7.22 | 0.397 | -129.81 |
| 1.00 | 0.837 | -152.15 | 11.950 | 85.47 | 0.0307 | 4.24 | 0.398 | -133.60 |
| 1.10 | 0.835 | -156.31 | 10.942 | 81.88 | 0.0308 | 1.56 | 0.399 | -136.79 |
| 1.20 | 0.833 | -159.98 | 10.086 | 78.52 | 0.0309 | -0.87 | 0.402 | -139.53 |
| 1.30 | 0.831 | -163.28 | 9.350 | 75.34 | 0.0309 | -3.10 | 0.405 | -141.92 |
| 1.40 | 0.830 | -166.28 | 8.712 | 72.32 | 0.0308 | -5.17 | 0.409 | -144.05 |
| 1.50 | 0.829 | -169.04 | 8.155 | 69.41 | 0.0307 | -7.11 | 0.413 | -145.96 |
| 1.60 | 0.829 | -171.60 | 7.663 | 66.61 | 0.0306 | -8.93 | 0.417 | -147.72 |
| 1.70 | 0.828 | -174.01 | 7.227 | 63.89 | 0.0305 | -10.65 | 0.422 | -149.34 |
| 1.80 | 0.828 | -176.27 | 6.838 | 61.24 | 0.0304 | -12.28 | 0.427 | -150.87 |
| 1.90 | 0.827 | -178.43 | 6.488 | 58.65 | 0.0302 | -13.82 | 0.432 | -152.32 |
| 2.00 | 0.827 | 179.50 | 6.173 | 56.11 | 0.0300 | -15.29 | 0.437 | -153.71 |
| 2.10 | 0.827 | 177.51 | 5.888 | 53.62 | 0.0299 | -16.70 | 0.442 | -155.05 |
| 2.20 | 0.826 | 175.58 | 5.628 | 51.17 | 0.0297 | -18.03 | 0.447 | -156.36 |
| 2.30 | 0.826 | 173.70 | 5.391 | 48.76 | 0.0295 | -19.31 | 0.453 | -157.64 |
| 2.40 | 0.826 | 171.87 | 5.174 | 46.38 | 0.0293 | -20.52 | 0.458 | -158.90 |
| 2.50 | 0.825 | 170.07 | 4.975 | 44.02 | 0.0291 | -21.68 | 0.463 | -160.15 |
| 2.60 | 0.825 | 168.30 | 4.791 | 41.69 | 0.0288 | -22.78 | 0.468 | -161.38 |
| 2.70 | 0.825 | 166.56 | 4.622 | 39.37 | 0.0286 | -23.83 | 0.473 | -162.61 |
| 2.80 | 0.824 | 164.83 | 4.465 | 37.08 | 0.0284 | -24.82 | 0.478 | -163.84 |
| 2.90 | 0.824 | 163.12 | 4.320 | 34.80 | 0.0282 | -25.76 | 0.483 | -165.07 |
| 3.00 | 0.824 | 161.41 | 4.185 | 32.54 | 0.0280 | -26.64 | 0.488 | -166.31 |
| 3.20 | 0.823 | 158.01 | 3.941 | 28.06 | 0.0276 | -28.24 | 0.496 | -168.79 |
| 3.40 | 0.821 | 154.60 | 3.730 | 23.61 | 0.0272 | -29.61 | 0.505 | -171.31 |
| 3.60 | 0.820 | 151.17 | 3.545 | 19.19 | 0.0268 | -30.76 | 0.512 | -173.86 |
| 3.80 | 0.818 | 147.68 | 3.382 | 14.76 | 0.0265 | -31.70 | 0.519 | -176.46 |
| 4.00 | 0.816 | 144.13 | 3.239 | 10.34 | 0.0262 | -32.41 | 0.525 | -179.10 |
| 4.20 | 0.814 | 140.49 | 3.113 | 5.89 | 0.0260 | -32.91 | 0.531 | 178.20 |
| 4.40 | 0.811 | 136.74 | 3.002 | 1.42 | 0.0259 | -33.20 | 0.535 | 175.44 |
| 4.60 | 0.809 | 132.85 | 2.905 | -3.10 | 0.0259 | -33.31 | 0.539 | 172.61 |
| 4.80 | 0.806 | 128.81 | 2.821 | -7.68 | 0.0261 | -33.28 | 0.542 | 169.69 |
| 5.00 | 0.802 | 124.60 | 2.746 | -12.33 | 0.0264 | -33.14 | 0.544 | 166.67 |
| 5.20 | 0.799 | 120.21 | 2.680 | -17.05 | 0.0269 | -32.94 | 0.545 | 163.54 |
| 5.40 | 0.795 | 115.62 | 2.622 | -21.86 | 0.0276 | -32.76 | 0.545 | 160.28 |
| 5.60 | 0.791 | 110.82 | 2.569 | -26.77 | 0.0286 | -32.65 | 0.544 | 156.88 |
| 5.80 | 0.787 | 105.80 | 2.522 | -31.78 | 0.0297 | -32.69 | 0.542 | 153.33 |
| 6.00 | 0.783 | 100.56 | 2.479 | -36.91 | 0.0311 | -32.95 | 0.540 | 149.60 |

