



BALANCED MIXERS

[BMC-28 - 26.5-40GHz](#)

[BMC-19 - 40-60GHz](#)

[BMC-15 - 50-75GHz](#)

[BMC-12 - 60-90GHz](#)

[BMC-10 - 75-110GHz](#)

[BMC-08 - 90-140GHz](#)

[BMC-06 - 110-170GHz](#)

[BMC-05 - 140-220GHz](#)

Datasheet

Description

Farran Technology offers a wide variety of balanced mixers. These are based on planar technology and GaAs Schottky barrier beam lead diodes. They feature low conversion loss, low noise figure, excellent noise suppression and LO-RF isolation. The LO drive requirement can be reduced by operating the mixers with bias. They are extremely rugged devices for small physical size and mass. Designs are chosen from a portfolio of mixer architectures depending on the customer's detailed requirements. IF frequency coverage to at least 18GHz is available and full RF/LO bandwidths may be provided in certain frequency bands.



Features

- Planar GaAs diodes
- Rugged compact design
- High reliability
- Low noise figure conversion loss
- Broad bandwidth
- Biased designs available

Applications

- Communications
- Radiometry
- Radar
- Laboratory Test Systems

Specification	Unit	Min	Typ	Max
RF Frequency Range	GHz	140		220
Conversion Loss	dB		9	
Noise Figure DSB	dB			10

Notes:

1. The Conversion loss values are for IF bandwidth DC to 4 GHz. The BMC spec are for fixed LO frequency and a 4GHz IF bandwidth.
2. Mixers are operational over the specified full band (performance will vary over full band). Please consult factory with exact LO, RF and IF range for expected mixer performance.
3. RF/LO/IF VSWR typically <2.5:1.
4. BMC-XXB model uses bias to allow LO drive levels 0 to +3dBm.
5. LO level +13dBm as standard
6. Consult factory with LO, RF and IF range for performance specifications
7. IF bandwidths up to 40GHz are available with fixed LO, for certain models consult factory
8. Models covering frequencies beyond 220GHz are available, consult factory
9. FTL recommends the use of a precision PSU (FDB-F4) for best practice protection of Schottky diodes in all mixers.

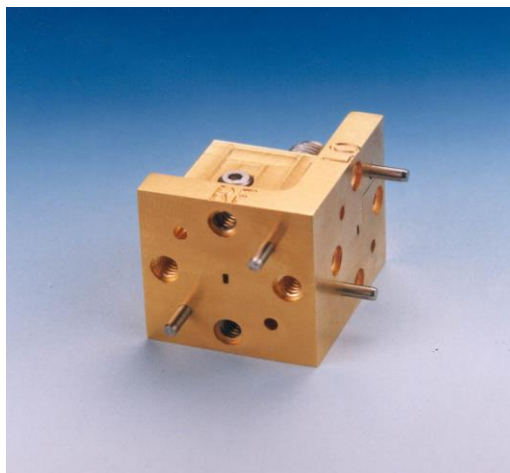
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RF Frequency Range	GHz	110		170
Conversion Loss	dB		9	
Noise Figure DSB	dB			10

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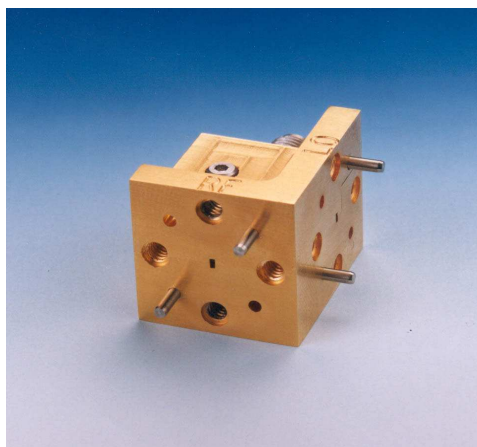
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Specification	Unit	Min	Typ	Max
RF Frequency Range	GHz	90		140
Conversion Loss	dB		7.5	
Noise Figure DSB	dB			8.5

