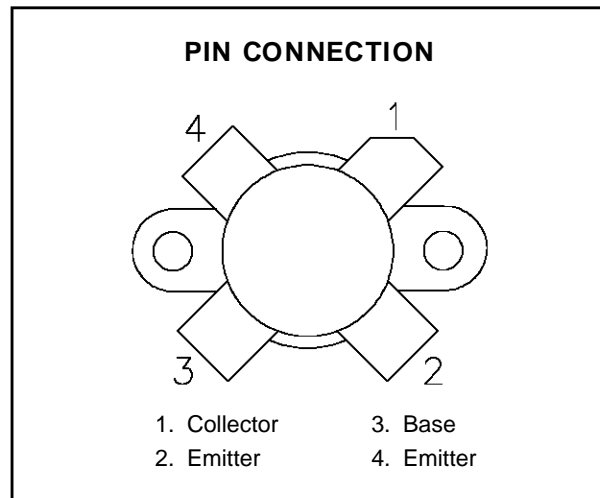
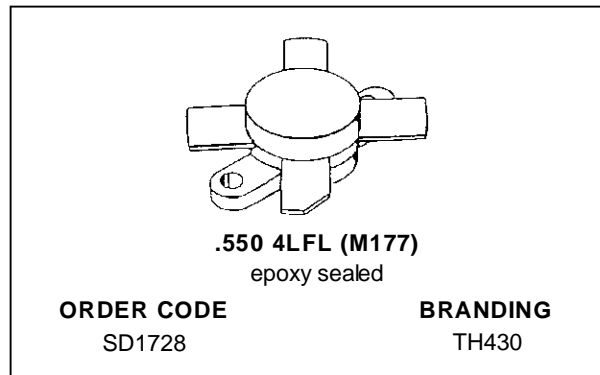


RF & MICROWAVE TRANSISTORS HF SSB APPLICATIONS

- OPTIMIZED FOR SSB
- 30 MHz
- 50 VOLTS
- 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 _{CB0}	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	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 SPECIFICATIONS ($T_{\text{case}} = 25^{\circ}\text{C}$)

STATIC

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

DYNAMIC

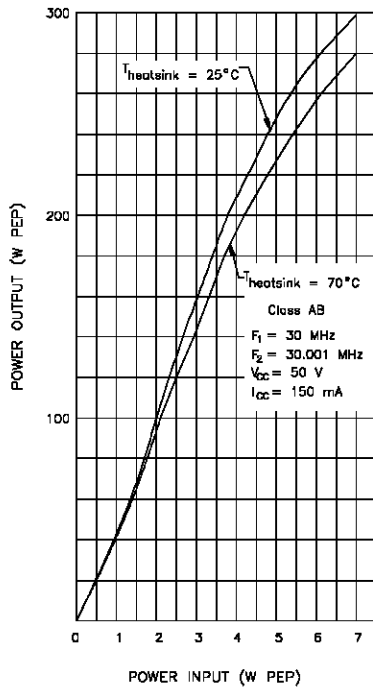
Symbol	Test Conditions			Value			Unit
				Min.	Typ.	Max.	
P_{OUT}	$f = 30\text{ MHz}$	$V_{\text{CC}} = 50\text{ V}$	$I_{\text{CQ}} = 150\text{ mA}$	250	—	—	W
G_{P}^*	$P_{\text{OUT}} = 250\text{ W PEP}$	$V_{\text{CC}} = 50\text{ V}$	$I_{\text{CQ}} = 150\text{ mA}$	14.5	—	—	dB
IMD^*	$P_{\text{OUT}} = 250\text{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

