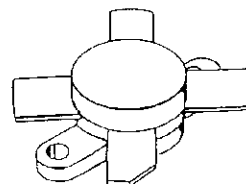


RF & MICROWAVE TRANSISTORS HF SSB APPLICATIONS

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



.550 4LFL (M177)
epoxy sealed

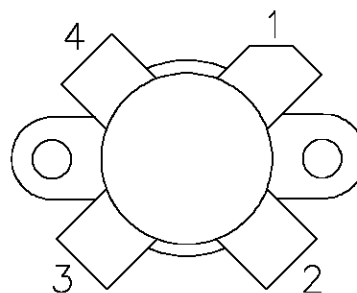
ORDER CODE
SD1728

BRANDING
TH430

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.

PIN CONNECTION



- | | |
|--------------|------------|
| 1. Collector | 3. Base |
| 2. Emitter | 4. Emitter |

ABSOLUTE MAXIMUM RATINGS ($T_{case} = 25^{\circ}\text{C}$)

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	Junction Temperature	+200	$^{\circ}\text{C}$
T_{STG}	Storage Temperature	– 65 to +150	$^{\circ}\text{C}$

THERMAL DATA

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

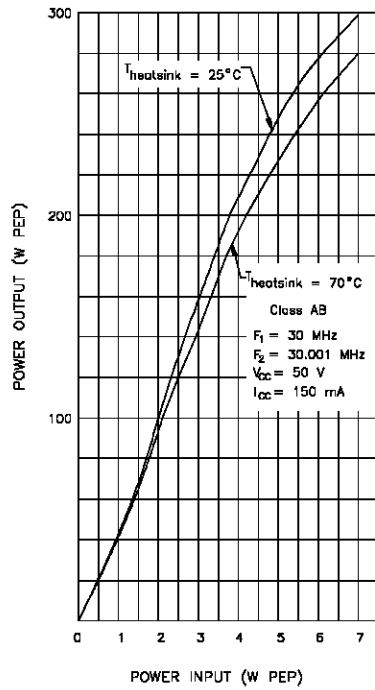
Symbol	Test Conditions			Value			Unit
				Min.	Typ.	Max.	
P_{OUT}	$f = 30\text{ MHz}$	$V_{\text{CC}} = 50\text{ V}$	$I_{\text{CQ}} = 150\text{ mA}$	250	—	—	W
G_{P}^*	$P_{\text{OUT}} = 250\text{ W PEP}$	$V_{\text{CC}} = 50\text{ V}$	$I_{\text{CQ}} = 150\text{ mA}$	14.5	—	—	dB
IMD^*	$P_{\text{OUT}} = 250\text{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

