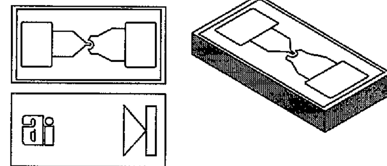
GaAs Beamless Flip Chip Mixer Diodes

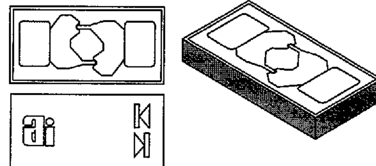
Features

- Designed for High Volume Designs
- High Frequency (20–50 GHz)
- Exceeds Environmental Requirements for MIC & Hybrid Applications
- Designed for Low Junction Capacitance & and Low Series Resistance
- Applications Include PCN Mixers and Circuits
- Low Parasitic Flip Chip Configuration

Single



Anti–Parallel



Description

This new series of gallium arsenide schottky barrier diodes offers the high performance of GaAs diodes at commercial market prices. They are designed for low junction capacitance as well as low series resistance. Diodes are designed for MIC work (hard and soft substrates) but the leadless design eliminates the problems associated with mounting of beam lead diodes.

Due to its rigid construction, it exceeds environmental requirements for MIC and hybrid applications. Diodes can be supplied on expandable film frame for high speed pick and place process. Standard packing will be in a gel pack.

Flexible Conductive epoxy is the most effective method for circuitry attachments. Standard mounting temperatures should not exceed 175 °C.

Part Number	V_B[1] @ 10 μA V	C_J[2] 0V, 1 MHz pF	R_S Ω	V_F @ 1 mA mV	Recommended Frequency GHz	Outline Drawing Number
Single		**Min/Max**	**Max**	**Min/Max**		
DMK2790	3.0	0.04 – 0.07	7	650 – 750	20 – 50	540–011
Anti–Parallel						
DMK2308	—	0.04 – 0.07	7	650 – 750	20 – 50	540–025

1. V_B cannot be measured nondestructively in antiparallel configuration.
2. C_J includes overlay capacitance of .015 pF.

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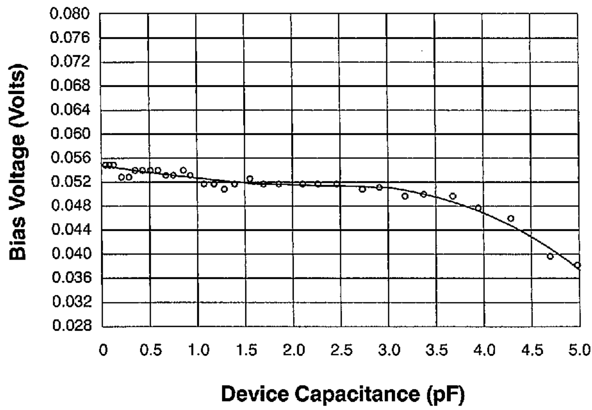
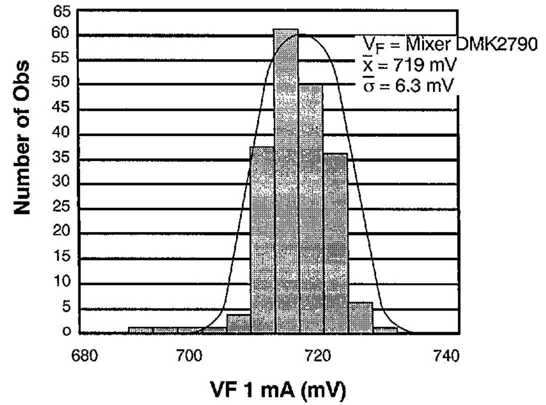
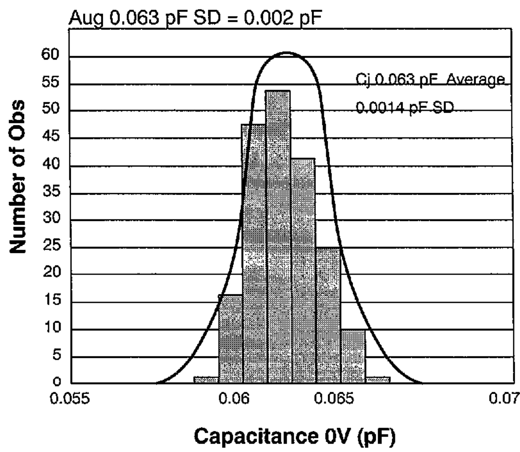
Typical Parameter Distribution on Wafer



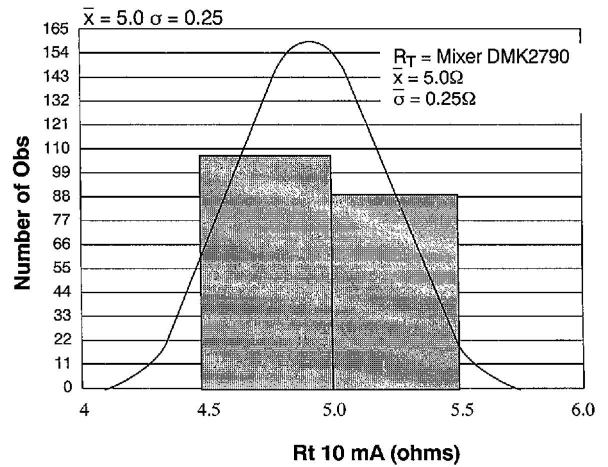
Capacitance/Voltage Variation



Histogram



Histogram



Histogram

Spice Parameters (Per Junction)

