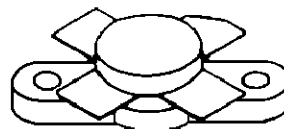


RF & MICROWAVE TRANSISTORS HF SSB APPLICATIONS

- OPTIMIZED FOR SSB
- 30 MHz
- 28 VOLTS
- IMD -30dB
- EFFICIENCY 40%
- COMMON EMITTER
- GOLD METALLIZATION
- $P_{OUT} = 220$ W PEP WITH 12 dB GAIN



.500 4 LFL (M174)
epoxy sealed

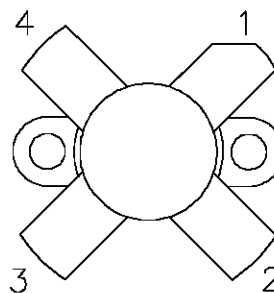
ORDER CODE
SD1730

BRANDING
TH560

DESCRIPTION

The SD1730 is a 28 V epitaxial silicon NPN planar transistor designed primarily for SSB and VHF communications. The device utilizes emitter ballasting for improved ruggedness and reliability.

PIN CONNECTION



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

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

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage	70	V
V_{CEO}	Collector-Emitter Voltage	35	V
V_{EBO}	Emitter-Base Voltage	4.0	V
I_C	Device Current	16	A
P_{DISS}	Power Dissipation	320	W
T_J	Junction Temperature	+200	$^{\circ}C$
T_{STG}	Storage Temperature	- 65 to +150	$^{\circ}C$

THERMAL DATA

$R_{TH(j-c)}$	Junction-Case Thermal Resistance	0.6	$^{\circ}C/W$
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SD1730 (TH560)

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

STATIC

Symbol	Test Conditions	Value			Unit
		Min.	Typ.	Max.	
BV_{CES}	$I_{\text{C}} = 100 \text{ mA}$ $V_{\text{BE}} = 0 \text{ V}$	70	—	—	V
BV_{CEO}	$I_{\text{C}} = 200 \text{ mA}$ $I_{\text{B}} = 0 \text{ mA}$	35	—	—	V
BV_{EBO}	$I_{\text{E}} = 20 \text{ mA}$ $I_{\text{C}} = 0 \text{ mA}$	4.0	—	—	V
I_{CEO}	$V_{\text{CE}} = 30 \text{ V}$ $I_{\text{E}} = 0 \text{ mA}$	—	—	5	mA
I_{CES}	$V_{\text{CE}} = 35 \text{ V}$ $I_{\text{E}} = 0 \text{ mA}$	—	—	5	mA
h_{FE}	$V_{\text{CE}} = 5 \text{ V}$ $I_{\text{C}} = 7 \text{ A}$	15	—	60	—

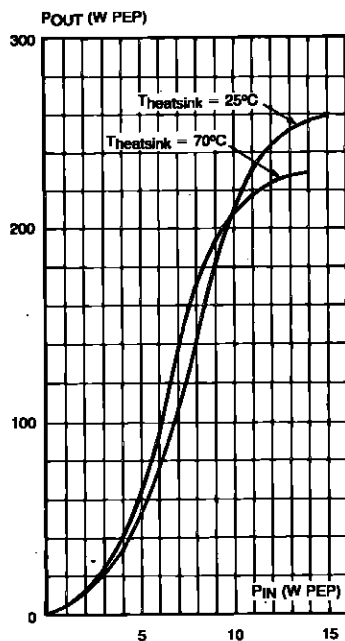
DYNAMIC

Symbol	Test Conditions	Value			Unit
		Min.	Typ.	Max.	
P_{OUT}	$f = 30 \text{ MHz}$ $V_{\text{CE}} = 28 \text{ V}$ $I_{\text{CQ}} = 750 \text{ mA}$	220	—	—	W
P_{G}^*	$P_{\text{OUT}} = 220 \text{ W PEP}$ $V_{\text{CE}} = 28 \text{ V}$ $I_{\text{CQ}} = 750 \text{ mA}$	12	—	—	dB
IMD^*	$P_{\text{OUT}} = 220 \text{ W PEP}$ $V_{\text{CE}} = 28 \text{ V}$ $I_{\text{CQ}} = 750 \text{ mA}$	—	—	-30	dBc
η_{C}^*	$P_{\text{OUT}} = 220 \text{ W PEP}$ $V_{\text{CE}} = 28 \text{ V}$ $I_{\text{CQ}} = 750 \text{ mA}$	40	—	—	%
C_{OB}	$f = 1 \text{ MHz}$ $V_{\text{CB}} = 28 \text{ V}$	—	450	—	pF
Load Mismatch	$P_{\text{OUT}} = 220 \text{ W PEP}$ $V_{\text{CE}} = 28 \text{ V}$ $I_{\text{CQ}} = 750 \text{ mA}$	—	$\infty:1$	—	VSWR

