



SD1728 (TH430)

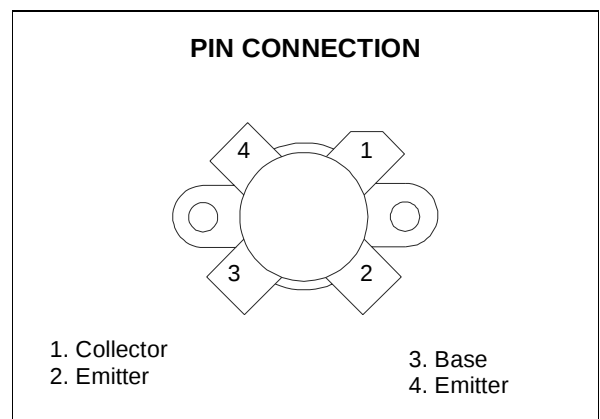
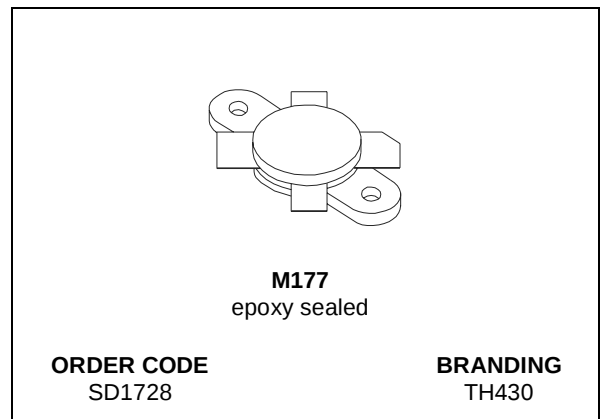
RF & MICROWAVE TRANSISTORS

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

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	$^{\circ}C$
T_{STG}	Storage Temperature	-65 to +150	$^{\circ}C$

THERMAL DATA

$R_{th(j-c)}$	Junction -Case Thermal Resistance	0.4	$^{\circ}C/W$
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SD1728 (TH430)

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

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

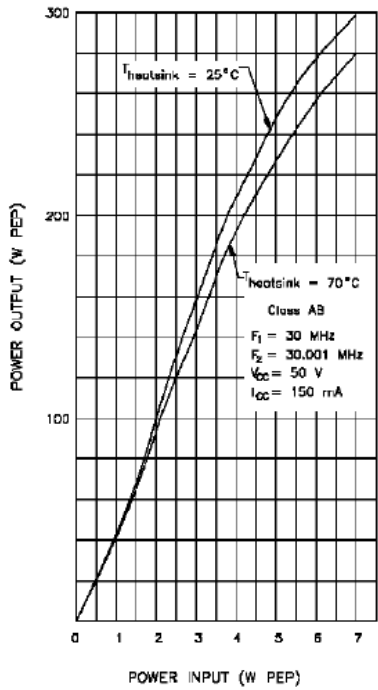
Symbol	Test Conditions	Min.	Typ.	Max.	Unit
P_{OUT}	$V_{CC} = 50\text{ V}$ $I_{CQ} = 150\text{ mA}$ $f = 30\text{ MHz}$	250			W
G_P^*	$V_{CC} = 50\text{ V}$ $I_{CQ} = 150\text{ mA}$ $P_{OUT} = 250\text{ W PEP}$	14.5			dB
IMD^*	$V_{CC} = 50\text{ V}$ $I_{CQ} = 150\text{ mA}$ $P_{OUT} = 250\text{ W PEP}$			-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

