

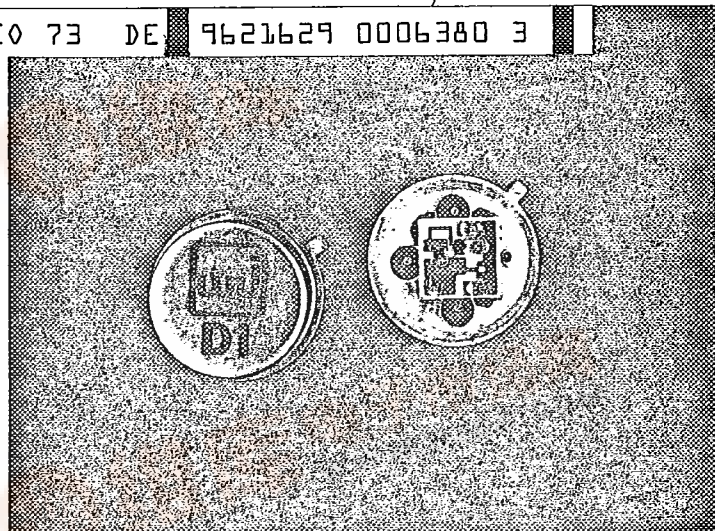
WJ-D1

WATKINS-JOHNSON CO 73 DE 9621629 0006380 3

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**10 TO 1000 MHz
TO-5 DIRECTIONAL LEVEL
DETECTOR**

- HIGH DIRECTIVITY: > 40 dB
AT PIN = +4 dBm (TYP.)
- HIGH ISOLATION: 40 dB (TYP.)
- LOW VSWR: 1.2:1 (TYP.)
- LOW COST
- ULTRA SMALL SIZE

**Specifications**

Characteristic	Typical (25°C)	Guaranteed ¹	
		0°-50°C	0°-+85°C
Frequency Range	10-1200 MHz	10-1000 MHz	10-1000 MHz
Insertion Loss (Max.)	3.4 dB	3.8 dB	3.8 dB
DC Output² (Min.)			
At Pin = +10 dBm	135 mV	90 mV	90 mV
At Pin = +6 dBm	55 mV	25 mV	25 mV
Directivity^{2,3} (Min.)			
At Pin = +4 dBm			
10-250 MHz	> 40 dB	35 dB	35 dB
250-1000 MHz	> 30 dB	20 dB	20 dB
Isolation² (Min.)			
Input → DC Output			
10-500 MHz	> 40 dB	33 dB	33 dB
500-1000 MHz	> 35 dB	28 dB	28 dB
Output → DC Output			
10-500 MHz	> 45 dB	38 dB	38 dB
500-1000 MHz	> 40 dB	32 dB	32 dB
VSWR Input/Output			
10-1000 MHz	< 1.2:1	1.3:1	1.4:1

Notes:

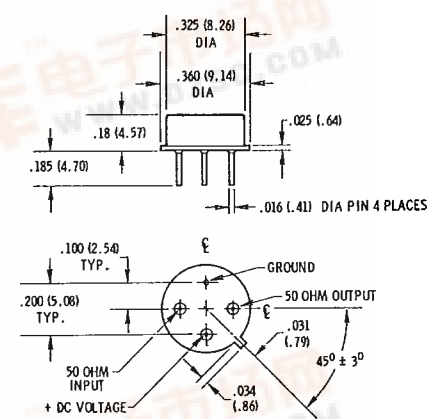
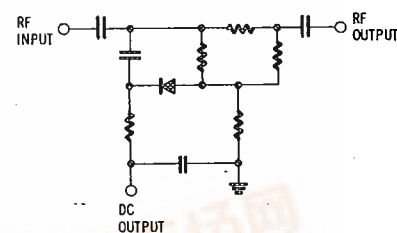
1. Measured in a 50-ohm system.
2. Measured with 50K ohm dc output load.
3. Directivity = 20 log (Forward dc output/Reverse dc out).
4. Video Bandwidth 10 kHz Typ.

