



SD1728 (TH430)

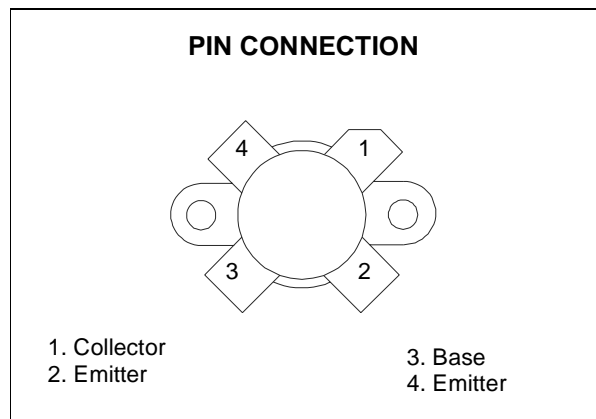
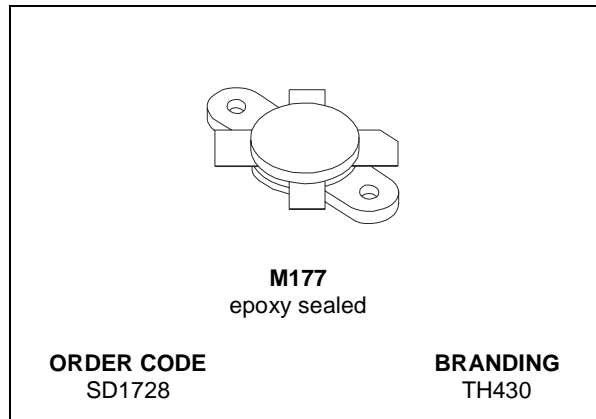
RF & MICROWAVE TRANSISTORS

HF SSB APPLICATION

- OPTIMIZED FOR SSB
- 30 MHz
- 50 V
- IMD = -30 dB
- GOLD METALLIZATION
- COMMON EMITTER
- P_{OUT} = 250 W PEP WITH 14.5 dB GAIN

DESCRIPTION

The SD1728 is a 50 V 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_{CASE} = 25 °C)

Symbol	Parameter	Value	Unit
V _{CBO}	Collector-Base Voltage	110	V
V _{CEO}	Collector-Emitter Voltage	55	V
V _{EBO}	Emitter-Base Voltage	4.0	V
I _C	Device Current	40	A
P _{DISS}	Power Dissipation	330	W
T _j	Max. Operating Junction Temperature	200	°C
T _{STG}	Storage Temperature	-65 to +150	°C

THERMAL DATA

R _{th(j-c)}	Junction -Case Thermal Resistance	0.4	°C/W
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SD1728 (TH430)

ELECTRICAL SPECIFICATION ($T_{CASE} = 25\text{ }^{\circ}\text{C}$)

STATIC

Symbol	Test Conditions	Min.	Typ.	Max.	Unit
BV_{CES}	$I_C = 200\text{ mA}$ $V_{BE} = 0\text{ V}$	110			V
BV_{CEO}	$I_C = 200\text{ mA}$ $I_B = 0\text{ mA}$	55			V
BV_{EBO}	$I_E = 20\text{ mA}$ $I_C = 0\text{ mA}$	4.0			V
I_{CEO}	$V_{CE} = 30\text{ V}$ $I_E = 0\text{ mA}$	1.5		10	mA
I_{CES}	$V_{CE} = 60\text{ V}$ $I_E = 0\text{ mA}$			10	mA
h_{FE}	$V_{CE} = 6\text{ V}$ $I_C = 10\text{ A}$	15		45	