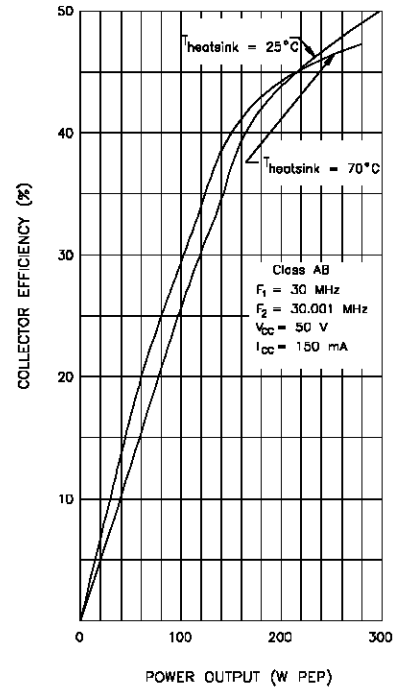
TYPICAL PERFORMANCE

CLASS AB

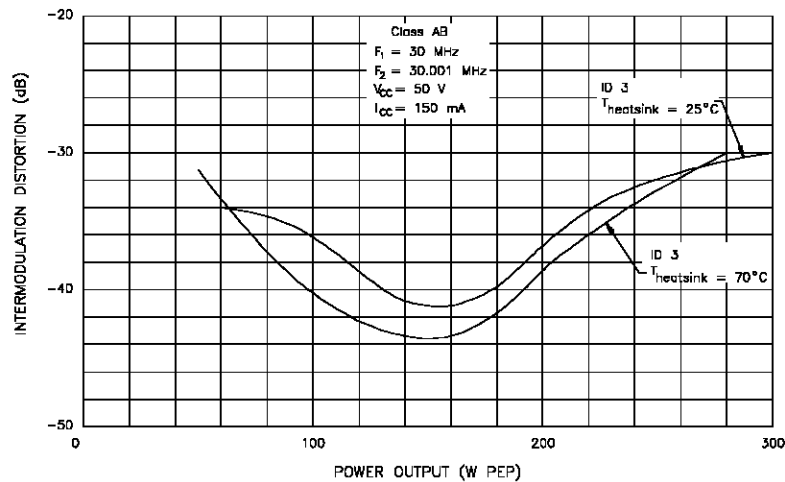
POWER OUTPUT PEP vs POWER INPUT



COLLECTOR EFFICIENCY vs POWER OUTPUT PEP

