

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CEO}	5.0	Vdc
Collector-Base Voltage	V_{CBO}	10	Vdc
Emitter-Base Voltage	V_{EBO}	2.0	Vdc
Collector Current — Peak	I_C	5.0	mA _{dc}
Total Device Dissipation @ $T_A = 100^\circ\text{C}$ Derate above 100°C	P_D	50 1.0	mW mW/ $^\circ\text{C}$
Junction Temperature	T_J	+ 150	$^\circ\text{C}$
Storage Temperature	T_{stg}	- 65 to + 150	$^\circ\text{C}$

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	500	$^\circ\text{C/W}$

MRF931**CASE 317-01, STYLE 2
HIGH FREQUENCY TRANSISTOR****NPN SILICON****ELECTRICAL CHARACTERISTICS** ($T_A = 25^\circ\text{C}$ unless otherwise noted.)

Characteristic	Symbol	Min	Typ	Max	Unit
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OFF CHARACTERISTICS

Collector-Emitter Breakdown Voltage ($I_C = 0.1$ mA _{dc} , $I_E = 0$)	$V_{(BR)CEO}$	5.0	—	—	Vdc
Collector-Base Breakdown Voltage ($I_C = 0.01$ mA _{dc} , $I_E = 0$)	$V_{(BR)CBO}$	10	—	—	Vdc
Emitter-Base Breakdown Voltage ($I_E = 0.1$ mA _{dc} , $I_C = 0$)	$V_{(BR)EBO}$	2.0	—	—	Vdc
Collector Cutoff Current ($V_{CB} = 5.0$ Vdc, $I_E = 0$)	I_{CBO}	—	—	50	nA _{dc}

ON CHARACTERISTICS

DC Current Gain ($I_C = 0.25$ mA _{dc} , $V_{CE} = 1.0$ Vdc)	h_{FE}	30	—	150	—
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SMALL SIGNAL CHARACTERISTICS

Current-Gain — Bandwidth Product ($I_E = 1.0$ mA _{dc} , $V_{CE} = 1.0$ Vdc, $f = 1.0$ GHz)	f_T	—	3.0	—	GHz
Collector-Base Capacitance ($V_{CB} = 1.0$ Vdc, $I_E = 0$, $f = 1.0$ MHz)	C_{cb}	—	0.35	0.5	pF

FUNCTIONAL TEST

Noise Figure ($I_E = 0.25$ mA _{dc} , $V_{CE} = 1.0$ Vdc, $f = 0.5$ GHz) ($I_E = 0.25$ mA _{dc} , $V_{CE} = 1.0$ Vdc, $f = 1.0$ GHz)	NF	— —	3.8 4.3	— —	dB
Power Gain at Optimum Noise Figure ($I_E = 0.25$ mA _{dc} , $V_{CE} = 1.0$ Vdc, $f = 0.5$ GHz) ($I_E = 0.25$ mA _{dc} , $V_{CE} = 1.0$ Vdc, $f = 1.0$ GHz)	GNF	— —	16 10	— —	dB
Transducer Power Gain ($I_E = 0.5$ mA _{dc} , $V_{CE} = 1.0$ Vdc, $f = 0.5$ GHz) ($I_E = 0.5$ mA _{dc} , $V_{CE} = 1.0$ Vdc, $f = 1.0$ GHz)	G_T	— —	18 12	— —	dB

FIGURE 1 – POWER DERATING

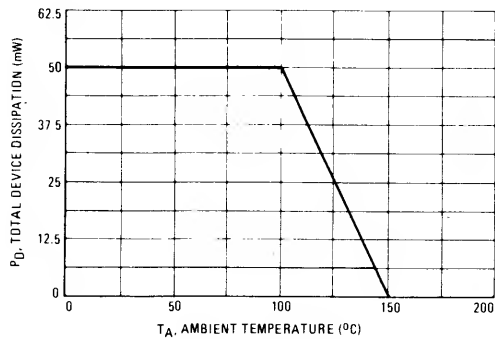


FIGURE 2 – TRANSDUCER POWER GAIN AND NOISE FIGURE versus FREQUENCY

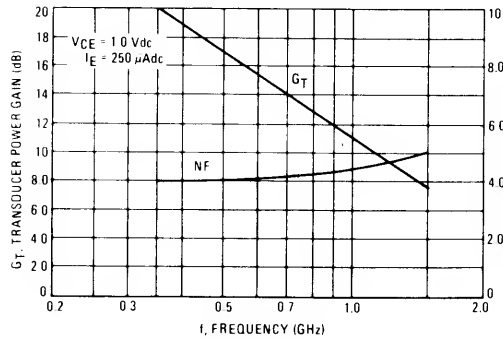


FIGURE 3 – TRANSDUCER POWER GAIN AND NOISE FIGURE versus EMITTER CURRENT