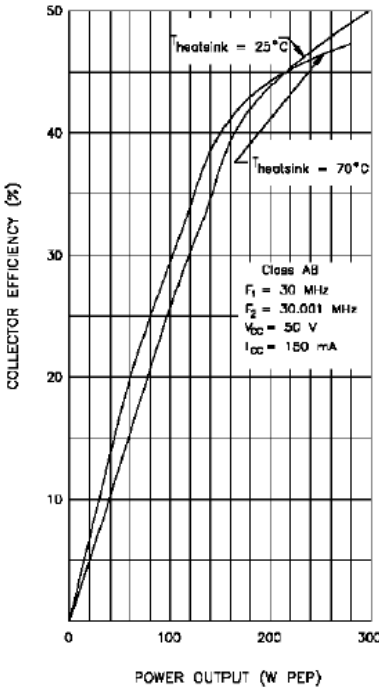
TYPICAL PERFORMANCE

CLASS AB

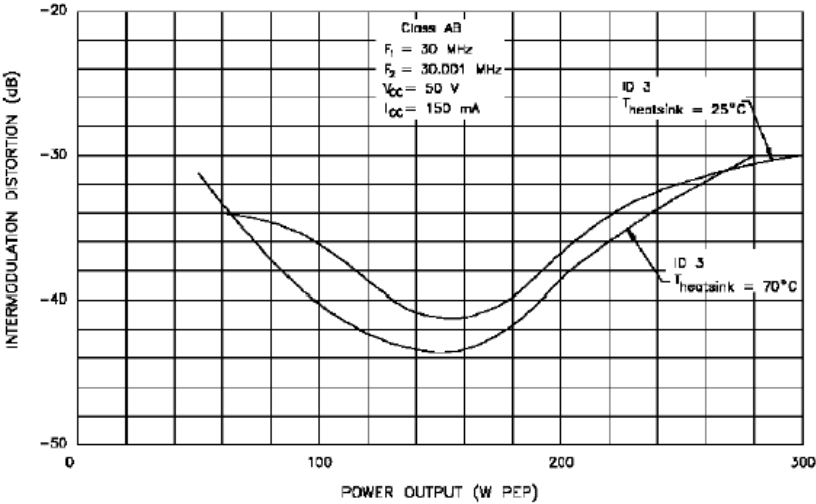
POWER OUTPUT PEP vs POWER INPUT



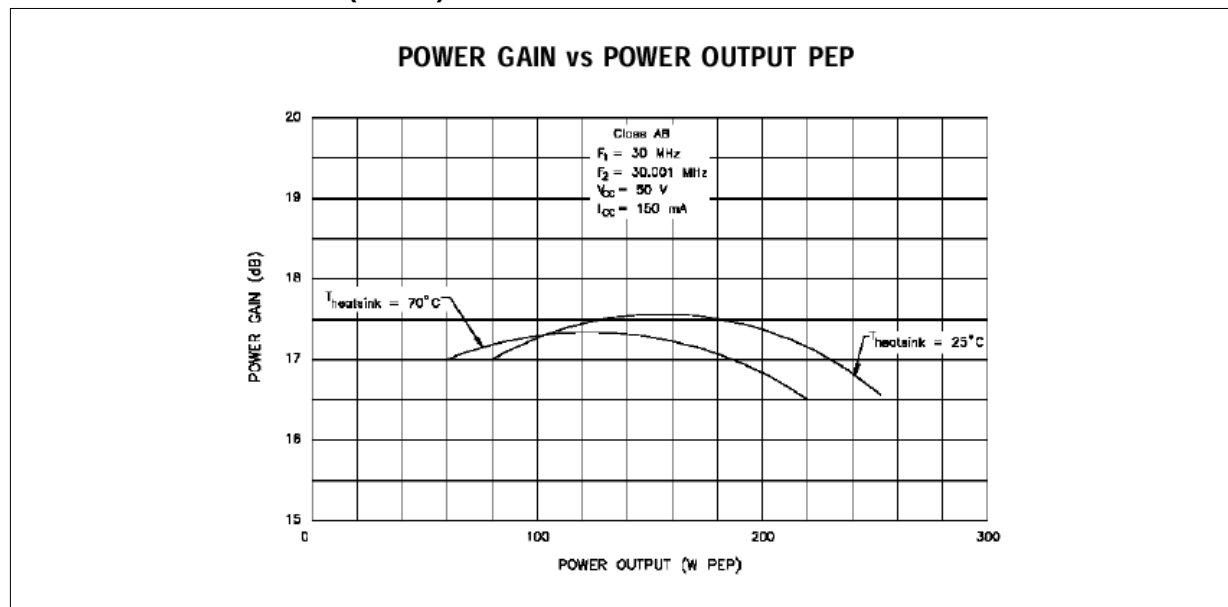
COLLECTOR EFFICIENCY vs POWER OUTPUT PEP



