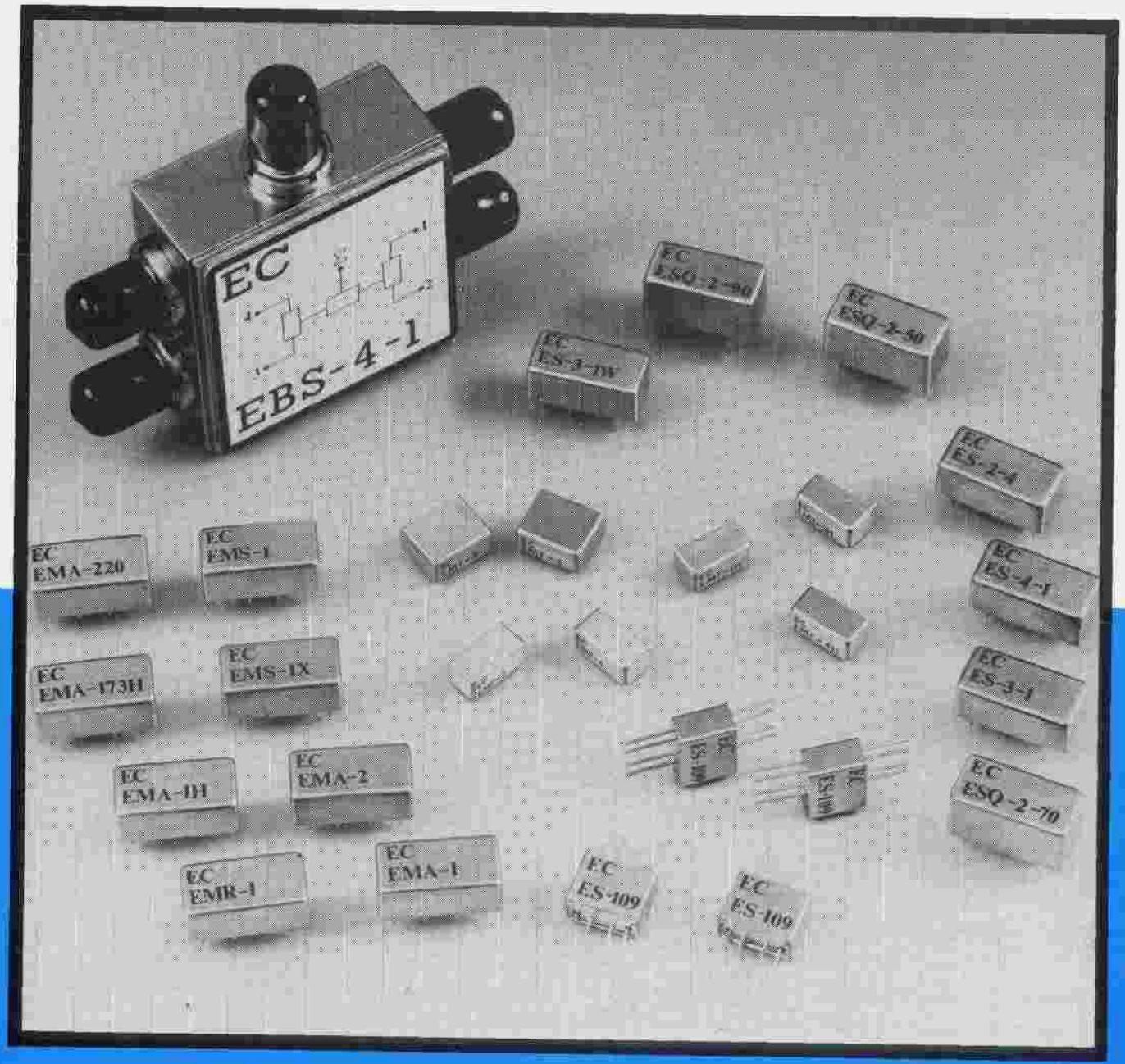
RF and IF Signal Processing Components



EUROTEC COMPONENTS

THE EUROPEAN ADVANTAGE

EUROTEC COMPONENTS is a business unit of Adams-Russell B.V., the international affiliate of Adams-Russell Electronics USA.

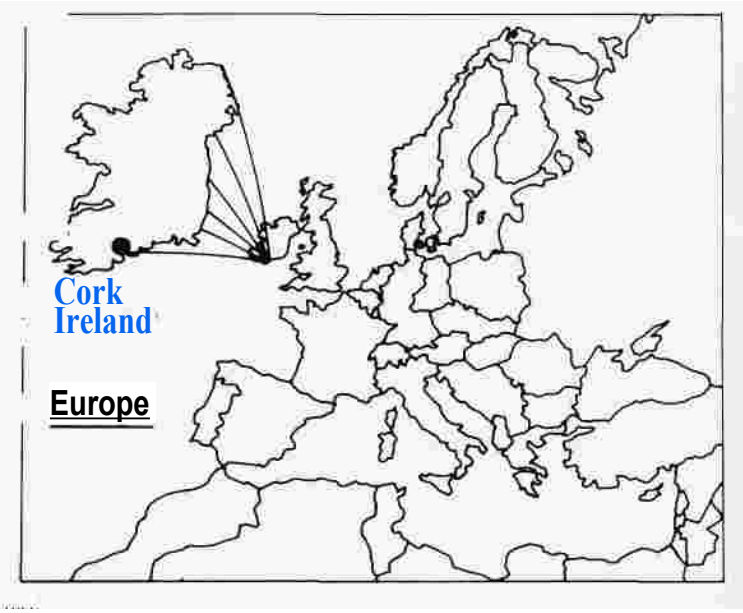
EUROTEC is a European Company established to provide Microwave and RF Products to the European Community (EC). These products are designed, developed, and manufactured using International Electrotechnical Commission (IEC) Standards as the primary certification. EUROTEC COMPONENTS objective is to provide the user with the optimum balance of price/performance needed meet his specific requirements.

to

—

Operating from a 4150 square metre facility in Cork Ireland, EUROTEC COMPONENTS offers:

- **QUALITY**
  With a goal of 0-PPM failures — quality is designed and built in.
- **SERVICE/DELIVERY**
  Delivery normally 48 hours ex stock, within 72 hours to anywhere in Europe.
- **DESIGNS**
  Proven HI-REL designs in best cost packaging.
- **COMPETITIVE PRICES**
  Volume purchasing, automated manufacturing processes, and a location in Europe combine to give EUROTEC the competitive edge.