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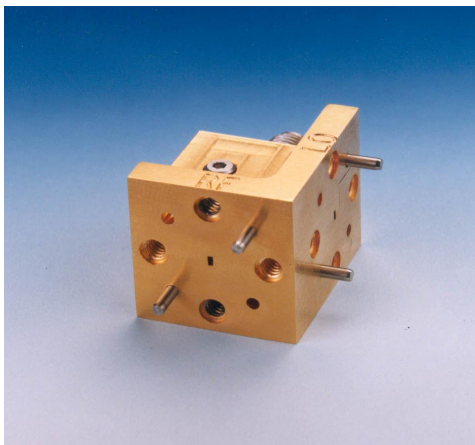
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Specification BMC-10 (Unbiased)	Unit	Min	Typ	Max
RF Frequency Range	GHz	75		110
Conversion Loss (Full-band Fixed LO)	dB		7.5	12
Conversion Loss (Full-band Swept LO)	dB		8.5	13
LO power	dBm	+10	+13	
Specification BMC-10B (Biased)	Unit	Min	Typ	Max
RF Frequency Range	GHz	75		110
Conversion Loss (Full-band Fixed LO)	dB		8.5	13
Conversion Loss (Full-band Swept LO)	dB		9	15
LO power	dBm	+0	+3	

Datasheet

Typical Plots:

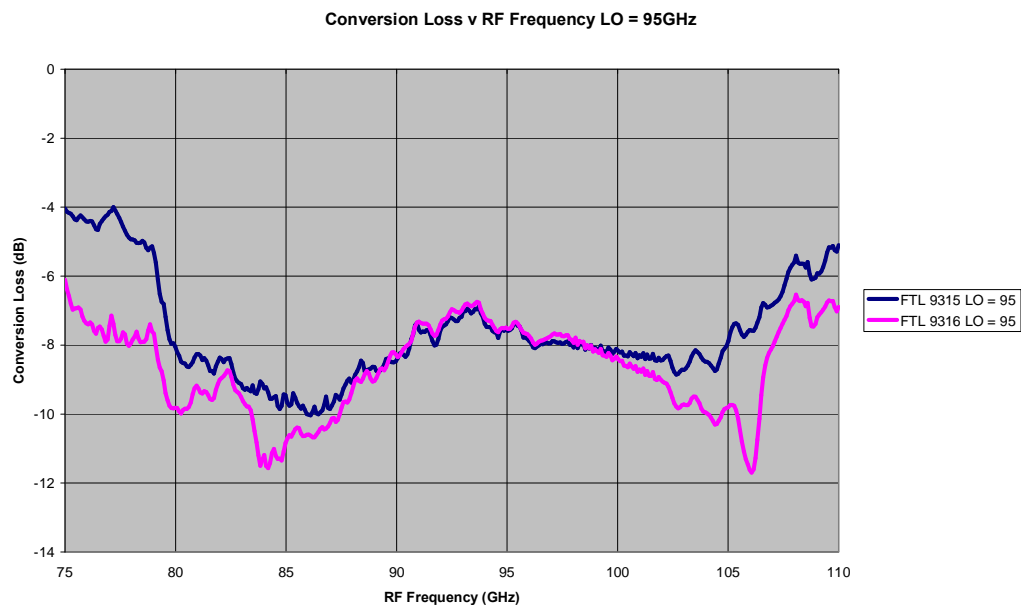


Figure 1 Conversion Loss Full Band (75 – 110 GHz) LO = 95 GHz BMC-10 (Unbiased)