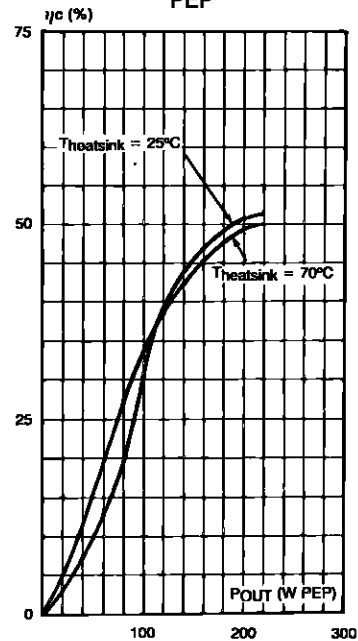
Note: * $f_1 = 30.00 \text{ MHz}$, $f_2 = 30.001 \text{ MHz}$

TYPICAL PERFORMANCE

POWER OUTPUT PEP vs POWER INPUT

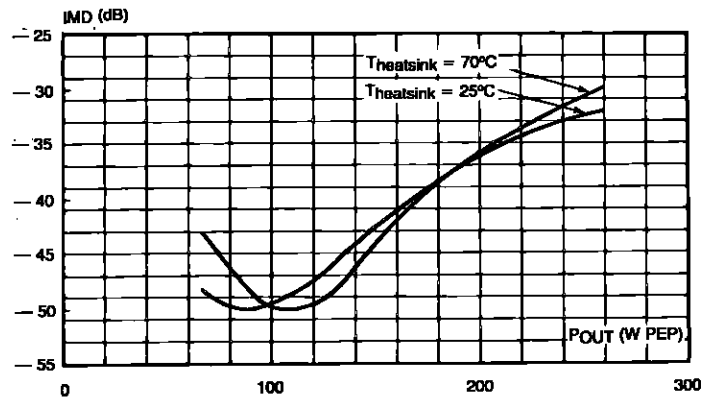


COLLECTOR EFFICIENCY vs POWER OUTPUT PEP

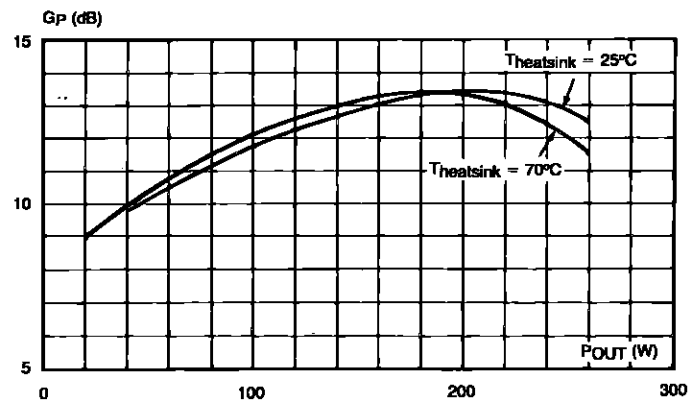


TYPICAL PERFORMANCE (cont'd)

