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to allow for the correct viewing of
continuous facing pages.**

FREQUENCY MIXERS

Surface Mount

LEVEL 7 150 kHz to 4.3 GHz


ALY


ASK-KK81


†JMS


† LRMS-J


†RMS

+7 dBm LO, up to +1 dBm RF

	MODEL NO.	FREQUENCY MHz LO/RF f_L-f_U	FREQUENCY MHz IF	CONVERSION LOSS dB Mid-Band m $\bar{x}$	CONVERSION LOSS dB Mid-Band m σ	CONVERSION LOSS dB Mid-Band m Max.	CONVERSION LOSS dB Total Range Max.	LO-RF ISOLATION, dB L Typ.	LO-RF ISOLATION, dB L Min.	LO-RF ISOLATION, dB M Typ.	LO-RF ISOLATION, dB M Min.	LO-RF ISOLATION, dB U Typ.	LO-RF ISOLATION, dB U Min.	LO-IF ISOLATION, dB L Typ.	LO-IF ISOLATION, dB L Min.	LO-IF ISOLATION, dB M Typ.	LO-IF ISOLATION, dB M Min.	LO-IF ISOLATION, dB U Typ.	LO-IF ISOLATION, dB U Min.	CASE STYLE Note B	CONNECTION	PRICE $ Qty. (1-9)
◆	ALY-3	2300-2600	DC-400	5.5	.15	—	7.0			31 (typ.)		25 (min.)				15 (typ.)		12 (min.)		CB539	jx	5.95
◆	ALY-4	3300-4300	DC-600	5.7	.15	—	8.0			28 (typ.)		23 (min.)				15 (typ.)		12 (min.)		CB539	jx	5.95
	ASK-1-KK81	1-600	DC-600	5.58	.06	7.0	8.5	50	30	35	25	30	20	45	35	30	20	25	15	KK81	w	6.95
†	ASK-2-KK81	1-1000	DC-1000	6.79	.10	8.0	9.8	60	40	35	18	26	16	50	30	25	17	15	10	KK81	w	8.25
	JMS-1	2-500	DC-500	5.75	.10	7.0	8.0	55	50	45	30	40	25	55	45	45	25	32	20	BH292	ht	4.95
	JMS-2	20-1000	DC-1000	7.0	.15	8.4	9.5	63	40	50	28	35	20	56	30	47	22	37	20	BH292	ht	7.45
	JMS-2W	5-1200	DC-500	6.8	.10	8.0	9.0	60	40	60	30	37	20	60	40	48	20	31	15	BH292	ht	7.95
	JMS-5	5-1500	DC-1000	6.0	.10	8.0	9.5	63	40	50	25	35	20	60	40	30	18	15	8	BH292	ht	9.95
	JMS-11X	5-1900	5-1000	6.7	.15	8.2	9.8	58	45	35	20	27	18	56	45	37	20	27	20	BH292	hu	4.25***
◆	LRMS-1J	0.5-500	DC-500	5.94	.05	7.0	8.5	55	50	33	25	27	20	55	45	30	23	24	19	QQQ569	w	6.25
◆	LRMS-1WJ	2-750	DC-750	5.83	.21	7.5	8.5	70	45	45	28	38	22	60	45	40	25	30	20	QQQ569	w	6.75
◆	LRMS-2J	5-1000	DC-1000	6.67	.26	8.0	9.5	60	40	40	20	25	18	55	30	30	20	20	12	QQQ569	w	6.95
◆	LRMS-2DJ	5-1000	DC-1000	6.81	.06	8.0	10.0	59	40	40	30	33	22	55	30	40	22	30	20	QQQ569	w	7.25
◆	LRMS-2UJ	10-1000	10-750	6.79	.16	8.0	9.5	55	40	40	30	30	25	55	30	35	25	30	22	QQQ569	w	11.45
◆	LRMS-5J	5-1500	DC-1000	5.92	.34	7.5	9.5	60	40	40	20	30	18	55	30	30	18	15	8	QQQ569	w	13.95
◆	LRMS-11AJ	1500-1900	40-400	7.44	.36	—	9.0			25 (typ.)		17 (min.)				23 (typ.)		15 (min.)		QQQ569	w	16.95
◆	LRMS-860J	800-1050	DC-250	5.5	.23	7.5	7.5			36 (typ.)		25 (min.)				24 (typ.)		18 (min.)		QQQ569	w	11.45
◆	LRMS-30J	200-3000	DC-1000	6.8	.30	9.0	9.8			30 (typ.)		17 (min.)				27 (typ.)		7 (min.)		QQQ569	w	7.95***
	RMS-1	0.5-500	DC-500	5.94	.05	7.0	8.5	55	50	33	25	27	20	55	45	30	23	24	19	TT240	w	6.25
	RMS-1W	2-750	DC-750	5.83	.21	7.5	8.5	70	45	45	28	38	22	60	45	40	25	30	20	TT240	w	6.75
	RMS-1BM	5-600	DC-600	6.0	.05	7.0	7.5	65	45	50	32	35	23	55	40	40	25	35	22	TT240	w	6.25
	RMS-2	5-1000	DC-1000	6.67	.26	8.0	9.5	60	40	40	20	25	18	55	30	30	20	20	12	TT240	w	6.95
	RMS-2D	5-1000	DC-1000	6.81	.06	8.0	10.0	59	40	40	30	33	22	55	30	40	22	30	20	TT240	w	7.25
	RMS-2U	10-1000	10-750	6.79	.16	8.0	9.5	55	40	40	30	30	25	55	30	35	25	30	22	TT240	w	11.45
	RMS-5	5-1500	DC-1000	5.92	.34	7.5	9.5	60	40	40	20	30	18	55	30	30	18	15	8	TT240	w	13.95
	RMS-11A	1500-1900	40-400	7.44	.36	—	9.0			25 (typ.)		17 (min.)				23 (typ.)		15 (min.)		TT240	w	16.95
✪	RMS-11F	350-2000	DC-400	5.5	.20	7.0	9.2	37	26	36	20	32	20	22	14	29	20	28	20	TT240	w	4.95***
	RMS-11X	5-1900	5-1000	7.1	.10	8.2	9.8	58	45	35	20	27	18	56	45	37	20	27	20	TT240	gk	3.95***
	RMS-30	200-3000	DC-1000	6.5	.20	9.0	9.8			27 (typ.)		17 (min.)				20 (typ.)		7 (min.)		TT240	w	6.95***
	RMS-860	800-1050	DC-250	5.5	.23	7.5	7.5			36 (typ.)		25 (min.)				24 (typ.)		18 (min.)		TT240	w	11.45