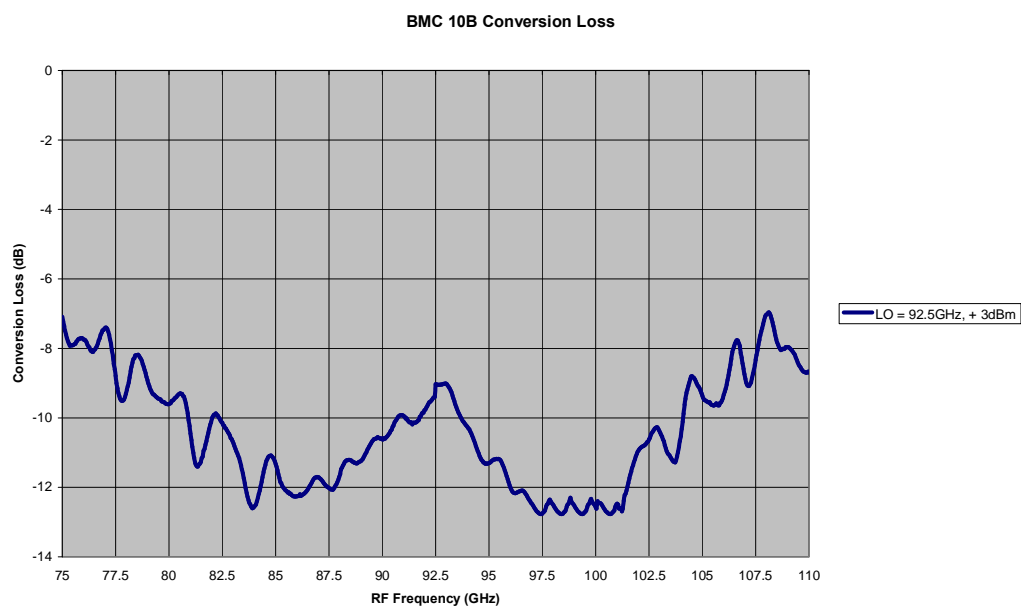


Figure 2 Conversion Loss Full Band (75 – 110 GHz) LO = 92.5 GHz BMC-10B (Biased)

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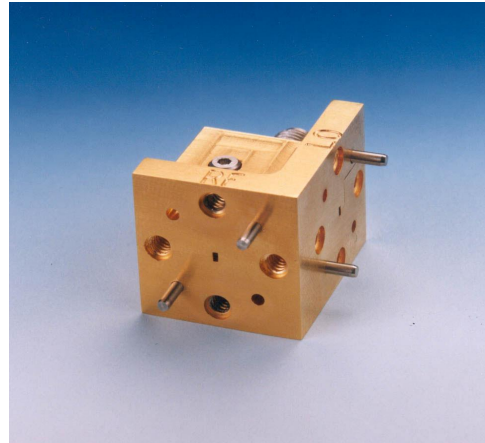
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Specification	Unit	Min	Typ	Max
RF Frequency Range	GHz	60		90
Conversion Loss	dB		7.5	
Noise Figure DSB	dB			8.5

Notes:

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4. BMC-XXB model uses bias to allow LO drive levels 0 to +3dBm.
5. LO level +13dBm as standard
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7. IF bandwidths up to 40GHz are available with fixed LO, for certain models consult factory
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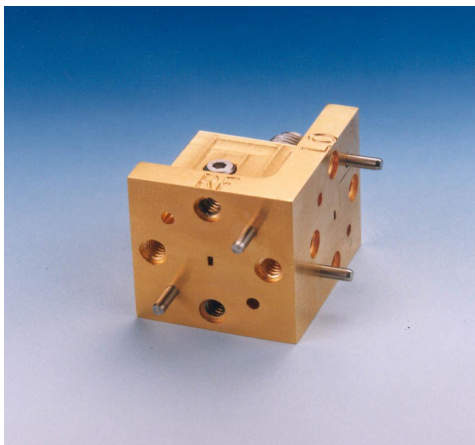
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Specification BMC-15-000X	Unit	Min	Typ	Max
(Unbiased Mixer)				
RF Frequency Range	GHz	50		75
Conversion Loss (Full RF Band, Fixed LO @ centre Freq)	dB		7.5	12
Conversion Loss (Full RF Band, Swept LO, IF<4GHz)	dB		8.5	13
LO Power	dBm		+10	+13

Specification BMC-15B-000X	Unit	Min	Typ	Max
(Biased Mixer)				
RF Frequency Range	GHz	50		75
Conversion Loss (Full RF Band, Fixed LO @ centre Freq)	dB		8.5	13
Conversion Loss (Full RF Band, Swept LO, IF<4GHz)	dB		10	15
LO Power	dBm		0	+3