Absolute Maximum Ratings

Ambient Operating Temperature	0°C to +85°C
Storage Temperature	-62°C to +125°C
Maximum Case Temperature	125°C
Maximum CW Input Power	+50 Milliwatts
Maximum Short Term RF Input Power (1 Minute Max.)	100 Milliwatts
Maximum Peak Power	0.5 Watt (3 μsec Max.)
"S" Series Burn-in Temperature	125°C

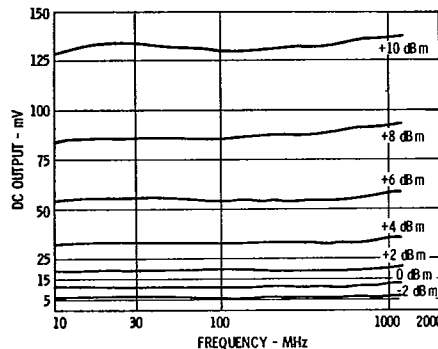
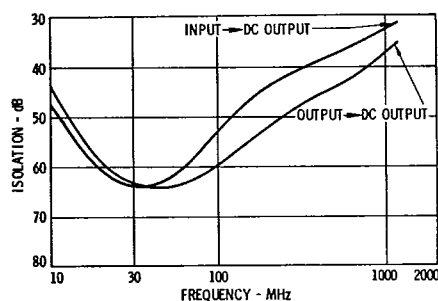
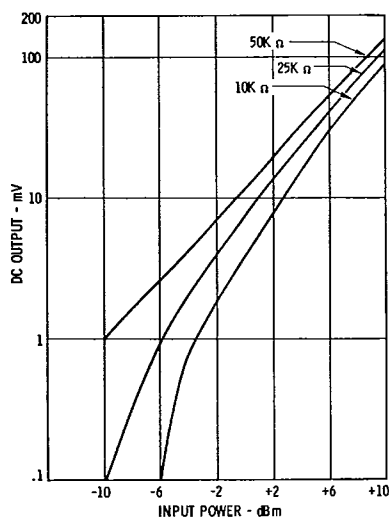
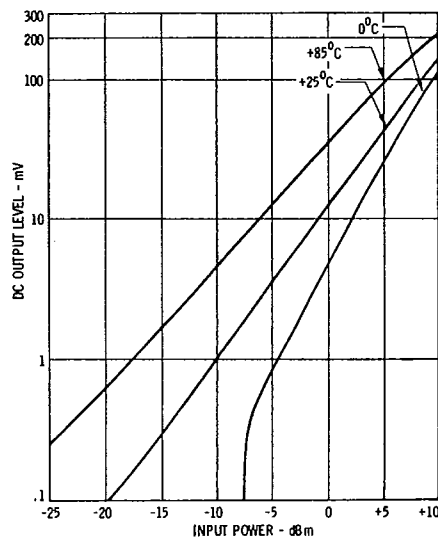
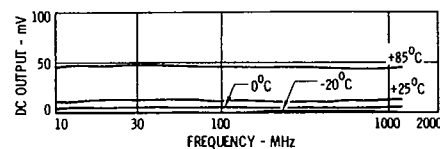
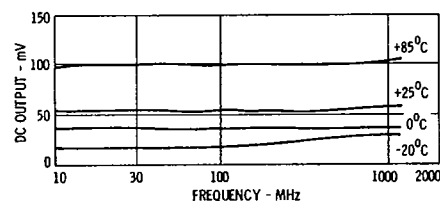
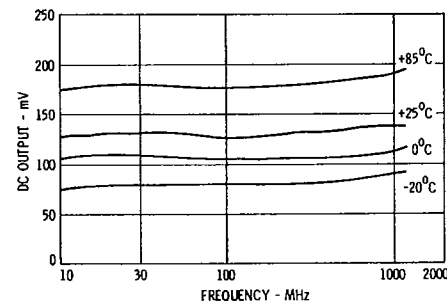
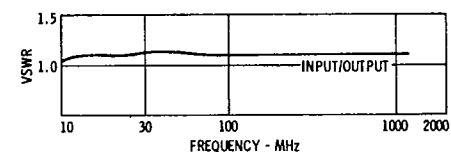
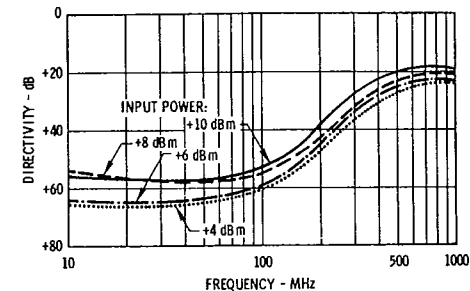
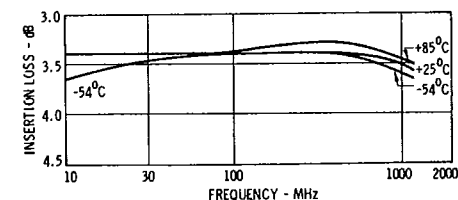
Outline Drawing