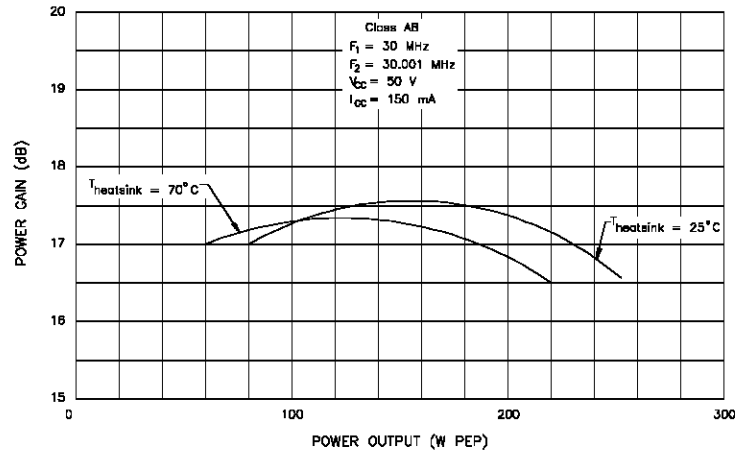


INTERMODULATION DISTORTION vs POWER OUTPUT PEP

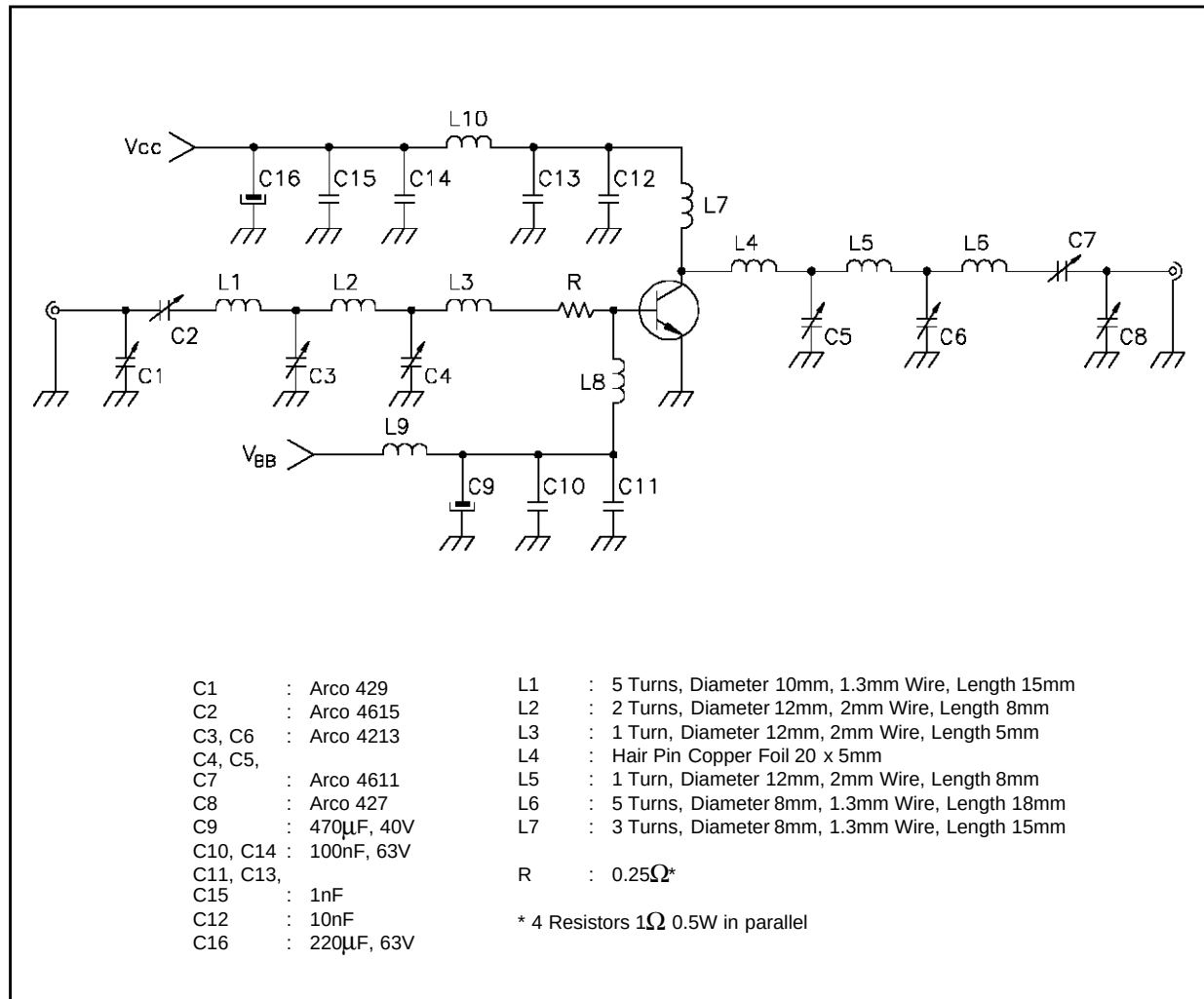


TYPICAL PERFORMANCE (cont'd)