INTERMODULATION DISTORTION vs POWER OUTPUT PEP



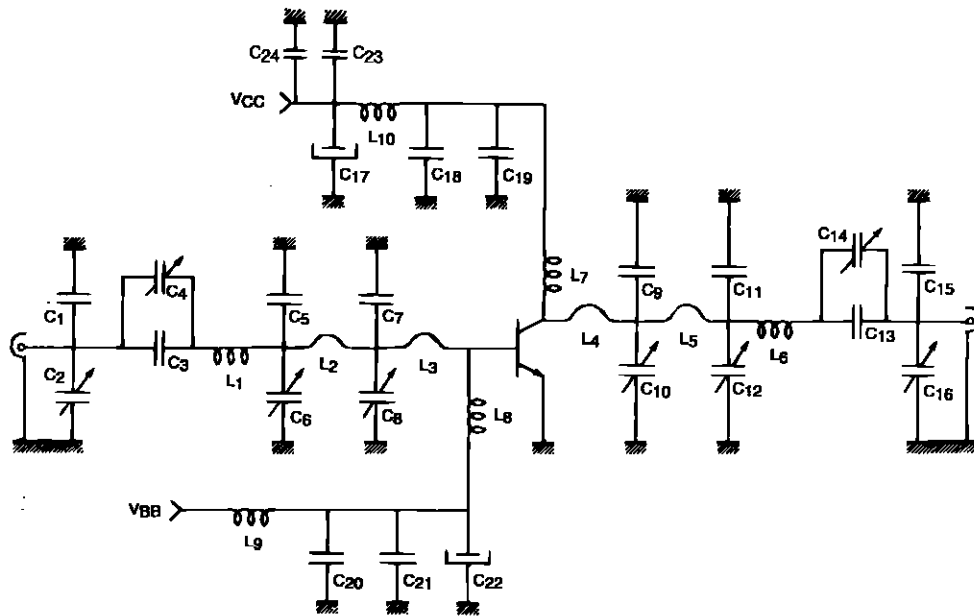
POWER GAIN vs POWER OUTPUT



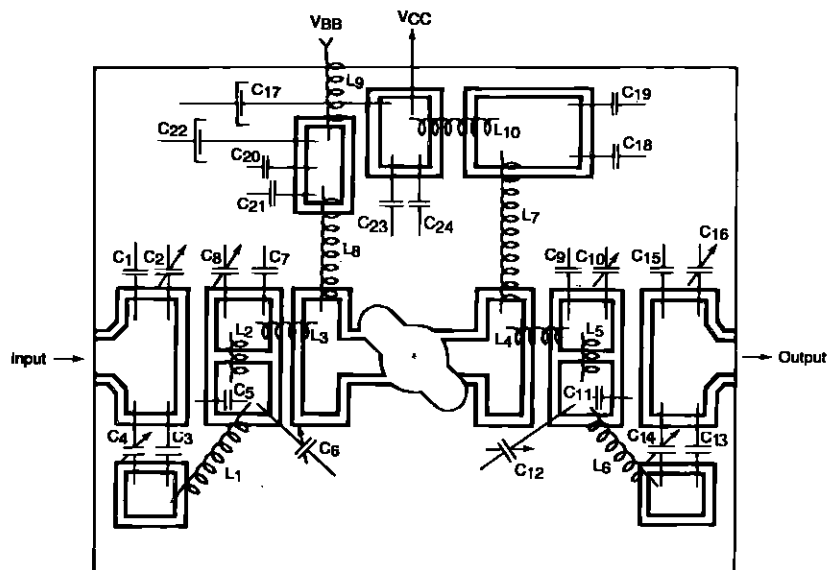
IMPEDANCE DATA

FREQ.	$Z_{IN} (\Omega)$	$Z_{CL} (\Omega)$
30 MHz	$1.15 + j 0.41$	$1.25 + j 1.92$

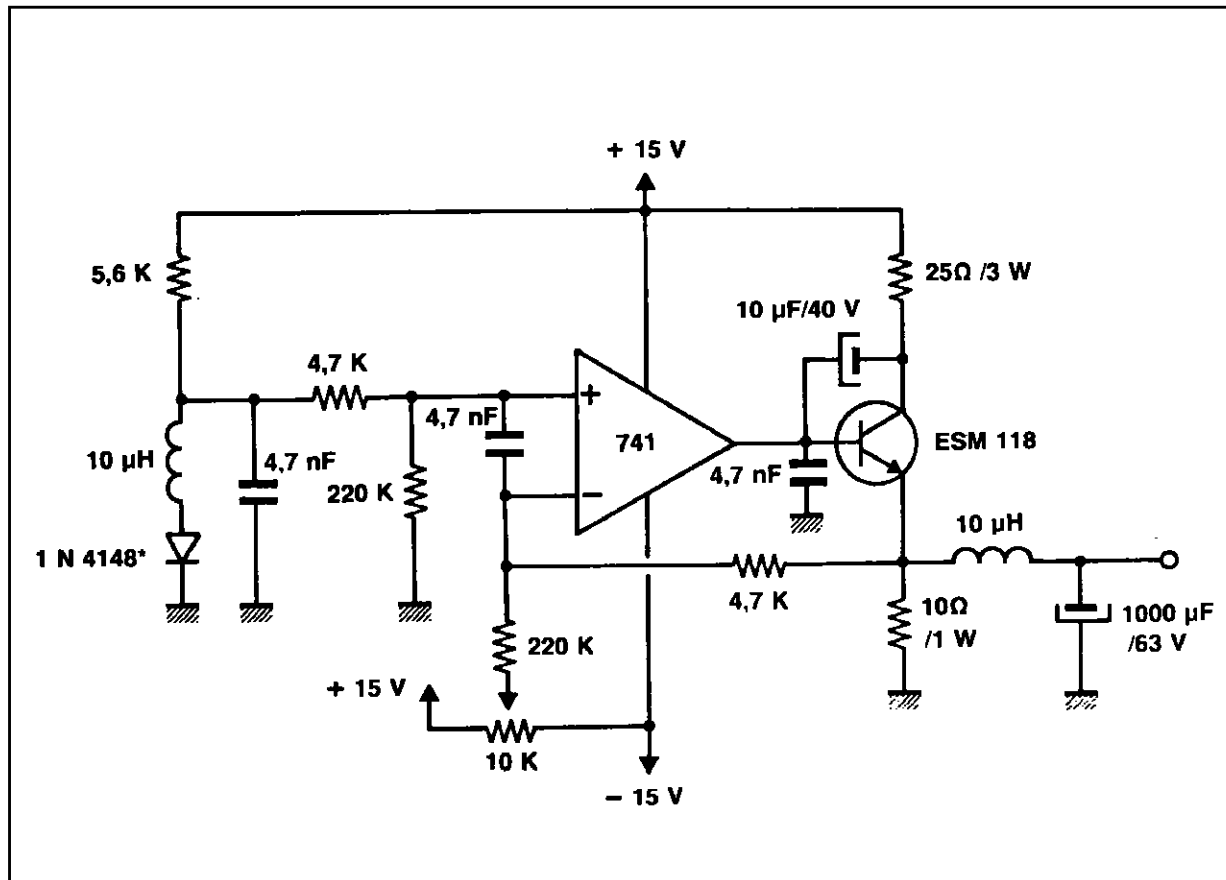
TEST CIRCUIT



C1	: 180pF	L1	: 3 Turns, Diameter 10mm, 1.3mm Wire, Length 10mm
C2, C4, C6, C8, C10, C12		L2, L5	: Hair Pin Copper foil 40 x 5mm, 0.2mm Thick
C14, C16	: Arco 428	L3, L4	: Hair Pin Copper Foil 10 x 5mm, 0.2mm Thick
C3	: 820pF	L6	: 5 Turns, Diameter 10mm, 1.3mm Wire, Length 15mm
C5, C13	: 680pF	L7	: 3 Turns, Diameter 10mm, 1.3mm Wire, Length 25mm
C7, C11	: 1.2nF	L8	: Choke
