

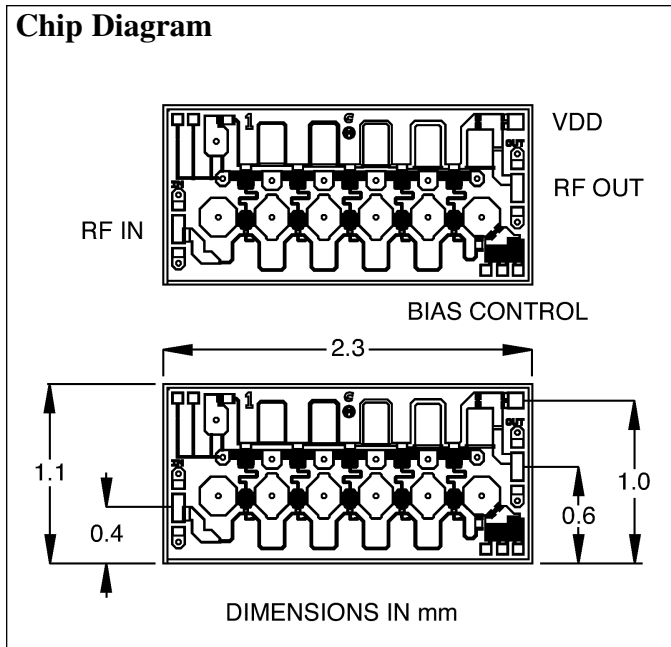
2.0 to 22.0 GHz GaAs MMIC Power Amplifier

**Advanced Product Information
October 2003**

(1 of 2)

Features

- ❑ Small Size: 45 x 92 mils
- ❑ High Gain: 11.5 dB
- ❑ Medium Power: +25 dBm, Typ P1dB
- ❑ Directly Cascadable – Fully Matched
- ❑ Unconditionally Stable
- ❑ Single Supply
- ❑ Bias Control
- ❑ pHEMT Technology
- ❑ Silicon Nitride Passivation



Specifications ($T_A = 25^\circ\text{C}$, $V_{dd} = 8\text{V}$)				
Parameters	Units	Min	Typ	Max
Frequency Range	GHz	2.0		22.0
Small Signal Gain	dB	10.0		13.5
Gain Flatness	$\pm\text{dB}$			1.6
Return Loss	dB		-10	
P1dB Variation (over operating frequency)	dBm			4.5
Power Output (@1 dB Gain Compression) ¹	dBm	22.5		27.5
Saturated Output Power	dBm	24.0		29.0
Second Order Intercept Point	dBm		40.0	
Third Order Intercept Point	dBm		30.0	
Current	mA	250	300	350
Stability ²		Unconditionally Stable		

Notes: 1. Power may be increased by 1 dB if Bias of 7V and 350 mA is used (all source resistors bonded to ground).
2. Stability factor measured on-wafer.