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Typical Plots:

BMC 15 Conversion Loss Characteristic Date 29-04-09

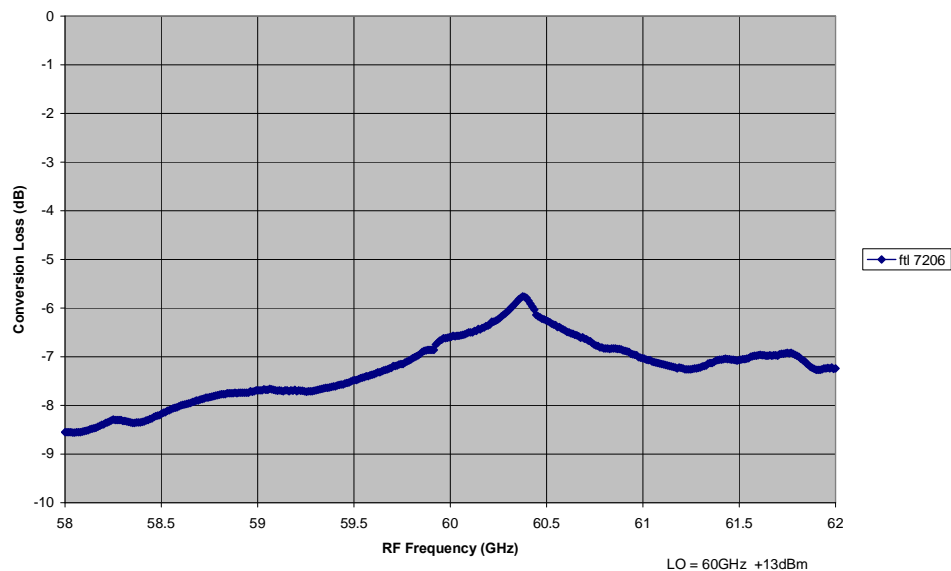


Figure 1 Conversion Loss (58 – 62 GHz) LO = 60 GHz BMC-15 (Unbiased)

Conversion Loss v RF Frequency for fixed IF = 400MHz (LO Swept)

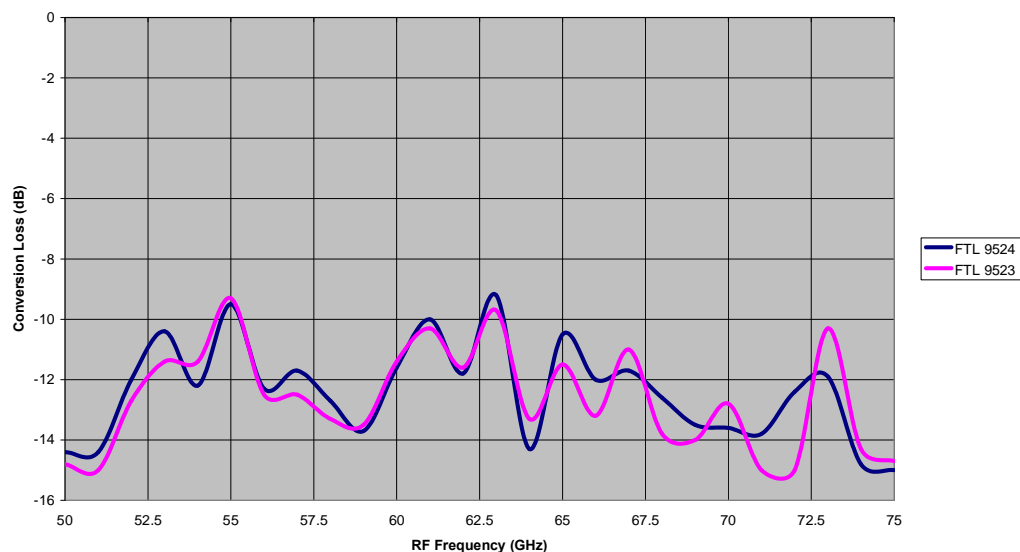


Figure 2 Conversion Loss Full Band (50 – 75 GHz) LO swept BMC-15B (Biased)