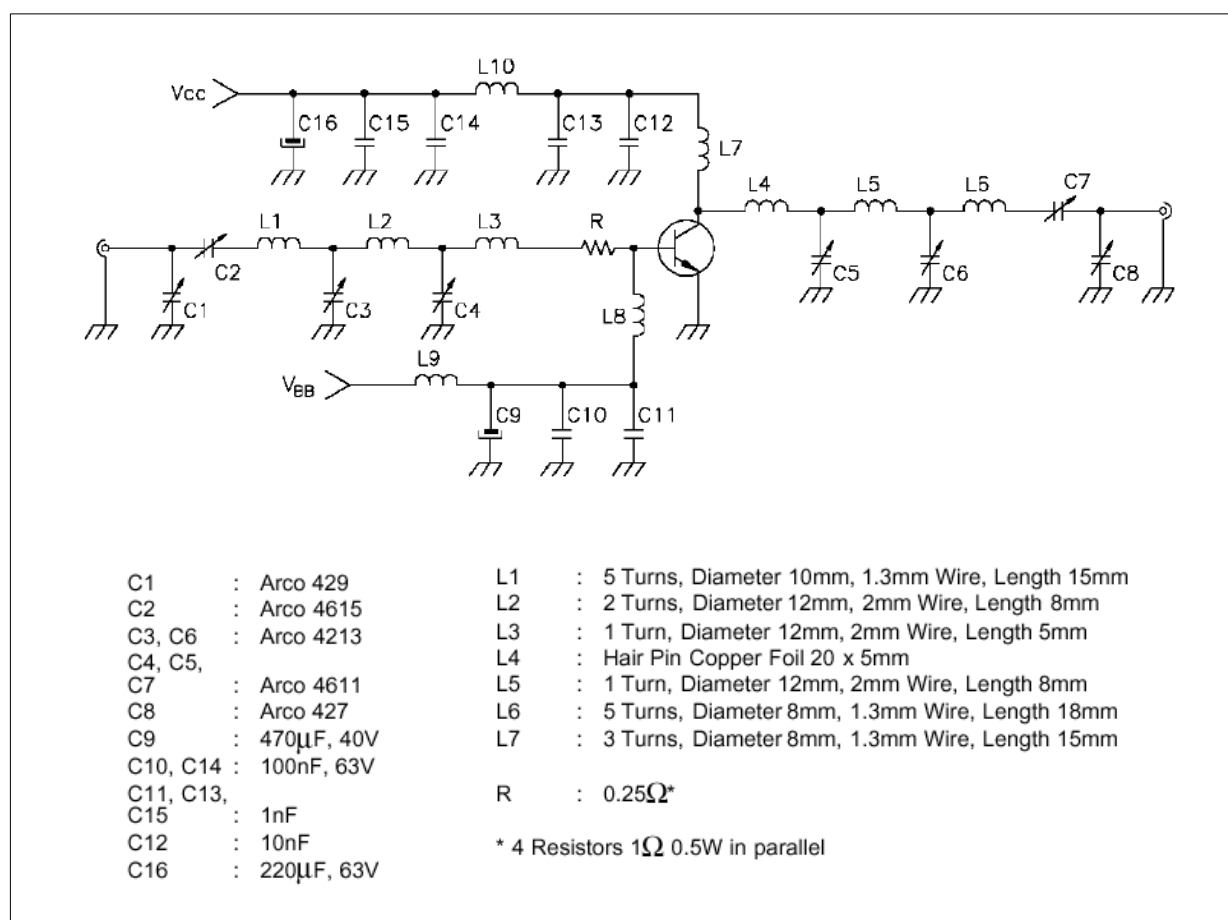
INTERMODULATION DISTORTION vs POWER OUTPUT PEP



TYPICAL PERFORMANCE (cont'd)



