RF Products
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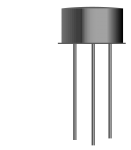
MRF1001A

RF & MICROWAVE DISCRETE LOW POWER TRANSISTORS

Features

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



1. Emitter
2. Base
3. Collector

TO-39

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 = 25ºC Derate above 25ºC	1.0 5.71	Watts mW/ ºC

ELECTRICAL SPECIFICATIONS (Tcase = 25°C)

STATIC

(off)

Symbol	Test Conditions	Value			
		Min.	Typ.	Max.	Unit
BVCEO	Collector-Emitter Breakdown Voltage (IC = 5.0 mAdc)	20	-	-	Vdc
BVEBO	Emitter-Base Breakdown Voltage (IC= 0.1 mAdc)	3.5	-	-	Vdc
BVCBO	Collector-Base Breakdown Voltage (IC=1.0 mAdc)	30	-	-	Vdc
ICBO	Collector-Base (VCB = 10 Vdc)	-	50	-	µA
VCE(sat)	Collector-Emitter Saturation Voltage (IC = 50mA, IC/IB = 10)	-	100	-	mV

(on)

HFE	DC Current Gain (IC = 50 mAdc, VCE = 5.0 Vdc)	50	-	300	-

DYNAMIC

Symbol	Test Conditions	Value			
		Min.	Typ.	Max.	Unit
f_T	Current-Gain - Bandwidth Product (IC = 90 mAdc, VCE = 14 Vdc, f = 300 MHz)	-	3.0	-	GHz

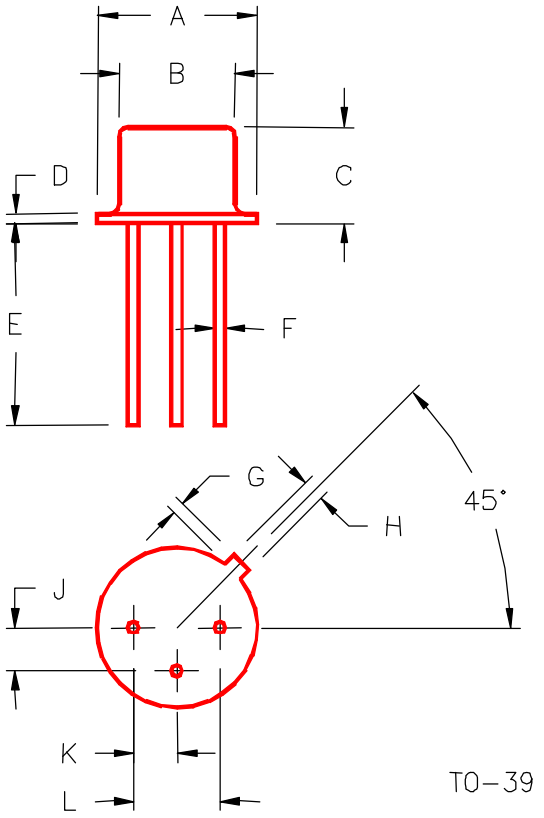
FUNCTIONAL

Symbol	Test Conditions		Value			
			Min.	Typ.	Max.	Unit
$G_{U\ max}$	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	S11		S21		S12		S22	
(MHz)	|S11|	∠ϕ	|S21|	∠ϕ	|S12|	∠ϕ	|S22|	∠ϕ
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



	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			