Typical Package S-Parameters for CG2H40010

(Small Signal, $V_{DS} = 28\text{ V}$, $I_{DQ} = 200\text{ mA}$, angle in degrees)

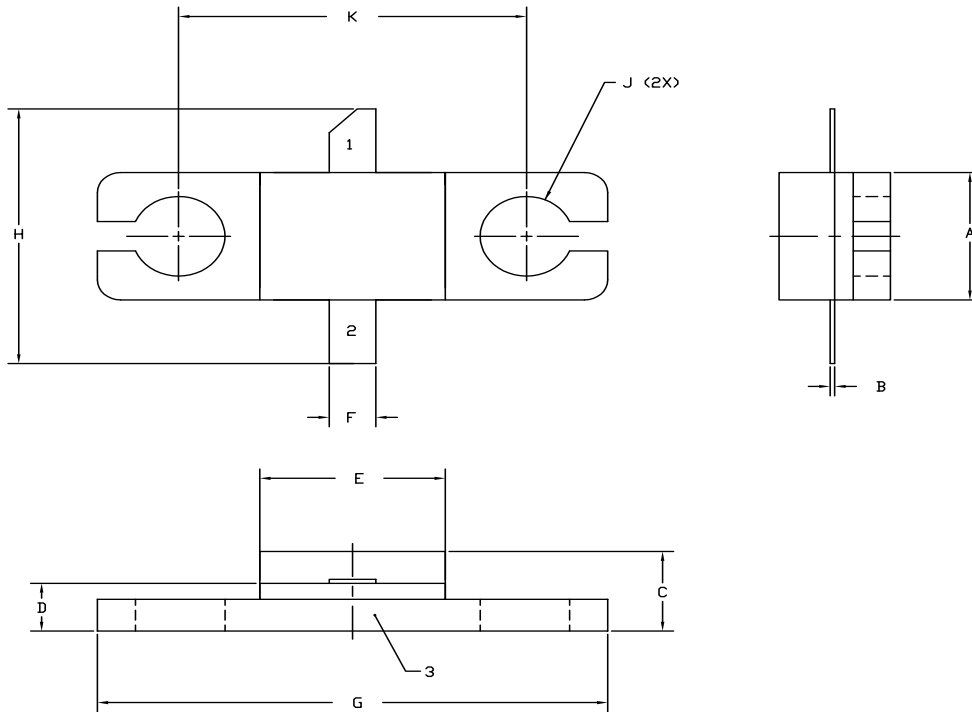
| Frequency | Mag S11 | Ang S11 | Mag S21 | Ang S21 | Mag S12 | Ang S12 | Mag S22 | Ang S22 |
|-----------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0.50 | 0.874 | -125.62 | 23.065 | 107.16 | 0.0231 | 22.83 | 0.390 | -121.46 |
| 0.60 | 0.865 | -135.15 | 19.881 | 101.04 | 0.0238 | 17.87 | 0.389 | -129.56 |
| 0.70 | 0.858 | -142.64 | 17.413 | 95.93 | 0.0243 | 13.91 | 0.390 | -135.68 |
| 0.80 | 0.853 | -148.74 | 15.461 | 91.50 | 0.0246 | 10.65 | 0.391 | -140.43 |
| 0.90 | 0.850 | -153.82 | 13.887 | 87.55 | 0.0248 | 7.88 | 0.393 | -144.22 |
| 1.00 | 0.848 | -158.16 | 12.595 | 83.95 | 0.0249 | 5.47 | 0.395 | -147.32 |
| 1.10 | 0.846 | -161.95 | 11.518 | 80.62 | 0.0250 | 3.34 | 0.397 | -149.92 |
| 1.20 | 0.844 | -165.32 | 10.608 | 77.50 | 0.0250 | 1.43 | 0.400 | -152.13 |
| 1.30 | 0.843 | -168.35 | 9.830 | 74.53 | 0.0251 | -0.30 | 0.403 | -154.05 |
| 1.40 | 0.842 | -171.12 | 9.158 | 71.70 | 0.0250 | -1.89 | 0.406 | -155.75 |
| 1.50 | 0.841 | -173.68 | 8.572 | 68.96 | 0.0250 | -3.36 | 0.410 | -157.29 |
| 1.60 | 0.840 | -176.06 | 8.057 | 66.32 | 0.0250 | -4.72 | 0.413 | -158.68 |
| 1.70 | 0.839 | -178.31 | 7.600 | 63.74 | 0.0249 | -5.99 | 0.417 | -159.98 |
| 1.80 | 0.839 | 179.55 | 7.194 | 61.23 | 0.0249 | -7.17 | 0.420 | -161.20 |
| 1.90 | 0.838 | 177.51 | 6.830 | 58.76 | 0.0248 | -8.29 | 0.424 | -162.36 |
| 2.00 | 0.838 | 175.55 | 6.502 | 56.34 | 0.0247 | -9.33 | 0.428 | -163.47 |
| 2.10 | 0.837 | 173.65 | 6.206 | 53.96 | 0.0247 | -10.31 | 0.432 | -164.54 |
| 2.20 | 0.836 | 171.80 | 5.936 | 51.60 | 0.0246 | -11.23 | 0.436 | -165.60 |