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

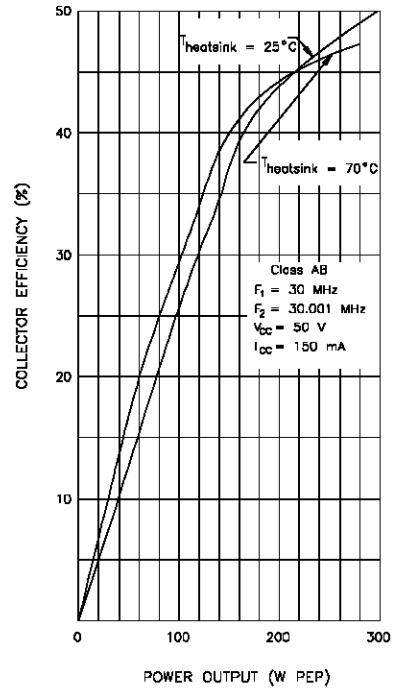
TYPICAL PERFORMANCE

CLASS AB

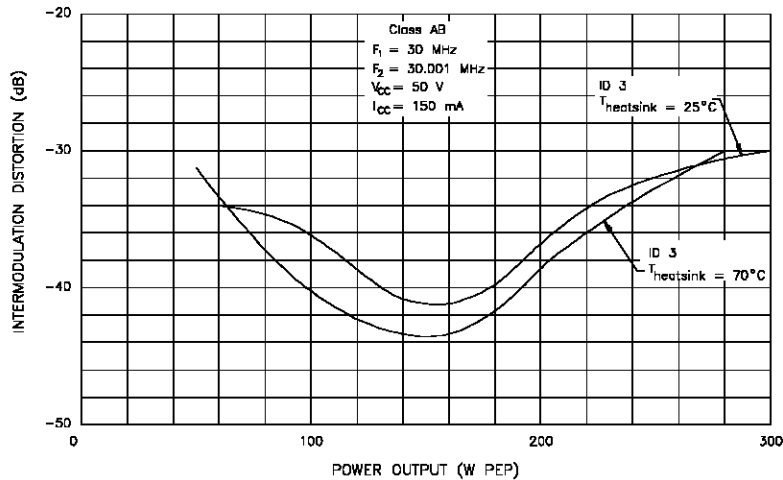
POWER OUTPUT PEP vs POWER INPUT