DYNAMIC

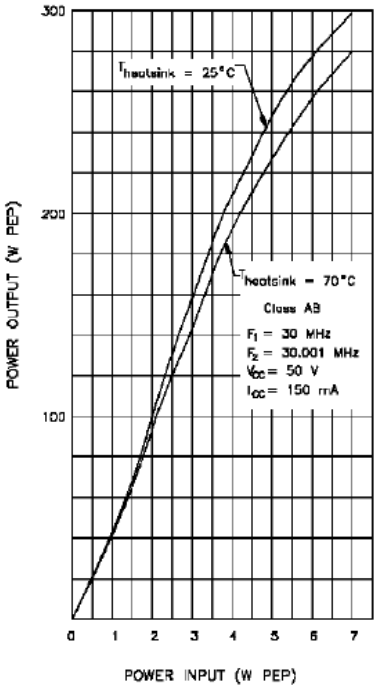
Symbol	Test Conditions	Min.	Typ.	Max.	Unit
P_{OUT}	$V_{CC} = 50\text{ V}$ $I_{CQ} = 150\text{ mA}$ $f = 30\text{ MHz}$	250			W
G_P^*	$V_{CC} = 50\text{ V}$ $I_{CQ} = 150\text{ mA}$ $P_{OUT} = 250\text{ W PEP}$	14.5			dB
IMD^*	$V_{CC} = 50\text{ V}$ $I_{CQ} = 150\text{ mA}$ $P_{OUT} = 250\text{ W PEP}$			-30	dBc
η_C^*	$V_{CC} = 50\text{ V}$ $I_{CQ} = 150\text{ mA}$ $P_{OUT} = 250\text{ W PEP}$	37			%
C_{OB}	$V_{CB} = 50\text{ V}$ $f = 1\text{ MHz}$			360	pF

* Two Tone Method; $f_1 = 30.00\text{ MHz}$; $f_2 = 30.001\text{ MHz}$
In Class C: GP Min. 13.5 dB, Efficiency 65% @ 30 MHz
GP Min. 10 dB, Efficiency 57% @ 70 MHz

