1N5155 (SILICON)

CASE 46 

Silicon high-frequency step-recovery power varactor, for multiplier applications from 2 to 8.5 GHz with 2 watts minimum power output guaranteed at 6 GHz.

MAXIMUM RATINGS (T_C = 25°C unless otherwise noted)

Rating	Symbol	Value	Unit
Reverse Voltage	V_R	35	Vdc
Forward Current	I_F	200	mAdc
RF Power Input	P_{in}	7.0	Watts
Total Device Dissipation @ T_C = 75°C Derate above 75°C	P_D	3.5 30	Watts mW/°C
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-65 to+ 200	°C

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted)

Characteristic	Conditions	Symbol	Min	Typ	Max	Unit
Reverse Breakdown Voltage	I_R = 10 μAdc	BV_R	35	45	—	Vdc
Reverse Current	V_R = 26 Vdc V_R = 26 Vdc, T_A = 150°C	I_R	— —	— —	1.0 100	μAdc
Series Resistance	V_R = 6 Vdc, f = 50 MHz	R_S	—	0.9	—	Ohms
Diode Capacitance	V_R = 6 Vdc, f = 1 MHz	C_T	1.0	2.1	3.0	pF
Figure of Merit	V_R = 6 Vdc, f = 50 MHz	Q	—	1700	—	—
Thermal Resistance		θ_{JC}	—	—	35	°C/W

FUNCTIONAL TEST

RF Power Output	Test Circuit Figure 5 P_{in} = 5 watts, f_{in} = 2 GHz, f_{out} = 6 GHz	P_{out}	2.0	—	—	Watts
Tripling Efficiency		η	40	—	—	%

POWER OUTPUT versus OUTPUT FREQUENCY

FIGURE 1A — DOUBLING (X2)

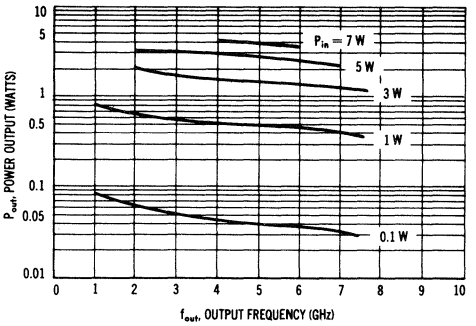


FIGURE 1B — TRIPLING (X3)

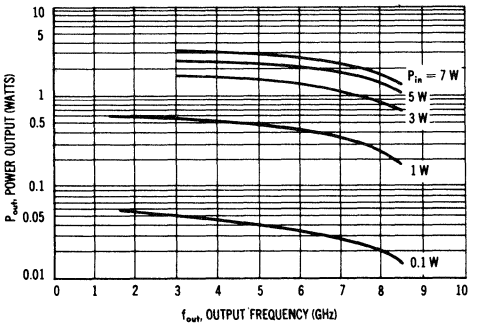
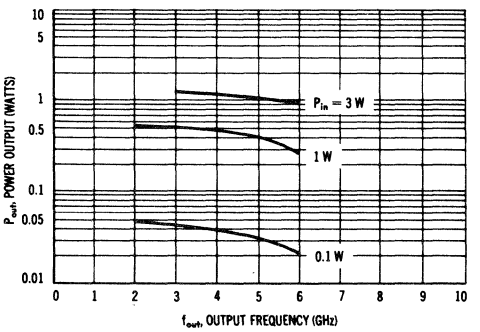


FIGURE 1C — QUADRUPLING (X4)