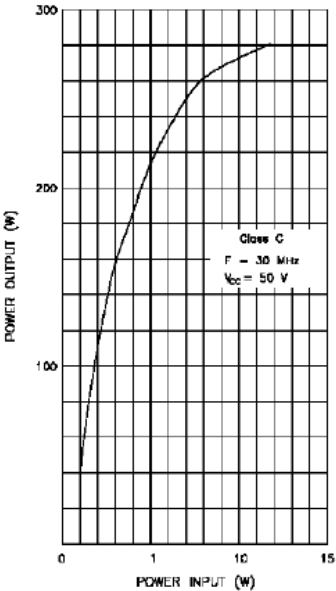
TEST CIRCUIT SSB - CLASS AB - 30 MHz



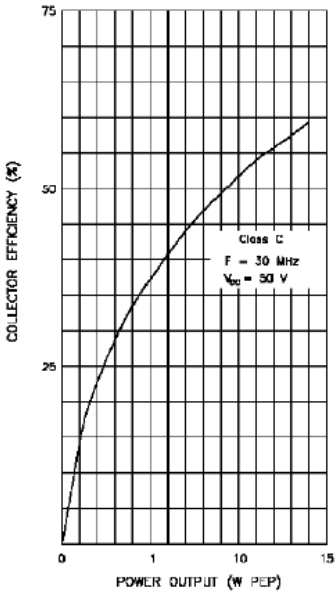
TYPICAL PERFORMANCE

CLASS C F = 30 MHz

POWER OUTPUT vs POWER INPUT

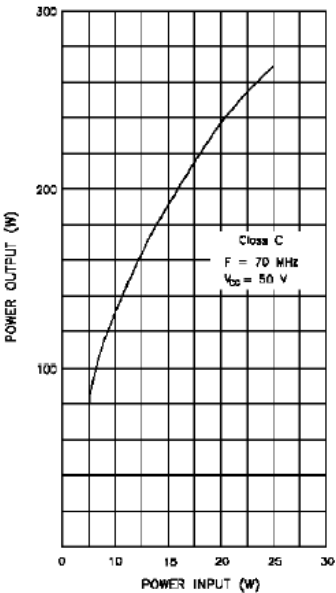


COLLECTOR EFFICIENCY vs POWER OUTPUT

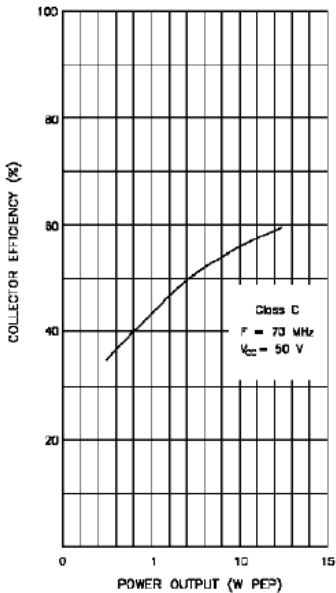