I_S Amp	R_S Ohm	n	T_D S	C_jO pF	m	E_G eV	V_J eV	X_{TI}	FC	B_V V	IBV A
0.5 E–12	4	1.05	1E–11	0.05	0.26	1.43	0.82	2	0.5	4.0	1E–05

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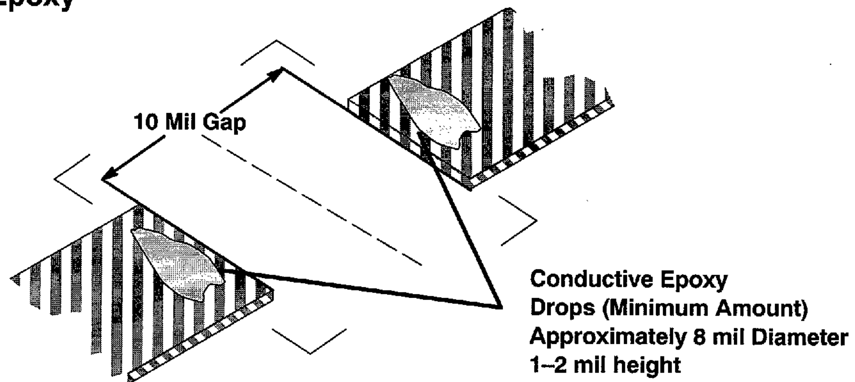
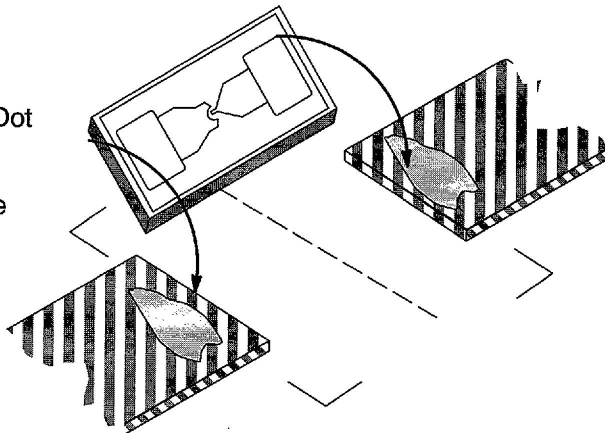
Flexible Conductive Epoxy Mounting of Alpha Beamless Flip Chip Diodes – To Soft or Hard Substrate – As Plated

1. Deposit Conductive Epoxy



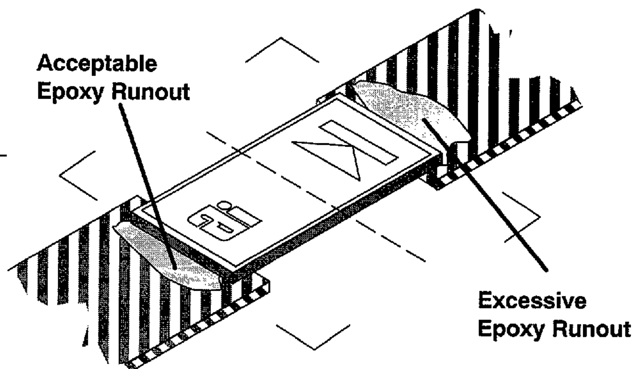
2. Perform Die Attach

- Flip Device
- Align Bond Pads to Epoxy Dot (Alignment Marks Help)
- Use Even Pressure to Make Correct Connection



3. Cure Epoxy & DC Continuity Check

- Inspect for Adequate Epoxy Fillet
- Cure According to Mfg. Preferred Schedule Typically 110–150 °C @ 60 Minutes, or 150°C, 4 Minutes for Snap-Cure Epoxies



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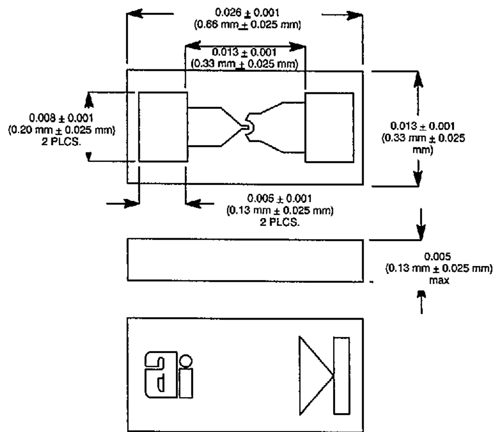
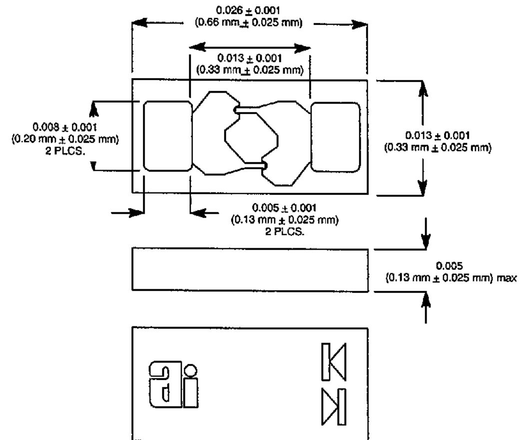
Outline Drawings

540–011



540–025



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RF GaAs MMIC Products in Metal Packages

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