| 2.30 | 0.836 | 170.00 | 5.690 | 49.28 | 0.0245 | -12.10 | 0.440 | -166.63 |
| 2.40 | 0.835 | 168.24 | 5.466 | 46.98 | 0.0244 | -12.91 | 0.444 | -167.65 |
| 2.50 | 0.835 | 166.50 | 5.259 | 44.70 | 0.0244 | -13.66 | 0.447 | -168.67 |
| 2.60 | 0.834 | 164.79 | 5.070 | 42.43 | 0.0243 | -14.37 | 0.451 | -169.68 |
| 2.70 | 0.833 | 163.09 | 4.894 | 40.19 | 0.0242 | -15.02 | 0.455 | -170.70 |
| 2.80 | 0.832 | 161.41 | 4.732 | 37.95 | 0.0242 | -15.63 | 0.459 | -171.72 |
| 2.90 | 0.832 | 159.73 | 4.582 | 35.73 | 0.0241 | -16.19 | 0.462 | -172.74 |
| 3.00 | 0.831 | 158.06 | 4.443 | 33.52 | 0.0241 | -16.70 | 0.466 | -173.78 |
| 3.20 | 0.829 | 154.72 | 4.192 | 29.12 | 0.0241 | -17.58 | 0.472 | -175.88 |
| 3.40 | 0.827 | 151.37 | 3.974 | 24.74 | 0.0241 | -18.30 | 0.478 | -178.04 |
| 3.60 | 0.825 | 147.98 | 3.783 | 20.37 | 0.0241 | -18.86 | 0.484 | 179.75 |
| 3.80 | 0.822 | 144.53 | 3.615 | 15.99 | 0.0243 | -19.28 | 0.489 | 177.48 |
| 4.00 | 0.820 | 141.00 | 3.467 | 11.59 | 0.0245 | -19.59 | 0.493 | 175.13 |
| 4.20 | 0.817 | 137.38 | 3.337 | 7.16 | 0.0248 | -19.82 | 0.497 | 172.72 |
| 4.40 | 0.813 | 133.65 | 3.223 | 2.69 | 0.0253 | -20.00 | 0.500 | 170.22 |
| 4.60 | 0.810 | 129.77 | 3.122 | -1.84 | 0.0259 | -20.17 | 0.502 | 167.64 |
| 4.80 | 0.806 | 125.74 | 3.034 | -6.43 | 0.0267 | -20.38 | 0.504 | 164.95 |
| 5.00 | 0.802 | 121.53 | 2.956 | -11.09 | 0.0276 | -20.67 | 0.504 | 162.15 |
| 5.20 | 0.798 | 117.14 | 2.887 | -15.84 | 0.0287 | -21.10 | 0.504 | 159.21 |
| 5.40 | 0.794 | 112.55 | 2.825 | -20.68 | 0.0300 | -21.69 | 0.503 | 156.13 |
| 5.60 | 0.789 | 107.75 | 2.770 | -25.62 | 0.0315 | -22.49 | 0.502 | 152.90 |
| 5.80 | 0.785 | 102.74 | 2.719 | -30.66 | 0.0331 | -23.54 | 0.499 | 149.49 |
| 6.00 | 0.780 | 97.50 | 2.672 | -35.82 | 0.0350 | -24.86 | 0.496 | 145.89 |



