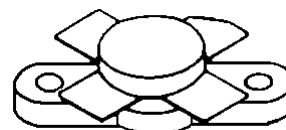


## RF & MICROWAVE TRANSISTORS HF SSB APPLICATIONS

- 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

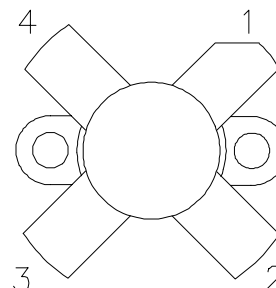
**BRANDING**

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

2. Emitter

3. Base

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

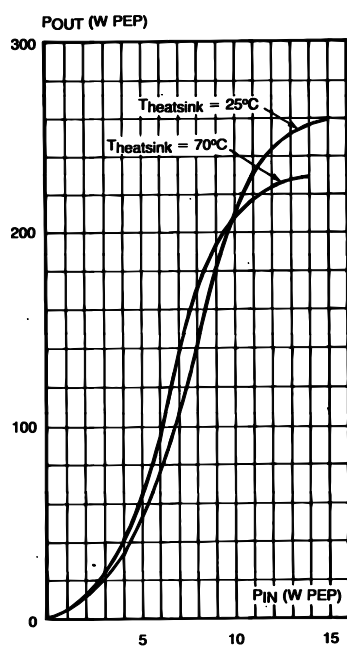
#### DYNAMIC

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

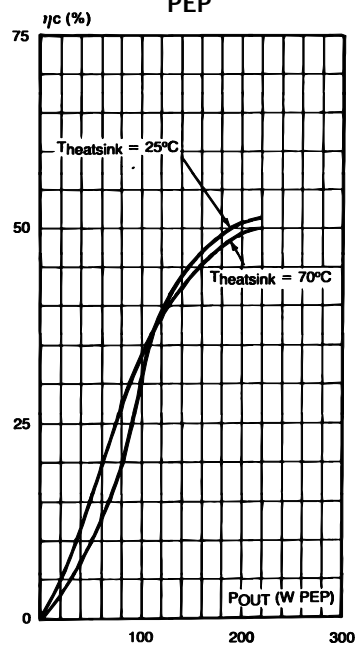
Note: \*  $f_1 = 30.00 \text{ MHz}$ ,  $f_2 = 30.001 \text{ MHz}$