COLLECTOR EFFICIENCY vs POWER OUTPUT PEP

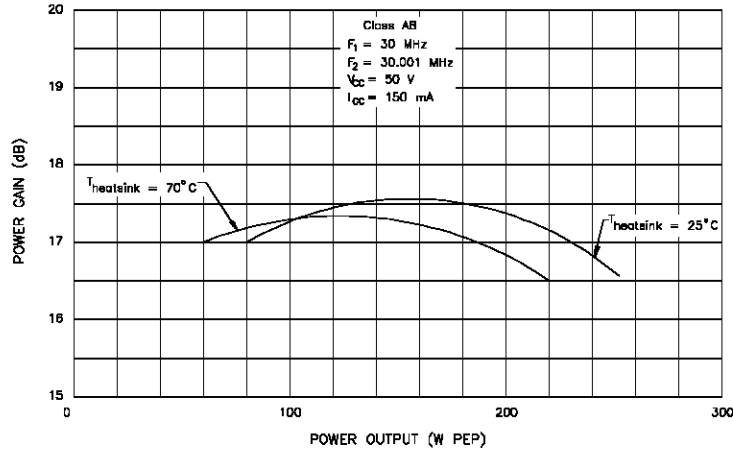


INTERMODULATION DISTORTION vs POWER OUTPUT PEP

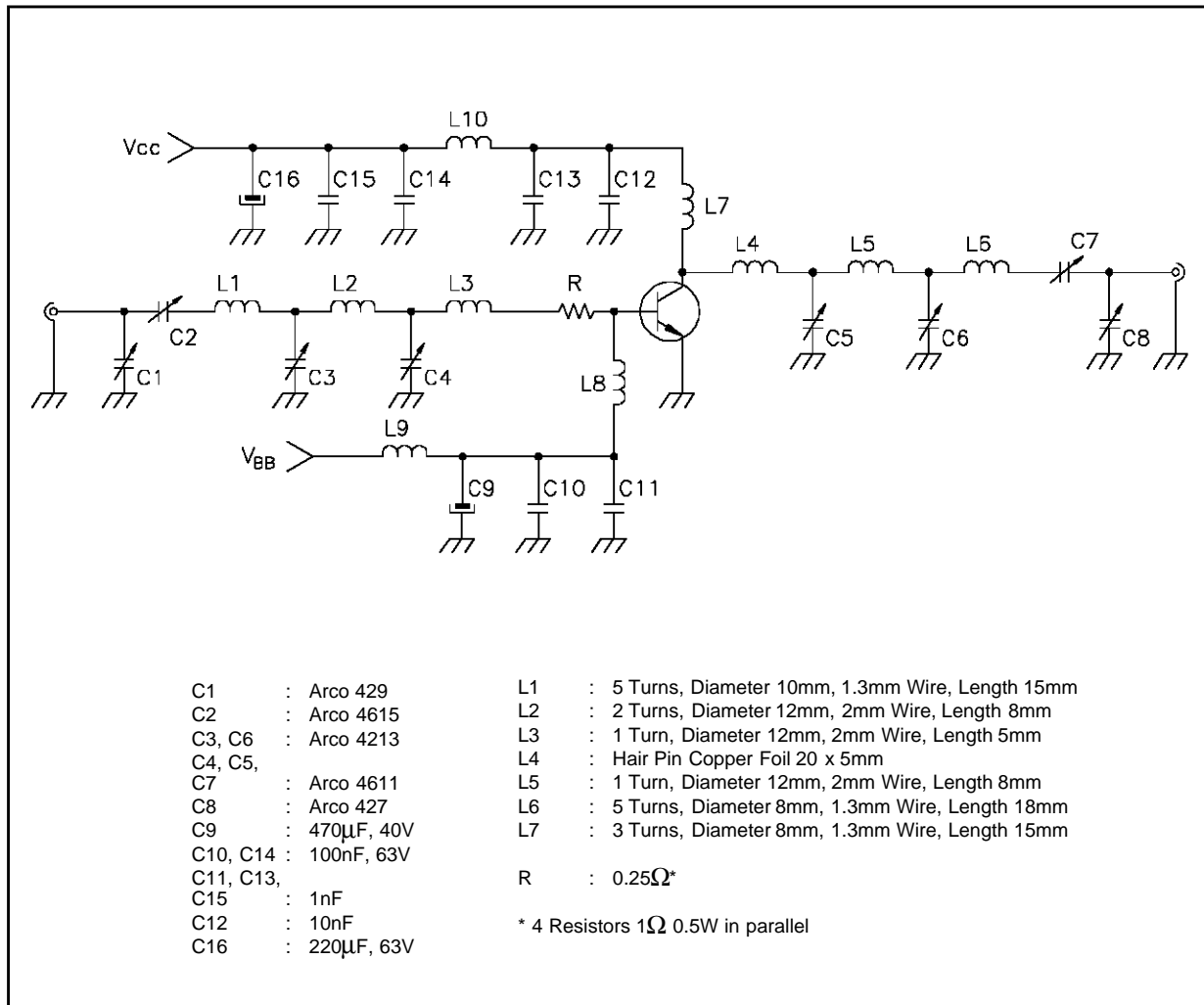


TYPICAL PERFORMANCE (cont'd)

