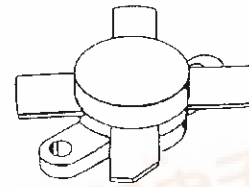




SD1728 (TH430)

RF & MICROWAVE TRANSISTORS HF SSB APPLICATIONS

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

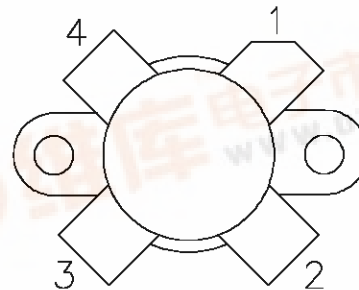


.550 4LFL (M177)
epoxy sealed

ORDER CODE
SD1728

BRANDING
TH430

PIN CONNECTION



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

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

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

$R_{\theta(j-c)}$	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

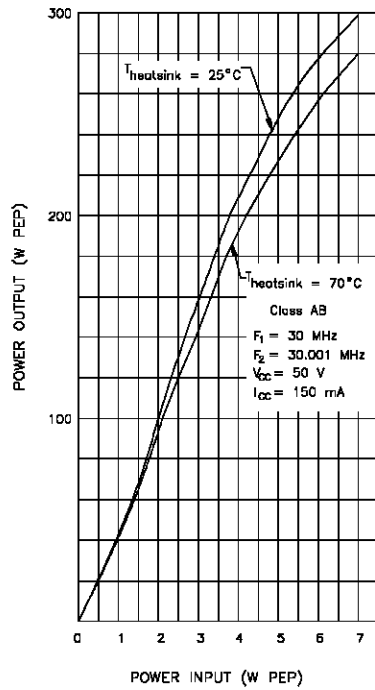
Symbol	Test Conditions			Value			Unit
				Min.	Typ.	Max.	
P_{OUT}	$f = 30\text{ MHz}$	$V_{\text{CC}} = 50\text{ V}$	$I_{\text{CQ}} = 150\text{ mA}$	250	—	—	W
G_{P}^*	$P_{\text{OUT}} = 250\text{ W PEP}$	$V_{\text{CC}} = 50\text{ V}$	$I_{\text{CQ}} = 150\text{ mA}$	14.5	—	—	dB
IMD^*	$P_{\text{OUT}} = 250\text{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