TYPICAL CHARACTERISTICS $T_C = 25°C$

FIGURE 2 — VARACTOR CAPACITANCE versus REVERSE VOLTAGE

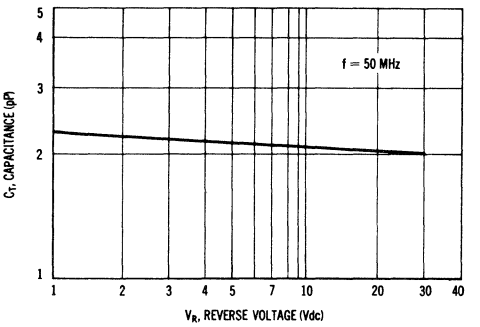


FIGURE 3 — TRIPLER POWER OUTPUT versus TEMPERATURE 2 GHz to 6 GHz

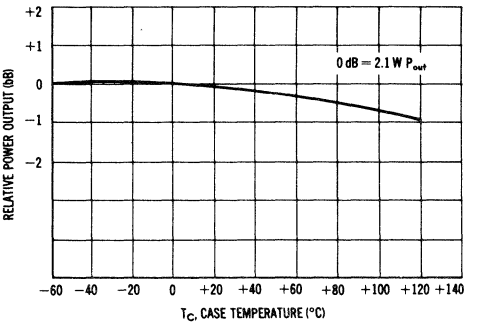


FIGURE 4 — TRIPLER LINEARITY CHARACTERISTIC

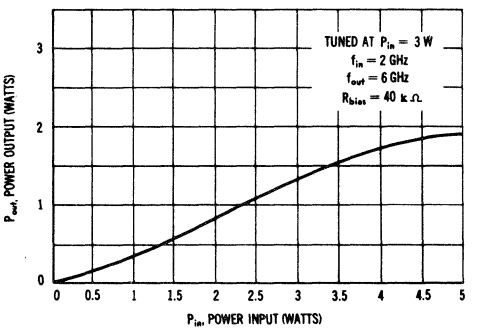


FIGURE 5 — HARMONIC TRIPLER — 2 GHz to 6 GHz

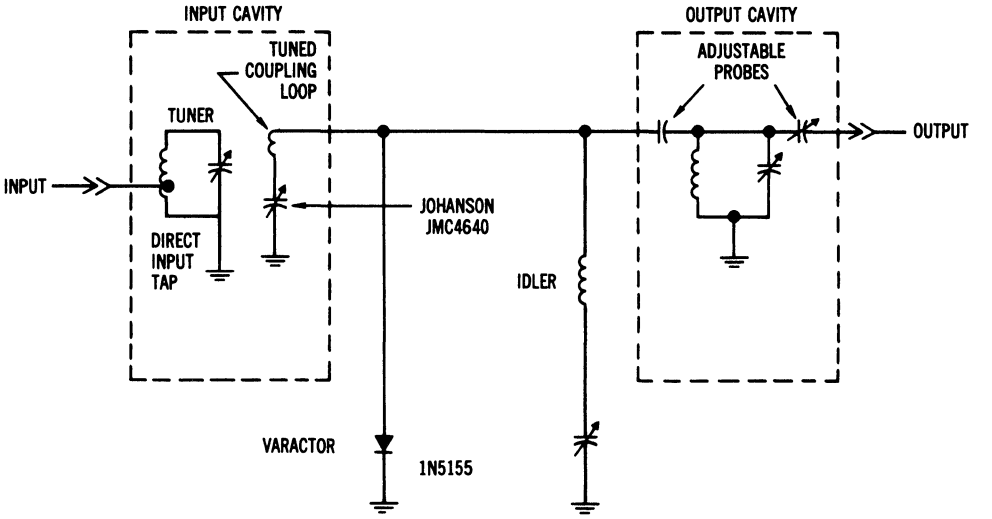
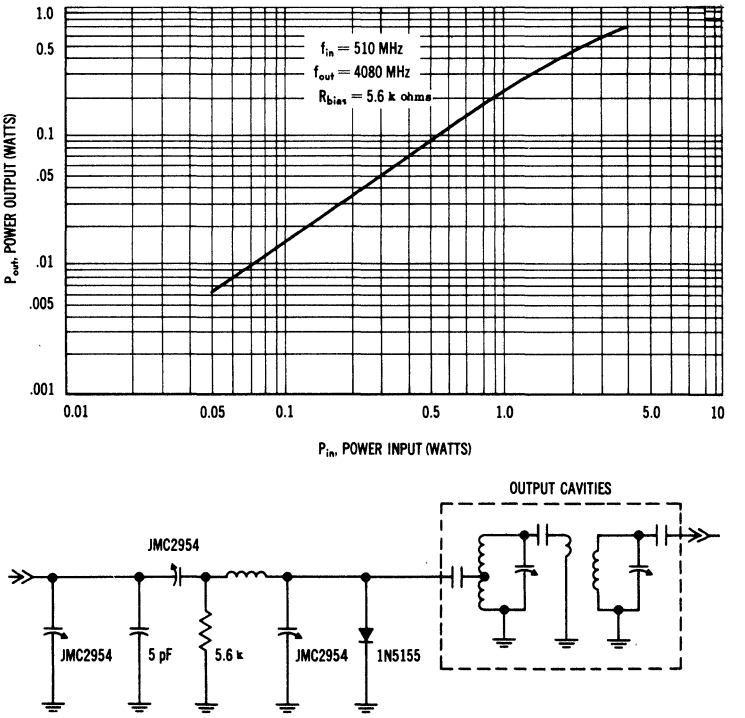


FIGURE 6 — HARMONIC OCTUPLER — 510 MHz to 4080 MHz



1N5155A

For Specifications, See 1N5150A Data