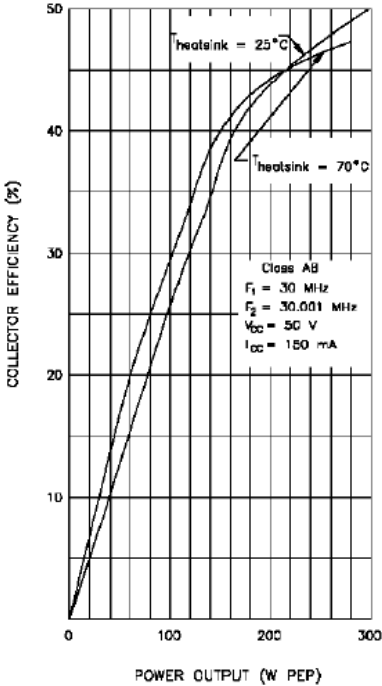
TYPICAL PERFORMANCE

CLASS AB

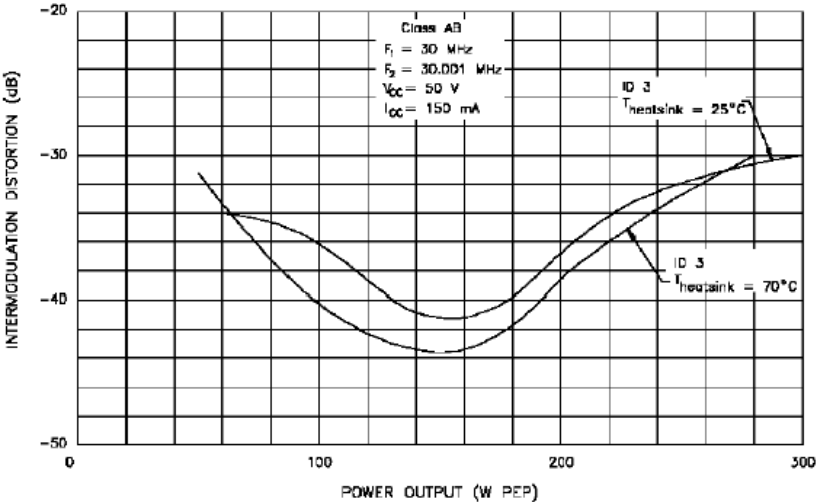
POWER OUTPUT PEP vs POWER INPUT