An additional benefit is that we can supply products with:

- NO IMPORT DUTY
- MINIMUM FREIGHT COST

CORK FACILITY

INDEX

The ratio of component cost to the cost of locating a System defect in the field is enormous — for this reason Eurotec uses the PPM concept for product screening.

Typical cost of a defect when located and replaced can be:

A	—	£ .03 at our factory (automated screening)
B	—	£ .30 at your incoming inspection
C	—	£ 3.00 in your sub-system
D	—	£ 30.00 in your System
E	—	£300.00 in the field

Although AQL has been an accepted industry Standard, an AQL of 0.1 °/o is equal to 1000 PPM. A rate Eurotec believes is unacceptable. We guarantee 100 PPM with a goal of 0-PPM.

Achieving 0-PPM requires extremely close liaison between manufactuers and user, to permit detailed verification and analysis of any products believed to be defective. This two way communication will allow a prompt and efficient response to any user questions or problems.

REMEMBER	0.1%AQL	—	1000 PPM
WE GUARANTEE			100 PPM

ENVIRONMENTAL PERFORMANCE

All Eurotec products are designed, developed, and manufactured to perform when exposed to the requirements of the International Electrotechnical Commission (IEC).

Typical parameters and IEC methods are listed below:

EXPOSURE	IEC METHOD
Temperatune cycling -65°C to + 125°C	IEC68-2-14
Low Air Pressure (656,000 feet) 9.4 x 10-8in Mercury	IEC68-2-13
Humidity: 93°/o RH, 40°C, 4-56 days	IEC68-2-3
Thermal shock -65°C to + 1 25°C	IEC68-2-14
Seal: less than 10^{-5} Atm cc/s	IEC68-2-17 Qc
Free Fall Drop: random, 45 min.	IEC68-2-32 Ed
Vibration: 2 to 2000 cps, 20g, 12 hrs.	IEC68-2-6 Fc
Solder heat: 260°C, 10s.	IEC68-2-20 Tb
Solderability: 95% coverage	IEC68-2-20 Ta
Terminal tensile strength: 2kgs, 10s	IEC68-2-21 Ub
Terminal fatigue: 1kg, 3 cycles	IEC68-2-21 Ub
Mechanical shock: 100g, 6ms.	IEC68-2-27 Ea
Solvent resistance: alcohol, trichlorethane, freon	IEC68-2-45

THREE YEAR WARRANTY

During every step in the production of Eurotec products, from initial concept through design, material selection, manufacturing, inspection, and test procedures, utmost importance is placed on performance and reliability. All products carry this warranty:

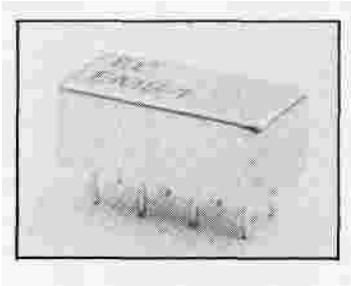
Seller warrants that the supplies to be delivered hereunder shall, at the time of delivery, be free from defects in workmanship and material and shall conform to the specifications made a part of the contract or purchase order. This warranty shall remain in effect for a period of three years from the date of delivery of the supplies; provided however, that notice of any such defect must be produced to the Seiler within thirty days of its discovery by Buyer.

Seller's liability under this warranty is limited to the furnishing of replacement parts on an exchange basis, or at Seller's Option, to the repair or replacement of defective articles at Seller's plant, in which event all costs of packing and shipment to and from Seller's plant will be borne by Buyer. Seiler shall have no liability for defects which arise, directly, or indirectly, as a result of accident, improper use, or unauthorised repairs.

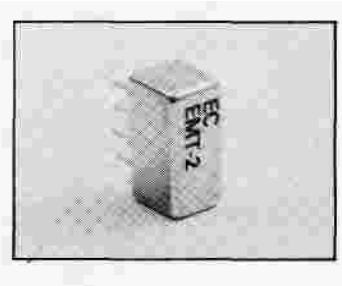
THE WARRANTIES STATED HEREIN ARE EXCLUSIVE AND IN LEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, IN NO EVENT SHALL SELLER BE LIABLE FOR SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES.