L = low range [f_L to 10 f_L] M = mid range [10 f_L to f_U/2] U = upper range [f_U/2 to f_U]

m = mid band [2f_L to f_U/2]

NOTES:

$\bar{x}$ Average of conversion loss at center of mid-band frequency (f_L+f_U/4)

σ Standard deviation

◆ Aqueous washable. For non-aqueous requirements, LRMS units available in case style QQQ130

† Phase detection, positive polarity except RMS-860 and LRMS-860

✪ Frequency ranges specified: m = 350-1000 MHz, L = 350-750 MHz, M = 750-1000 MHz, U = 1000-2000 MHz

*** Price for quantities 10-49

A. Environmental specifications and re-flow soldering information available in General Information Section.

B. Units are non-hermetic unless otherwise noted. For details on case dimensions & finishes see "Case Styles & Outline Drawings".

C. Prices and Specifications subject to change without notice.

1. Absolute maximum power, voltage and current ratings:
   1a. RF power, 50mW
   1b. Peak IF current, 40mA

NSN GUIDE

MCL NO.	NSN
RMS-1	5895-01-415-6798
RMS-2	5895-01-447-3489
RMS-2TR	5895-01-382-2092
SCM-1NL	5895-01-374-9561

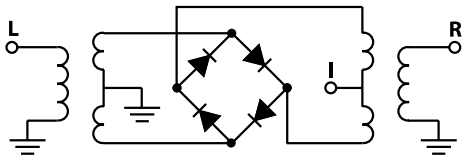
991222

SCM SKY SYM-J SYM TUF-SM

+7 dBm LO, up to +1 dBm RF

	MODEL NO.	FREQUENCY MHz LO/RF f_L-f_U	FREQUENCY MHz IF	CONVERSION LOSS dB Mid-Band m $\bar{x}$	CONVERSION LOSS dB Mid-Band m σ	CONVERSION LOSS dB Mid-Band m Max.	CONVERSION LOSS dB Total Range Max.	LO-RF ISOLATION, dB L Typ.	LO-RF ISOLATION, dB L Min.	LO-RF ISOLATION, dB M Typ.	LO-RF ISOLATION, dB M Min.	LO-RF ISOLATION, dB U Typ.	LO-RF ISOLATION, dB U Min.	LO-IF ISOLATION, dB L Typ.	LO-IF ISOLATION, dB L Min.	LO-IF ISOLATION, dB M Typ.	LO-IF ISOLATION, dB M Min.	LO-IF ISOLATION, dB U Typ.	LO-IF ISOLATION, dB U Min.	CASE STYLE Note B	CONNECTION	PRICE $ Qty. (1-9)
	SCM-1	1-500	DC-500	5.72	.10	7.0	8.0	60	40	45	35	40	30	50	40	45	35	40	25	YY101	d	4.25
	SCM-2	5-1000	DC-500	5.76	.03	8.3	9.8	50	40	40	25	35	20	55	30	40	25	30	18	YY101	k	5.45
	SCM-2500	500-2500	DC-500	5.88	.08	6.9	10.0	35	22	35	22	35	22	18	12	18	12	18	12	YY101	r	11.95
	SKY-5G	2000-5000	DC-1000	6.6	.10	—	9.5	28 (typ.)		20 (min.)				13 (typ.)		7 (min.)				BJ398	je	14.95