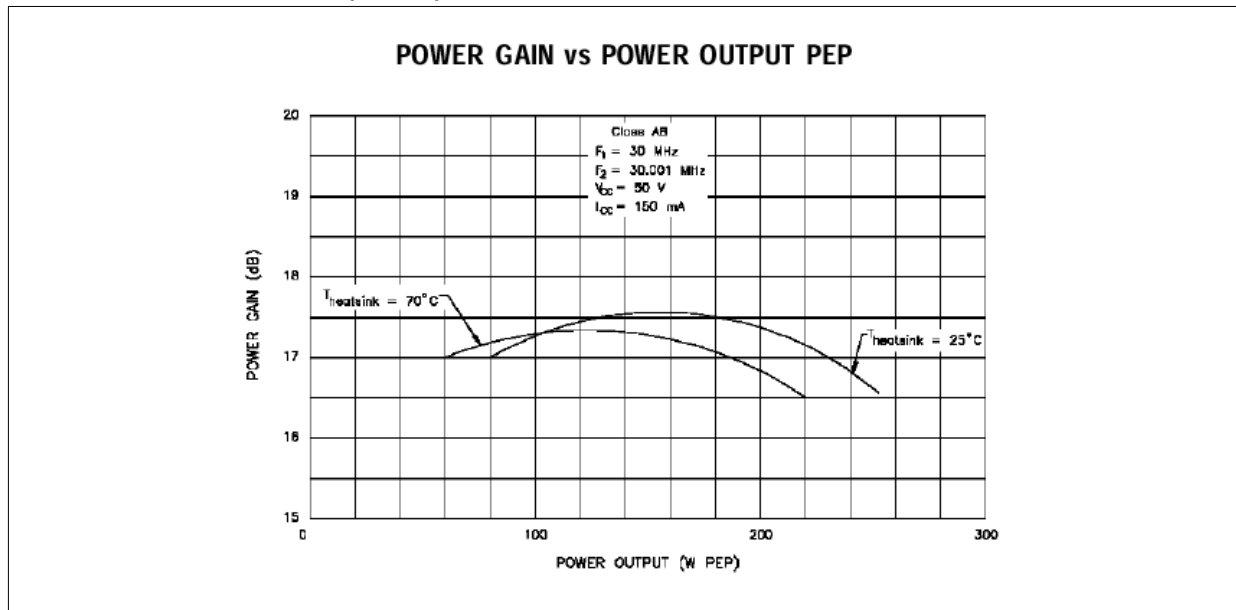
COLLECTOR EFFICIENCY vs POWER OUTPUT PEP



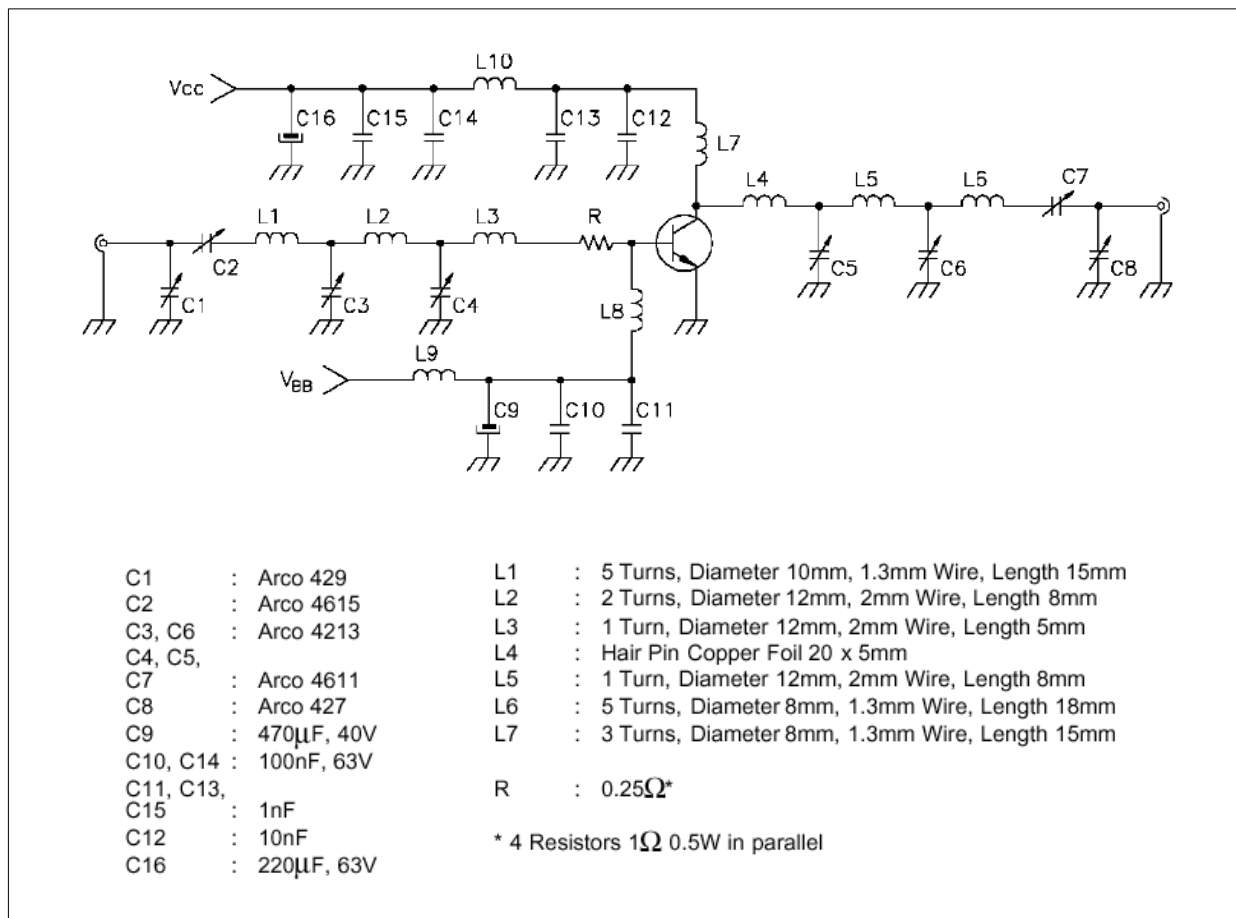
INTERMODULATION DISTORTION vs POWER OUTPUT PEP