Typical Package S-Parameters for CG2H40010
 (Small Signal, $V_{DS} = 28\text{ V}$, $I_{DQ} = 500\text{ mA}$, angle in degrees)

| Frequency | Mag S11 | Ang S11 | Mag S21 | Ang S21 | Mag S12 | Ang S12 | Mag S22 | Ang S22 |
|-----------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0.50 | 0.884 | -133.72 | 22.181 | 103.56 | 0.0199 | 20.32 | 0.356 | -129.90 |
| 0.60 | 0.878 | -142.44 | 18.972 | 97.82 | 0.0203 | 15.95 | 0.358 | -136.80 |
| 0.70 | 0.873 | -149.25 | 16.532 | 93.01 | 0.0206 | 12.53 | 0.360 | -141.87 |
| 0.80 | 0.870 | -154.75 | 14.626 | 88.83 | 0.0208 | 9.75 | 0.363 | -145.73 |
| 0.90 | 0.868 | -159.35 | 13.103 | 85.08 | 0.0209 | 7.42 | 0.366 | -148.77 |
| 1.00 | 0.866 | -163.28 | 11.861 | 81.66 | 0.0210 | 5.42 | 0.369 | -151.23 |
| 1.10 | 0.865 | -166.73 | 10.830 | 78.47 | 0.0210 | 3.68 | 0.373 | -153.26 |
| 1.20 | 0.864 | -169.80 | 9.963 | 75.46 | 0.0210 | 2.13 | 0.376 | -154.99 |
| 1.30 | 0.863 | -172.59 | 9.223 | 72.59 | 0.0210 | 0.75 | 0.380 | -156.50 |
| 1.40 | 0.862 | -175.15 | 8.585 | 69.83 | 0.0210 | -0.50 | 0.384 | -157.83 |
| 1.50 | 0.861 | -177.52 | 8.030 | 67.17 | 0.0210 | -1.64 | 0.388 | -159.04 |
| 1.60 | 0.861 | -179.75 | 7.543 | 64.58 | 0.0209 | -2.67 | 0.393 | -160.15 |
| 1.70 | 0.860 | -178.13 | 7.112 | 62.05 | 0.0209 | -3.61 | 0.397 | -161.19 |
| 1.80 | 0.860 | -176.12 | 6.729 | 59.58 | 0.0208 | -4.47 | 0.402 | -162.19 |
| 1.90 | 0.859 | -174.18 | 6.386 | 57.15 | 0.0208 | -5.25 | 0.406 | -163.15 |
| 2.00 | 0.859 | -172.31 | 6.077 | 54.76 | 0.0207 | -5.97 | 0.411 | -164.08 |
| 2.10 | 0.858 | -170.49 | 5.797 | 52.40 | 0.0207 | -6.61 | 0.415 | -165.00 |
| 2.20 | 0.857 | -168.71 | 5.544 | 50.07 | 0.0207 | -7.20 | 0.420 | -165.92 |
| 2.30 | 0.857 | -166.97 | 5.313 | 47.76 | 0.0206 | -7.72 | 0.424 | -166.83 |
| 2.40 | 0.856 | -165.25 | 5.101 | 45.48 | 0.0206 | -8.19 | 0.429 | -167.74 |
| 2.50 | 0.856 | -163.56 | 4.907 | 43.21 | 0.0206 | -8.60 | 0.433 | -168.66 |
| 2.60 | 0.855 | -161.89 | 4.729 | 40.96 | 0.0205 | -8.95 | 0.438 | -169.59 |
| 2.70 | 0.854 | -160.23 | 4.564 | 38.72 | 0.0205 | -9.26 | 0.442 | -170.53 |
| 2.80 | 0.853 | -158.57 | 4.412 | 36.50 | 0.0205 | -9.51 | 0.446 | -171.48 |
| 2.90 | 0.853 | -156.92 | 4.271 | 34.28 | 0.0205 | -9.71 | 0.451 | -172.45 |
| 3.00 | 0.852 | -155.27 | 4.140 | 32.08 | 0.0206 | -9.87 | 0.455 | -173.43 |
| 3.20 | 0.850 | -151.96 | 3.904 | 27.68 | 0.0207 | -10.05 | 0.462 | -175.45 |
| 3.40 | 0.848 | -148.62 | 3.699 | 23.31 | 0.0209 | -10.08 | 0.469 | -177.54 |
| 3.60 | 0.846 | -145.23 | 3.520 | 18.93 | 0.0212 | -10.00 | 0.476 | -179.70 |
| 3.80 | 0.843 | -141.78 | 3.362 | 14.55 | 0.0215 | -9.85 | 0.482 | -178.06 |
| 4.00 | 0.840 | -138.24 | 3.223 | 10.14 | 0.0220 | -9.66 | 0.487 | -175.75 |
| 4.20 | 0.837 | -134.60 | 3.101 | 5.70 | 0.0227 | -9.48 | 0.492 | -173.36 |
| 4.40 | 0.834 | -130.83 | 2.994 | 1.21 | 0.0235 | -9.38 | 0.495 | -170.88 |
| 4.60 | 0.831 | -126.92 | 2.899 | -3.33 | 0.0244 | -9.39 | 0.498 | -168.30 |
| 4.80 | 0.827 | -122.84 | 2.816 | -7.93 | 0.0256 | -9.56 | 0.500 | -165.62 |
| 5.00 | 0.823 | -118.59 | 2.743 | -12.62 | 0.0269 | -9.95 | 0.502 | -162.83 |
| 5.20 | 0.819 | -114.14 | 2.678 | -17.39 | 0.0284 | -10.59 | 0.502 | -159.90 |
| 5.40 | 0.815 | -109.50 | 2.619 | -22.25 | 0.0301 | -11.49 | 0.502 | -156.82 |
| 5.60 | 0.811 | -104.65 | 2.566 | -27.21 | 0.0320 | -12.69 | 0.501 | -153.59 |
| 5.80 | 0.807 | -99.58 | 2.518 | -32.28 | 0.0341 | -14.20 | 0.499 | -150.18 |
| 6.00 | 0.802 | -94.29 | 2.473 | -37.47 | 0.0364 | -16.03 | 0.496 | -146.59 |

