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With the principle of "Quality Parts,Customers Priority,Honest Operation,and Considerate Service",our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



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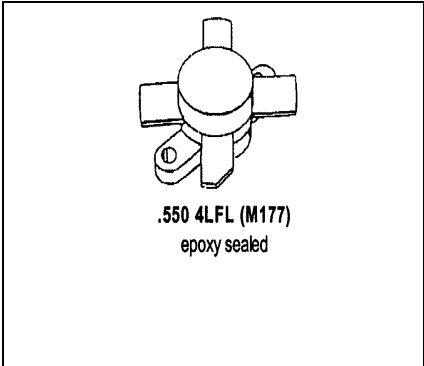


MS1004

**RF & MICROWAVE TRANSISTORS**  
**HF SSB APPLICATIONS**

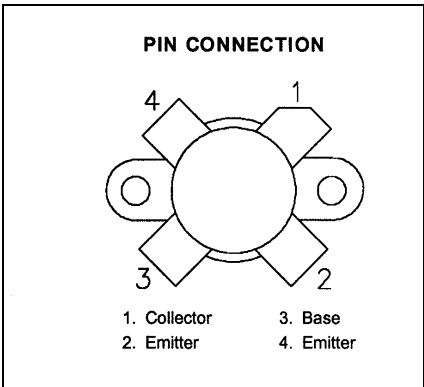
**Features**

- 30 MHz
- 50 VOLTS
- P<sub>OUT</sub> = 250 WATTS
- G<sub>P</sub> = 14.5 dB MINIMUM
- IMD = -30 dB
- GOLD METALIZATION
- COMMON EMITTER CONFIGURATION



**DESCRIPTION:**

The MS1004 is a 50V epitaxial silicon NPN planar transistor designed primarily for SSB and VHF communications. This device utilizes emitter ballasting for improved ruggedness and reliability.



**ABSOLUTE MAXIMUM RATINGS (T<sub>case</sub> = 25°C)**

Symbol	Parameter	Value	Unit
V <sub>CBO</sub>	Collector-Base Voltage	110	V
V <sub>CEO</sub>	Collector-Emitter Voltage	55	V
V <sub>EBO</sub>	Emitter-Base Voltage	4.0	V
I <sub>C</sub>	Device Current	40	A
P <sub>DISS</sub>	Total Dissipation	330	W
T <sub>J</sub>	Junction Temperature	200	°C
T <sub>STG</sub>	Storage Temperature	-65 to +150	°C

**Thermal Data**

R <sub>TH(J-C)</sub>	Thermal Resistance Junction-case	0.4	°C/W
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**ELECTRICAL SPECIFICATIONS (T<sub>case</sub> = 25°C)**
**STATIC**

Symbol	Test Conditions		Value			Unit
			Min.	Typ.	Max.	
<b>BV<sub>CES</sub></b>	<b>I<sub>C</sub> = 200 mA</b>	<b>V<sub>BE</sub> = 0 V</b>	<b>110</b>	---	---	<b>V</b>
<b>BV<sub>CEO</sub></b>	<b>I<sub>C</sub> = 200 mA</b>	<b>I<sub>B</sub> = 0 mA</b>	<b>55</b>	---	---	<b>V</b>
<b>BV<sub>EBO</sub></b>	<b>I<sub>E</sub> = 20 mA</b>	<b>I<sub>C</sub> = 0 mA</b>	<b>4.0</b>	---	---	<b>V</b>
<b>I<sub>CEO</sub></b>	<b>V<sub>CE</sub> = 30 V</b>	<b>I<sub>E</sub> = 0 mA</b>	---	---	<b>10</b>	<b>mA</b>
<b>I<sub>CES</sub></b>	<b>V<sub>CE</sub> = 60 V</b>	<b>I<sub>E</sub> = 0 mA</b>	---	---	<b>10</b>	<b>mA</b>
<b>h<sub>F</sub>E</b>	<b>V<sub>CE</sub> = 6 V</b>	<b>I<sub>C</sub> = 10 A</b>	<b>15</b>	---	<b>45</b>	---