TYPICAL PERFORMANCE (cont'd)



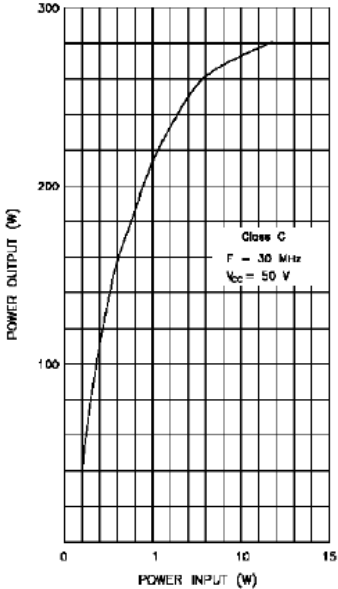
TEST CIRCUIT SSB - CLASS AB - 30 MHz



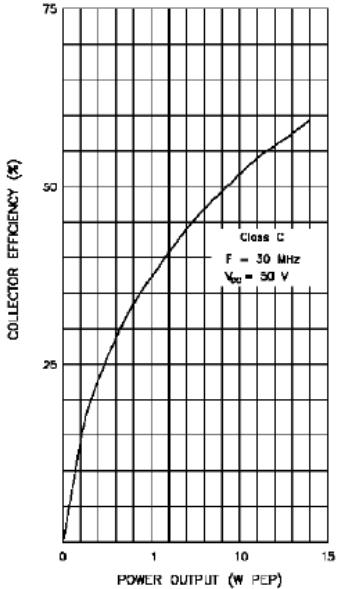
TYPICAL PERFORMANCE

CLASS C F = 30 MHz

POWER OUTPUT vs POWER INPUT

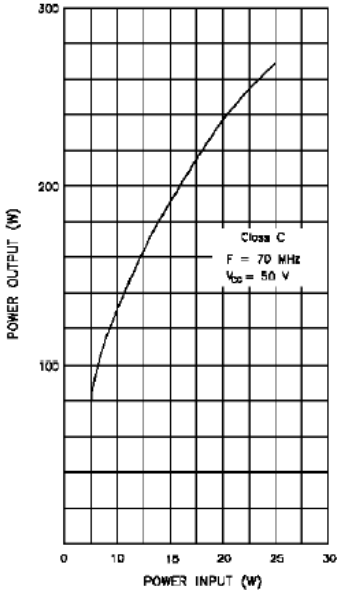


COLLECTOR EFFICIENCY vs POWER OUTPUT

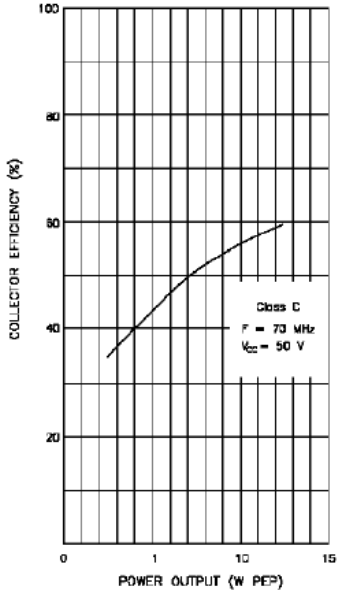


CLASS C F = 70 MHz

POWER OUTPUT vs POWER INPUT

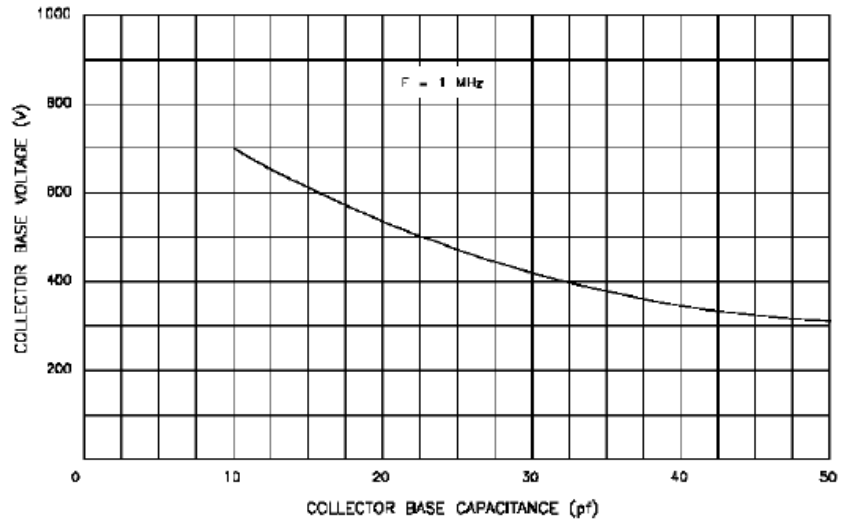


COLLECTOR EFFICIENCY vs POWER OUTPUT

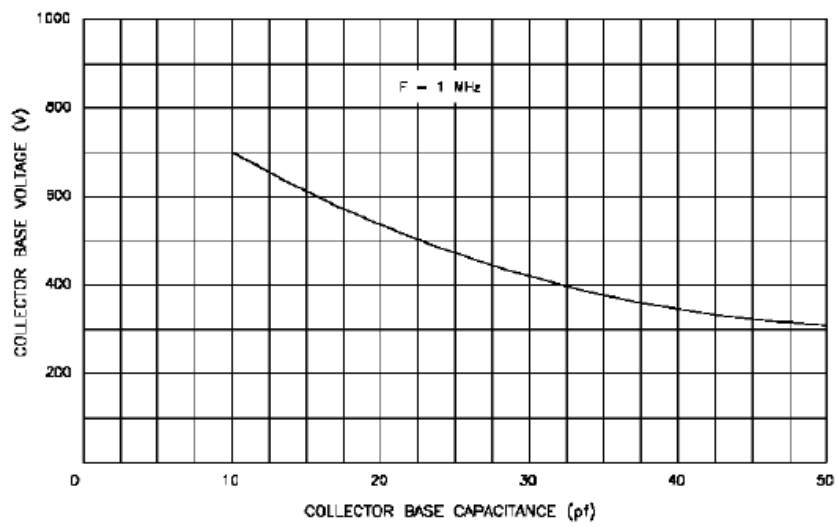


TYPICAL PERFORMANCE (cont'd)