POWER GAIN vs POWER OUTPUT PEP



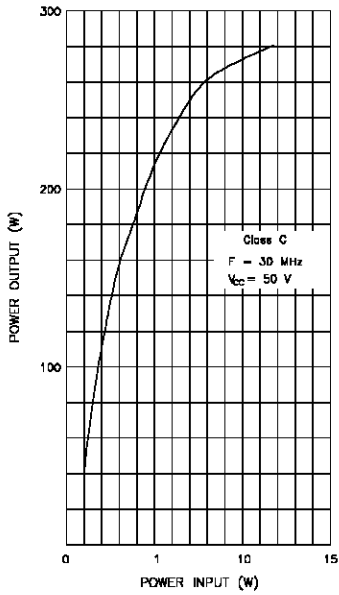
TEST CIRCUIT SSB - CLASS AB - 30 MHz



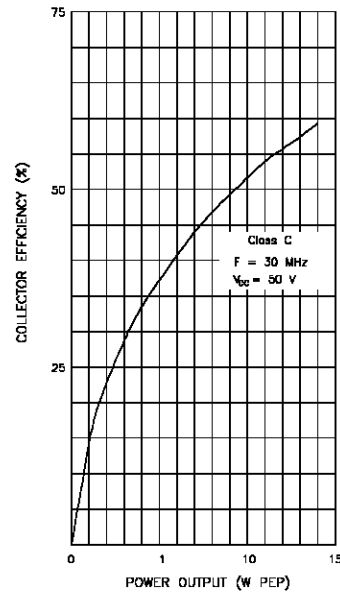
TYPICAL PERFORMANCE

CLASS C F = 30 MHz

POWER OUTPUT vs POWER INPUT

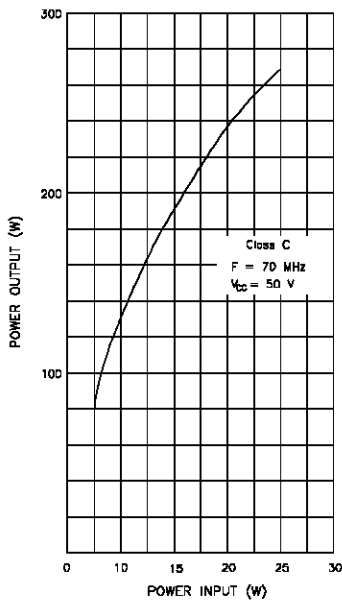


COLLECTOR EFFICIENCY vs POWER OUTPUT

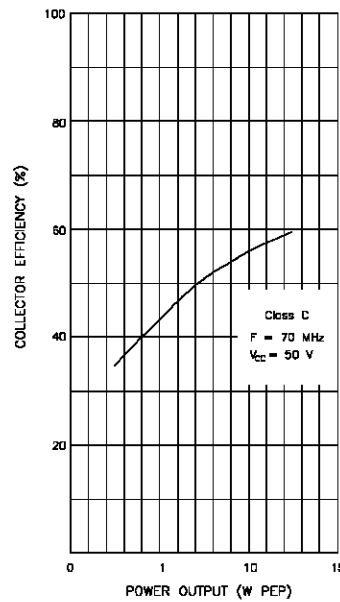


CLASS C F = 70 MHz

POWER OUTPUT vs POWER INPUT

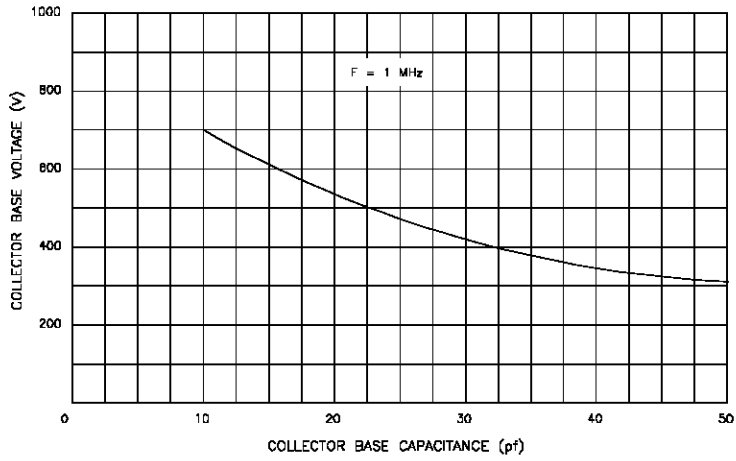


COLLECTOR EFFICIENCY vs POWER OUTPUT

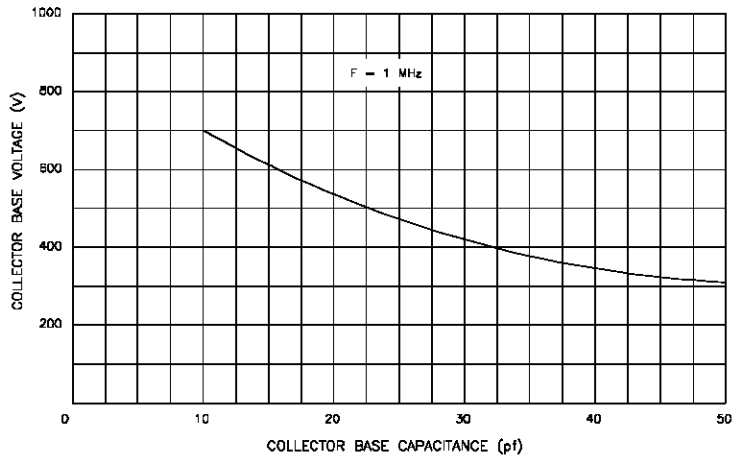


TYPICAL PERFORMANCE (cont'd)