**DYNAMIC**

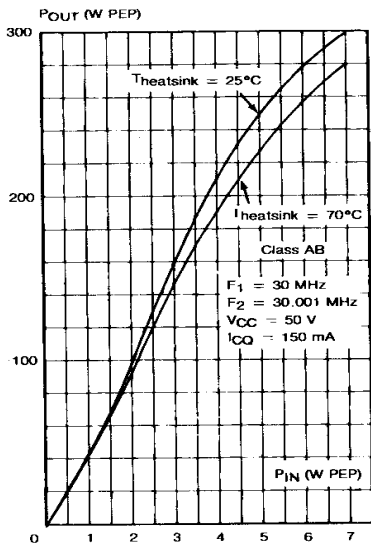
Symbol	Test Conditions			Value			Unit
				Min.	Typ.	Max.	
<b>P<sub>OUT</sub></b>	<b>f = 30MHz</b>	<b>V<sub>CC</sub> = 50 V</b>	<b>I<sub>CQ</sub> = 150 mA</b>	<b>250</b>	---	---	<b>WPEP</b>
<b>G<sub>p</sub></b>	<b>f = 30MHz</b>	<b>V<sub>CC</sub> = 50 V</b>	<b>I<sub>CQ</sub> = 150 mA</b>	<b>14.5</b>	---	---	<b>dB</b>
<b>IMD*</b>	<b>f = 30MHz</b>	<b>V<sub>CC</sub> = 50 V</b>	<b>I<sub>CQ</sub> = 150 mA</b>	--	---	<b>-30</b>	<b>dBc</b>
<b>η<sub>C</sub></b>	<b>f = 30MHz</b>	<b>V<sub>CC</sub> = 50 V</b>	<b>I<sub>CQ</sub> = 150 mA</b>	<b>37</b>	---	---	<b>%</b>
<b>C<sub>OB</sub></b>	<b>f = 1 MHz</b>	<b>V<sub>CB</sub> = 50 V</b>		---	---	<b>360</b>	<b>pf</b>
<b>Condition</b>	<b>f1 = 30.000 MHz</b>	<b>f2 = 30.001 MHz</b>					



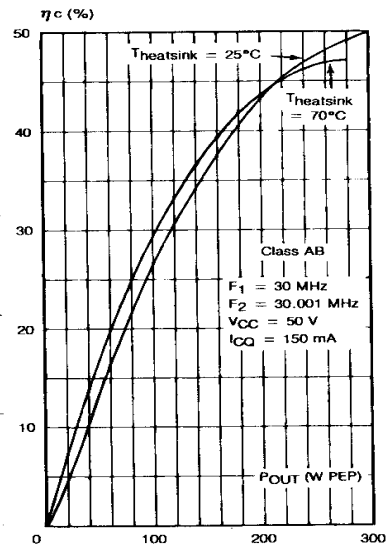
**TYPICAL PERFORMANCE**

**CLASS AB**

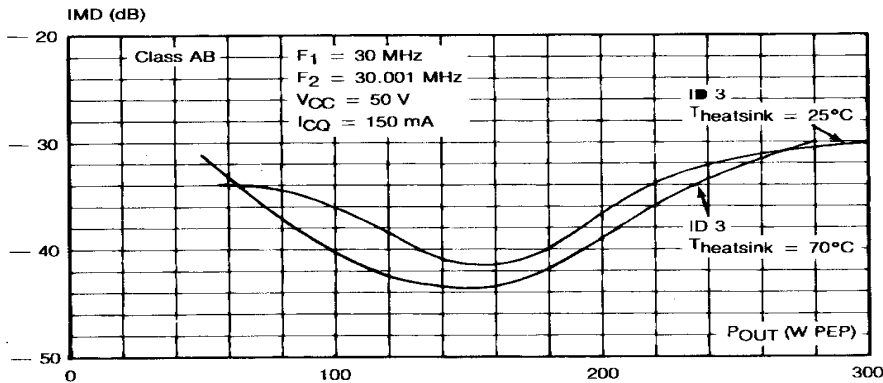
**POWER OUTPUT PEP vs POWER INPUT**



**COLLECTOR EFFICIENCY vs POWER OUTPUT PEP**



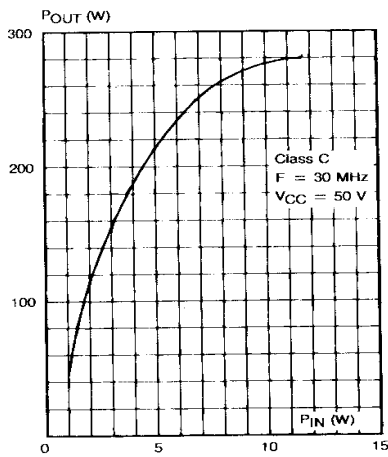
**INTERMODULATION DISTORTION vs POWER OUTPUT PEP**