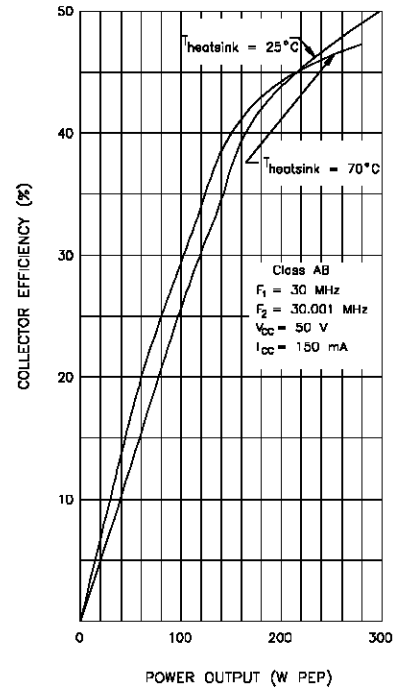
TYPICAL PERFORMANCE

CLASS AB

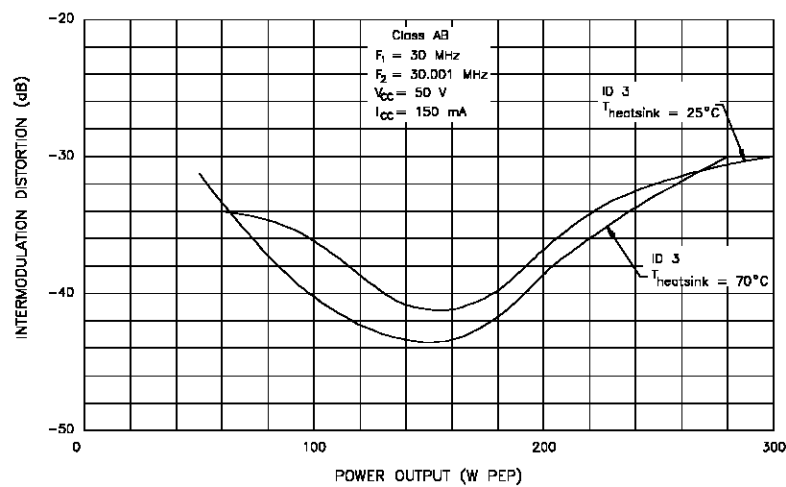
POWER OUTPUT PEP vs POWER INPUT



COLLECTOR EFFICIENCY vs POWER OUTPUT PEP



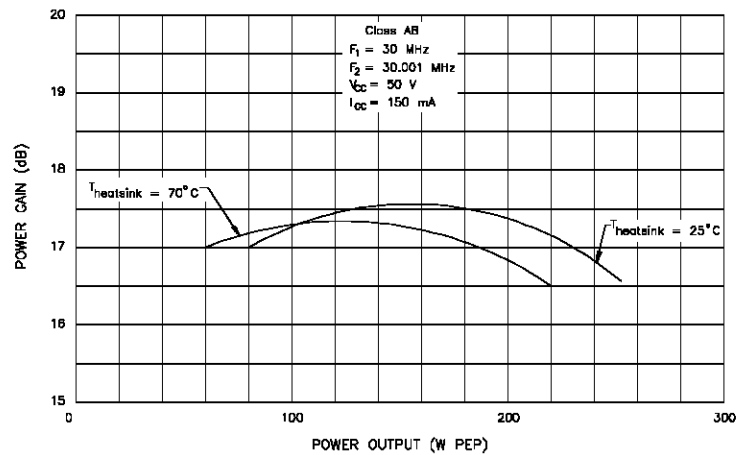
INTERMODULATION DISTORTION vs POWER OUTPUT PEP



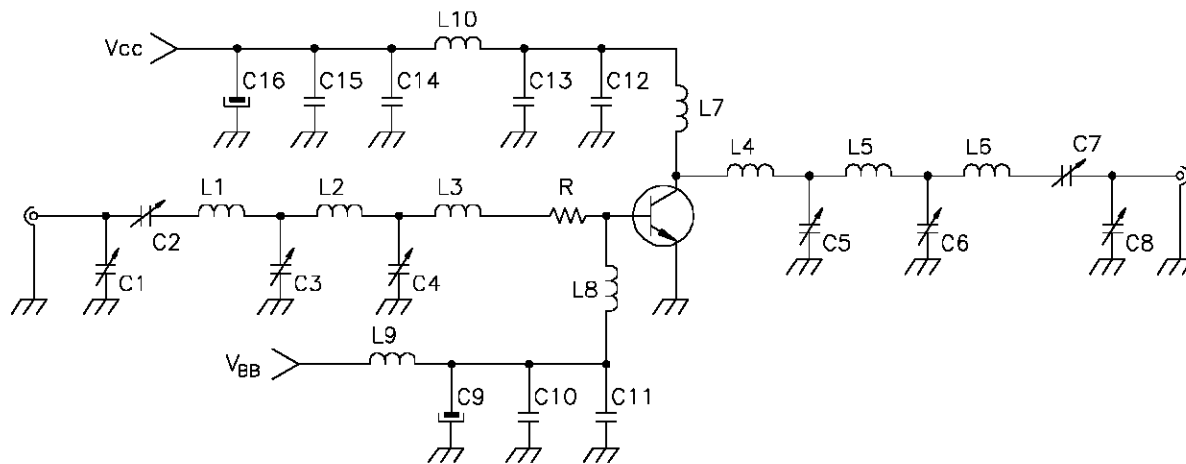
SD1728 (TH430)

TYPICAL PERFORMANCE (cont'd)

