

# MODULATORS

Plug-In & Coaxial

I&Q 9 MHz to 1880 MHz



ZFMIQ



ZAMIQ

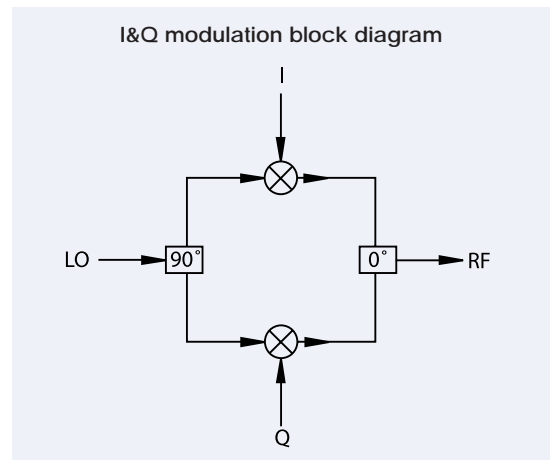


high rejection of carrier and sideband

MODEL NO.	FREQUENCY (MHz)		I&Q		CONVERSION LOSS (dB)			CARRIER REJECTION (-dBc)		SIDE BAND REJECTION (-dBc)		HARMONIC SUPPRESSION (-dBc)		CASE STYLE	CONNECTION	PRICE \$
	RF(signal)/LO(carrier) f <sub>L</sub>	f <sub>U</sub>	Min.	Max.	$\bar{x}$	$\sigma$	Max.	Typ.	Min.	Typ.	Min.	3XI/Q Typ. Min.	5XI/Q Typ. Min.			
MIQA-10M	9	11	DC	2	5.8	0.20	7.0	41	30	40	30	58	48	A06	dv	49.95
MIQA-21M	20	23	DC	3	6.2	0.14	7.0	50	40	40	30	48	40	A06	gd	39.95
MIQA-70M	66	73	DC	5	6.2	0.10	7.0	38	30	38	30	48	45	A06	dv	39.95
MIQA-70ML	66	73	DC	5	5.7	0.10	6.5	38	30	38	30	48	43	A06	dv	49.95
MIQA-91M	86	95	DC	5	5.5	0.10	6.5	38	30	38	30	48	45	A06	dv	49.95
MIQA-100M	95	105	DC	5	5.5	0.10	6.5	38	30	38	30	48	45	A06	dv	49.95
MIQA-195M	185	205	DC	5	5.6	0.10	6.5	38	30	38	30	48	45	A06	dv	49.95
MIQC-88M	52	88	DC	5	5.7	0.10	7.5	41	35	34	30	52	40	C07	dx	49.95
MIQC-176M	104	176	DC	5	5.5	0.10	7.0	38	30	36	30	47	35	C07	dx	54.95
MIQC-895M	868	895	DC	5	8.0	0.10	10.5	40	30	40	30	52	35	C07	dw	99.95
MIQC-1785M	1710	1785	DC	5	9.0	0.30	10.5	35	25	35	25	40	33	C07	dx	99.95
MIQC-1880M	1805	1880	DC	5	9.0	0.30	10.5	35	25	35	25	40	33	C07	dx	99.95
▲ ZAMIQ-895M	868	895	DC	5	8.0	0.10	10.5	40	30	40	30	52	35	HHH141	gv	149.95
▲ ZFMIQ-10M	9	11	DC	2	5.8	0.20	7.0	41	30	40	30	58	45	J17	dz	89.95
▲ ZFMIQ-70ML	66	73	DC	5	5.7	0.1	6.5	38	30	38	30	48	43	J17	dz	89.95
▲ ZFMIQ-91M	86	95	DC	5	5.5	0.17	6.5	38	30	38	30	48	45	J17	dz	89.95
▲ ZFMIQ-100M	95	105	DC	5	5.5	0.17	6.5	38	30	38	30	48	45	J17	dz	89.95
□ MIQY-70M	67	73	DC	5	5.8	0.20	7.0	40	35	36	30	47	40	C07	dy	19.95
□ MIQY-140M	137	143	DC	5	5.8	0.20	7.0	34	30	36	30	45	35	C07	dy	19.95

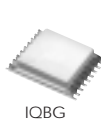
NOTES:

- $\bar{x}$  Average of conversion loss at center of mid-band frequency ( $(f_L + f_U)/4$ )
- ◆ Aqueous washable
- σ Standard deviation
- Non-hermetic
- ▲ Available only with SMA connectors
- \* BLUE CELL™ modulators protected by U.S. Patents 5,534,830 5,640,132 5,640,134 5,640,699, 5,745,017
- A. General Quality Control Procedures, Environmental Specifications, Hi-Rel and MIL description are given in section 0, see "Mini-Circuits Guarantees Quality" article.
- B. Connector types and case mounted options, case finishes are given in section 0, see "Case styles & outline drawings".
- C. Prices and specifications subject to change without notice.
- 1. Absolute maximum power, voltage and current rating:
  - 1a. LO power, 50mW
  - 1b. I&Q current, 40mA
- 2. Operating LO power: 10 ± 1dBm
- 3. 1dB compression: 0dBm typical
- 4. Conversion Loss = (I+Q) power, dBm - RF power, dBm
- 5. Carrier and sideband rejections measured at -5dBm I/Q power.
- 6. Q=I-90° for MIQA-70M  
Q=I+90° for all other models



# Surface Mount

## I&Q 52 MHz to 2000 MHz



IQBG



JCIQ

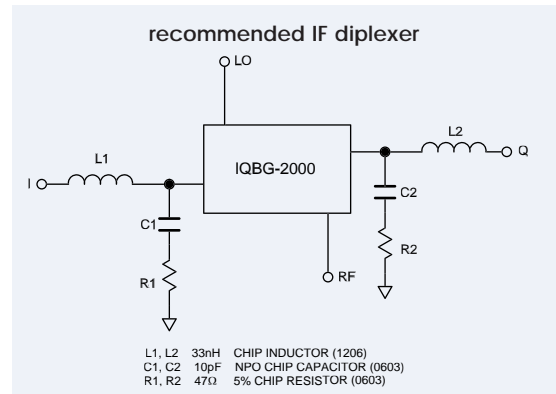
high rejection of carrier and sideband

BLUE CELL

MODEL NO.	FREQUENCY (MHz)		CONVERSION LOSS (dB)			CARRIER REJECTION (-dBc)		SIDE BAND REJECTION (-dBc)		HARMONIC SUPPRESSION (-dBc)				CASE STYLE	CONNECTION	PRICE \$		
	RF (signal)/ LO (carrier)		Min.	Max.	$\bar{x}$	$\sigma$	Max.	Typ.	Min.	Typ.	Min.	3XI/Q					5XI/Q	
	$f_l$	$f_u$										I&Q	Typ. Min.				Typ. Min.	
IQBG-2000*	1800	2000	DC	10	7.5	—	9.0	30	20	34	28	50	45	70	50	SM20	lm	39.95
JCIQ-88M	52	88	DC	5	5.6	0.1	7.0	40	32	35	30	45	35	65	50	BG291	hs	49.95
JCIQ-176M	104	176	DC	5	5.6	0.1	7.0	35	30	35	30	45	35	65	50	BG291	hs	54.95

### features

- IQBG, excellent temperature stability, low noise floor
- cellular applications, radar and communication systems
- good carrier and sideband rejections
- excellent 3rd and 5th order harmonic suppression
- all MIQA and MIQC models, metal case and hermetically sealed
- JCIQ models, shielded surface mount metal case with solder-plated J-leads



Incorporates multi-layer monolithic ceramic substrates for moderate bandwidth and low cost RF/Microwave products

### pin and coaxial connections

see case style outline drawings

PORT	dv	dw	dx	dy	dz	gd	gv	hs	lm
LO (carrier)	1	13	13	13	1	1	1	2	9
RF (signal)	8	2	1	1	3	8	3	9	14
I (0°)(ref.)	7	4	8	8	S	7	4	4	10
Q (90°)*	4	1	5	5	2	4	2	11	18
ISOLATED**	—	9,12,16	—	10,11	—	—	—	—	—
50W TERM. EXT.	2	—	—	—	—	—	—	—	—
NOT USED	—	—	—	—	—	2	—	—	—
GND EXT.	3,5,6	3,5,6,7,8,10,11,14,15	2,3,4,6,7,9,10,11,12,14,15,16	2,3,4,6,7,9,12,14,15,16	—	3,5,6	—	1,3,5,6,7,8,10,12,13,14	1,2,3,4,5,6,7,8,11,12,13,15,16,17
CASE GND	3,5,6	3,5,6,7,8,10,11,14,15	3,4,6,7,10,11,14,15	2,3,4,6,7,9,12,14,15,16	—	3,5,6	—	—	—

\* For I&Q modulators: Q(90°) for lower sideband suppression.

\*\* For MIQY external variable capacitors can be connected at pins 10 & 11 to ground for improvement of sideband rejection.



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