THREE YEAR WARRANTY

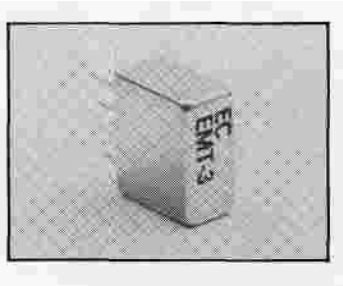
Level 7 (+7dBm LO, up to +1dBm RF)



8 Pin Relay Header
(R1)



4 Pin Relay Header
(R3)



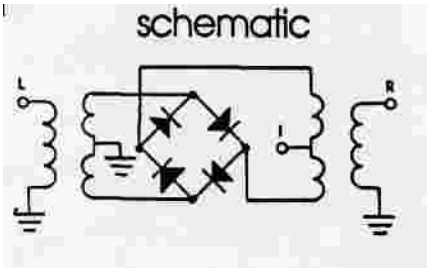
4 Pin Relay Header
(R4)

Model No.	Frequency MHz LO/RF	IF F1-FU	Conversion Loss dB Mid Band m Typ.	Max.	Total Range Typ.	Max.	LO-RF Isolation dB L Typ.	Min.	M Typ.	Min.	U Typ.	Min.	LO-IF Isolation dB L Typ.	Min.	M Typ.	Min.	U Typ.	Min.	Price Gase Pin-Out Each	Qty.	£ Stg.
EMS-1	1-500	DC-500	5.5	7.0	6.5	8.0	60	45	45	35	40	25	45	35	40	25	30	20	R1	1	3.00	[5-24)
EMS-1 X	10-1000	5-500	6,0	7.5	70	8.0	50	40	40	30	30	20	50	45	40	35	35	25	R1	2	4.00	(5-24]
EMA-1	.5-500	DC-500	5.5	7.0	6.5	8.5	50	45	45	30	35	25	45	35	40	25	30	20	R1	3	8.10	(5-24)
EMA-2	1-1000	.5-500	5.5	7.5	6.5	8.5	45	30	35	20	30	20	45	30	30	20	30	20	R1	2	10.10	(5-24)
EMT-2	1-1000	DC-1000	6.0	7.5	7.0	8.5	50	45	40	25	30	25	45	40	35	25	25	20	R3	4	8.10	(5-24)
EMT-3	0.04-400	DC-400	5.3	7. G	6.0	8.0	60	50	50	35	35	25	55	40	45	30	35	25	R4	4	13.50	(5-24)
EMT-4	5-1250	DC-1250	6.0	7.5	7.5	8.5	50	45	40	30	30	25	45	40	35	25	25	20	R3	4	14.90	(5-24)

L = Low range (Fi. to 1 OFü M = mid ränge (1 QFi to Fu/2) m = mid band (2F|_ to Fu/2) U = Upper range (fu/2 to fu)

Mixers — Cross Reference List

EUROTEC	MINI CCrS	WATKINS JOHNSON		VARIL		SYNERGY	
Model No.	Part No.	Equivalent	Nearest	Equivalent	Nearest	Equivalent	Nearest
EMS-1	SBL-1		MBE-50	CM-1		S-1	
EMS-1X	SBL-1X		-X-M6R (TO)		CM2	S-4A	
EMA-1	SRA-1		M6E-50		CM1	S- 3	
EMA-2	SRA-2		-X-M6R (TO)		CM2	S-4	
EMT-2	TFM-2		-X-M6R (TO)		-X-CM2	S- 6	
EMT-3	TFM-3		M6K		-X-DBM141		CLP-301
EMT-4	TFM-4		-X-M9K		-X-DBM177		CLP-311
-X-Different Package.							



NOTES

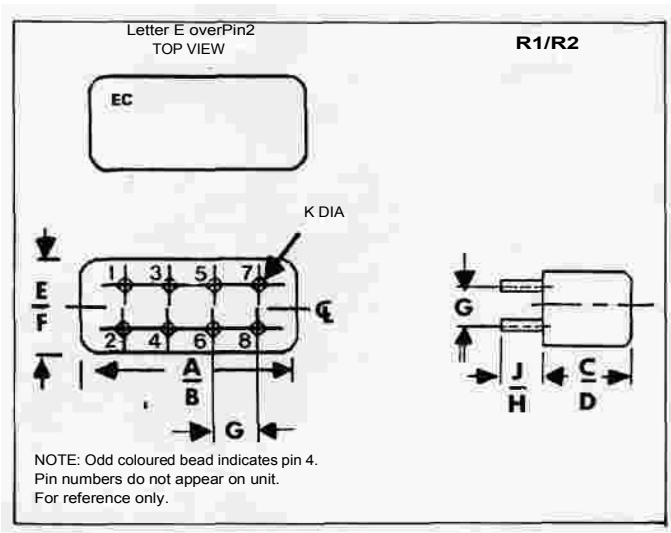
1. **For quality and environmental specifications see pages 4 and 5.**

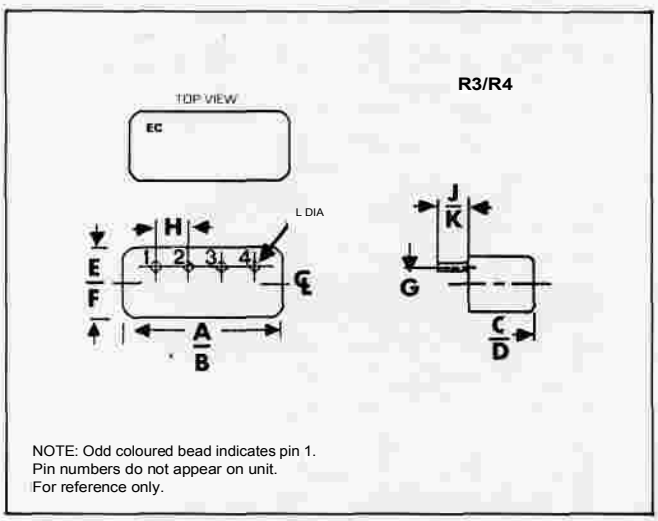
2. **Absolute maximum ratings:**
   Rf Power: 50mW.
   Peak If Current: 40mA
   Operating and storage temperature: —55°C to +100°C.
   Pin temperature (10s) 260 C.

3. **Price and specifications subject to change without notice.**

• Delivery is from stock.