	SKY-7G	2000-7000	DC-1000	7.0	.10	—	9.8	28 (typ.)		15 (min.)				20 (typ.)		7 (min.)				BJ398	je	16.95
	SKY-42	2000-4200	DC-1200	5.0	.30	—	8.5	31 (typ.)		20 (min.)				17 (typ.)		12 (min.)				BJ398	je	14.95
	SKY-53R	2800-5300	DC-500	5.7	.20	—	9.5	28 (typ.)		15 (min.)				12 (typ.)		8 (min.)				BJ398	hp	14.95
	SKY-60	2500-6000	DC-1500	6.2	.20	—	9.7	28 (typ.)		17 (min.)				14 (typ.)		8 (min.)				BJ398	je	14.95
	SYM-2	2-1000	DC-1000	5.4	.10	7.2	9.5	70	45	50	30	40	25	63	40	48	24	37	20	TTT166	x	11.95
	SYM-860	800-1050	DC-250	5.6	.10	7.0	7.0	39 (typ.)		25 (min.)				37 (typ.)		20 (min.)				TTT166	x	8.95
	SYM-11	1-2500	10-600	7.0	.30	9.0	10.5	63	40	40	24	34	20	61	40	35	20	28	15	TTT167	x	9.95
◆	SYM-11J	1-2500	10-500	7.4	.10	8.0	9.8	64	40	43	24	35	20	60	40	35	20	30	15	CG581	ka	10.95
	SYM-12	5-1200	DC-1000	6.5	.30	8.0	9.0	68	45	50	30	37	25	56	40	46	25	29	18	TTT167	x	9.45
	SYM-2500	1-2500	DC-500	6.5	.10	8.5	9.8	70	50	50	25	36	20	60	45	30	10	16	8	TTT167	x	11.95
	SYM-42	1000-4200	DC-200	6.7	.20	—	10.2	35 (typ.)		20 (min.)				30 (typ.)		8 (min.)				TTT167	kv	15.95
	TUF-1SM	2-600	DC-600	5.85	.04	7.0	8.0	60	50	42	30	37	25	60	45	47	30	36	22	NNN150	z	4.25
	TUF-2SM	50-1000	DC-1000	5.85	.07	7.5	9.0	58	40	47	30	42	25	50	35	44	20	29	18	NNN150	z	5.20
†	TUF-3SM	0.15-400	DC-400	4.7	.02	7.0	8.0	60	50	46	30	35	25	60	40	47	25	35	20	NNN150	z	6.10
	TUF-5SM	20-1500	DC-1000	5.7	.04	9.0	9.0	54	40	42	30	39	25	40	25	32	18	23	8	NNN150	z	10.45
	TUF-11ASM	1400-1900	40-500	6.8	.30	8.6	8.6	33 (typ.)		20 (min.)				29 (typ.)		15 (min.)				NNN150	z	16.95
	TUF-860SM	800-1050	DC-250	5.6	.24	7.75	7.75	35 (typ.)		25 (min.)				27 (typ.)		20 (min.)				NNN150	z	9.45

L = low range [f_L to 10 f_L] M = mid range [10 f_L to f_U/2] U = upper range [f_U/2 to f_U]



pin connections see case style outline drawings

PORT	d	k	r	w	x	z	gk	ht[1]	hu[2]	hp	je	jx	ka	kv
LO	8	8	1	1	2	4	1	6	6	5	1	5	11	1
RF	1	1	8	4	1	1	5	3	2	1	5	10	5	2
IF	3,4^	3	3	5	3	2	4	2	3	7	7	8	2	3
GND EXT.	2,5,6,7	2,5,6,7	2,4,5,6,7	2,3,6	4,5,6	3	2,3,6	1,4,5	1,4,5	2,3,4,6,8	2,3,4,6,8	all others	all others	4,5,6
CASE GND	—	—	—	—	—	3	—	—	—	—	—	—	—	—
NOT USED	—	4	—	—	—	—	—	—	—	—	—	—	—	—