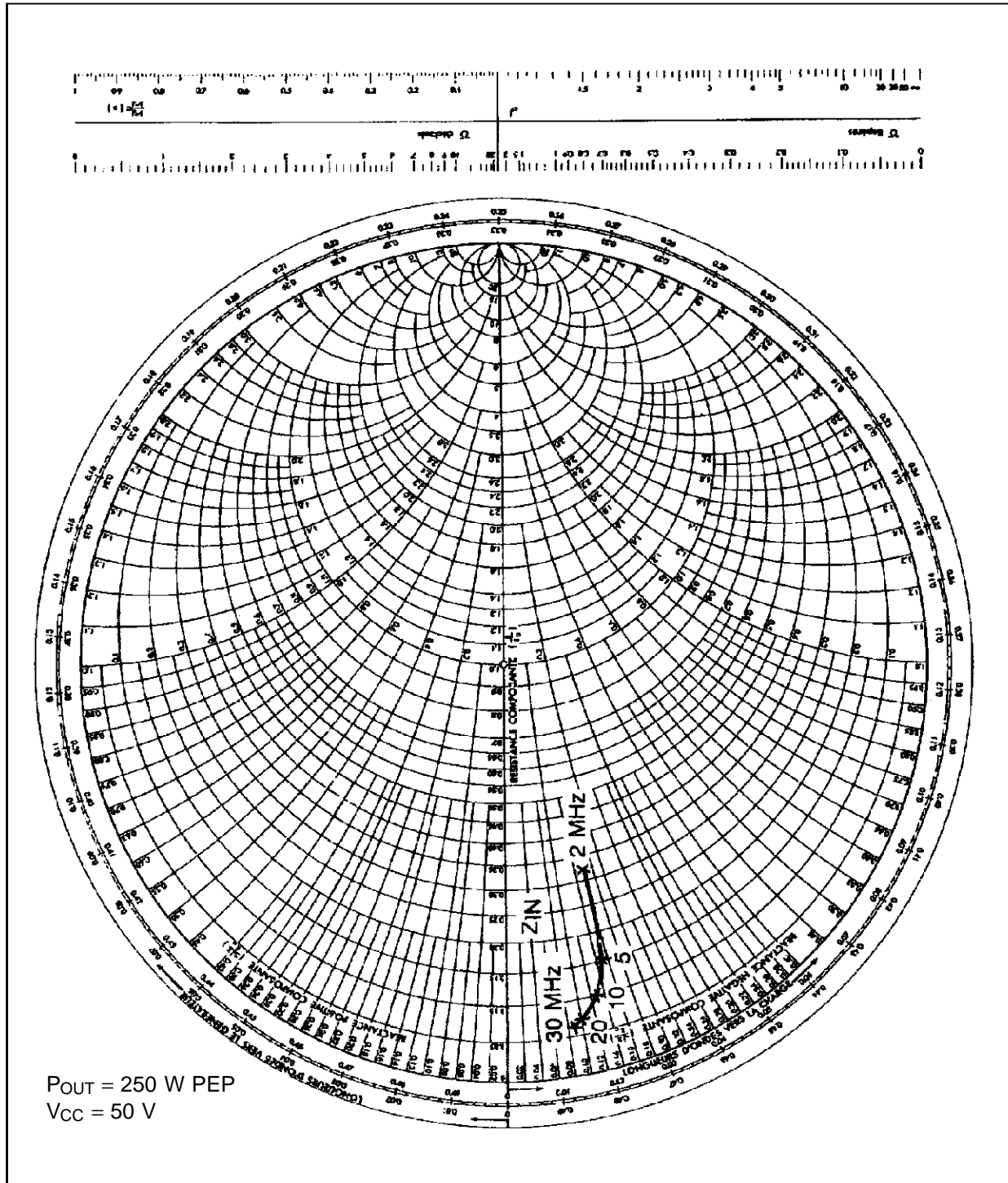
COLLECTOR BASE CAPACITANCE vs COLLECTOR BASE VOLTAGE