POWER GAIN vs POWER OUTPUT PEP



TEST CIRCUIT SSB - CLASS AB - 30 MHz



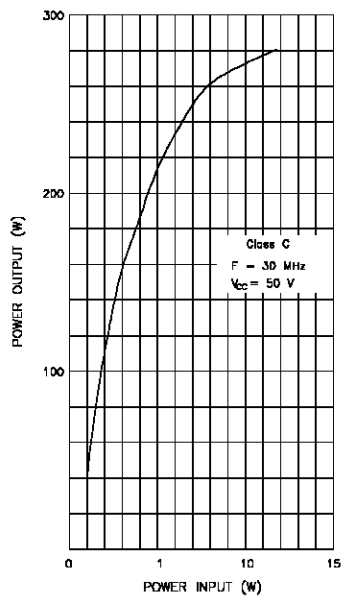
C1	: Arco 429	L1	: 5 Turns, Diameter 10mm, 1.3mm Wire, Length 15mm
C2	: Arco 4615	L2	: 2 Turns, Diameter 12mm, 2mm Wire, Length 8mm
C3, C6	: Arco 4213	L3	: 1 Turn, Diameter 12mm, 2mm Wire, Length 5mm
C4, C5,		L4	: Hair Pin Copper Foil 20 x 5mm
C7	: Arco 4611	L5	: 1 Turn, Diameter 12mm, 2mm Wire, Length 8mm
C8	: Arco 427	L6	: 5 Turns, Diameter 8mm, 1.3mm Wire, Length 18mm
C9	: 470 μ F, 40V	L7	: 3 Turns, Diameter 8mm, 1.3mm Wire, Length 15mm
C10, C14	: 100nF, 63V		
C11, C13,		R	: 0.25 Ω *
C15	: 1nF		
C12	: 10nF		
C16	: 220 μ F, 63V		

