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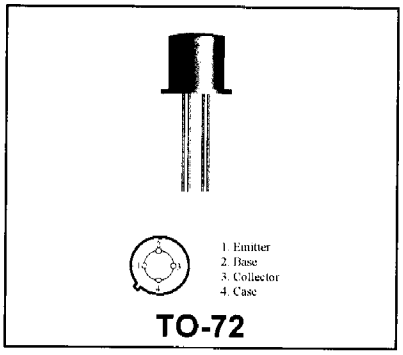
MRF914

RF & MICROWAVE DISCRETE LOW POWER TRANSISTORS



TO-72

Features

- Silicon NPN, High Frequency Transistor
- High Power Gain - Gmax = 15 dB (typ) @ f = 500 MHz
- Low Noise Figure: NF = 2.5 dB (typ) @ f = 500 MHz
- High F_T - 4.5 GHz (typ) @ IC = 20 mAdc

DESCRIPTION:

Designed primarily for use in High Gain, low noise general purpose amplifiers. Also excellent for high speed switching applications.

ABSOLUTE MAXIMUM RATINGS (Tcase = 25°C)

Symbol	Parameter	Value	Unit
V_{CEO}	Collector-Emitter Voltage	12	Vdc
V_{CBO}	Collector-Base Voltage	20	Vdc
V_{EBO}	Emitter-Base Voltage	3.0	Vdc
I_C	Collector Current	40	mA

Thermal Data

P_D	Total Device Dissipation @ T_A = 25° C	200	mWatts
	Derate above 25° C	1.6	mW/ °C

ELECTRICAL SPECIFICATIONS (Tcase = 25°C)

STATIC (off)

Symbol	Test Conditions	Value			Unit
		Min.	Typ.	Max.	
BV_{CEO}	Collector-Emitter Breakdown Voltage (IC = 1.0 mAdc, IB = 0)	12	-	-	Vdc
BV_{CBO}	Collector-Base Breakdown Voltage (IC= 0.1 mAdc, IE=0)	20	-	-	Vdc
BV_{EBO}	Emitter-Base Breakdown Voltage (IE = 0.1 mAdc, IC = 0)	3.0	-	-	Vdc
I_{CBO}	Collector Cutoff Current (VCE = 15 Vdc, IE = 0 Vdc)	-	-	50	nA

STATIC (on)

HFE	DC Current Gain (IC = 20 mAdc, VCE = 10 Vdc)	30	-	200	-

DYNAMIC

Symbol	Test Conditions	Value			Unit
		Min.	Typ.	Max.	
f_T	Current-Gain - Bandwidth Product (IC = 20 mAdc, VCE = 10 Vdc, f = .5 GHz)	-	4.5	-	GHz
C_{CB}	Junction Capacitance (VCB = 10Vdc, IE=0, f=1 MHz)	-	0.7	-	pF

FUNCTIONAL

Symbol	Test Conditions	Value			Unit
		Min.	Typ.	Max.	
MAG	Maximum Available Gain (IC = 20 mAdc, VCE = 10 Vdc, f = 500 MHz)	-	12	-	dB
$S_{\|21\|}^2$	Insertion Gain (IC = 20 mAdc, VCE = 10 Vdc, f = 500 MHz)	10	11	-	dB
NF	Noise Figure (IC = 5.0 mAdc, VCE = 10 Vdc, f = 500 MHz)	-	2.5	-	dB
G_{MAX}	Maximum Available Power Gain (IC = 20 mAdc, VCE = 10 Vdc, f = 500 MHz)	-	15	-	dB

Table 1. Common Emitter S-Parameters, @ VCE = 10 V, IC = 20 mA

f	S11		S21		S12		S22	
(MHz)	|S11|	∠ϕ	|S21|	∠ϕ	|S12|	∠ϕ	|S22|	∠ϕ
100	.45	-36	15.6	115	.03	75	.67	-20
200	.32	-38	8.7	101	.05	78	.55	-19
300	.26	-36	6.3	91	.08	76	.54	-17
400	.24	-36	4.6	86	.1	74	.52	-22
500	.22	-39	3.8	84	.12	75	.48	-23
600	.21	-40	3.4	78	.15	71	.48	-26
700	.19	-44	3.0	72	.17	68	.47	-29
800	.18	-48	2.5	68	.19	65	.46	-35
900	.18	-58	2.4	69	.20	67	.44	-40
1000	.18	-65	2.4	62	.23	63	.45	-42