Absolute Maximum Ratings

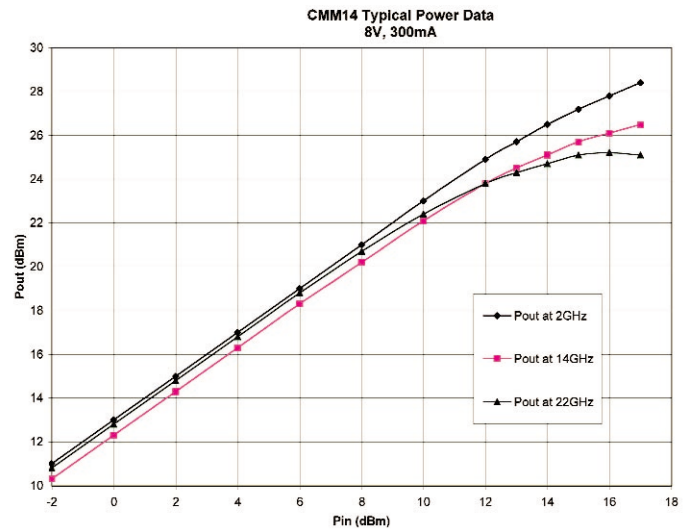
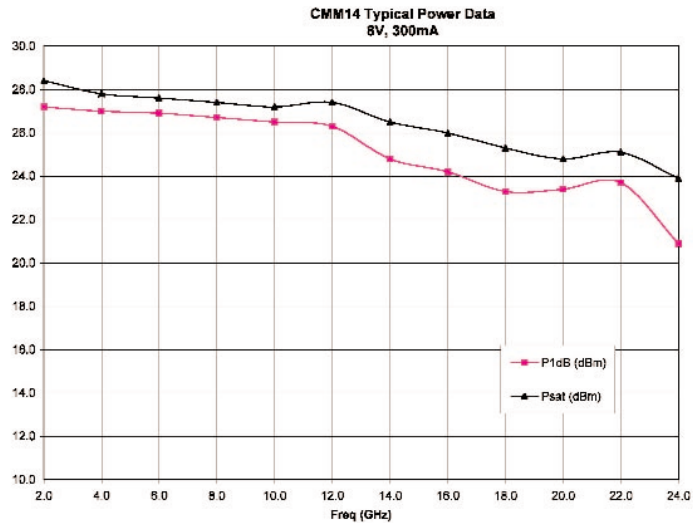
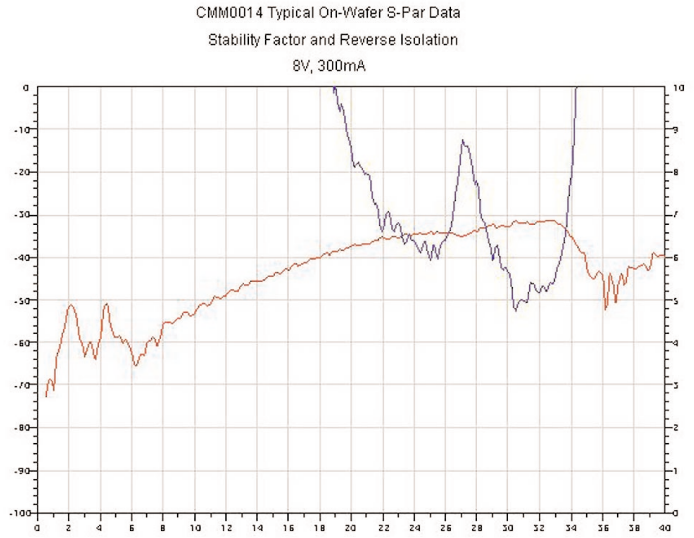
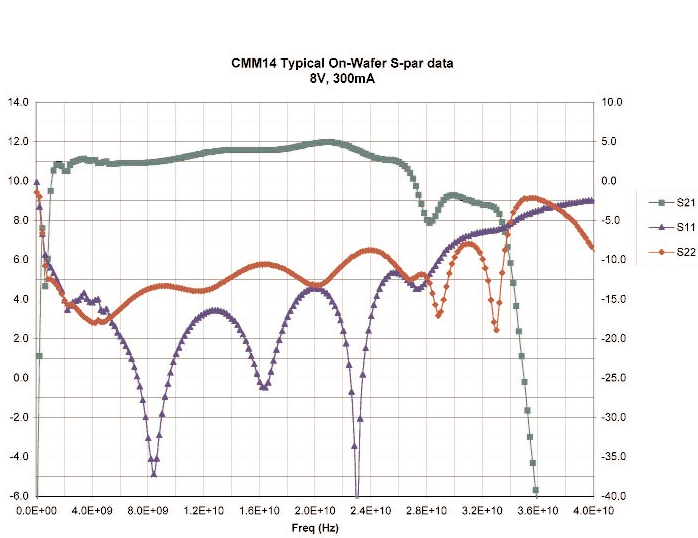
Parameter	Rating
Drain Voltage	12V
Drain Current	375 mA
Continuous Power Dissipation	3.0 W
Channel Temperature	+175°C
Storage Temperature	-65°C to +175°C
Mounting Temperature	+320°C
Input Power	+23 dBm

Die Attach and Bonding Procedures

Die Attach: Eutectic die attach is recommended. For eutectic die attach: Preform: AuSn (80% Au, 20% Sn); Stage Temperature: 290°C, $\pm 5^\circ\text{C}$; Handling Tool: Tweezers; Time: 1 min or less.

Wire Bonding: Wire Size: 0.7 to 1.0 mil in diameter (pre-stressed); Thermocompression bonding is preferred over thermosonic bonding. For thermocompression bonding: Stage Temperature: 250°C; Bond Tip Temperature: 150°C; Bonding Tip Pressure: 18 to 40 gms depending on size of wire.

Typical Performance (V_{dd} = 8V, 300 mA)



Ordering Information

The CMM-0014-BD is available in bare die and is shipped in Gel Pak.

Part Number for Ordering
CMM0014-BD

Package
Bare Die

Celeritek reserves the right to make changes without further notice to any products herein. Celeritek makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does Celeritek assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation consequential or incidental damages. "Typical" parameters can and do vary in different applications. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. Celeritek does not convey any license under its patent rights nor the rights of others. Celeritek products are not designed, intended, or authorized for use as components in systems intended for surgical implant into the body, or other applications intended to support or sustain life, or for any other application in which the failure of the Celeritek product could create a situation where personal injury or death may occur. Should Buyer purchase or use Celeritek products for any such unintended or unauthorized application, Buyer shall indemnify and hold Celeritek and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that Celeritek was negligent regarding the design or manufacture of the part. Celeritek is a registered trademark of Celeritek, Inc. Celeritek, Inc. is an Equal Opportunity/Affirmative Action Employer.