CLASS C F = 70 MHz

POWER OUTPUT vs POWER INPUT

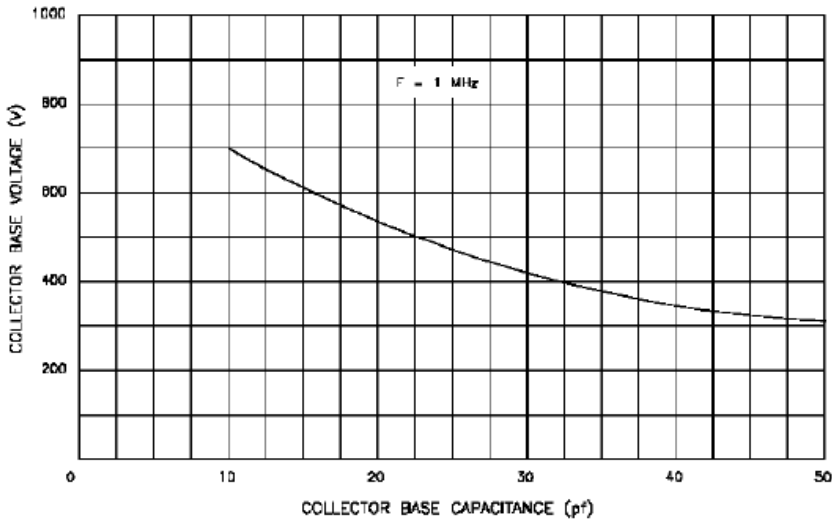


COLLECTOR EFFICIENCY vs POWER OUTPUT

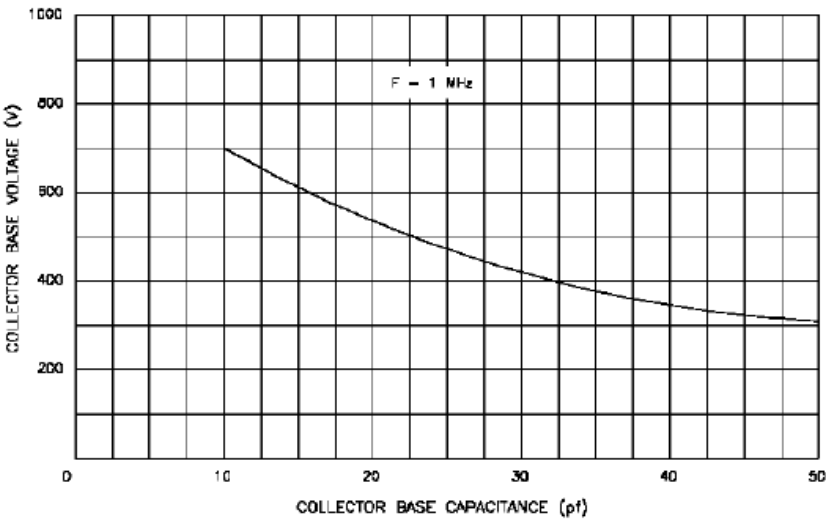


TYPICAL PERFORMANCE (cont'd)

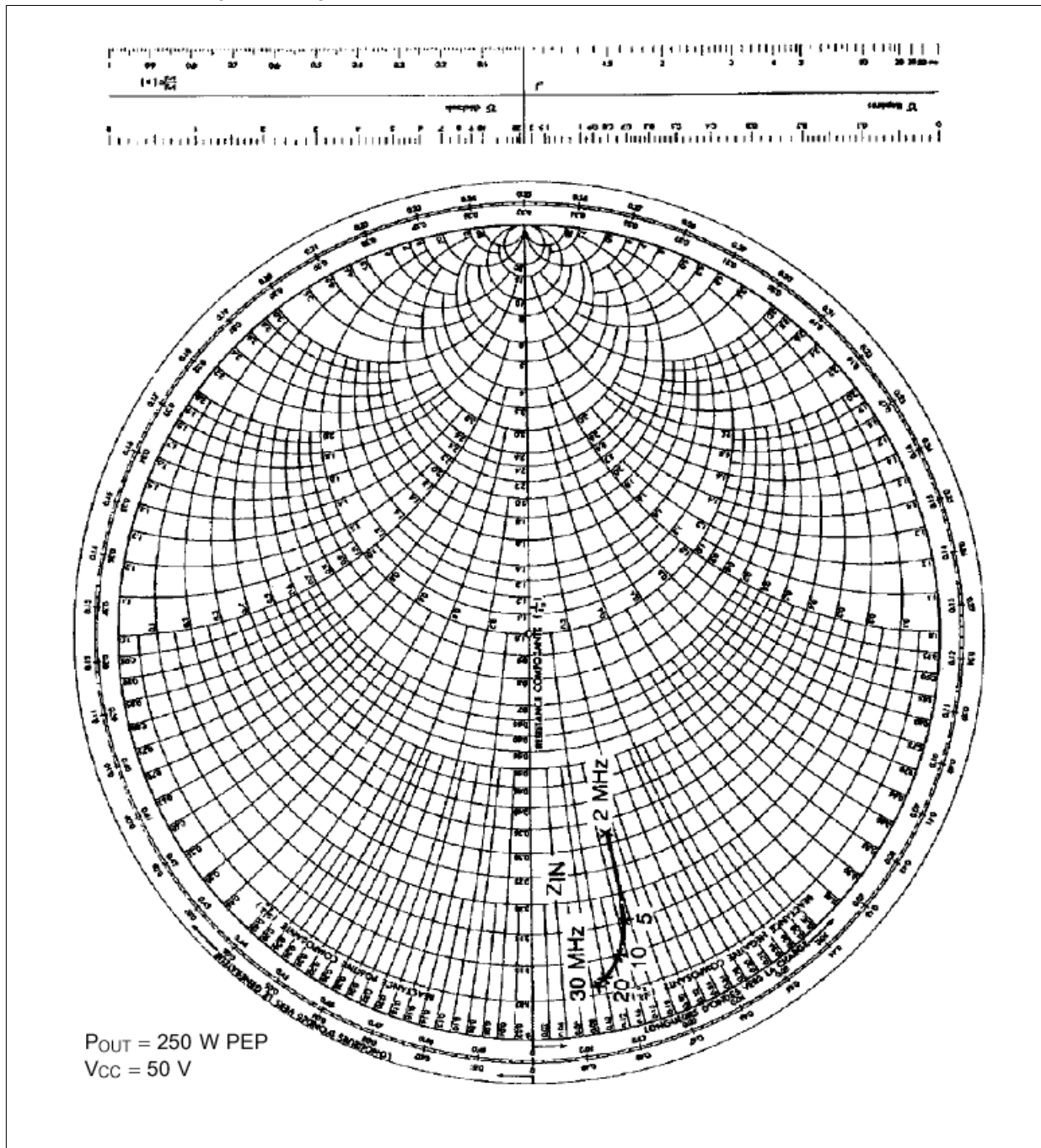
COLLECTOR BASE CAPACITANCE vs COLLECTOR BASE VOLTAGE



