

**DESCRIPTION**

The B7RX1002 is a low noise front end for S-band marine radar receivers. It comprises a low noise amplifier with condition monitoring output, an image rejection mixer and an electronically tuned local oscillator. (See Note 4.)

Frequency range . . . . . 3020 to 3080 MHz  
I.F. output frequency . . . . . 60 MHz  
Noise figure . . . . . 2.5 dB

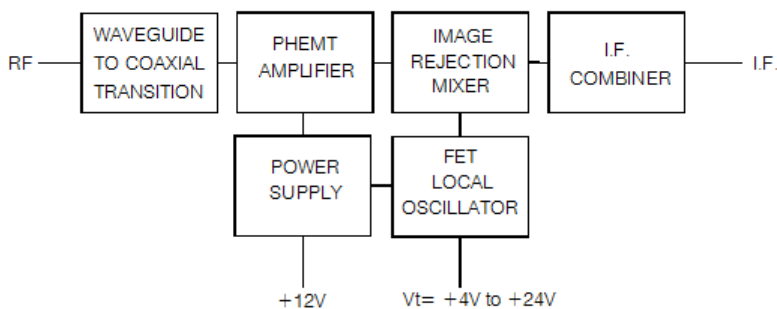
**GENERAL DATA**

Operating voltage . . . . . 12 V d.c.  
Operating current . . . . . 100 mA  
Overall dimensions . .182.8 x 114.5 x 39 mm max  
7.197 x 4.508 x 1.535 inches max  
Net weight . . . . . 700 g (1.5 pounds) approx  
Waveguide size . . . . . WR284 (WG10)

**MAXIMUM AND MINIMUM RATINGS**

	MIN	MAX
Operating voltage (see note 1).	-	13 V
Tuning voltage . . . . .	-	25 V
R.F. input power . . . . .	-	0.5 W
Body temperature:		
Operating . . . . .	-25	+75 °C
Storage . . . . .	-40	+100 °C
Vibration (50Hz) . . . . .	-	10 g
Shock (0.5ms, half sine) . . . . .	-	100 g

**BLOCK DIAGRAM**



**TYPICAL OPERATION**

**Operating Conditions**

Operating voltage . . . . .	12.0 ± 0.2	V
Signal frequency . . . . .	3050 ± 30	MHz
Local Oscillator frequency tuning voltage 4V . . . . .	3080 MHz	max
tuning voltage 24V . . . . .	3140 MHz	min

**TYPICAL Performance (at 25 °C)**

	Min	Typ	Max
Operating current . . . . .	-	70	100 mA
Noise figure . . . . .	-	2.5	3.0 dB
Conversion gain . . . . .	6.0	8.0	- dB
Image rejection ratio . . . . .	18	20	dB
Frequency pulling . . . . .	-	0.2	0.35 MHz
(See note 2)			
Local oscillator switch on drift (3 to 40 mins) . . . . .	-	-	4.0 MHz
Local oscillator leakage from RF port . . . . .	-	-	-30 dBm
Input power at 1dB compression . . . . .	-10	-	- dBm
F.M. bandwidth . . . . .	500	-	1000 Hz
Local Oscillator temperature drift . . . . .	-300	-80	130 kHz/°C
I.F. output impedance . . . . .	-	50	- Ω
Tune I/P impedance . . . . .	100	-	kΩ
Monitor output voltage (see note 3):			
amplifier functioning . . . . .	3.0	3.5	4.0 V
amplifier not functioning . . . . .	0	0.3	0.5 V

**NOTES**

1. Positive only; negative voltage must not be applied.
2. Input power 10 dBm.
3. External voltages must not be applied to the I.F. or monitor terminals.
4. Tested together with B3LT1008 limiter to give >30dB STC range.

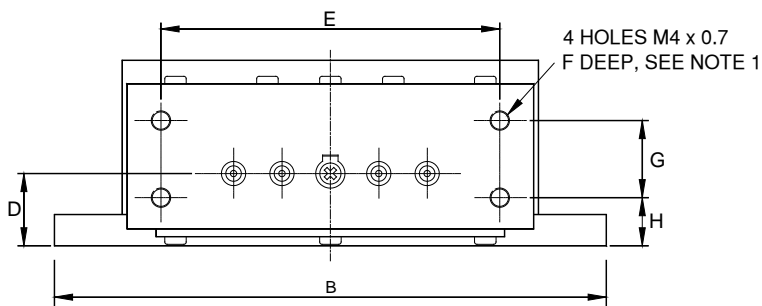
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e2v technologies (uk) limited, Waterhouse Lane, Chelmsford, Essex CM1 2QU United Kingdom Holding Company: e2v technologies plc  
Telephone: +44 (0)1245 493493 Facsimile: +44 (0)1245 492492  
Contact e2v by e-mail: [enquiries@e2v.com](mailto:enquiries@e2v.com) or visit [www.e2v.com](http://www.e2v.com) for global sales and operations centres.

# OUTLINE (All dimensions without limits are nominal)

## Outline Notes

1. Positional tolerance 0.2 mm (0.008 inch) diameter
2. Positional tolerance 0.15 mm (0.006 inch) diameter



Ref	Millimetres	Inches
A	173.8 ± 0.5	6.843 ± 0.020
B	114.0 ± 0.5	4.488 ± 0.020
C	38.5 ± 0.5	1.516 ± 0.020
D	15.0	0.591
E	70.0	2.756
F	6.0 min	0.236 min
G	16.0	0.630
H	10.0	0.394
J	84.0 ± 0.5	3.307 ± 0.020
K	6.7 ± 0.1	0.264 ± 0.004
L	6.6 ± 0.1	0.260 ± 0.004
M	76.0 ± 0.5	2.992 ± 0.020
N	65.08	2.562
P	57.2	2.252
Q	63.5	2.500
R	103.2	4.063
S	31.7 ± 0.5	1.248 ± 0.020
T	8.5 max	0.335 max

Inch dimensions have been derived from millimetres.