^ pins must be connected together externally
[1] pin connection physically same as w
[2] pin connection physically same as gk

010723

LEVEL 7 50 kHz to 6.7 GHz

ADE

+7 dBm LO, up to +1 dBm RF

	MODEL NO.◆	FREQUENCY MHz LO/RF f_L-f_U	FREQUENCY MHz IF	CONVERSION LOSS dB Mid-Band m $\bar{x}$	m σ	m Max.	Total Range Max.	LO-RF ISOLATION, dB L Typ.	L Min.	M Typ.	M Min.	U Typ.	U Min.	LO-IF ISOLATION, dB L Typ.	L Min.	M Typ.	M Min.	U Typ.	U Min.	IP3@ center band Typ. (dBm)	CASE STYLE	CONNECTION	PRICE $ Qty. (10-49)
	ADE-1**	0.5-500	DC-500	5.0	.10	6.5	7.8	70	50	55	35	45	30	65	45	40	25	30	20	15	CD636	ht	1.99✱
†	ADE-1ASK**	2-600	DC-600	5.3	.10	6.5	7.5	55	45	50	30	40	25	50	40	45	24	35	18	16	CD542	ht	3.95
†	ADE-2ASK**	1-1000	DC-1000	5.4	.10	6.8	9.5	55	45	45	30	36	20	50	40	32	22	22	12	12	CD542	ht	4.25
†	ADE-3G**	2300-2700	DC-400	5.6	.10	—	7.0			36 (typ.)		25 (min.)				26 (typ.)		17 (min.)		13	CD542	ht	3.45
	ADE-3GL**	2100-2600	DC-600	6.0	.25	—	8.8			34 (typ.)		25 (min.)				20 (typ.)		7 (min.)		17	CD541	jw	4.95
☆	ADE-4**	200-1000	DC-800	6.8	0.1	8.5	8.5	60	45	53	40	45	30	45	30	40	22	35	20	15	CD542	ht	4.25
†	ADE-5**	5-1500	DC-1000	6.6	.10	7.5	9.3	50	40	40	25	33	23	50	40	30	20	20	10	15	CD542	ht	3.45
	ADE-6**	0.05-250	DC-200	4.6	.05	7.0	8.4	62	49	40	30	40	20	58	44	45	24	25	15	10	CD637	ht	4.95
NEW	ADE-11X**	10-2000	5-1000	7.1	0.1	8.2	9.8	62	45	36	20	27	18	60	45	37	20	38	20	9	CD542	nd	1.99✱
	ADE-12**	50-1000	DC-1000	7.0	.15	8.0	9.0	40	25	—	—	33	22	44	26	—	—	37	20	17	CD541	jv	2.95
	ADE-13**	50-1600	50-1000	8.1	.10	9.0	9.8	50	25	40	25	33	20	49	30	35	20	32	20	11	CD541	ju	3.10
	ADE-14**	800-1000	DC-200	7.4	.20	—	8.9			32 (typ.)		22 (min.)				34 (typ.)		20 (min.)		17	CD541	jv	3.25
	ADE-18**	1700-2500	DC-600	4.9	.20	—	7.3			27 (typ.)		22 (min.)				10 (typ.)		7 (min.)		10	CD542	jw	3.45
	ADE-18W**	1750-3500	DC-700	5.4	.30	8.9	8.9			33 (typ.)		20 (min.)				12 (typ.)		7 (min.)		11	CD542	jw	3.95
	ADE-20**	1500-2000	DC-300	5.4	.10	—	7.8			31 (typ.)		22 (min.)				28 (typ.)		20 (min.)		14	CD542	jv	4.95
	ADE-28**	1500-2800	DC-1000	5.1	.25	—	8.2			30 (typ.)		21 (min.)				27 (typ.)		17 (min.)		8	CD542	jv	5.95
	ADE-30**	200-3000	DC-1000	4.5	.20	9.0	9.8			35 (typ.)		20 (min.)				20 (typ.)		7 (min.)		14	CD542	ht	6.95
	ADE-30W**	300-4000	DC-950	6.8	.20	9.0	9.8			35 (typ.)		17 (min.)				16 (typ.)		7 (min.)		12	CD542	ht	8.95
	ADE-32**	2500-3200	DC-1200	5.4	0.2	—	9.4			29 (typ.)		20 (min.)				30 (typ.)		20 (min.)		15	CD542	jv	6.95
†	ADE-35**	1600-3500	DC-1500	6.3	.50	—	9.8			25 (typ.)		16 (min.)				22 (typ.)		12 (min.)		11	CD542	jv	4.95
	ADE-901**	800-1000	DC-200	5.9	.10	—	7.3			32 (typ.)		22 (min.)				26 (typ.)		18 (min.)		13	CD542	jv	2.95

