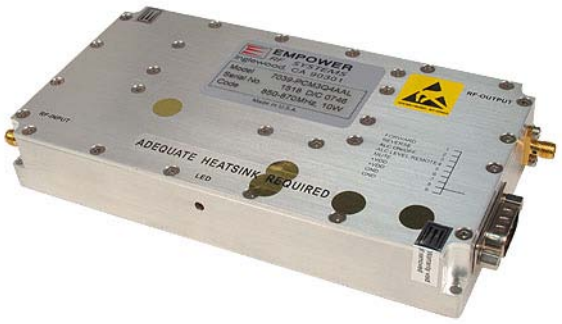
EMPOWER RF SYSTEMS, INC.

# Solid State Personal Communication Power Amplifier

**7040 – PCM3Q4AGR** | **869 - 894MHz / 40 Watts CDMA/GSM/W-CDMA**

## HARRIS AMPLIFIER MODULE

The PCM3Q4AGR (SKU 7040-40) is suitable for Ultra linear SMR and iDEN repeater and base station applications in the Cellular frequency range. Also suitable for CDMA, GSM and TDMA applications, this amplifier utilizes linear LDMOS power devices that provide high gain, wide dynamic range, and excellent group delay and phase linearity. Exceptional performance, long term reliability, and high efficiency are achieved by employing advanced matching networks and combining techniques, EMI/RFI filters, machined housings, and qualified components. Empower RF's ISO9001 Quality Assurance Program assures consistent performance and the highest reliability.




- Solid-state Pre-D linear design
- Small form factor and lightweight
- Suitable for SMR, iDEN and multi FA Applications.
- 50 ohm input/output impedance
- High reliability and ruggedness
- Built-in high dynamic range ALC circuit and control functions
- Built-in Output Circulator

### ELECTRICAL SPECIFICATIONS @ +28 VDC, 25°C, 50Ω System

| Parameter | Symbol | Min | Typ | Max | Unit |
|---|---|---|---|---|---|
| Operating Frequency | BW | 869 | | 894 | MHz |
| Output Power CW | $P_{SAT}$ | 50 | | | Watt |
| Output Power @ 1 dB Gain Compression Point | $P_{1dB}$ | | 50 | | Watt |
| Power Output CDMA per IS-97 | $P_{CDMA}$ | 10 | | | Watt |
| Gain at Rated $P_{OUT}$ | G | 55 | | 57 | dB |
| Input Power Range with ALC ON | $P_{IN}$ | -6 | | +5 | dBm |
| Small Signal Gain Flatness | ΔG | | | ±0.75 | dB |
| Gain Flatness @ 46 dBm, $P_{IN}$ = 0 dBm, (ALC ON) | $\Delta G_{ALC}$ | | | ±0.5 | dB |
| Input/Output Return Loss | $S_{11}$ / $S_{22}$ | | -10 | -14 | dB |
| Third Order Intercept Point<br>2-Tones, $P_{OUT}$ = 12 W Avg., Δ = 500 KHz | IP3 | +62 | +66 | | dBm |
| Harmonics @ P1 dB Gain Compression Point | H | | | -45 | dBc |
| Noise Figure | NF | | 7 | 10 | dB |
| Spurious Signals | Spur | | | -60 | dBc |
| Operating Voltage | $V_{DD}$ | 26 | 28 | 30 | Volt |
| Supply Current @ $P_{OUT}$ = 40 W CW | $I_{DD}$ | | 5.5 | 6.0 | Amp |
| Supply Current @ $P_{OUT}$ = 12 W Composite | $I_{DD}$ | | 3.5 | | Amp |

### MECHANICAL SPECIFICATIONS

| Parameter | Value | Units | Limits |
|---|---|---|---|
| Dimensions | 6.4 x 3.4 x 1.0 | Inch | Max |
| Weight | 1.0 | lb. | Max |
| RF Connectors In/Out | SMA female | | |
| DC / Function Connector | D-sub, 9 Pins | | |
| Cooling | External Heatsink | | |

### ENVIRONMENTAL CHARACTERISTICS (Design to Meet)

| Parameter | Symbol | Min | Typ | Max | Unit |
|---|---|---|---|---|---|
| Operating Case Temperature | Tc | 0 | | +75 | °C |
| Storage Temperature | Tstg | -40 | | +85 | °C |
| Relative humidity (non-condensing) | RH | | | 95 | % |
| Altitude (MIL-STD-810F Method 500.4) | ALT | | | 30,000 | Feet |
| Shock / Vibration (MIL-STD-810F Method 516.5) | SH / VI | | Airborne | | |

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### PROTECTIONS

| | | |
|---|---|---|
| Input Overdrive | +10 dBm | Max |
| Load VSWR @ nominal output power | ∞ @ all load phase & amplitude for duration of 1 minute<br>3:1 @ all phase & amplitude continuous | Nom |
| Thermal Overload | 85°C shutdown | Max |

### INTERFACE CONNECTOR
**D-Sub, 9-Pin**

| Pin # | Description | Specifications |
|---|---|---|
| 1 | Forward Power Monitor | Continuous Analog voltage relative to forward power via RMS detector<br>FWDM: 27 – 47 dBm @ 0 – 5 V (100 mV/dB) |
| 2 | Reverse Power Monitor | Continuous Analog voltage relative to reflected power via RMS detector<br>REVM: 24 – 44 dBm @ 0 – 5 V (100 mV/dB) |
| 3 | ALC ON/OFF | ALC ON = TTL "High"<br>ALC OFF = TTL "Low or Open" |
| 4 | ALC Level | Continuous adjustable range via analog input levels<br>Input Power Range: -6dBm to +5dBm<br>**Setting Point (ASP): 33 – 47 dBm @ 0 – 5 V (250 mV/dB)**<br>**46 dBm @ 4.75 V**<br>Error Range (AER): ±1.5 dB<br>**Response Time (ART): 100 mS/dB** |
| 5 | Mute | Amplifier Enable: TTL "Low" or Open<br>Amplifier Disable: TTL "High" |
| 6 | +VDD | +28 ± 2 $V_{DC}$ |
| 7 | +VDD | +28 ± 2 $V_{DC}$ |
| 8 | GND | Ground |
| 9 | GND | Ground |

| | | |
|---|---|---|
| **LED** | LED Indicator | Output Power level indicator referenced to ALC setting **(optional)** |

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### OUTLINE DRAWING