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BMC 15B Conversion Loss Date 20/08/09

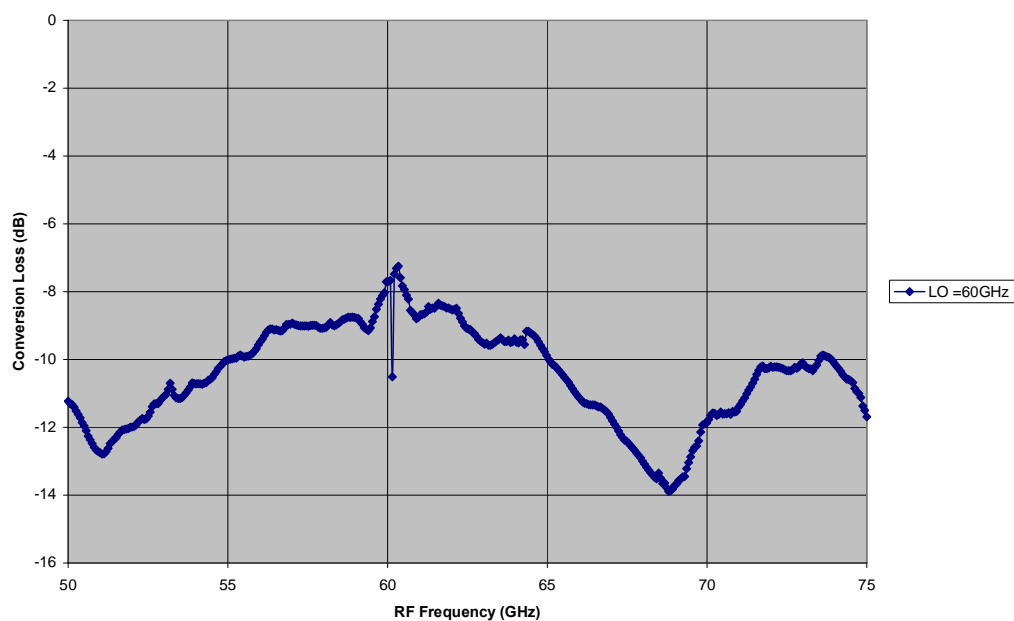


Figure 3 Conversion Loss Full Band (50 – 75 GHz) LO = 60 GHz BMC-15B (Biased)

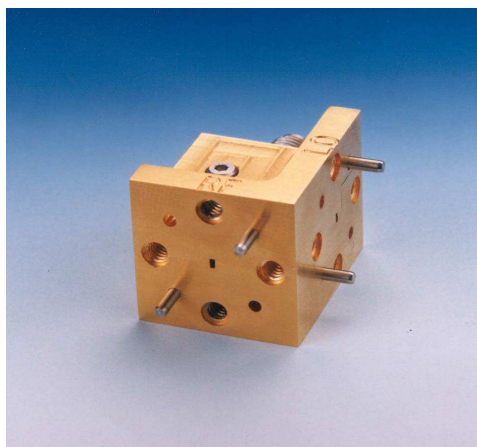
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Specification	Unit	Min	Typ	Max
RF Frequency Range	GHz	40		60
Conversion Loss	dB		6	
Noise Figure DSB	dB			5.5

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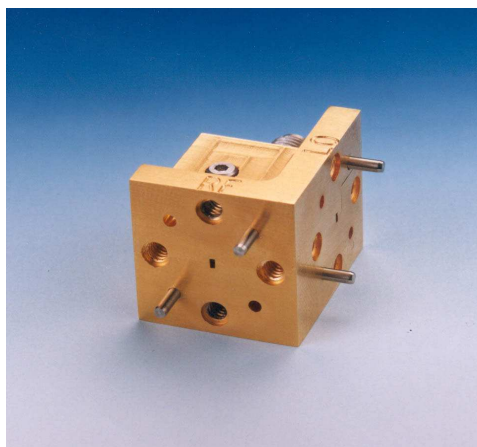
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RF Frequency Range	GHz	26.5		40
Conversion Loss	dB		7	
Noise Figure DSB	dB			7

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