CASE OUTLINE DRAWINGS





Package Style Outline Dimensions (inch/mm)

Case	A	B	C	D	E	F	G	H	J	K	L
R1	.770 19.56	.800 20.32	.285 7.24	.310 7.88	.370 9.40	.400 10.16	.200 5.08	.200 5.08	.14 3.56	.031 .79	
R2	.770 19.56	.800 20.32	.385 9.78	.400 10.16	.370 9.40	.400 10.16	.200 5.08	.200 5.08	.14 3.56	.031 .79	
R3	.48 12.20	.50 12.70	.24 6.10	.255 6.48	.21 5.34	.230 5.85	.16 4.07	.100 2.54	.14 3.56	.20 5.08	.020 .51
R4	.48 12.20	.50 12.70	.390 9.91	.405 10.29	.21 5.34	.23 5.85	.16 4.07	.10 2.54	.14 3.56	.20 5.08	.02 .51

NOTES
Material and finish (R1 /R2/R3).
Header material: C.R.S.;
Pin material: No. 52 alloy;
Finish: bright electro-tin type I, .0003 in. thick min.;
Cover material: cupro-nickel.

PIN OUT TABLE — Frequency Mixers

Pin-Out	LO	RF	IF	Ground	Case Ground
1	8	1	3,4*	2,5,6,7	—
2	8	3,4	1	2,5,6,7	2,5,6,7
3	8	1	3,4*	2,5,6,7	2
4	4	1	2	3	3
5	3,4	1	8	2,5,6,7	2,5,6,7
6	8	1	3,4	2,5,6,7	2,5,6,7
7	8	1	3	2,5,6,7	2,5,6,7

See Pin Numbers above.
*** Pins must be connected together externally,**

Level10 (+10 dBm LO, up to + 5dBm RF)
Level 17(+ 17 dBm LO, up to + 10dBm RF)
Level 23 (+ 23 dBm LO up to +15dBm RF)

8 Pin Relay Header (R1)

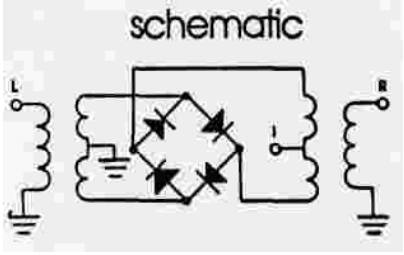
4 Pin Relay Header (R3)

Model No.	Frequency MHz LO/RF F1-Fu	IF	Conversion Loss dB Mid Band in Typ.	Max.	Total Range Typ.	Max.	L Typ.	LO-RF Isolation dB L Min.	M Typ.	Min.	U Typ.	Min.	LO-IF Isolation dB L Typ.	Min	M Typ.	Min.	U Typ.	Min.	Gase	Price Pin-Out Each	Qty.	
Level 10 < 10dBm LO, up to 5dBm RF)																						
EMA-220	5.0-2000	.05-500	6.0	B.O	7.0	9.0	25	20	40	30	30	SO	25	20	40	30	25	15	R1	7	18.20	(5-24)
Level 17 (+17dBm LO, up to +10dBm RF)																						
EMA-1 H	.5-500	DC-500	5.5	7.5	6.5	8.5	55	45	45	30	35	25	45	35	40	30	30	20	R1	3	12.20	(5-24)
EMT-1H	2-500	DC-500	B.O	7.5	7.0	8.5	50	45	40	30	30	20	45	40	35	25	25	20	R3	4	16.20	B-24)
EMT-2H	5-1000	DC-1000	6.2	7.0	7.0	10	50	45	40	30	30	20	45	40	35	25	25	17	R3	4	21.70	(5-24)
EMT-3H	0.1-250	DC-250	5.0	7.0	6.0	B.5	50	45	40	30	28	33	45	40	35	25	26	20	R3	4	16.20	(5-24)
EMT-4H	5-1200	DC-1200	6.5	8.0	7.0	9.0	50	40	35	25	30	20	50	40	35	20	30	20	R3	4	23.00	(5-24)
EMA-173H	5-1200	DC-1200	6.0	7.0	7.0	8.5	40	35	35	25	35	SO	40	35	35	20	30	20	R1	5.6	20.30	(5-24)
Level 23 < 23dBm LO, up to 15dBm RF)																						
EMR-1	5-500	DC-500	6.0	7.5	7.5	8.5	55	45	40	30	30	25	55	45	40	30	30	20	R1	3	23.70	(5-24)

L = Low ränge (F|_ to 10FÜ M = mid ränge HÖR. to Fu/2) m = mid band (2FL to Fu/2) U = Upper ränge (fu/2 to fu)

Mixers — Cross Reference List

EUROTEC	MINI CCTS	WATKINS JOHNSON	VARIL	SYNERGY
Model No.	Part No.	Equivalent Nearest	Equivalent Nearest	Eauivalent Nearest
EMA-1H	SRA-1H	I-M9BC	CM-1H8	CMP-A27
EMT-1H	TFM-1H	I-M9BC	*CM2-1 H8	CMP-301
EMT-2H	TFM-2H	J-M9G	*CM-2HB	CMP-303
EMT-3H	TFM-3H	I-M9BC	*CM-1 HB	CMP-312
EMT-4H	TFM-4H	!-M9G	*DBM-176	CMP-31 1
EMR-1	RAY-1	M9D	DBM-188	CHP-201
EMA-173H	EMA-173H	;-M9G	*DBM-1 76	CMP-A12
EMA-220	SRA-220	*M2E		CLP-205
*Different Package.				