* 4 Resistors 1 Ω 0.5W in parallel

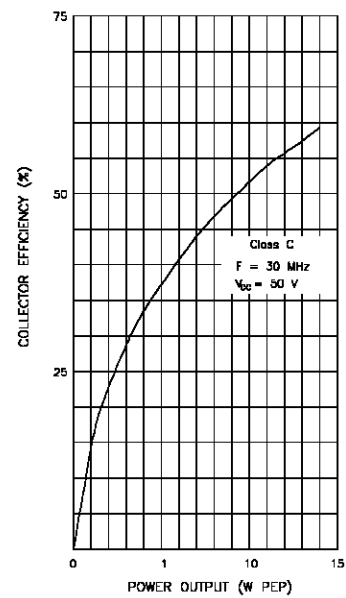
TYPICAL PERFORMANCE

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

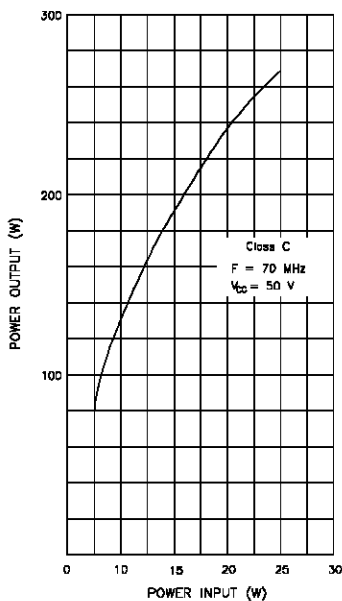
POWER OUTPUT vs POWER INPUT



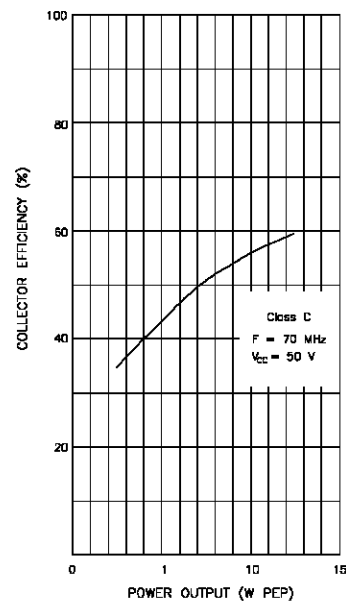
COLLECTOR EFFICIENCY vs POWER OUTPUT

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

POWER OUTPUT vs POWER INPUT

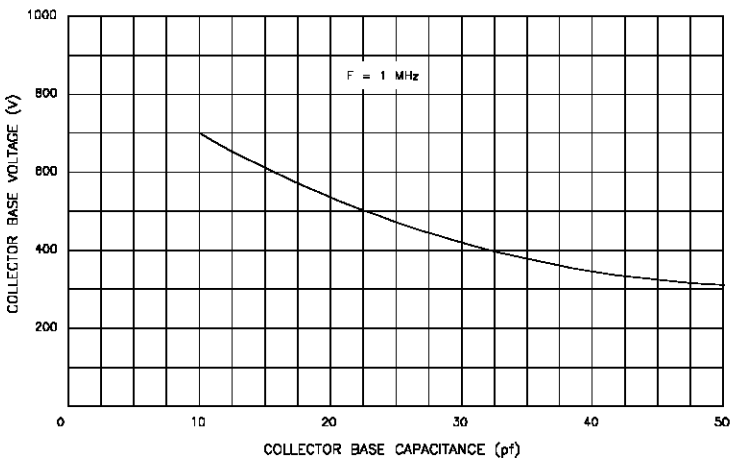


COLLECTOR EFFICIENCY vs POWER OUTPUT

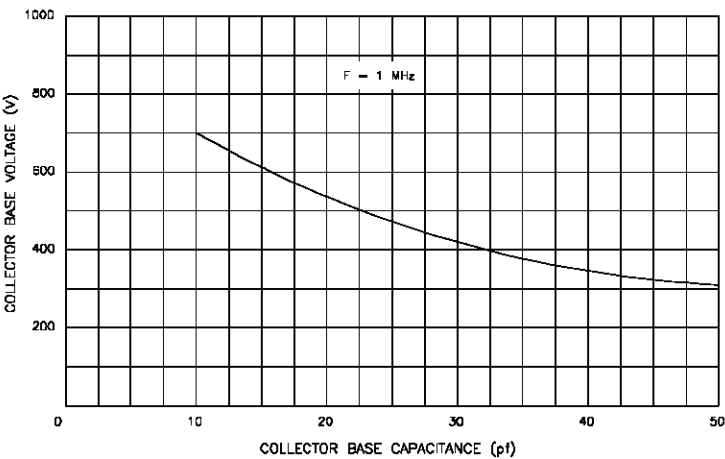


TYPICAL PERFORMANCE (cont'd)

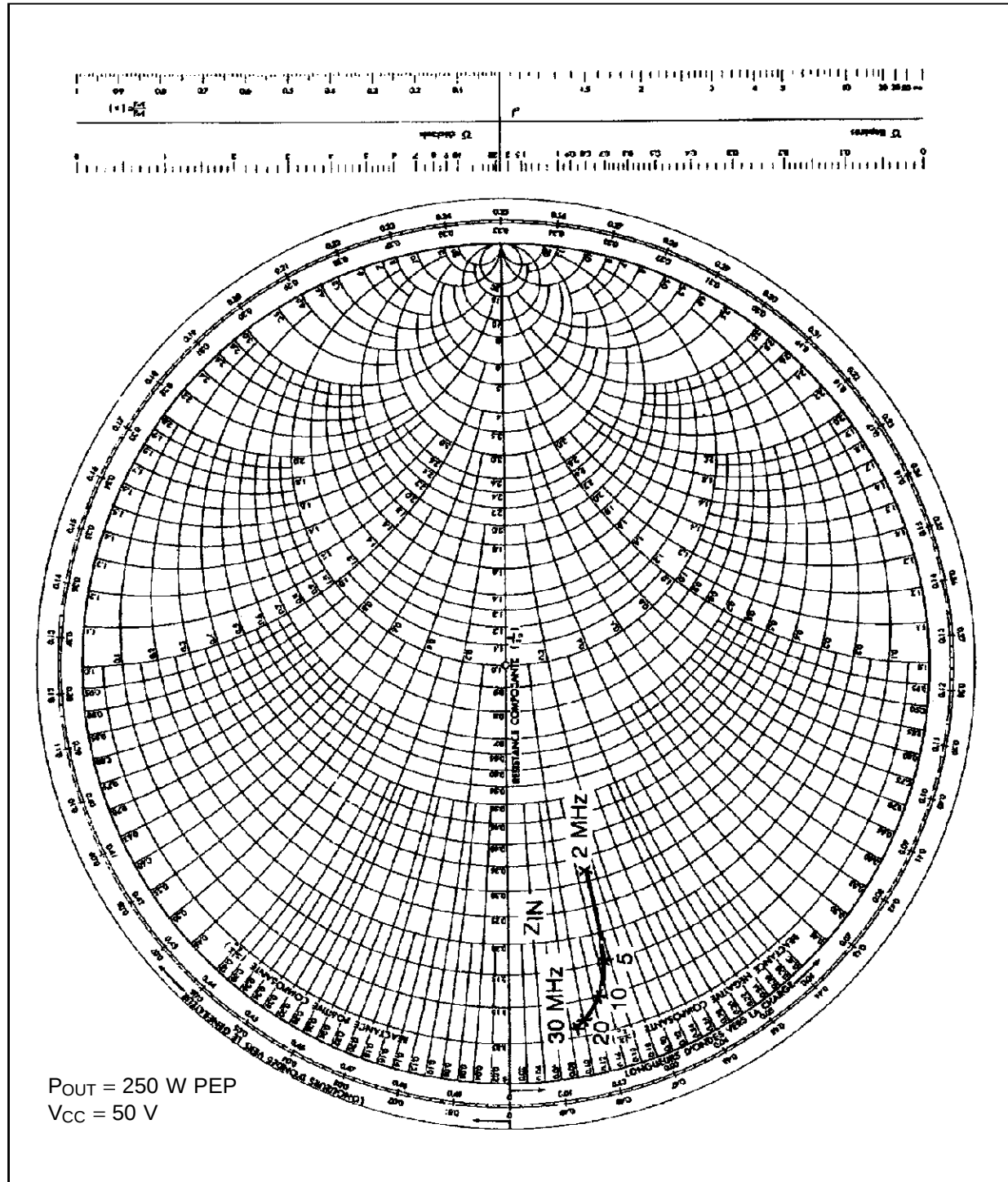
COLLECTOR BASE CAPACITANCE vs COLLECTOR BASE VOLTAGE



