# ADVANCED POWER TECHNOLOGY RF®

MS1649

RF & MICROWAVE TRANSISTORS
UHF CLASS C MOBILE APPLICATIONS

Features
- **470 MHz**
- **P_{OUT} = 3W**
- **G_P = 9.5dB MINIMUM**
- **COMMON EMITTER CONFIGURATION**

DESCRIPTION:
The MS1649 is a 12.5V epitaxial NPN planar transistor designed primarily for UHF communications. This device is packaged in a grounded emitter TO-39 package for increased power gain and optimum heat dissipation.

1. Collector
2. Base
3. Emitter

TO-39
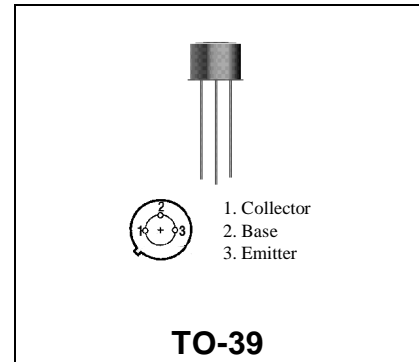
ABSOLUTE MAXIMUM RATINGS (Tcase = 25°C)

Symbol	Parameter	Value	Unit
V_{CBO}	**Collector-Base Voltage**	**36**	**V**
V_{CEO}	**Collector-Emitter Voltage**	**16**	**V**
V_{EBO}	**Emitter-Base Voltage**	**3.5**	**V**
I_C	**Collector Current**	**1.0**	**A**
P_{TOT}	**Total Power Dissipation**	**7.8**	**W**
T_{STG}	**Storage Temperature**	**-65 to +200**	**°C**
T_J	**Junction Temperature**	**+200**	**°C**

Thermal Data

$R_{TH(J-C)}$	**Thermal Resistance Junction-Case**	**35.0**	**°C/W**

ELECTRICAL SPECIFICATIONS (Tcase = 25°C)
STATIC

Symbol	Test Conditions			Value			
				Min.	Typ.	Max.	Unit
BV$_{CES}$	I$_C$ = 50mA	V$_{BE}$ = 0		36	---	---	V
BV$_{CEO}$	I$_C$ = 50mA	I$_B$ = 0		16	---	---	V
BV$_{EBO}$	I$_E$ = 1mA	I$_C$ = 0		3.5	---	---	V
I$_{CES}$	V$_{CB}$ = 12.5V	V$_{BE}$ = 0		---	---	1.0	mA
H$_{FE}$	V$_{CE}$ = 5.0V	I$_C$ =100mA		20	---	150	---

DYNAMIC

Symbol	Test Conditions			Value			
				Min.	Typ.	Max.	Unit
G$_{PE}$	f = 470MHz	P$_{OUT}$ = 3.0W	V$_{CC}$ = 12.5V	9.5	---	---	dB
η	f = 470MHz	P$_{OUT}$ = 3.0W	V$_{CC}$ = 12.5V	50	---	---	%
C$_{OB}$	f = 1.0MHz	V$_{CB}$ = 12.5 V		---	---	12	pf

IMPEDANCE DATA

FREQ	Z$_{IN}(\Omega)$	Z$_{CL}(\Omega)$
175 MHz	3.5 + j1.2	14.0 + j10.0
470 MHz	3.3 + j3.2	11.0 + j5.7

PACKAGE MECHANICAL DATA

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			