Preliminary Product Information
September 1996 *(1 of 2)*

824 to 849 MHz 5V, 32 dBm Multi-Mode Power Amplifier

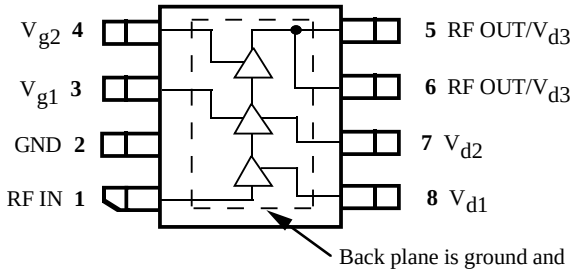
Features

- ❑ **Multi-Mode Operation from 5V Supply**
- ❑ **40% Linear Power Added Efficiency**
- ❑ **32.5 dBm with 55% Power Added Efficiency**
- ❑ **32 dBm Output Power (IS-136 TDMA)**
- ❑ **42 dB Gain**
- ❑ **Tested Under Actual Digital Modulation**
- ❑ **Low Cost, SO-8 Surface Mount Package**

Applications

- ❑ **IS-136/AMPS Cellular Handsets**
- ❑ **900 MHz ISM Band Products**
- ❑ **Wireless Local Loop Subscriber Terminals**

Functional Block Diagram



Description

The CMM0333 is a highly efficient 5V, multi-mode power amplifier intended for use in portable cellular handsets and datacom products operating in the AMPS and 902-928 MHz bands. As a pin-compatible member of the new ***Triniti DX***™ amplifier family, the CMM0333 offers maximum performance and flexibility. The CMM0333 is packaged in a low-cost, space efficient SO-8 power package that gives excellent electrical stability and thermal handling performance with a R_Θ of less than 18° C/W. The part is designed to require minimal external circuitry for bias matching, simplifying design and keeping board space and cost to a minimum.

Absolute Maximum Ratings

Parameter	Rating	Parameter	Rating	Parameter	Rating
Drain Voltage (+V_d)	+9.0 V*	Power Dissipation	5 W	Operating Temperature	-40°C to +85°C
Drain Current (I_d)	1.8 A	Thermal Resistance	18°C/W	Channel Temperature	175°C
RF Input Power	+15 dBm	Storage Temperature	-65°C to +150°C	Soldering Temperature	260°C for 5 Sec.
DC Gate Voltage (Vg)	-2.5 V				

* 9.0V max (+V_d) under linear operation. Max potential difference across the device ($2V_d$ + $|V_g|$) not to exceed the minimum breakdown voltage (V_{br}) of 18V in RF compression.

Recommended Operating Conditions

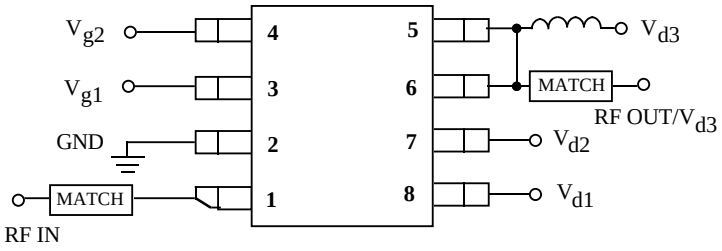
Parameter	Typ	Units	Parameter	Typ	Units
Drain Voltage (+V_d)	4.5 to 5.1	Volts	Operating Temperature (PC Board)	-30 to +80	°C

Electrical Characteristics

Unless otherwise specified, the following specifications are guaranteed at room temperature with drain voltage (+V_d) = 4.8 V in Celeritek test fixture

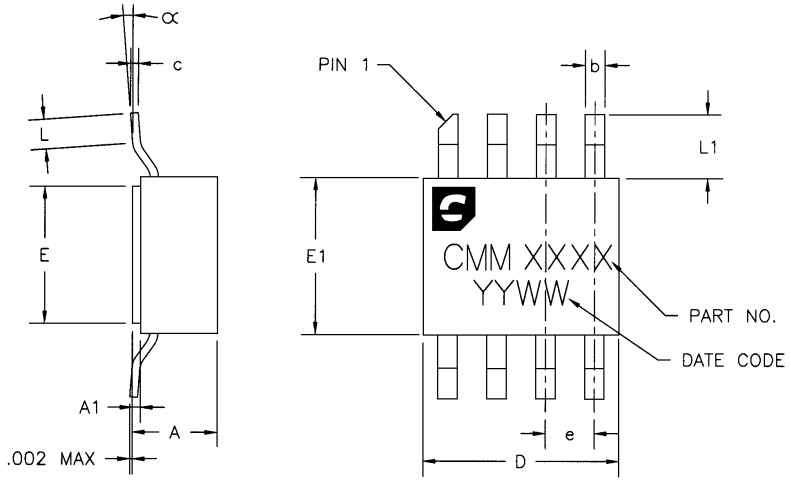
Parameter	Condition	Min	Typ	Std Deviation	Max	Units
Frequency Range		824			849	MHz
Gain	@ Digital power output	39	42	1.5		dB
Power Output	Meets IS-136 TDMA mask With Pin = 0 dBm AMPS mode	31 32.0	32 32.5	0.7		dBm dBm
Harmonics	2nd @ Pout = +32 dBm 3rd @ Pout = +32 dBm				-30 -35	dBc dBc
Return Loss			10			dB
Efficiency	32 dBm Pout IS-136 TDMA 32.5 dBm Pout / Pin = 0 dBm AMPS mode	35 50	40 55	2		% %
Positive Supply Current (I_d)	32 dBm Pout IS-54, IS-136 TDMA 32.5 dBm Pout / Pin = 0 dBm AMPS mode		675 700			mA mA
Quiescent Current (I_q)	No RF		350			mA
Negative Supply Current (-I_g)	Includes external resistor divider		1.1	0.2	2.0	mA
Negative Supply Voltage (-V_g)	Into external resistor divider	-1.3	-1.7	0.16	-2.2	V

Connection Diagram and Pin Descriptions



Pin #	Name	Description
1	RF IN	RF input
2	GND	Ground
3	V_{g1}	Input stage gate bias
4	V_{g2}	Output stage gate bias
5	RF OUT/V_{d3}	RF output and V_{d3}. External matching circuit required
6	RF OUT/V_{d3}	RF output and V_{d3}. External matching circuit required
7	V_{d2}	Second stage drain bias
8	V_{d1}	Input stage drain bias

Physical Dimensions



DIMENSION	MINIMUM	NOMINAL	MAXIMUM
A		.086[2.184]	.100[2.540]
A1	.005[.1270]	.008[.2032]	.011[.2794]
b	.017[.4318]	.020[.5080]	.023[.5842]
c	.007[.1778]	.008[2032]	.009[.2286]
D	.195[4.953]	.200[5.080]	.205[5.207]
E	.135[3.429]	.140[3.556]	.145[3.683]
E1	.155[3.937]	.160[4.064]	.165[4.191]
e		.050[1.270]	
L	.020[.5080]		.040[1.016]
L1	.055[1.397]	.065[1.651]	.075[1.905]
α	0°		8°

DIMENSIONS IN INCHES [MILIMETERS]

Ordering Information

The CMM0333 is available in a surface mount SO-8 power package and devices are available in tape and reel.

Part Number for Ordering	Package
CMM0333-AK	**SO-8 surface mount power package**
CMM0333-AK-000T	**SO-8 surface mount power package in tape and reel**

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