NOTES

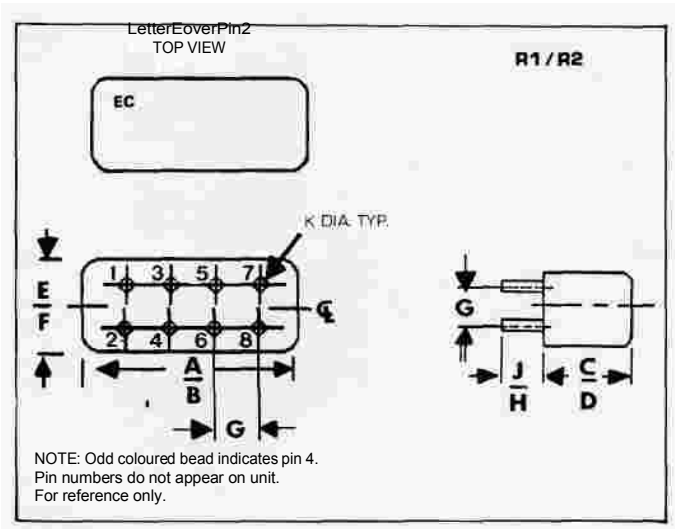
1. **For quality and environmental specifications See pages 4 and 5.**

2. **Absolute maximum ratings:**
   Rf Power: SO m W level 10, 300mW level 17, 350mw level 23.
   Peak If Current: 40mA
   Operating and storage temperature: —55°C to 1100 C.
   Pin temperature (IOs) +26O C

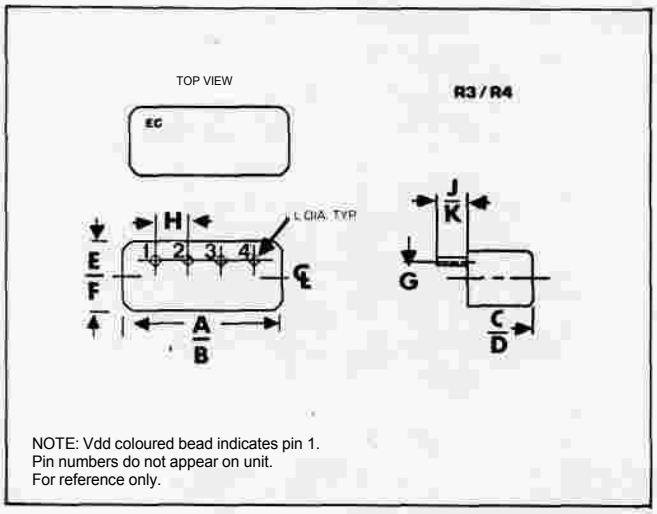
3. **Price and specifications subject to change without notice.**

• All units ex-stock delivery.

CASE OUTLINE DRAWINGS



NOTE: Odd coloured bead indicates pin 4.
Pin numbers do not appear on unit.
For reference only.



NOTE: Vdd coloured bead indicates pin 1.
Pin numbers do not appear on unit.
For reference only.

Package Style **Outline** Dimensions **(inch/mm)**

Case	A	B	C	D	E	F	G	H	J	K	L
R1	.770	.800	.285	.310	.370	.400	.200	200	.14	.031	
	19.56	20.32	7.24	7.88	9.40	10.16	5.08	5.08	3.56	.79	
R2	.770	.800	.385	.400	.370	.400	.200	.200	.14	.031	
	19.56	20.32	9.78	10.16	9.40	10.16	5.08	5.08	3.56	79	
R3	.48	.50	.24	.255	.21	.230	.16	.100	.14	.20	.020
	12.20	12.70	6.10	6.48	5.34	5.85	4.07	2.54	3.56	5.08	.51

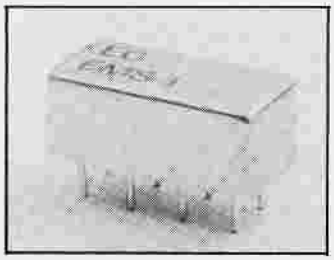
NOTES
Material and finish (R1, R2, F1).
Header material: C.R.S.;
Pin material: IVo. 52 alloy;
Finish: bright electro-tin type I, .0003 in. thick min.;
Cover material: cupro-nickel.

PIN OUT TABLE — Frequency Mixers

Pin-Out	LO	RF	IF	Ground	Case Ground
1	8	1	3.4*	2,5,6,7	—
2	8	3,4	1	2,5,6,7	2,5,6,7
3	8	1	3.4*	2,5,6,7	2
4	4	1	2	3	3
5	3,4*	1	8	2,5,6,7	2,5,6,7
B	8	1	3.4*	2,5,6,7	2,5,6,7
7	8	1	3	2,5,6,7	2,5,6,7

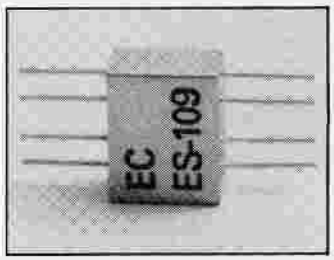
See Pin Numbers above.
*** Pins must be connected together externally.**

POWER SPLITTER/COMBINERS



8 Pin Relay Header
(R1)

8 Pin Relay Header
(R2)



8 Pin Flatpack
(F1)

POWER SPLITTER/COMBINER 2-Way-0

Model	Freq. Range	Isolation dB						Phase Insertion Loss Above 3dB			Amplitude Unbalance Degrees					Unbalance dB			Price £Stg.			
No.	MHz f2-fu	L typ.	min.	M typ.	min.	U typ.	min.	L typ.	max.	M typ.	max.	U typ.	L max.	M max.	U max.	L max.	M max.	U max.	Case	Pin-out	Each	Qty.
ES- 2-4	10-1000	30	25	25	20	25	20	0.6	1.0	O.B	1.2	0.7	1.2	2.0	8.0	20	0.15	0.2	0.4	R1	1	13.50	(5-24)
ES-109	10-500	35	25	30	25	30	25	0.3	G.5	0.4	O.B	0.5	O.B	2.0	3.0	2.0	0.15	0.2	0.3	F1	B	21.60	'5-24)