Product Dimensions CG2H40010F (Package Type – 440166)



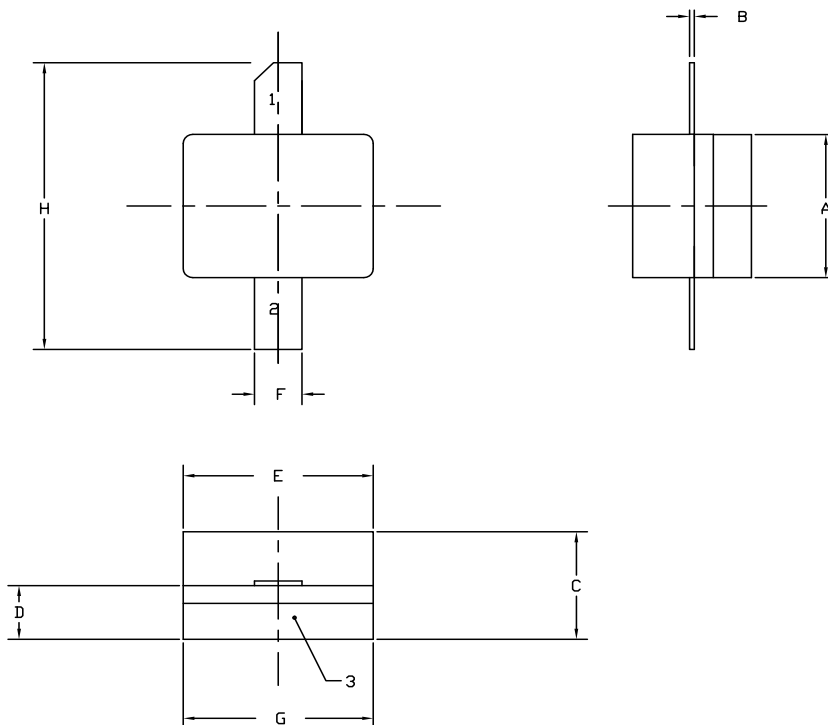
NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. ADHESIVE FROM LID MAY EXTEND A MAXIMUM OF 0.020" BEYOND EDGE OF LID.
4. LID MAY BE MISALIGNED TO THE BODY OF THE PACKAGE BY A MAXIMUM OF 0.008" IN ANY DIRECTION.
5. ALL PLATED SURFACES ARE NI/AU

