



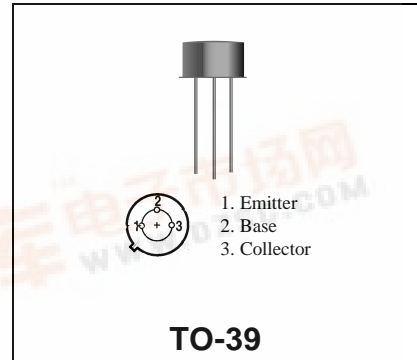
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MRF1001A

**RF & MICROWAVE DISCRETE
LOW POWER TRANSISTORS**

Features

- Silicon NPN, To-39 packaged VHF/UHF Transistor
- $F_{tau} = 3.0 \text{ GHz (typ) @ 300MHz, 14v, 90mA,}$
- $G_{U \text{ max}} = 11.5 \text{ dB (typ) @ 300 MHz, 14v, 90mA}$
- $|S_{21}|^2 = 11 \text{ dB (typ) @ 300 MHz, 14v, 90mA}$



DESCRIPTION:

Silicon NPN transistor, designed for VHF and UHF equipment. Applications include amplifier; pre-driver, driver, and output stages. Also suitable for oscillator and frequency-multiplier functions.

ABSOLUTE MAXIMUM RATINGS (Tcase = 25°C)

Symbol	Parameter	Value	Unit
V _{CEO}	Collector-Emitter	20	Vdc
V _{CBO}	Collector-Base Voltage	30	Vdc
V _{EBO}	Emitter-Base Voltage	3.5	Vdc
I _C	Collector Current	200	mA

Thermal Data

P _D	Total Device Dissipation @ T _A = 25°C Derate above 25°C	1.0 5.71	Watts mW/ °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 = 5.0 mA _{dc})	20	-	-	V _{dc}
BVEBO	Emitter-Base Breakdown Voltage (I _C = 0.1 mA _{dc})	3.5	-	-	V _{dc}
BVCBO	Collector-Base Breakdown Voltage (I _C = 1.0 mA _{dc})	30	-	-	V _{dc}
ICBO	Collector-Base (V _{CB} = 10 V _{dc})	-	50	-	μA
VCE(sat)	Collector-Emitter Saturation Voltage (I _C = 50mA, I _C /I _B = 10)	-	100	-	mV

(on)

HFE	DC Current Gain (I _C = 50 mA _{dc} , V _{CE} = 5.0 V _{dc})	50	-	300	-
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DYNAMIC

Symbol	Test Conditions	Value			Unit
		Min.	Typ.	Max.	
f _T	Current-Gain - Bandwidth Product (I _C = 90 mA _{dc} , V _{CE} = 14 V _{dc} , f = 300 MHz)	-	3.0	-	GHz

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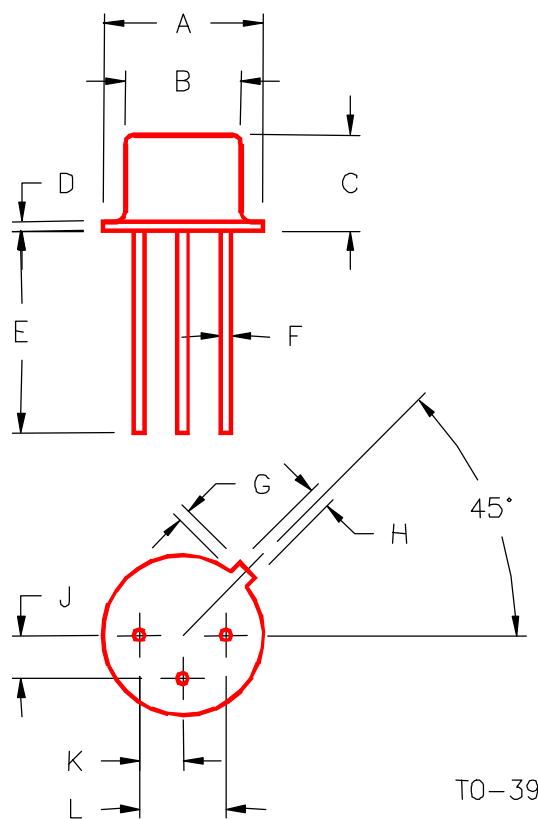
FUNCTIONAL

Symbol	Test Conditions		Value			Unit
			Min.	Typ.	Max.	
$G_{U\max}$	Maximum Unilateral Gain (1)	IC = 90 mAdc, VCE = 14Vdc, f = 300 MHz	-	11.5	-	dB
MAG	Maximum Available Gain	IC = 90 mAdc, VCE = 14Vdc, f = 300 MHz	-	11.7	-	dB
$ S_{21} ^2$	Insertion Gain	IC = 90 mAdc, VCE = 14Vdc, f = 300 MHz	10	11.13	-	dB

Table 1. Common Emitter S-Parameters, @ VCE = 14 V, IC = 90 mA

f (MHz)	S11		S21		S12		S22	
	S11	$\angle \phi$	S21	$\angle \phi$	S12	$\angle \phi$	S22	$\angle \phi$
100	.165	-17	9.7	98	.058	79	.411	-32
200	.113	-77	5.2	80	.115	73	.302	-36
300	.061	63	3.6	76	.169	76	.298	-42
400	.003	-49	2.7	66	.225	68	.287	-67
500	.063	117	2.3	57	.281	61	.235	-80
600	.069	140	1.9	54	.320	60	.245	-90
700	.135	150	1.9	48	.397	58	.232	-104
800	.179	144	1.7	39	.447	49	.237	-124
900	.282	146	1.6	33	.476	44	.215	-157
1000	.362	132	1.5	36	.510	47	.220	-177

PACKAGE STYLE M246



TO-39

	MINIMUM INCHES/MM	MAXIMUM INCHES/MM		MINIMUM INCHES/MM	MAXIMUM INCHES/MM
A	.350/8,89	.370/9,40	J	.095/2,41	.105/2,67
B	.315/8,00	.335/8,51	K	.095/2,41	.105/2,67
C	.240/6,10	.260/6,60	L	.190/4,83	.210/5,33
D	.015/0,38	.045/1,14			
E	.500/12,70				
F	.016/0,41	.019/0,48			
G	.029/0,74	.040/1,02			
H	.028/0,71	.034/0,86			