POWER SPLITTER/COMBINER 2-way-90

Model No.	Freq. Range	Isolation dB		Insertion Loss Avg. of Coupled Outputs less 3 dB		Phase Unbalance Degrees	Amplitude Unbalance dB	Case	Pin-Out	Prtce	
	MHz	typ.	mm.	typ.	max.	max.	max.		Each		Qty.
ESQ-2-50	25-50	30	20	0.3	0.7	3.0	1.5	R2	2	13.50	(5-24)
ESQ-2-70	40-70	30	20	0.3	0.7	3.0	1.5	R2	2	13.50	(5-24)
ESQ-2-90	55-90	30	20	0.3	0.7	3.0	1.2	R2	2	13.50	(5-24)

L = Low ränge (f_L to $10f_L$) M = Mid range ($10f_L$ to $fu/_2$) U = Upper range ($fu/_2$ to fu)

CROSS REFERENCE LIST

EUROTEC	Freq. Range	Splitter Type	Mini-Circuits	VARIL		SYNERGY	
Mode! No.	M Hz		Part No.	Equiv.	Nearest	Equiv.	Nearest
ES- 2-4	10-1000	2-way-0	PSC-2-4	*PS2-1000F		DSP-212	
ES-109	10-500	2-way-0	LPS-109	PS-2-500F			
ESQ-2-50	25-50	2-way-90	PSCQ-2-50			DQP-201	
E5Q-2-70	40-70	2-way-90	PSCQ-2-70			DQP-202	
ESQ-2-90	55-90	2-way-90	PSCQ-2-90			DQP-220	

NOTES:

1. **For quality and environmental specifications see pages 4 and 5.**
2. **Absolute maximum ratings:**

   Matched power rating: 1W.

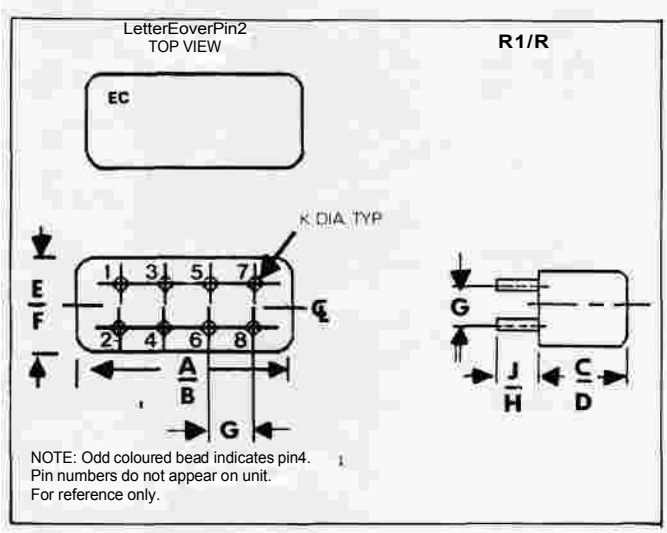
   Internal load dissipation: 0.125W.

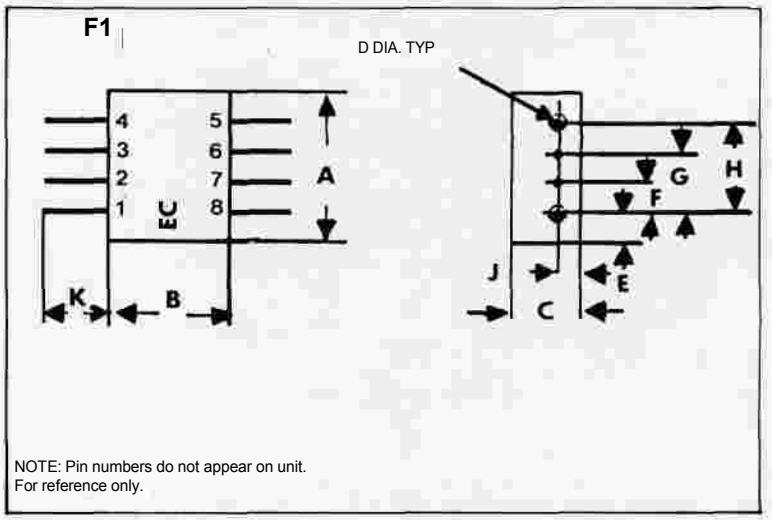
   Operating and storage temperature: —55°C to +100°C.

   Pin temperature (10s): +260°C.
3. **Prices and speoifications subject to change without notice.**

• Delivery is from stock.

CASE OUTLINE DRAWINGS





Package Style Outline Dimensions (inch/mm)

Case	A	B	C	D	E	F	G	H	J	K
R1	.770 19.56	.800 20.32	.285 7.24	.310 7.88	.370 9.40	.400 10.16	.200 5.08	.200 5.08	.14 3.56	.031 .79
R2	.770 19.56	.800 20.32	.385 9.78	.400 10.16	.370 9.40	.400 10.16	.200 5.08	.200 5.08	.14 3.56	.031 .79
F1	.50 12.70	.38 9.65	.150 3.81	.020 .51	.06 1.52	.100 2.54	.250 6.35	.350 8.89	.06 1.53	.31 7.87

NOTES

Material and finish (R1, R2, FD.
Header material: C.R.S.;
Pin materjal:No. 52 alloy;
Finish: bright electro-tin type I, .0003 in. thick min.;
Cover material: cupro-nickel.

PIN OUT TABLE — Power Splitter

Pin-Out	Sum Port	Port 1	Port 2	Ground	Terminate 50 Ohms
1	1	5	B	2,3,4,7,8	—
2	1	2	5	3,4,7,8	6
6	1	4	5	2,3,6,7,8	—

See Pin Numbers above.

