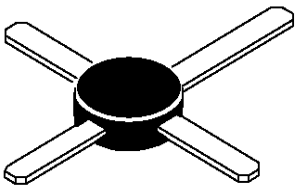
ADVANCED POWER TECHNOLOGY RF®

MRF941

RF & MICROWAVE DISCRETE LOW POWER TRANSISTORS

Features

- Fully Implanted Base and Emitter Structure.
- High Gain, G_{NF} = 15 dB @ 1 GHz
- Low Noise Figure – 1.3dB @ 1GHz
- Ftau - 8.0 GHz @ 6v, 15mA
- Cost Effective Macro X Package



Macro X

DESCRIPTION:

Designed for use in high gain, low noise small-signal amplifiers.

ABSOLUTE MAXIMUM RATINGS (Tcase = 25°C)

Symbol	Parameter	Value	Unit
V_{CEO}	Collector-Emitter Voltage	10	V
V_{CBO}	Collector-Base Voltage	20	V
V_{EBO}	Emitter-Base Voltage	1.5	V
I_C	Collector Current	50	mA
P_D	Total Device Dissipation @ TC = 75ºC	0.4	Watts
T_{STG}	Storage Junction Temperature Range	-65 to +150	ºC
T_{Jmax}	Maximum Junction Temperature	150	ºC

Thermal Data

$R_{TH(J-C)}$	Thermal Resistance Junction-Case	250	°C/W

ELECTRICAL SPECIFICATIONS (Tcase = 25°C)

STATIC

Symbol	Test Conditions	Value			
		Min.	Typ.	Max.	Unit
BV_{CEO}	I_C = 0.1 mA, I_B = 0	10	-	-	V
BV_{CBO}	I_C = 0.1 mA, I_E = 0	20	-	-	V
I_{CBO}	V_{CE} = 10 V, V_{BE} = 0 V	-	-	0.1	µA
I_{EBO}	V_{CE} = 1.0 V, V_{BE} = 0 V	-	-	0.1	µA
HFE	V_{CE} = 6.0 V, I_C = 5.0 mA,	50	-	200	-

DYNAMIC

Symbol	Test Conditions	Value			
		Min.	Typ.	Max.	Unit
C_{CB}	V_{CB} = 10 V, I_E = 0, f = 1.0 MHz	-	.35	1.0	pf
F_T	V_{CE} = 6 V, I_C = 15 mA, f = 1.0 GHz	-	8.0	-	GHz

FUNCTIONAL

Symbol	Test Conditions	Value			
		Min.	Typ.	Max.	Unit
NF_{MIN}	V_{CE} = 6 V, I_C = 5 mA, f = 1 GHz	-	1.3	-	dB
G_{NF}	V_{CE} = 6 V, I_C = 5 mA, f = 1 GHz	-	15	-	dB
$G_{U\ max}$	V_{CE} = 6 V, I_C = 15 mA, f = 1 GHz	-	18	-	dB
$\|S_{21}\|^2$	V_{CE} = 6 V, I_C = 15 mA, f = 1 GHz	12	16	-	dB

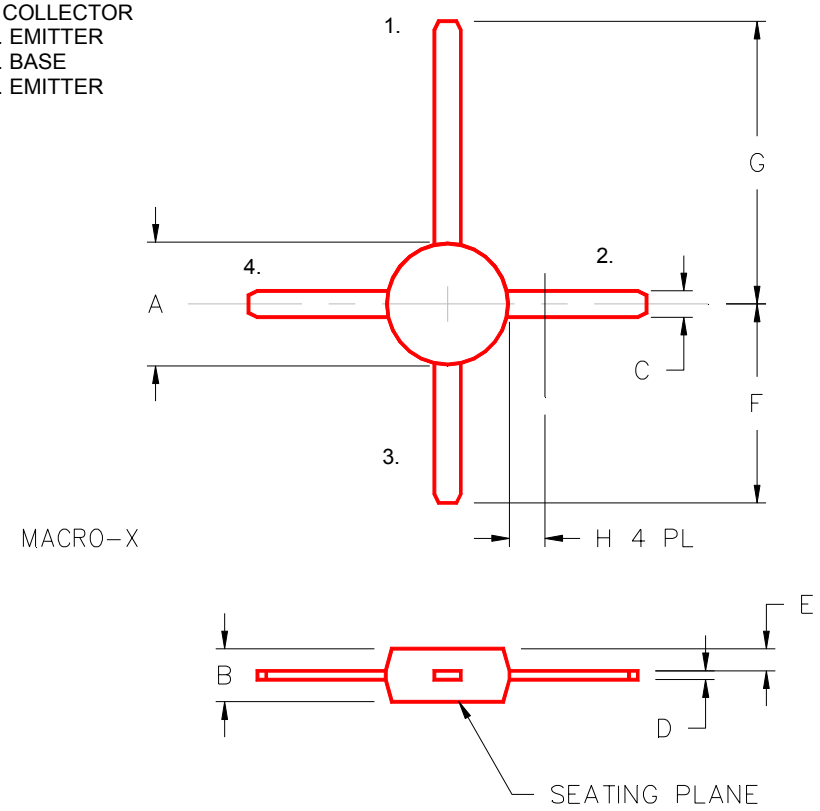
Table 1. Common Emitter S-Parameters, @ VCE = 6 V, IC = 15 mA

f	S11		S21		S12		S22	
(MHz)	|S11|	∠ ϕ	|S21|	∠ ϕ	|S12|	∠ ϕ	|S22|	∠ ϕ
100	.57	-47	30.1	149	.02	63	.87	-20
400	.40	-126	14.4	107	.03	65	.52	-37
1000	.33	180	6.3	81	.06	67	.42	-42
1500	.27	151	4.2	69	.08	72	.43	-49
2000	.32	124	3.1	59	.12	69	.42	-56
2500	.34	103	2.5	49	.15	67	.42	-64
3000	.41	80	2.1	42	.17	59	.40	-69
3500	.49	70	2.9	34	.20	54	.35	-84
4000	.55	52	1.7	27	.28	47	.32	-90

PACKAGE MECHANICAL DATA

PACKAGE STYLE M238

PIN 1. COLLECTOR
2. EMITTER
3. BASE
4. EMITTER



	MINIMUM INCHES/MM	MAXIMUM INCHES/MM		MINIMUM INCHES/MM	MAXIMUM INCHES/MM
A	.175/4,45	.205/5,21			
B	.075/1,91	.100/2,54			
C	.033/0,84	.039/0,99			
D	.008/0,20	.012/0,31			
E	.030/0,76	.045/1,14			
F	.285/7,24	.320/8,13			
G	.415/10,54	.450/11,43			
H	.065/1,65				