DC SAFE OPERATING AREA

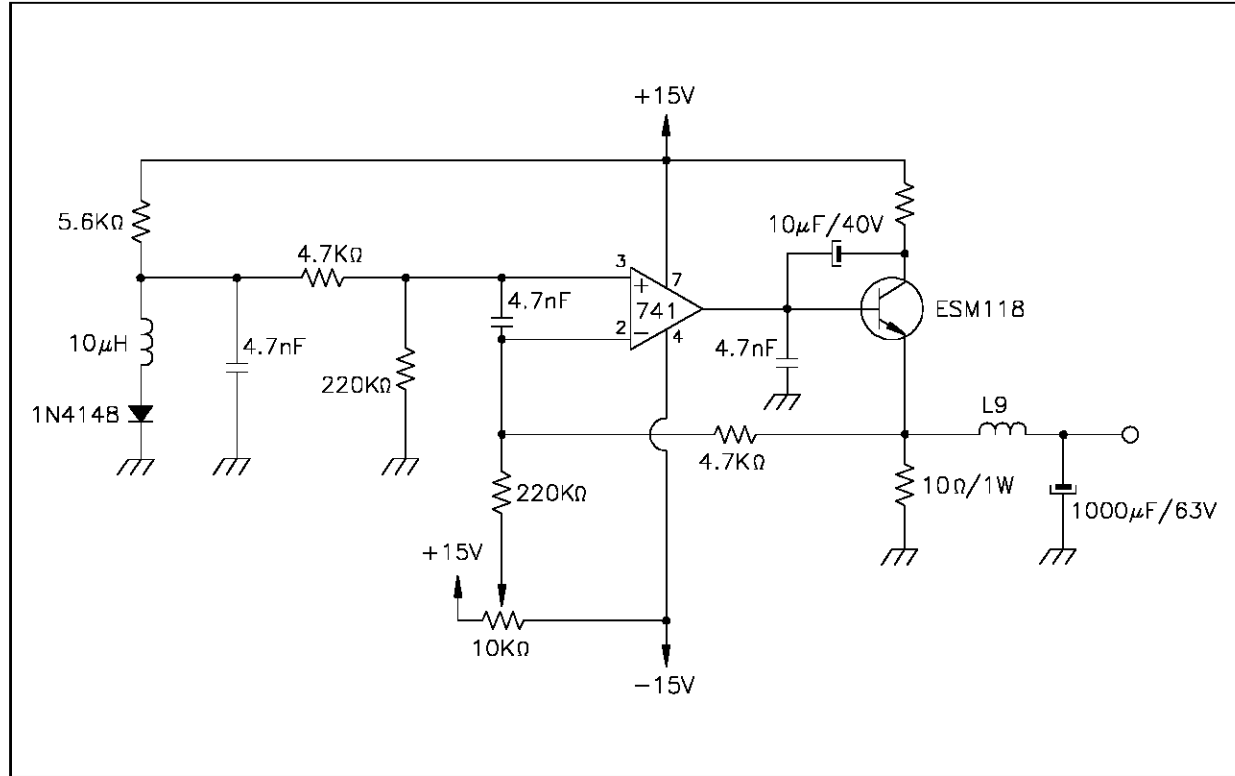


IMPEDANCE DATA (TYPICAL)

