

GERMANIUM MICROWAVE MIXER DIODE

GEM3 GEM4

Coaxial point contact germanium diodes intended for use in pretuned centimetric low noise mixer circuits up to 12Gc/s. The spread of admittance figures at 12Gc/s is very small. GEM3 and 4 are the commercial equivalents of CV7108 and CV7109 respectively.

The two types have identical dimensions and characteristics but the polarity is reversed. The pair are intended for use in balanced mixer circuits.

QUICK REFERENCE DATA

Measured overall noise figure (X band) (typ.)	8.0 dB
Operating frequency (max.)	12 Gc/s

OUTLINE AND DIMENSIONS

Conforming to V.A.S.C.A. SO-26

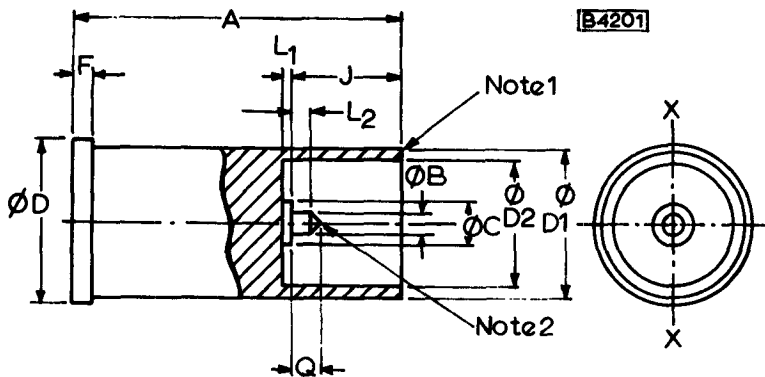
See page D2 for details

TERMINAL IDENTIFICATION

GEM3	{	Pin	cathode
		Body (Red spot)	anode
GEM4	{	Pin	anode
		Body (Green spot)	cathode

ACCESSORIES

Holders to fit these coaxial diodes are available in the U.K. from W. H. Saunders Ltd., Stevenage, Herts.



The millimetre dimensions are derived from the original inch dimensions

	Millimetres		Inches		Notes
	Min.	Max.	Min.	Max.	
A	18.80	19.30	0.740	0.760	
ϕB	1.270	1.320	0.050	0.052	3
ϕC	2.286	2.387	0.090	0.094	
ϕD	9.28	9.52	0.365	0.375	
$\phi D1$	8.611	8.737	0.339	0.344	3
$\phi D2$	7.163	7.264	0.282	0.285	
F	1.15	1.39	0.045	0.055	
J	6.300	6.477	0.248	0.255	
L1	0.686	0.762	0.027	0.030	
L2	1.02	1.27	0.040	0.050	
Q	1.86	2.10	0.073	0.083	

NOTES

1. The device is designed to make contact on this open face.
2. Cone tapers to a radius (0.13mm) 0.005 in. nominal.
3. Concentricity of D1 with respect to B shall be determined by a gauge V.A.S.C.A. Ref. SG.1.



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RATINGS

Limiting values of operation according to the absolute maximum system.

Electrical

Maximum available power

peak ($t = 0.1 \mu s$)	3.0	W
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*Spike energy

r. f.	0.3	erg
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d. c.	0.1	erg
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*For a minimum of 90% survival i. e. due to magnetron spikes.

Thermal

T_{stg} min.	-40	$^{\circ}C$
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T_{stg} max.	100	$^{\circ}C$
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T_{amb} max. (operating)	100	$^{\circ}C$
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ELECTRICAL CHARACTERISTICS ($T_{amb} = 25^{\circ}C$ unless otherwise stated)

	Min.	Typ.	Max.	
Measured overall noise figure (see note 1)	-	8.0	8.5	dB
R. F. admittance (see note 2)	-	-	1.43	V.S.W.R

NOTES

1. Tested at $9500 \pm 500 Mc/s$ in a standard SIM2/5 holder at 0.8mA crystal current, i. f. amplifier noise factor 2.0dB.
2. Tested at $9375 \pm 10 Mc/s$ under conditions as for note 1. The nominal rectifier admittance at a plane 0.247 in. inside the body from the open end is:-

$$\frac{1}{83.5} + \frac{j}{350} \text{ mho}$$

Measured at 9375Mc/s and a rectified current of 0.8mA.

OPERATING NOTES

The GEM3 reduces the overall noise factor at X band frequencies by about 1.0dB compared with the SIM2, for which it is a plug-in replacement.