C9	: 1.5nF	L9	: Choke
C17, C22	: 470 μ F, 40V	L10	: Choke
C18	: 10nF		
C19, C21			
C23	: 1nF		
C20, C24	: 100nF, 63V		



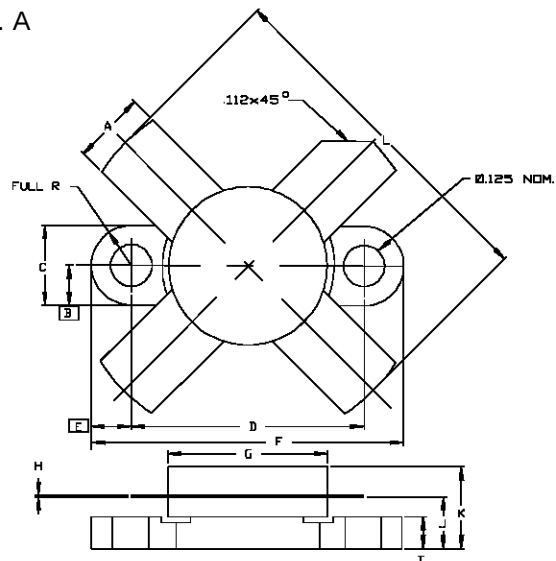
BIAS CIRCUIT



SD1730 (TH560)

PACKAGE MECHANICAL DATA

Ref.: Dwg. No.12-0174 rev. A



SGS-THOMSON MICROELECTRONICS			CONT'D		
	MINIMUM Inches/mm	MAXIMUM Inches/mm		MINIMUM Inches/mm	MAXIMUM Inches/mm
A	.220/5,59	.230/5,84	K		.280/7,11
B	.125/3,18		L		1.050/26,67
C	.245/6,22	.255/6,48			
D	.720/18,28	.730/18,54			
E	.125/3,18				
F	.970/24,64	.980/24,89			
G	.495/12,57	.505/12,83			
H	.003/0,08	.007/0,18			
I	.090/2,29	.110/2,79			
J	.160/4,06	.175/4,45			

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