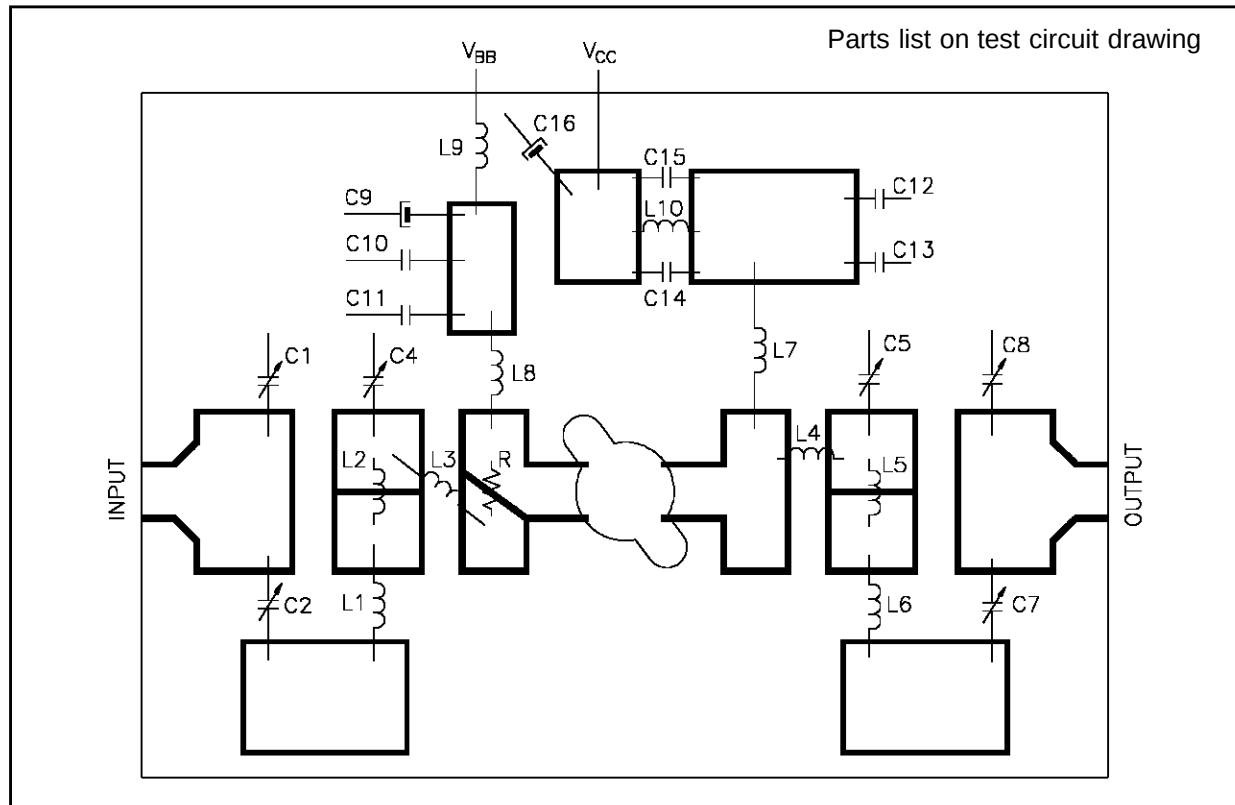


SD1728 (TH430)

BIAS CIRCUIT

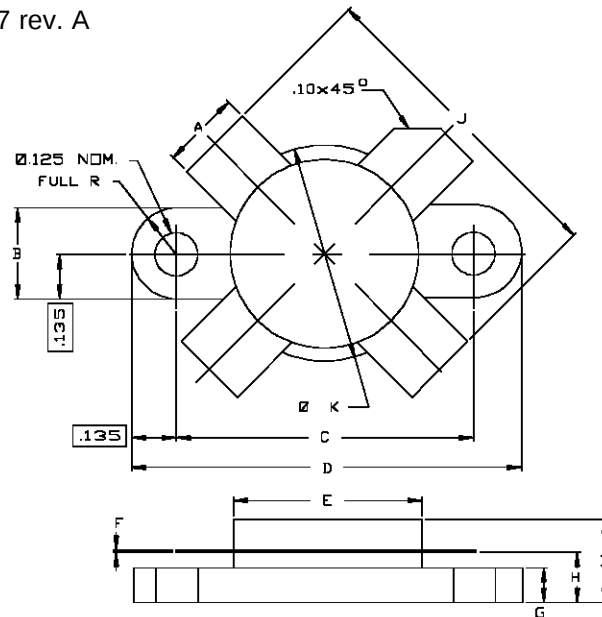


MOUNTING CIRCUIT



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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