DC SAFE OPERATING AREA



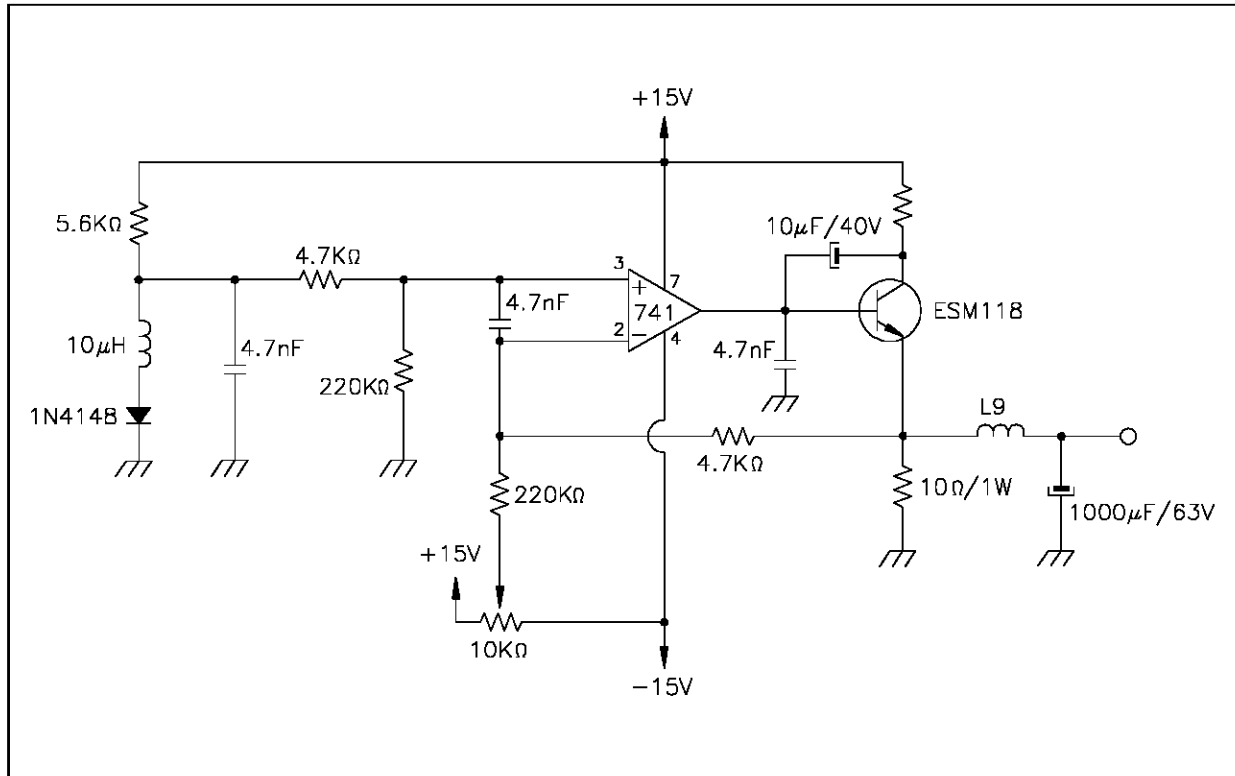
IMPEDANCE DATA (TYPICAL)