POWER GAIN vs POWER OUTPUT PEP



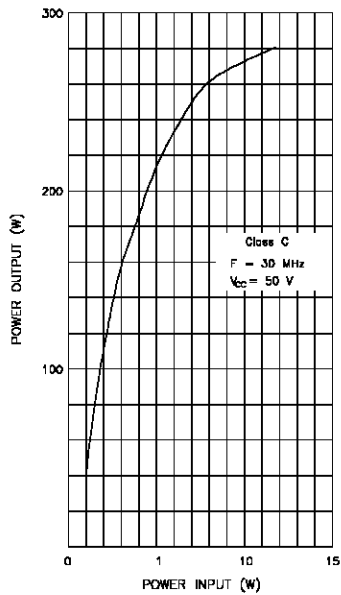
TEST CIRCUIT SSB - CLASS AB - 30 MHz



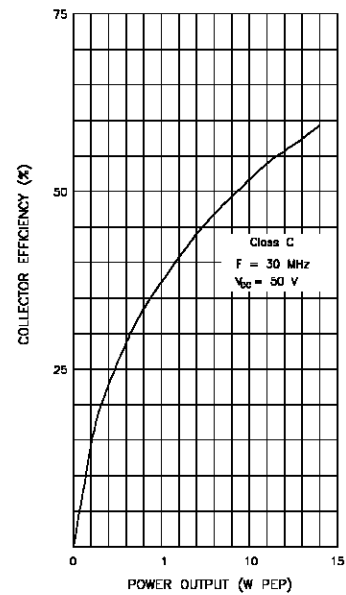
TYPICAL PERFORMANCE

CLASS C $F = 30 \text{ MHz}$

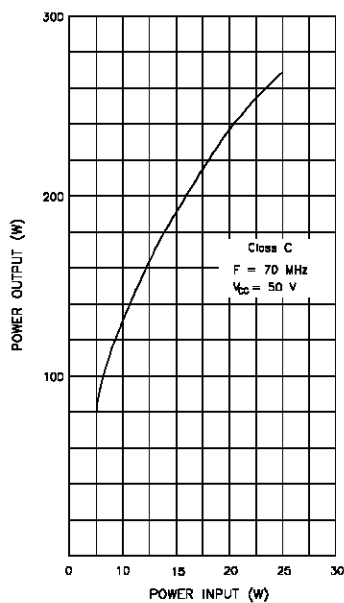
POWER OUTPUT vs POWER INPUT



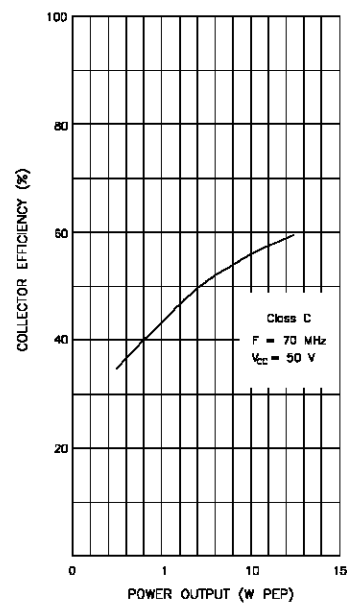
COLLECTOR EFFICIENCY vs POWER OUTPUT

CLASS C $F = 70 \text{ MHz}$

POWER OUTPUT vs POWER INPUT

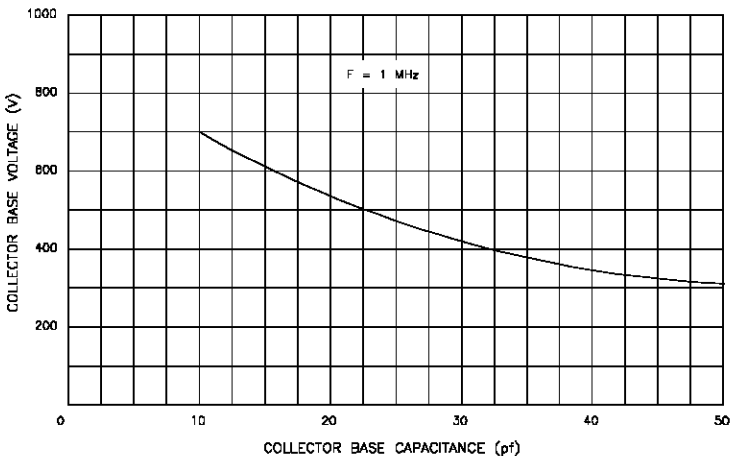


COLLECTOR EFFICIENCY vs POWER OUTPUT

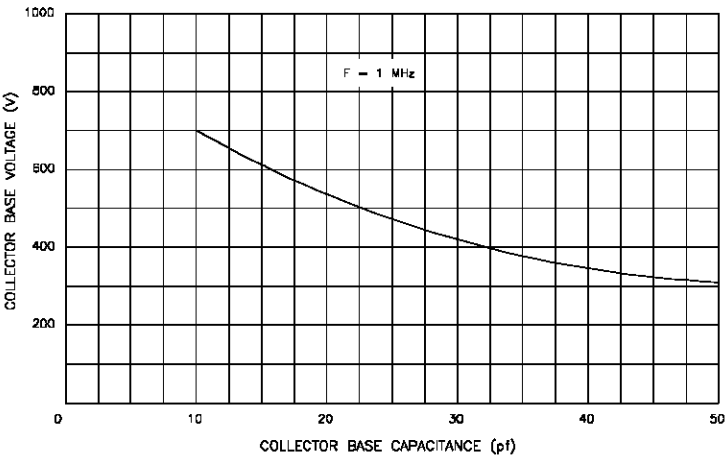


TYPICAL PERFORMANCE (cont'd)