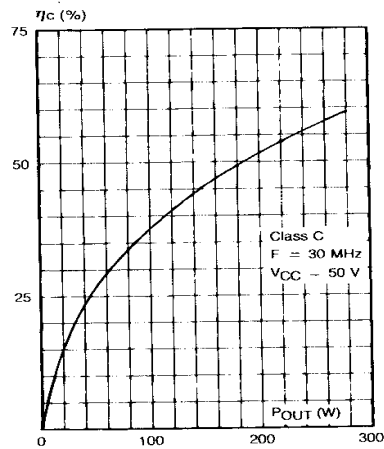
**TYPICAL PERFORMANCE**

**CLASS C F = 30 MHz**

**POWER OUTPUT vs POWER INPUT**

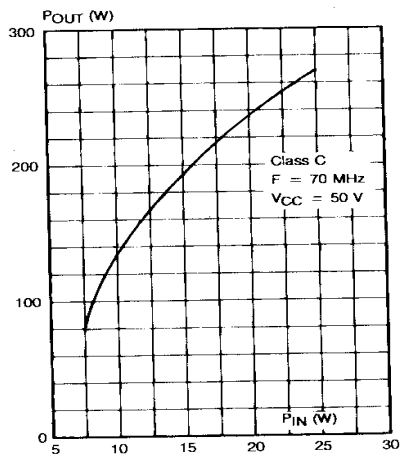


**COLLECTOR EFFICIENCY vs POWER OUTPUT**

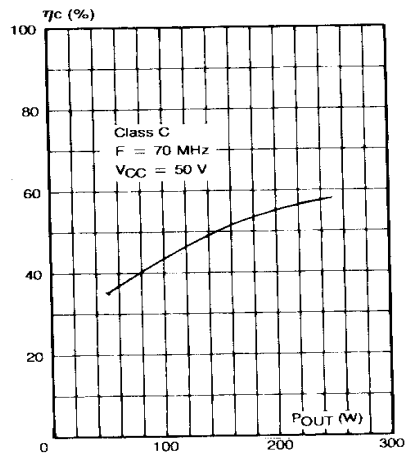


**CLASS C F = 70 MHz**

**POWER OUTPUT vs POWER INPUT**



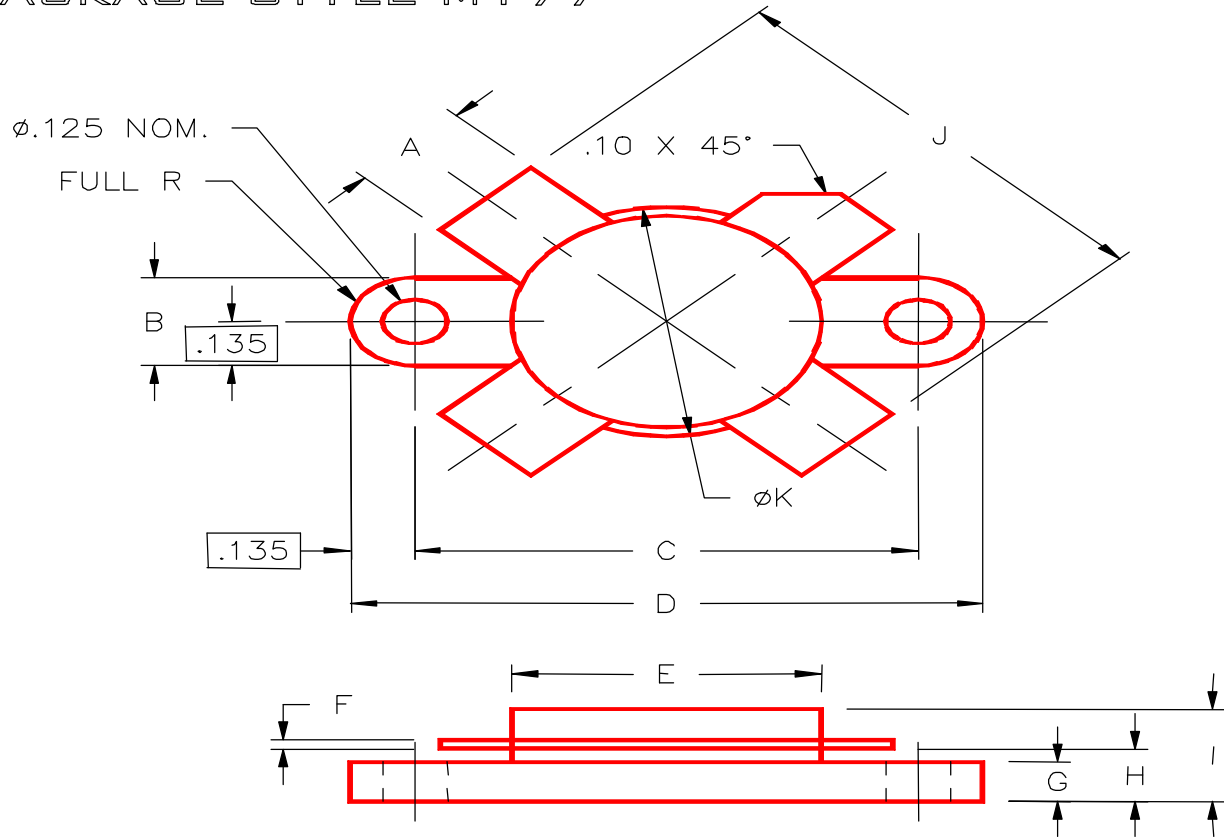
**COLLECTOR EFFICIENCY vs POWER OUTPUT**



MS1004

**PACKAGE MECHANICAL DATA**

**PACKAGE STYLE M177**



	MINIMUM INCHES/MM	MAXIMUM INCHES/MM		MINIMUM INCHES/MM	MAXIMUM INCHES/MM
A	.225/5,72	.235/5,97	I		.280/7,11
B	.265/6,73	.275/6,96	J	1.080/27,43	1.120/28,45
C	.860/21,84	.870/22,10	K	.625/15,88	.635/16,13
D	1.130/28,70	1.140/28,96			
E	.545/13,84	.555/14,10			
F	.003/0,08	.007/0,18			
G	.100/2,54	.118/3,00			
H	.150/3,81	.170/4,32			