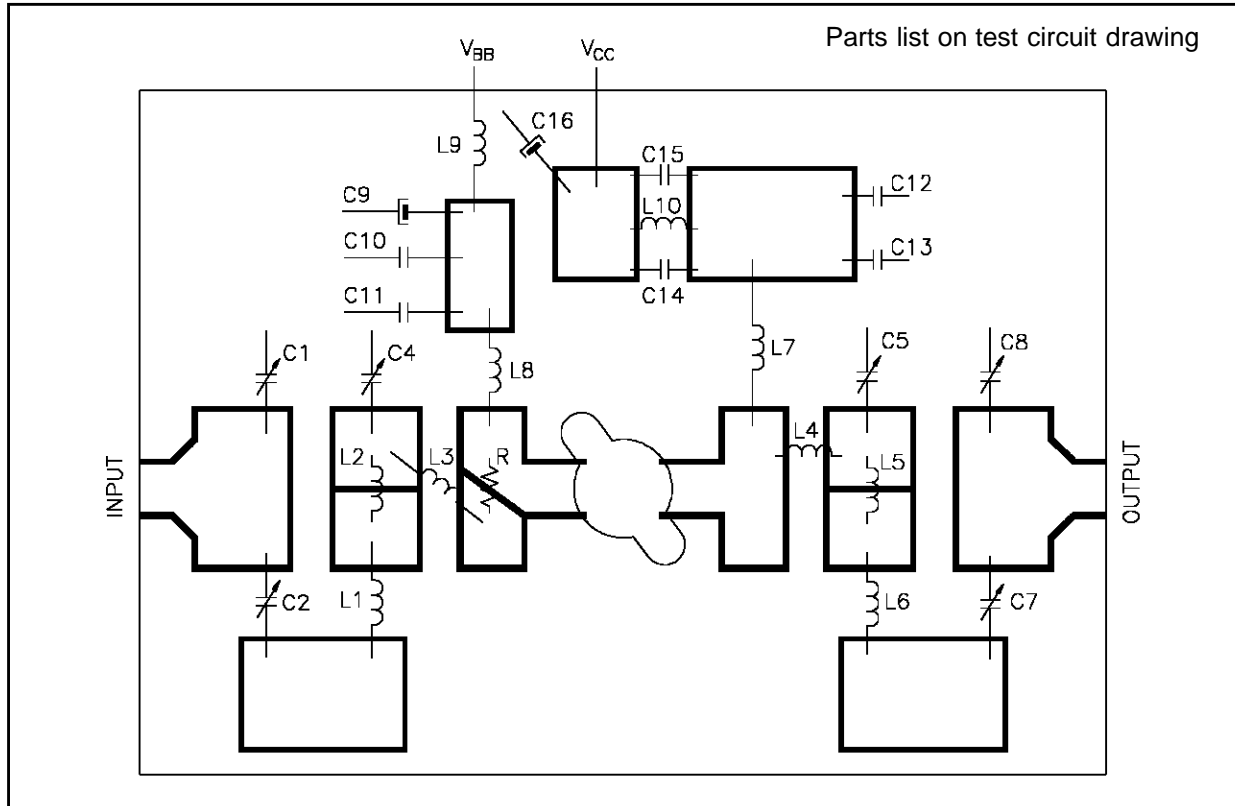
$P_{OUT} = 250 \text{ W PEP}$
 $V_{CC} = 50 \text{ V}$

SD1728 (TH430)

BIAS CIRCUIT

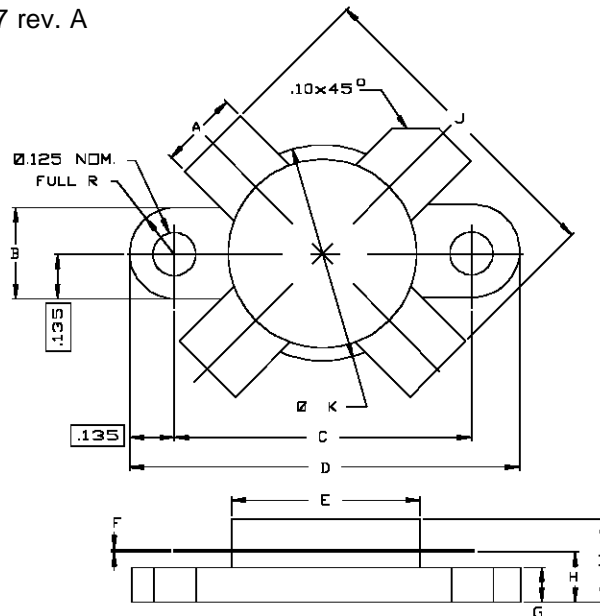


MOUNTING CIRCUIT



PACKAGE MECHANICAL DATA

Ref.: Dwg. No.12-0177 rev. A



SGS-THOMSON MICROELECTRONICS		CONT'D			
	MINIMUM Inches/mm	MAXIMUM Inches/mm			
A	.225/5,72	.235/5,97	K	.625/15,88	.635/16,13
B	.265/6,73	.275/6,96			
C	.860/21,84	.870/22,10			
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			
I		.280/7,11			
J	1.080/27,43	1.120/28,45			

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