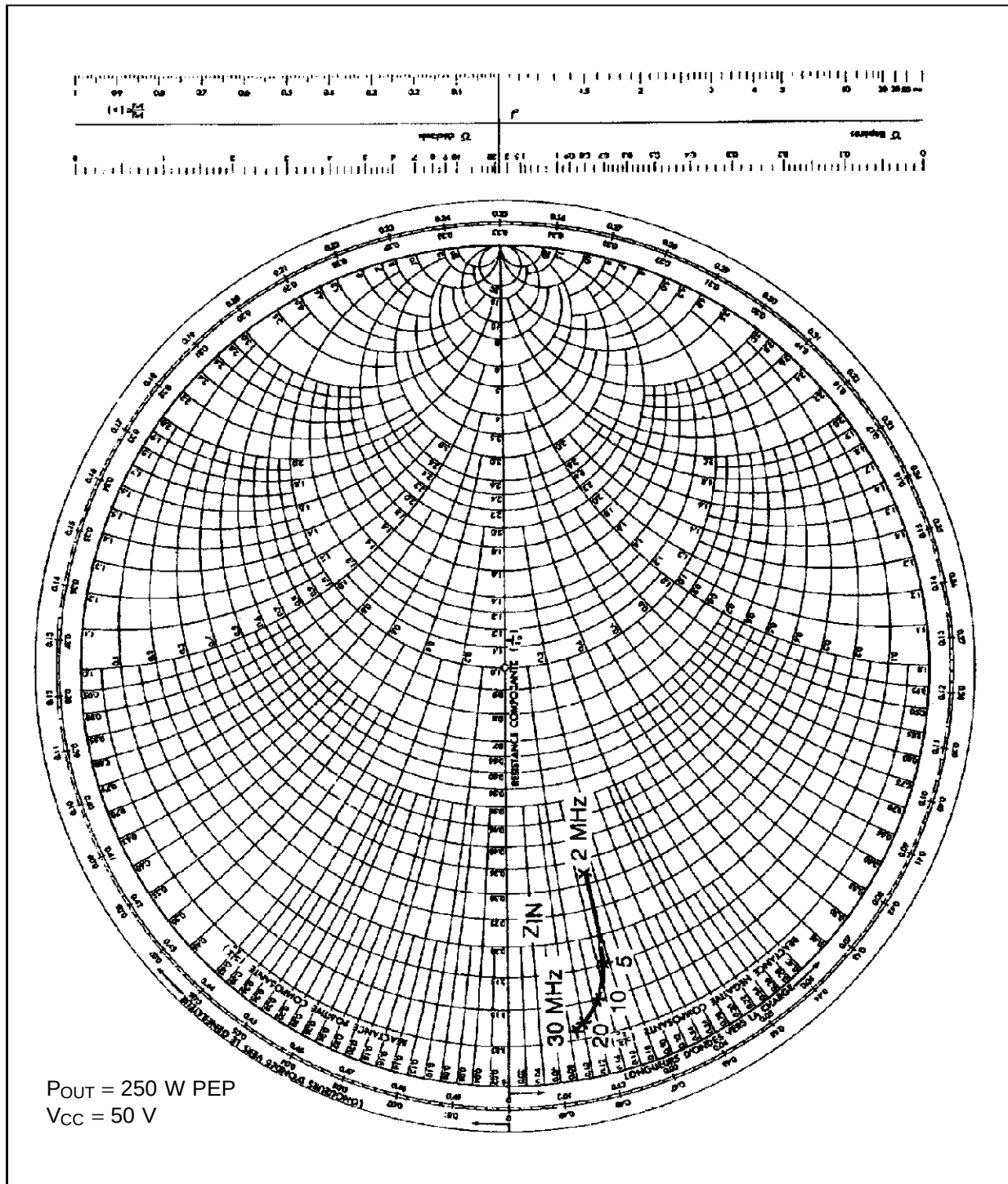
COLLECTOR BASE CAPACITANCE vs COLLECTOR BASE VOLTAGE