| DIM | INCHES | | MILLIMETERS | |
|-----|--------|-------|-------------|-------|
| | MIN | MAX | MIN | MAX |
| A | 0.155 | 0.165 | 3.94 | 4.19 |
| B | 0.004 | 0.006 | 0.10 | 0.15 |
| C | 0.115 | 0.135 | 2.92 | 3.43 |
| D | 0.057 | 0.067 | 1.45 | 1.70 |
| E | 0.195 | 0.205 | 4.95 | 5.21 |
| F | 0.045 | 0.055 | 1.14 | 1.40 |
| G | 0.545 | 0.555 | 13.84 | 14.09 |
| H | 0.280 | 0.360 | 7.11 | 9.14 |
| J | Ø .100 | | 2.54 | |
| K | 0.375 | | 9.53 | |

PIN 1. GATE
PIN 2. DRAIN
PIN 3. SOURCE

Product Dimensions CG2H40010P (Package Type – 440196)



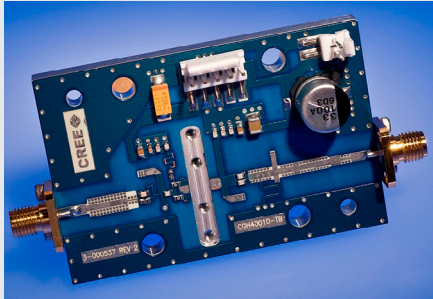
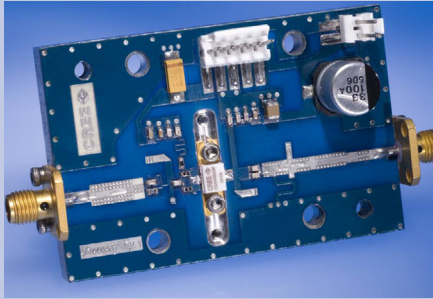
NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. ADHESIVE FROM LID MAY EXTEND A MAXIMUM OF 0.020" BEYOND EDGE OF LID.
4. LID MAY BE MISALIGNED TO THE BODY OF THE PACKAGE BY A MAXIMUM OF 0.008" IN ANY DIRECTION.
5. ALL PLATED SURFACES ARE NI/AU

| DIM | INCHES | | MILLIMETERS | |
|-----|--------|-------|-------------|------|
| | MIN | MAX | MIN | MAX |
| A | 0.155 | 0.165 | 3.94 | 4.19 |
| B | 0.003 | 0.006 | 0.10 | 0.15 |
| C | 0.115 | 0.135 | 2.92 | 3.17 |
| D | 0.057 | 0.067 | 1.45 | 1.70 |
| E | 0.195 | 0.205 | 4.95 | 5.21 |
| F | 0.045 | 0.055 | 1.14 | 1.40 |
| G | 0.195 | 0.205 | 4.95 | 5.21 |
| H | 0.280 | 0.360 | 7.11 | 9.14 |

PIN 1. GATE
PIN 2. DRAIN
PIN 3. SOURCE

Product Ordering Information

| Order Number | Description | Unit of Measure | Image |
|----------------|------------------------------------|-----------------|---|
| CG2H40010F | GaN HEMT | Each |  |
| CG2H40010P | GaN HEMT | Each |  |
| CG2H40010F-TB | Test board without GaN HEMT | Each |  |
| CG2H40010F-AMP | Test board with GaN HEMT installed | Each |  |



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