L = low range [f_L to 10 f_L] M = mid range [10 f_L to f_U/2] U = upper range [f_U/2 to f_U]
m = mid band [2f_L to f_U/2]

features

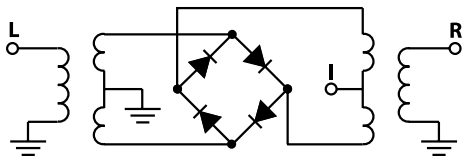
- low conversion loss, down to 4.9 dB typ.
- excellent isolation, up to 55 dB typ.
- IP3, up to 17 dBm typ.
- ultra low profile package (patent pending)
- solder plated leads for excellent solderability
- waterwash compatibility
- low cost

applications

- cellular
- PCN
- ISM
- instrumentation
- wireless/VSAT systems
- PCMCIA cards

NOTES:

x̄ Average of conversion loss at center of mid-band frequency (f_L+f_U/4)
σ Standard deviation
◆ Aqueous washable
† Phase detection, positive polarity.
☆ L=200-400 MHz M=400-500 MHz U=500-1000 MHz
✱ Quantity 100
* BLUE CELL™ mixers protected by U.S. Patents 5,534,830 5,640,132 5,640,134 5,640,699
** Protected under U.S. patent 6133525
A. Environmental specifications and re-flow soldering information available in General Information Section.
B. Units are non-hermetic unless otherwise noted. For details on case dimensions & finishes see "Case Styles & Outline Drawings".
C. Prices and Specifications subject to change without notice.
1. Absolute maximum power, voltage and current ratings:
1a. RF power 50mW
1b. Peak IF current, 40mA



010521

MBA

+7 dBm LO, up to +1 dBm RF

MODEL NO.◆	FREQUENCY MHz LO/RF f_L-f_U	IF	CONVERSION LOSS dB Mid-Band m $\bar{x}$	σ	Total Range Max.	LO-RF ISOLATION, dB Typ.	Min.	LO-IF ISOLATION, dB Typ.	Min.	IP3@ center band Typ. (dBm)	CASE STYLE	CONNECTION	PRICE $ Qty. (10-49)
MBA-9*	800-1000	DC-200	7.3	.20	9.0	22	20	17	12	10	SM2	lc	5.95
MBA-12*	800-2500	DC-500	7.5	.10	9.0	30	20	15	8	12	SM2	lc	5.95
MBA-26*	2200-2700	DC-500	5.7	.10	8.0	40	32	33	18	9	SM2	ld	5.95
MBA-591*	2800-5900	DC-1000	6.5	.10	9.0	36	20	26	17	10	SM2	le	6.95
MBA-671*	2400-6700	DC-1000	6.5	.10	9.2	36	20	26	17	10	SM2	le	8.95

BLUE CELL

L = low range [f_L to 10 f_L] M = mid range [10 f_L to f_U/2] U = upper range [f_U/2 to f_U]
m = mid band [2f_L to f_U/2]

features

- excellent temperature stability
- performance repeatability
- solder plated leads with strain relief
- very low cost
- ultra low height, 0.07"

BLUE CELL™ TECHNOLOGY

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

applications

- cellular
- WLAN
- satellite communication
- ISM band
- PCMCIA
- PCN/PCS/ wideband CDMA
- VSAT systems

pin connections

see case style outline drawings

PORT	ju	jv	jw	ht	lc	ld	le	nd
LO	6	6	4	6	10	10	10	6
RF	3	4	6	3	5	5	6	2
IF	4	3	3	2	3	3	1	3
GND	1,2,5	1,2,5	1,2,5	1,4,5	1,4,7,8,9	all others	all others	1,4,5
ISOLATE	—	—	—	—	2,6	—	—	—
DEMO BOARD	TB-02	TB-02	TB-02	TB-03	—	—	—	—

010521