DC SAFE OPERATING AREA

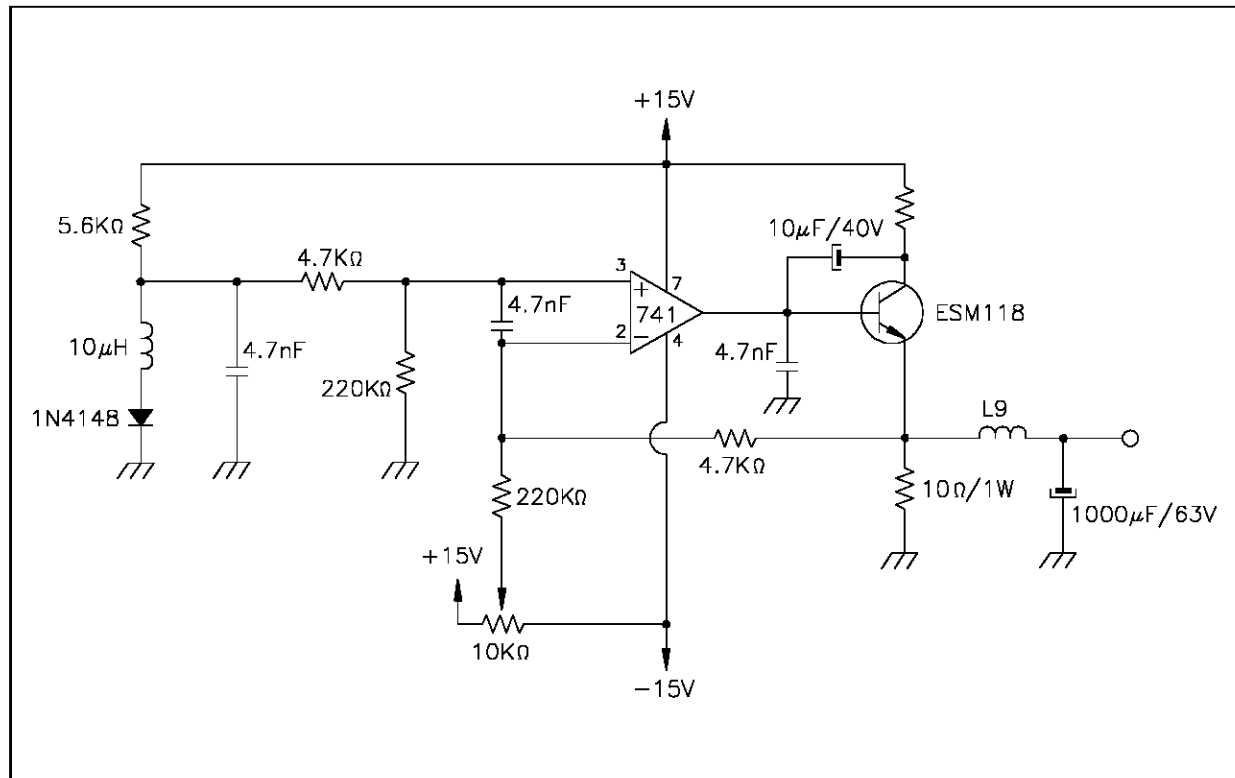


IMPEDANCE DATA (TYPICAL)