#### TYPICAL PERFORMANCE

POWER OUTPUT PEP vs POWER INPUT

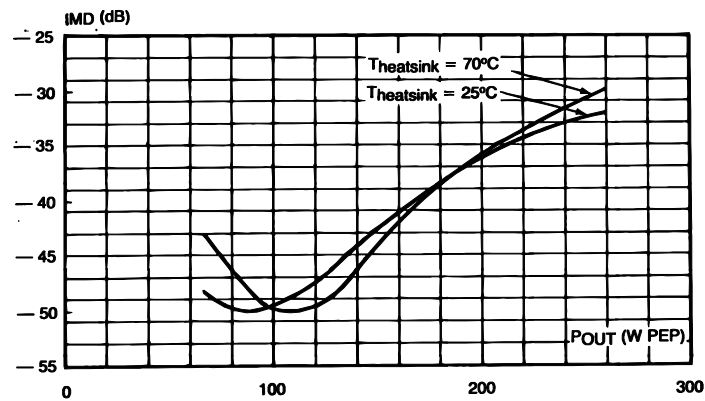


COLLECTOR EFFICIENCY vs POWER OUTPUT PEP

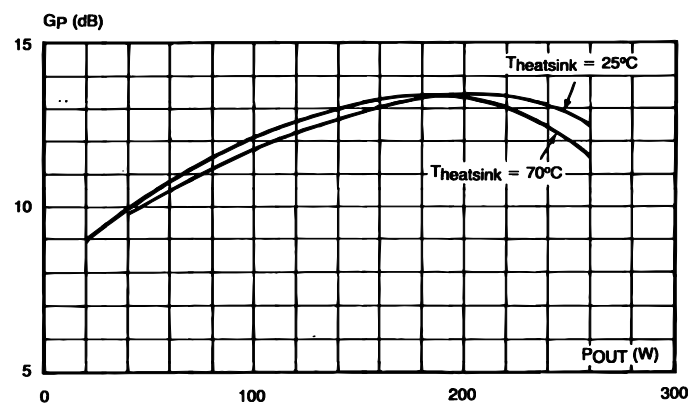


## TYPICAL PERFORMANCE (cont'd)

INTERMODULATION DISTORTION vs POWER OUTPUT PEP



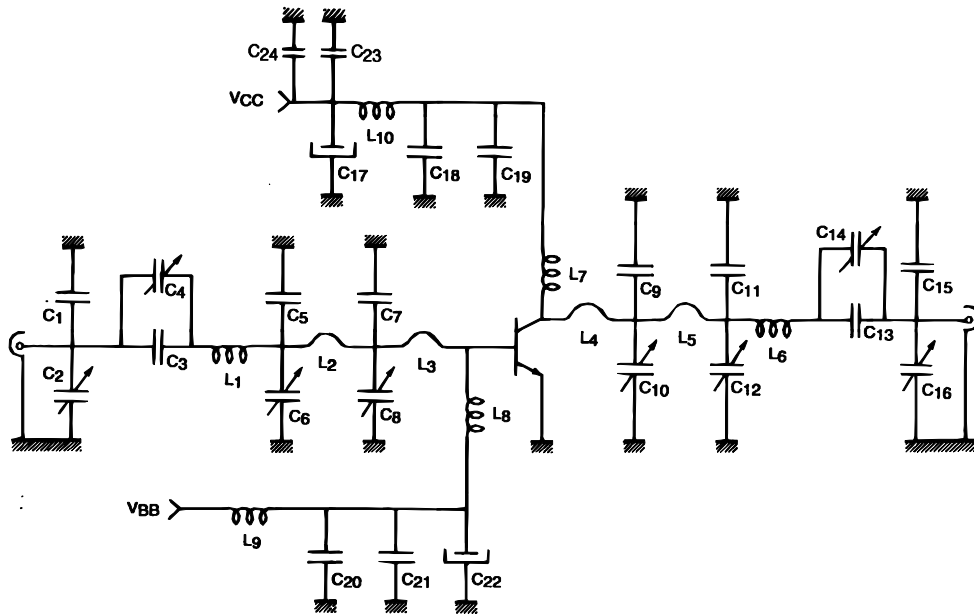
POWER GAIN vs POWER OUTPUT



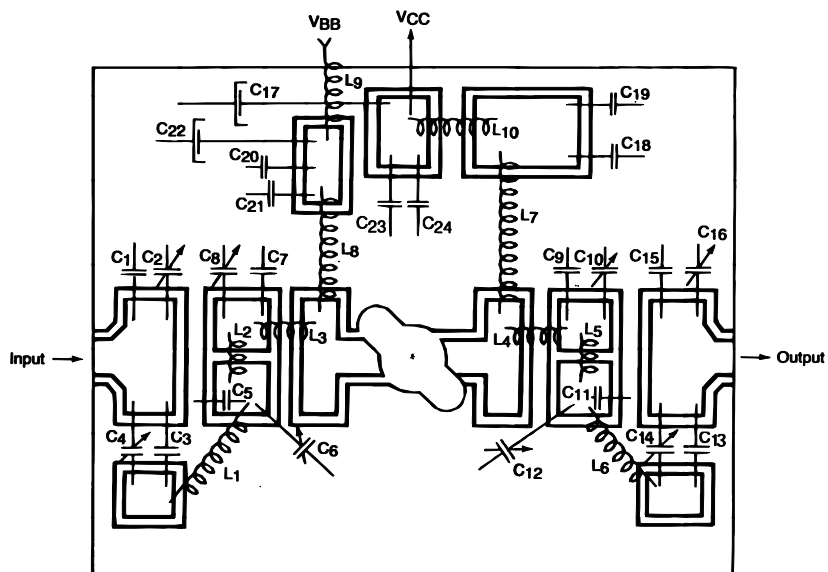