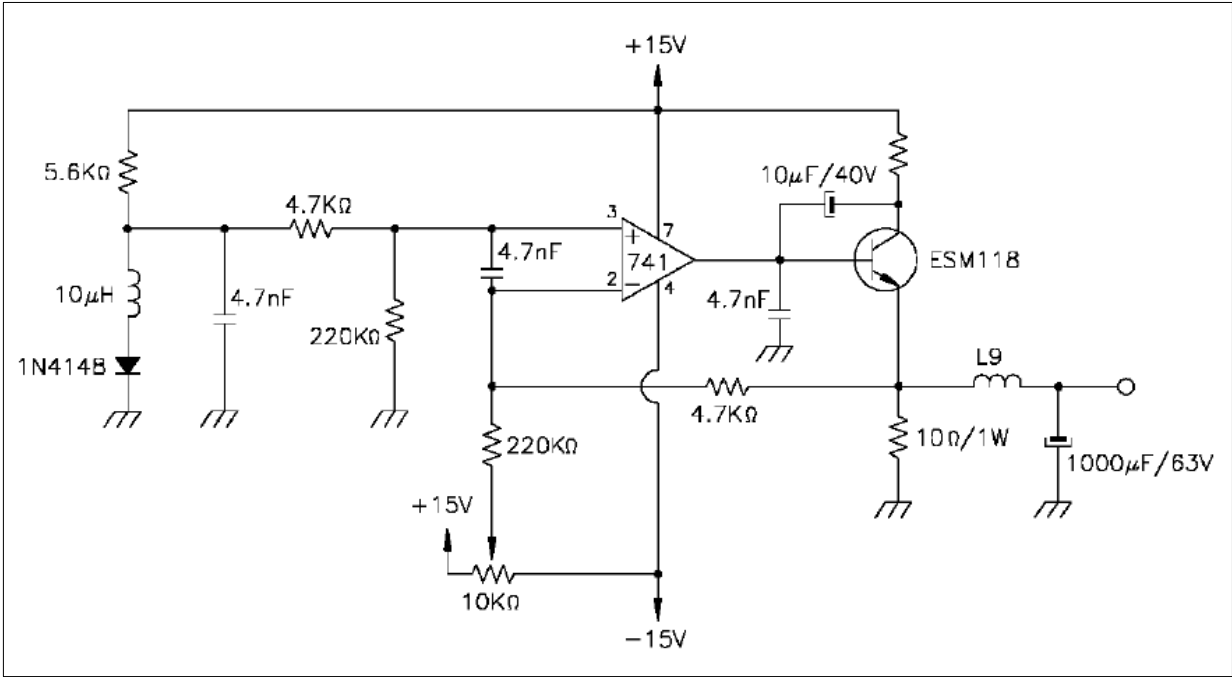
DC SAFE OPERATING AREA



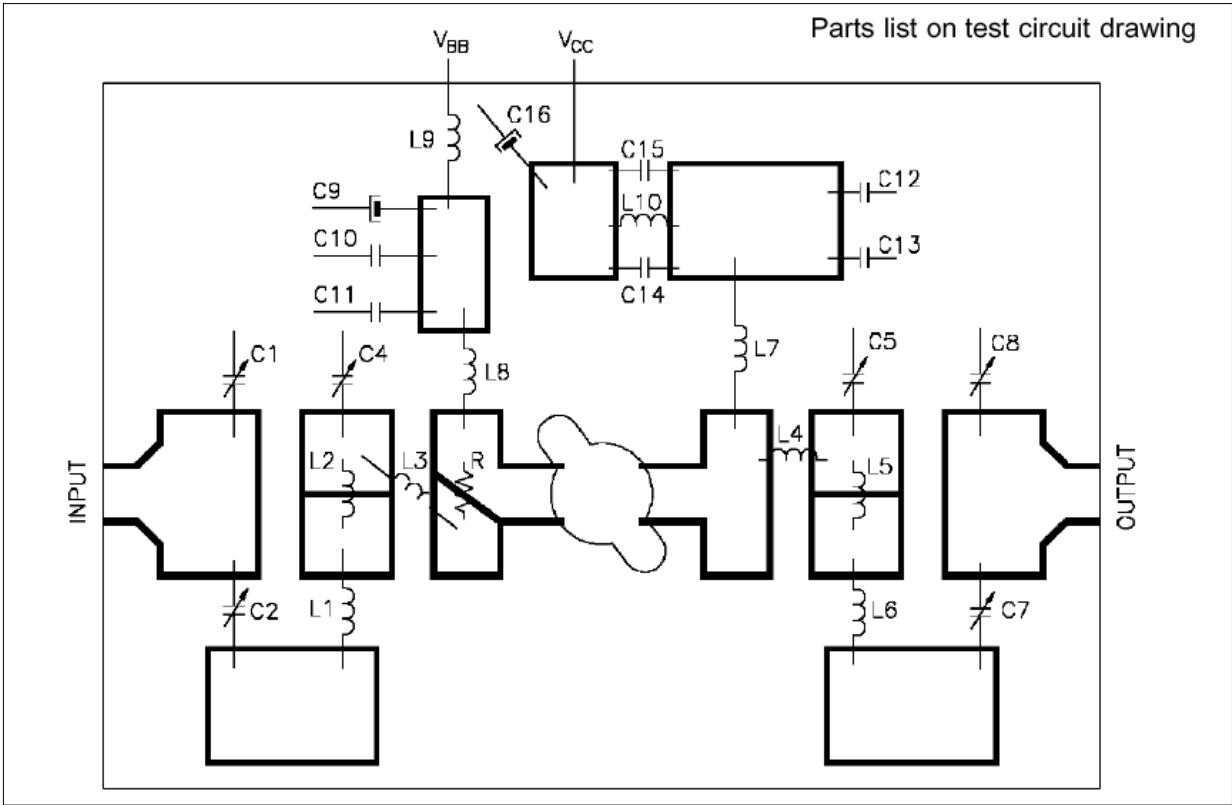
IMPEDANCE DATA (TYPICAL)



BIAS CIRCUIT

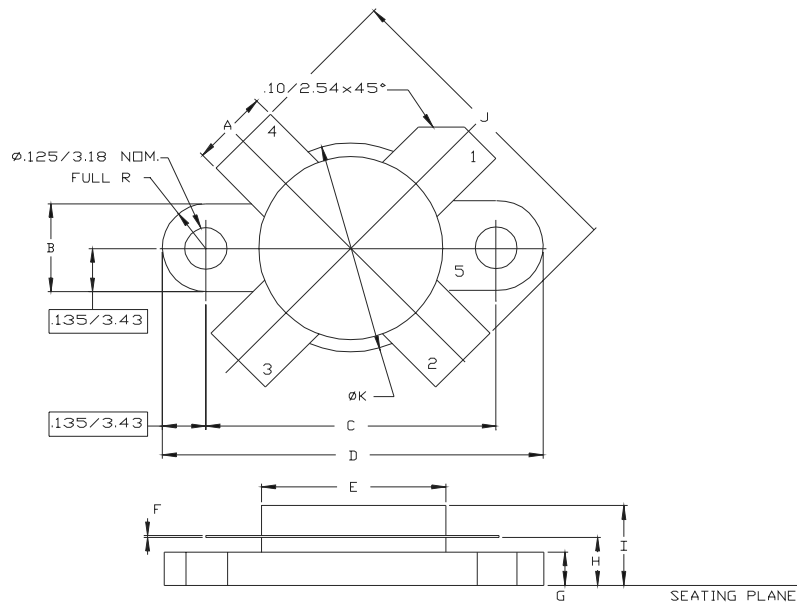


MOUNTING CIRCUIT



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



Controlling Dimension: Inches

1011012D

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