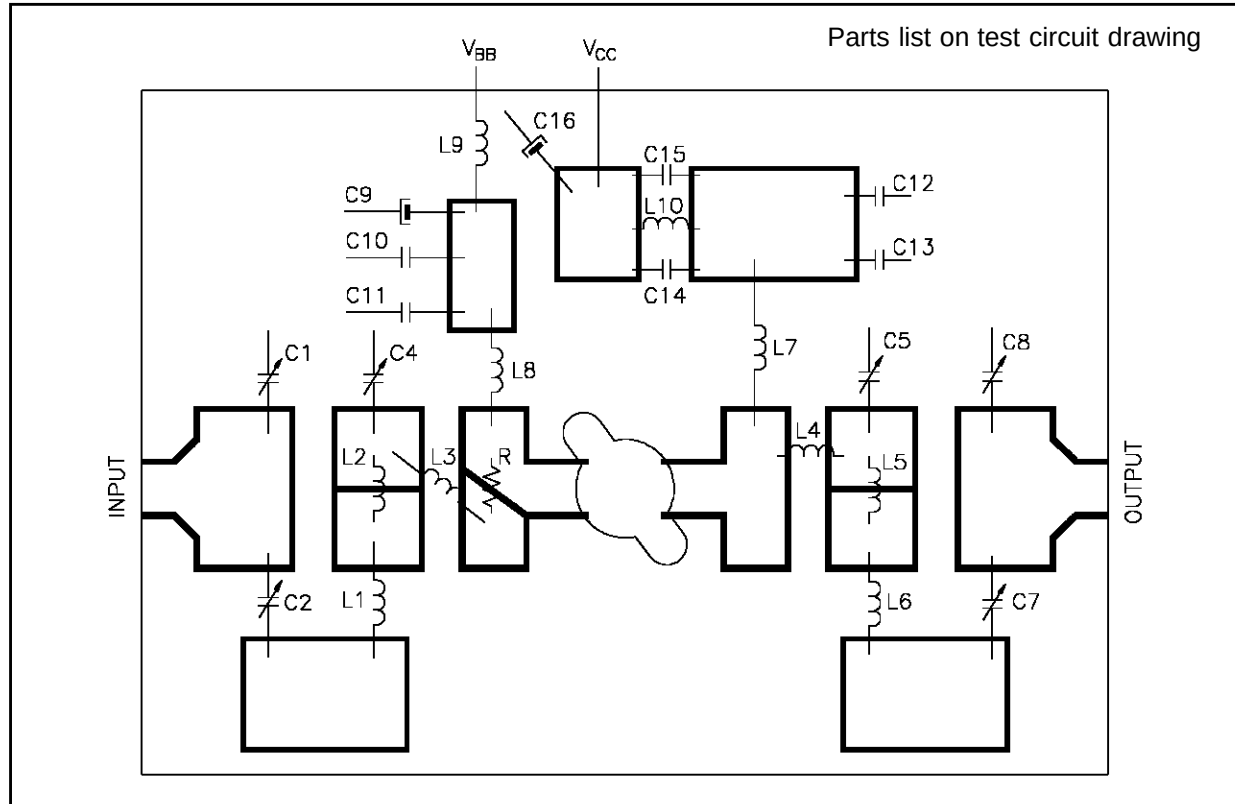


SD1728 (TH430)

BIAS CIRCUIT

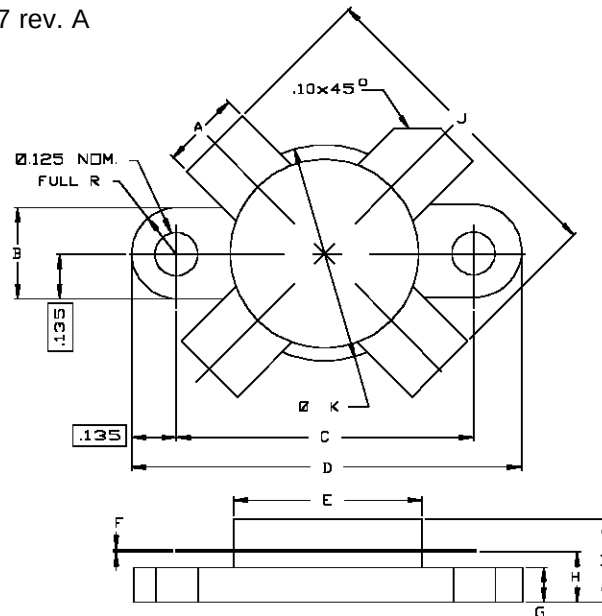


MOUNTING CIRCUIT



PACKAGE MECHANICAL DATA

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



SGS-THOMSON MICROELECTRONICS			CONT'D		
	MINIMUM Inches/mm	MAXIMUM Inches/mm		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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