## IMPEDANCE DATA

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

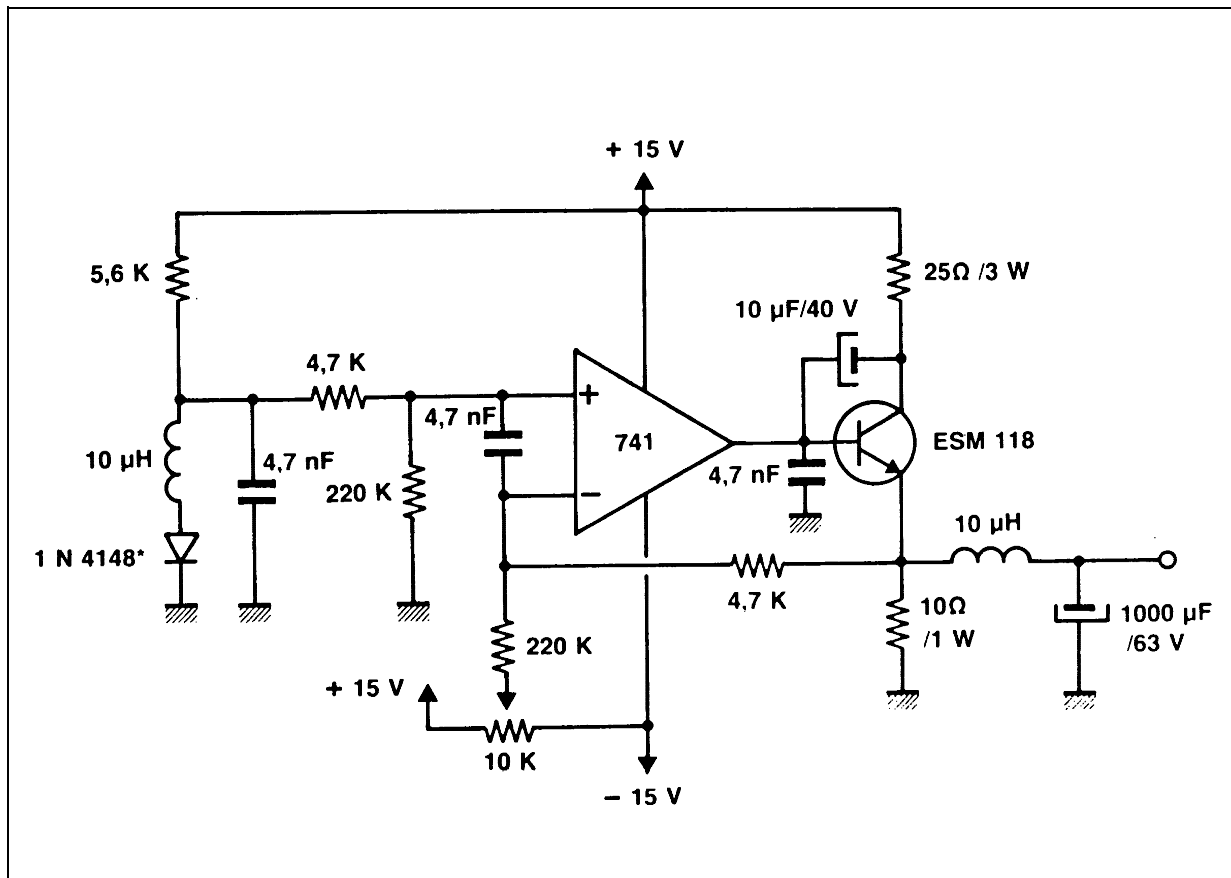
## TEST CIRCUIT



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	: 470μF, 40V	L10	: Choke
C18	: 10nF		
C19, C21	: 1nF		
C20, C24	: 100nF, 63V		

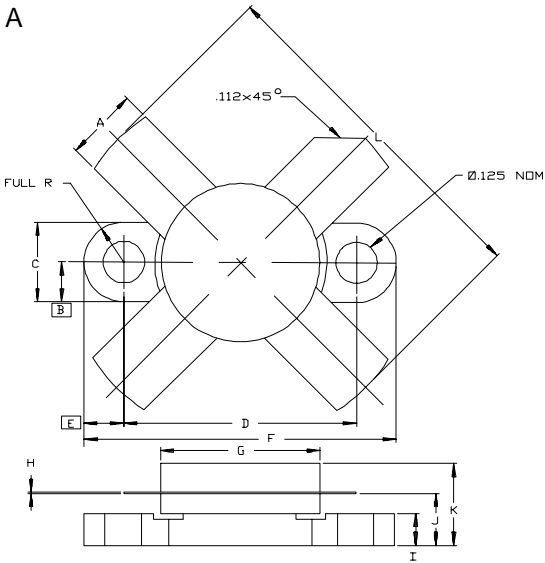


## BIAS CIRCUIT



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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