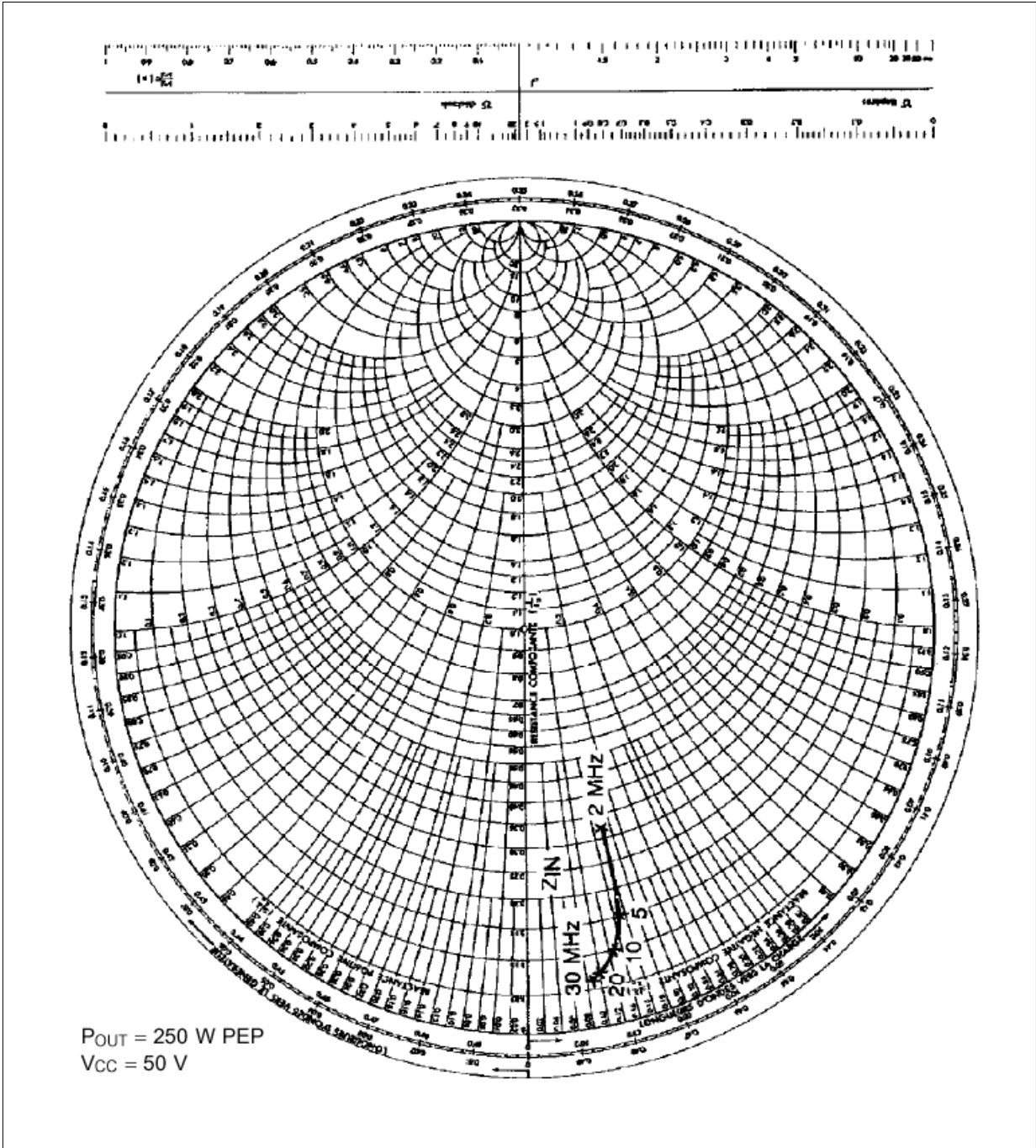
COLLECTOR BASE CAPACITANCE vs COLLECTOR BASE VOLTAGE