8 Pin Relay Header
(R1)

8 Pin Relay Header
(R2)

POWER SPLITTER/COMBINER 3-Way-0

Model No.	Freq. Range MHz	Isolation dB				Insertion Los				Phase Unbalance Degrees					Amplitude Unbalance dB					Price	
		L		M		U		L		M		U	L		M	U	L	M	U	Case	Pin-out	Each	Qty.
f_L-f_u		typ.	min.	typ.	min.	typ.	min.	typ.	max.	typ.	max.	typ.	max.	max.	max.	max.	max.	max.	max.				
ES- 3-1	1-900	45	30	40	30	40	25	0.6	1.0	0.4	0.7	0.6	1.0	1.0	2.Q	4.0	0.15	0.2	0.3	R1	3	13.50	(5-24)
ES- 3-1 W	5-500	25	20	31	15	25	15	04	O.B	0.4	1 .4	0.8	1.4	6.0	14	20	0.1	0.3	O.B	R1	4	28.50	(5-24)

POWER SPLITTER/COMBINER 4-Way-0

Model No.	Freq. Range MHz fL-fu	Isolation dB				Phase Insertion Loss				Unbalance				Degrees		Amplitude Unbalance dB				Price		
		L		M		U		L		M		U	L	M	U	L	M	U	Case	Pin-out	Each	Qty.
		typ.	min.	typ.	min.	typ.	min.	typ.	max.	typ.	max.	typ.	max.	max.	max.	max.		max.				
ES- 4-1	0.1-200	33	20	30	20	27	20	0.4	0.6	O.5 B.O	0.75	0.7	1.0	4.0	6.0	.15	.20	.25	R2	5	19.60	(5-24)

L = Low ränge (f_L to $10f_L$) M = Mid ränge ($10f_L$ to $fu/_2$) U = Upper range ($fu/_2$ to fu)

CROSS REFERENCE LIST

EUROTEC	Freq. Range	Splitter Type	Mini-Circuits	VARIL		SYNERGY	
Model No.	MHz		Part No.	Equiv.	Nearest	Equiv.	Nearest
ES- 3-1	1-200	3-way-0	PSC-3-1	*PS-3-500F			
ES-3-1W	5-500	3-way-0	PSC-3-1W	*PS-3-500F			
ES-4-1	5-500	4-way-0	PSC-4-1	*PS-4-500F		DSP-204	
*Different Package.							

NOTES:

1. For quality and environmental specifications see **pages 4 and 5.**
2. Absolute maximum ratings:

   Matched power rating: 1W.

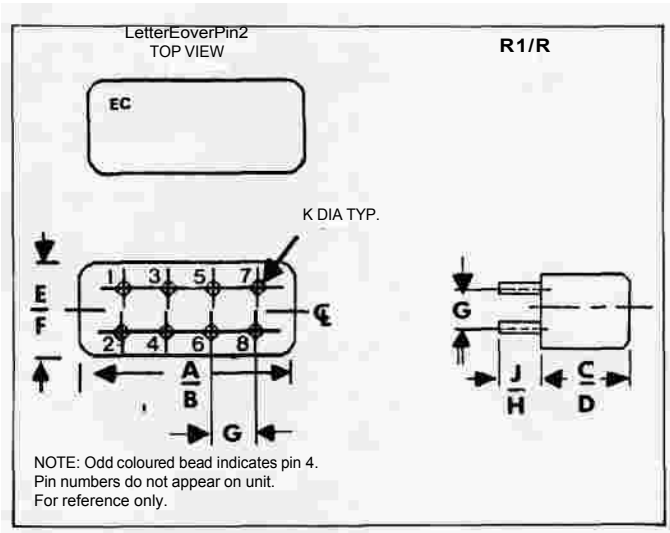
   Internal load dissipation: **0.125W.**

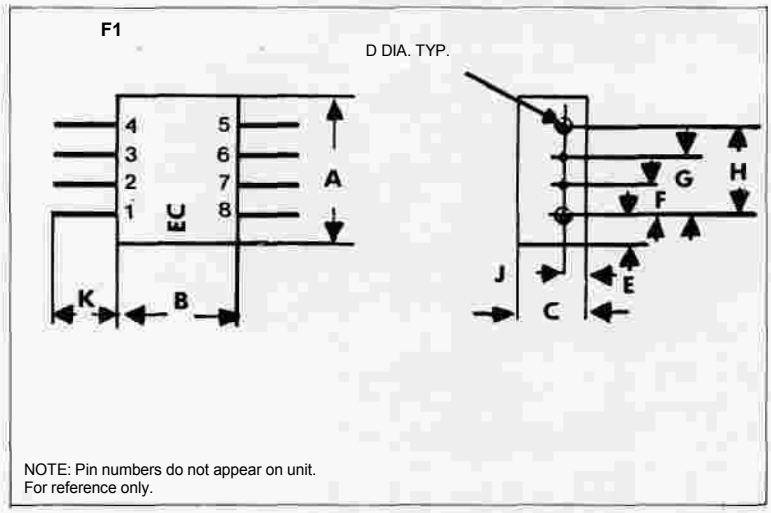
   Operating and st o rage temperature: —55°C to +100°C.

   Pin temperature **(10s): 260 C.**
3. Prices and specifications subject to change without notice.

• Delivery is from stock.

