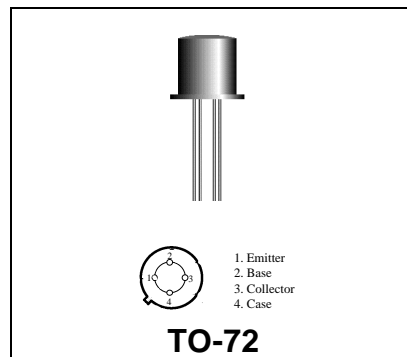


MRF914

**RF & MICROWAVE DISCRETE
 LOW POWER TRANSISTORS**

Features

- Silicon NPN, high Frequency, To-72 packaged, Transistor
- High Power Gain - $G_{max} = 15 \text{ dB (typ) @ } f = 500 \text{ MHz}$
- Low Noise Figure
 $NF = 2.5 \text{ dB (typ) @ } f = 500 \text{ MHz}$
- High $F_T - 4.5 \text{ GHz (typ) @ } I_C = 20 \text{ mA}$



DESCRIPTION:

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

ABSOLUTE MAXIMUM RATINGS ($T_{case} = 25^\circ\text{C}$)

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 @ $T_A = 25^\circ\text{C}$ Derate above 25°C	200 1.6	mWatts mW/ $^\circ\text{C}$
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ELECTRICAL SPECIFICATIONS (T_{case} = 25°C)

STATIC
 (off)

Symbol	Test Conditions	Value			Unit
		Min.	Typ.	Max.	
BVCEO	Collector-Emitter Breakdown Voltage (I _C = 1.0 mA _{dc} , I _B = 0)	12	-	-	V _{dc}
BVCBO	Collector-Base Breakdown Voltage (I _C = 0.1 mA _{dc} , I _E = 0)	20	-	-	V _{dc}
BVEBO	Emitter-Base Breakdown Voltage (I _E = 0.1 mA _{dc} , I _C = 0)	3.0	-	-	V _{dc}
ICBO	Collector Cutoff Current (V _{CE} = 15 V _{dc} , I _E = 0 V _{dc})	-	-	50	nA

(on)

HFE	DC Current Gain (I _C = 20 mA _{dc} , V _{CE} = 10 V _{dc})	30	-	200	-
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DYNAMIC

Symbol	Test Conditions	Value			Unit
		Min.	Typ.	Max.	
f _T	Current-Gain - Bandwidth Product (I _C = 20 mA _{dc} , V _{CE} = 10 V _{dc} , f = .5 GHz)	-	4.5	-	GHz
CCB	Junction Capacitance (V _{CB} = 10V _{dc} , I _E =0, f=1 MHz)	-	0.7	-	pF

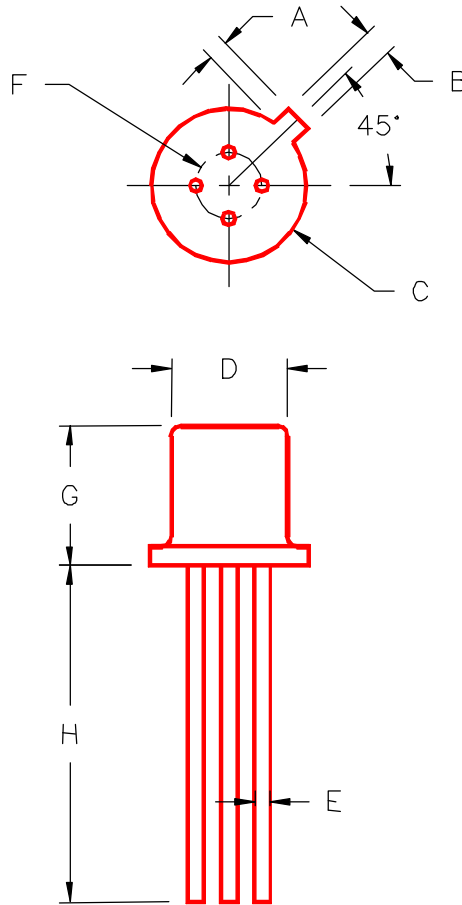
Functional

Symbol	Test Conditions	Value			Unit
		Min.	Typ.	Max.	
MAG	Maximum Available Gain (I _C = 20 mA _{dc} , V _{CE} = 10 V _{dc} , f = 500 MHz)	-	12	-	dB
S ₂₁ ²	Insertion Gain (I _C = 20 mA _{dc} , V _{CE} = 10 V _{dc} , f = 500 MHz)	10	11	-	dB
NF	Noise Figure (I _C = 5.0 mA _{dc} , V _{CE} = 10 V _{dc} , f = 500 MHz)	-	2.5	-	dB
G _{max}	Maximum Available Power Gain (I _C = 20 mA _{dc} , V _{CE} = 10 V _{dc} , f = 500 MHz)	-	15	-	dB

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

f (MHz)	S11		S21		S12		S22	
	S11	$\angle \phi$	S21	$\angle \phi$	S12	$\angle \phi$	S22	$\angle \phi$
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

PACKAGE STYLE M244



	MINIMUM INCHES/MM	MAXIMUM INCHES/MM		MINIMUM INCHES/MM	MAXIMUM INCHES/MM
A	.020/0,51	.048/1,22			
B	.036/0,91	.046/1,17			
C	.209/5,31	.230/5,84			
D	.178/4,52	.195/4,95			
E	.016/0,41	.020/0,51			
F	.100/2,54				
G	.170/4,32	.210/5,33			
H	.500/12,70				