DC SAFE OPERATING AREA

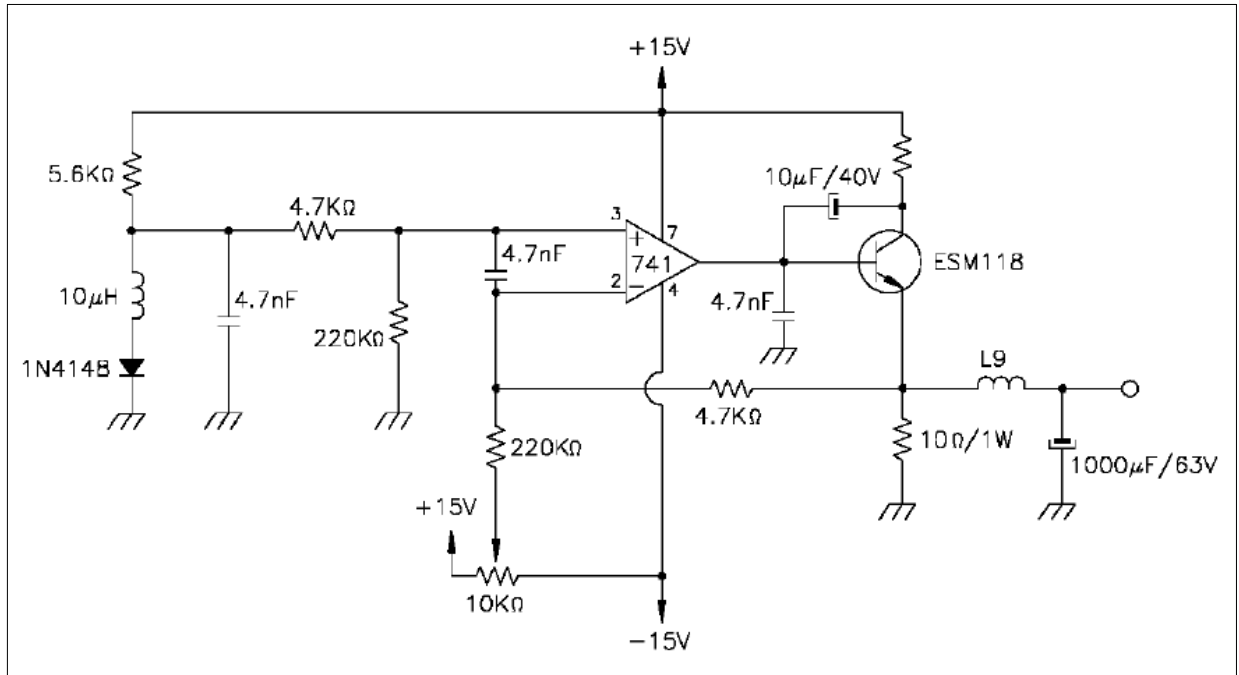


IMPEDANCE DATA (TYPICAL)