CASE OUTLINE DRAWINGS





Package Style Outline Dimensions (inch/mm)

Case	A	B	C	D	E	F	G	H	J	K
R1	.770 19.56	.800 20.32	.285 7.24	,310 7.88	.370 9.40	.400 10.16	.200 5.08	.200 5.08	.14 3.56	.031 .79
R2	.770 19.56	.800 20.32	.385 9.78	.400 10.16	.370 9.40	.400 10.16	.200 5.08	.200 5.08	.14 3.56	,031 ,79
F1	.50 12.70	.38 9.65	.150 3.81	,020 .51	.06 1.52	.100 2.54	.250 6.35	.350 8.89	.06 1.53	.31 7.87

NOTES
Material and finish (R1, R2, F1).
Header material: C.R.S.;
Pin material: No. 52 alloy;
Finish: bright electro-tin type I, .0003 in. thick min.;
Cover material: cupro-nickel.

PIN OUT TABLE — Power Splitter

Pin-Out	Sum Port	Port 1	Port 2	Port 3	Port 4	Ground
3	B	1	2	5	—	3,4,7,8
4	1	5	7	8	—	2,3,4,6
5	4	7	8	1	2	3,5,6,

See Pin Numbers above.

HOW TO ORDER

Your local representative is the contact for both Sales and Service Assistance for products listed in this catalogue. These local Offices will provide the latest price and delivery information on all models. They have details on Ordering Procedures, Service Information and Application Engineering Data.

Orders may be placed with either EUROTEC local sales representatives, listed on the back page of this catalogue, or directly with EUROTEC COMPONENTS at

EUROTEC COMPONENTS,
Kilbarry Industrial Estate,
Dublin Hill,
Cork,
Ireland.
Tel:+353-21-395700
Tlx:75115EI
Fax:+353-21-395507

PRICING

Prices listed in this catalogue are F.O.B. Cork, Ireland. EUROTEC COMPONENTS reserves the right to change specifications, models, prices or designs without prior notice and without liability for such changes. Our terms are net 30 days if credit has been established. Otherwise, shipments will be made C.O.D. or prepaid. If prepaying please include delivery charges.

SHIPPING INSTRUCTIONS

Unless instructed by the customer EUROTEC COMPONENTS will ship via U.P.S. for West Germany and TNT IPEC for the rest of Europe.
Also available are:

AIR PARCEL POST AIR FREIGHT, AIR EXPRESS and special Service methods.

Please indicate at time of purchase which method you require.

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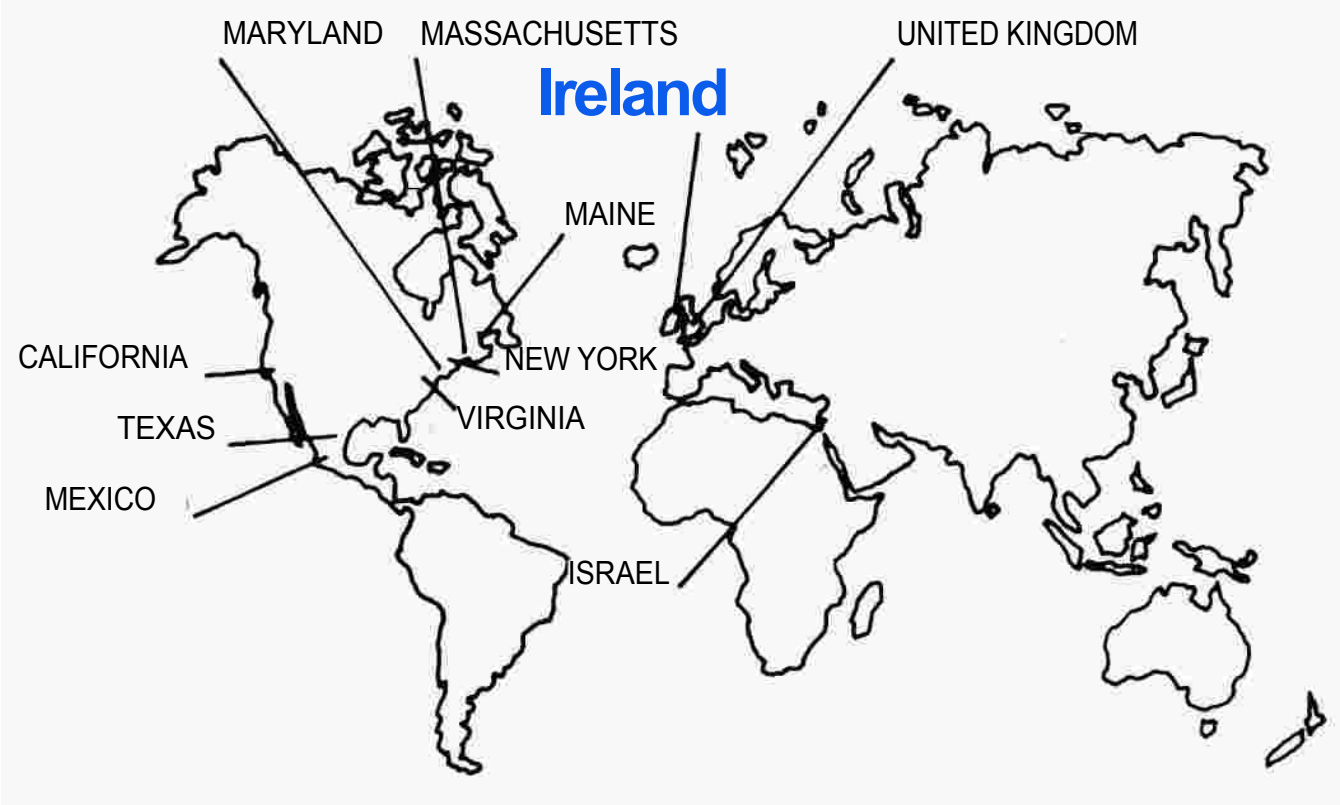

EUROTEC COMPONENTS

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Cork,Ireland.