

## Solid State Personal Communication Power Amplifier

**7110 – PCM4Q4SCL**
**1805 – 1880MHz / 16 Watts LTE**

The PCM4Q4SCL (SKU 7110) is suitable for single and LTE repeater applications in cellular frequency range. This amplifier utilizes linear LDMOS power devices that provide high gain, wide dynamic range, low distortions, and excellent group delay and phase linearity. Exceptional performance, long term reliability, and high efficiency are achieved by employing Direct Injection Pre-D™, advanced matching networks and combining techniques (**Doherty Design**), 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 single & multi-FA LTE
- 50 ohm input/output impedance
- High reliability and ruggedness
- Built-in Control & Monitoring Circuits
- Built-in output isolator
- High efficiency

### ELECTRICAL SPECIFICATIONS @ +28V<sub>DC</sub>, 25°C, 50 Ω System, PAR 8dB @ CCDF 0.01%

Parameter	Symbol	Min	Typ	Max	Unit
Operating Frequency	BW	1805		1880	MHz
Small Signal Gain @ P <sub>IN</sub> = -20dBm	G <sub>SS</sub>	44	45	46	dB
Small Signal Gain Flatness @ P <sub>IN</sub> = -20dBm	ΔG <sub>SS</sub>		±0.5	±0.75	dB
Gain Variation over operating temperature range	ΔG <sub>TEMP</sub>			±1.0	dB
Input/Output Return Loss	S <sub>11</sub> /S <sub>22</sub>			-14	dB
Power Output LTE 10MHz/FA		16			Watt
ACLR @ P <sub>OUT</sub> = 42 dBm	Fo±7.5MHz			-45	dBc
1-Tone, BW=10MHz, 100kHz RBW	Fo±12.5MHz			-50	
ACP @ 10MHz	Fo±5.05MHz			-15	dBm
1-Tone, BW=10MHz, 100kHz RBW	Fo±10.05MHz			-15	
Harmonic @ 16W, CW 1Tone	H			-45	
Spurious Signals @ 16W	Spur			-70	dBc
Operating Voltage	V <sub>DC</sub>	27	28	29	Volt
Current Consumption @ P <sub>OUT</sub> = 16W 1FA	I <sub>DD</sub>		2.0	2.25	Amp

### MECHANICAL SPECIFICATIONS

Parameter	Value	Unit
Dimension	4.4 x 6.7 x 1.1 / 110 x 170 x 28	Inch/mm
Weight	3.5	Pound
RF Connectors Input / Output	SMA Female	-
Interface Connectors	Control: D-sub 9-pin, Male DC Power: Hybrid, D-sub 3-pin, Male	-
Cooling	External heatsink (not supplied)	-

### ENVIRONMENTAL CHARACTERISTICS (Design to Meet)

Parameter	Symbol	Min	Typ	Max	Unit
Operating Case Temperature	T <sub>C</sub>	-20		+70	°C
Storage Temperature	T <sub>STG</sub>	-40		+85	°C
Relative humidity (non-condensing)	RH			95	%
Altitude (MIL-STD-810F Method 500.4)	ALT			30,000	Feet
Shock & Vibration	SH / VI		Airborne		
MIL-STD-810F Method 516.5/514.5					

### PROTECTIONS

Load VSWR @ P <sub>OUT</sub> = 16W	∞ @ all load phase & amplitude for duration of 1 minute 3:1 @ all load phase & amplitude continuous	-
Thermal Overload	95°C shutdown, auto-restart @ 85°C	Max

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### INTERFACE CONNECTORS

#### CONTROL – D-sub, 9-pin, Male

Pin #	Description	Specification
1	GND	Ground
2	Over Power Alarm	Alarm: TTL Logic High (5V): 44dBm $\pm$ 0.5dB, ( <i>Normally Low</i> )
3	VSWR Alarm	Alarm: TTL Logic High (5V): $\geq$ 3:1 VSWR, ( <i>Normally Low</i> )
4	Temperature Monitor	Analog voltage relative to units temperature @ 10mV/ $^{\circ}$ C with 0.50V <sub>OFFSET</sub> Equation: $(V_{MEASURED} - 0.50) / 0.01 = ^{\circ}$ C, Example; $(0.88V - 0.50) / 0.01 = 38^{\circ}$ C
5	Over Temp Alarm	Alarm: TTL Logic High (5V) @ $\geq$ 95 $^{\circ}$ C, ( <i>Normally Low</i> )
6	Shutdown	Amplifier Enable: TTL Logic Low (0V), ( <i>Internally Pulled-high</i> )
7	GND	Ground
8	Forward Power Monitor	Analog: +4V @ 42dBm, 0.1V/dB
9	N/C	No Connection

#### DC POWER – Hybrid, D-sub, 3-pin, Male

Pin #	Description	Specification
A1	VDD	+27.0-29.0V <sub>DC</sub>
A2	GND	Ground
A3	N/C	No Connection

### OUTLINE DRAWING