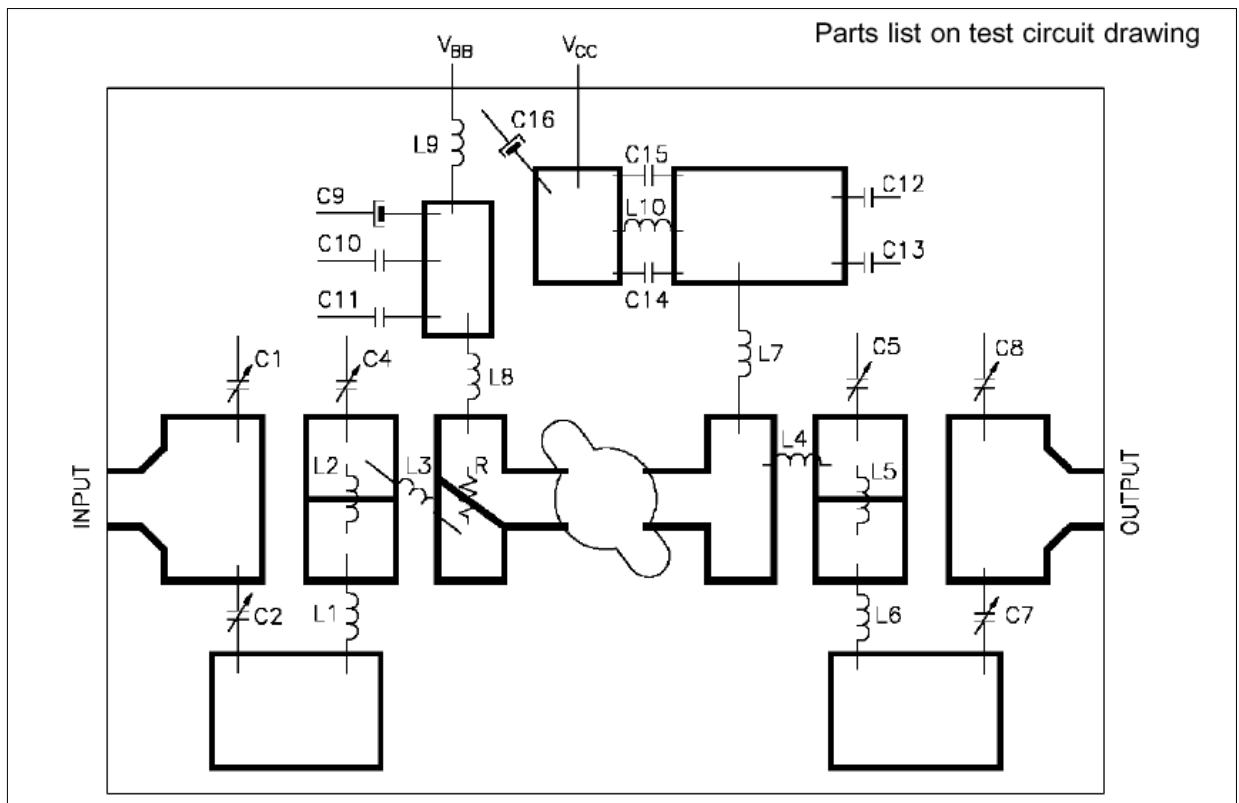


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BIAS CIRCUIT

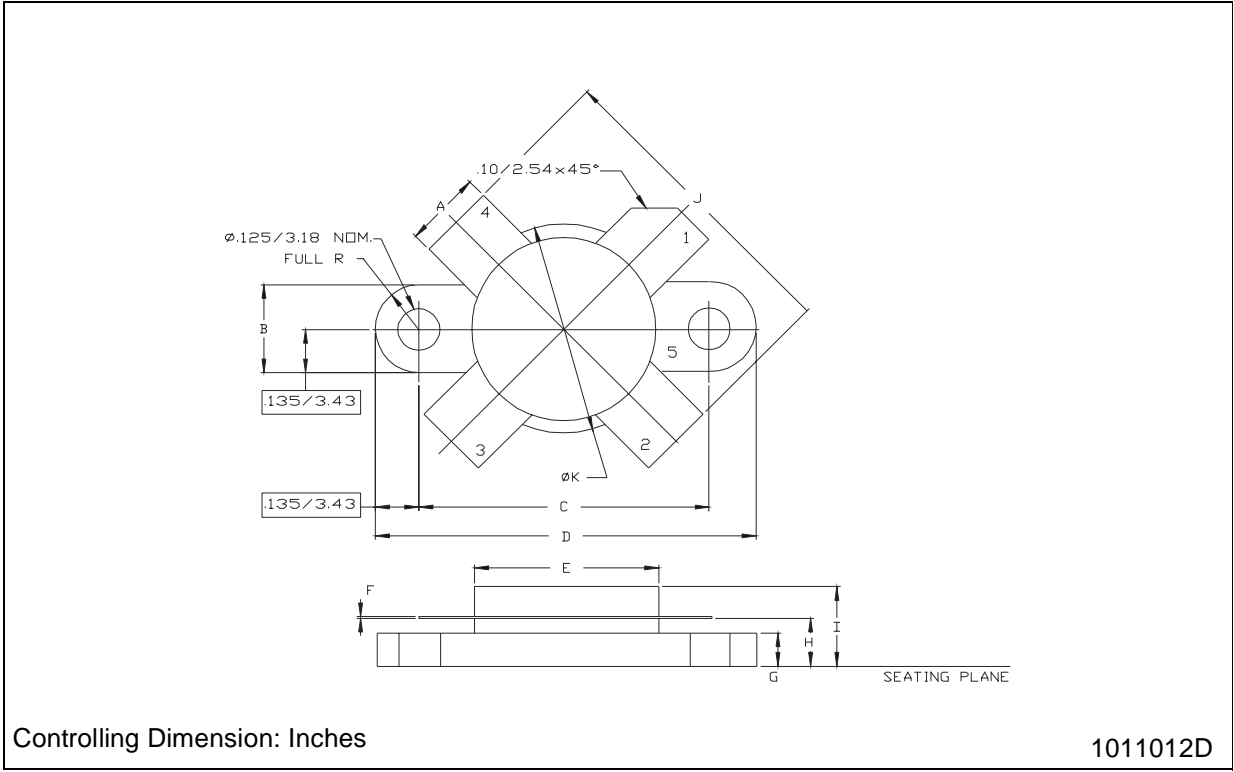


MOUNTING CIRCUIT



M177 (.550 DIA 4/L N/HERM W/FLG) MECHANICAL DATA

DIM.	mm			Inch		
	MIN.	TYP.	MAX	MIN.	TYP.	MAX
A	5.72		5.97	0.225		0.235
B	6.73		6.96	0.265		0.275
C	21.84		22.10	0.860		0.870
D	28.70		28.96	1.130		1.140
E	13.84		14.10	0.545		0.555
F	0.08		0.18	0.003		0.007
G	2.49		2.74	0.098		0.108
H	3.81		4.32	0.150		0.170
I			7.11			0.280
J	27.43		28.45	1.080		1.120
K	15.88		16.13	0.625		0.635



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