D1

**Schematic Diagram****Weight**

2.27 grams (0.08 oz.) maximum



Typical Performance at 25°C**DC Output vs. Frequency**vs. Input Power
(50K Ω Load)**Isolation vs. Frequency**
(50K Ω Load)**DC Output vs. Input Power**
vs. DC Output Loading
(500 MHz)**DC Output Level vs. Input Power**
vs. Temperature
(1000 MHz)**DC Output vs. Frequency**
vs. Temperature
PIN = 0 dBm (50K Ω Load)**DC Output vs. Frequency**
vs. Temperature
PIN = +6 dBm (50K Ω Load)**DC Output vs. Frequency**
vs. Temperature
PIN = +10 dBm (50K Ω Load)**VSWR vs. Frequency****Directivity vs. Frequency**
vs. Input Power
(50K Ω Load)**Insertion Loss vs. Frequency**
vs. Temperature

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(continued)

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Typical Automatic Test Data

V_{CC} = 12 V

FREQ MHz	VSWR IN	VSWR OUT	LOSS dB
100.	1.1	1.1	3.4
200.	1.1	1.1	3.4
300.	1.1	1.1	3.4
400.	1.1	1.1	3.5
500.	1.1	1.1	3.4
600.	1.1	1.1	3.5
700.	1.1	1.1	3.4
800.	1.1	1.1	3.4
900.	1.1	1.1	3.5
1000.	1.2	1.1	3.5
1100.	1.1	1.1	3.5
1200.	1.1	1.1	3.6

Linear S-Parameters

FREQ MHz	S11		S21		S12		S22	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
100.	.04	-123.7	.68	13.4	.68	13.3	.04	-134.3
200.	.03	-84.2	.67	22.3	.67	22.3	.03	-109.6
300.	.04	-109.2	.68	33.0	.68	32.8	.04	-114.0
400.	.03	-74.5	.67	43.1	.67	43.3	.03	-99.7
500.	.06	-64.7	.68	53.5	.67	52.8	.05	-76.6
600.	.05	-66.9	.67	63.7	.67	63.6	.05	-75.8
700.	.06	-30.5	.67	74.3	.67	73.9	.05	-51.7
800.	.06	-34.6	.68	84.4	.67	84.3	.06	-41.8
900.	.06	-8.6	.67	95.4	.66	94.4	.05	-42.0
1000.	.07	-6.5	.67	105.7	.67	105.2	.04	-20.4
1100.	.06	.8	.67	116.1	.67	115.8	.04	-32.0
1200.	.06	25.9	.66	125.7	.67	126.2	.03	10.2

Deviation from Linear Phase, Gain and Group Delay

FREQ MHz	DEV LIN P DEG	REL Q DEG	GAIN DEV dB	ABS GAIN dB	GROUP DELAY N-SEC
100.	-.96	.00	-.05	-3.38	.25
200.	-.42	8.95	-.02	-3.45	.27
300.	-.11	19.58	-.03	-3.40	.29
400.	-.31	29.70	-.05	-3.47	.29
500.	-.23	40.10	-.03	-3.40	.29
600.	-.29	50.36	-.03	-3.45	.29
700.	-.05	60.92	-.01	-3.43	.29
800.	-.30	70.99	-.03	-3.40	.29
900.	-.38	81.99	-.03	-3.46	.30
1000.	-.37	92.30	-.03	-3.46	.29