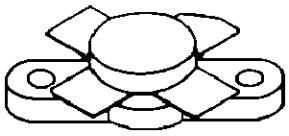
SGS-THOMSON MICROELECTRONICS

SD1730 (TH560)

RF & MICROWAVE TRANSISTORS HF SSB APPLICATIONS

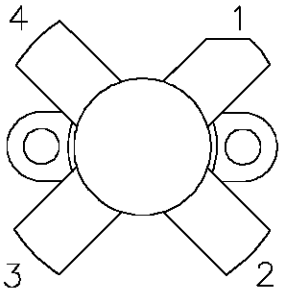
- OPTIMIZED FOR SSB
- 30 MHz
- 28 VOLTS
- IMD –30dB
- EFFICIENCY 40%
- COMMON EMITTER
- GOLD METALLIZATION
- P_{OUT} = 220 W PEP WITH 12 dB GAIN



.500 4 LFL (M174)
epoxy sealed

ORDER CODE	BRANDING
SD1730	TH560

PIN CONNECTION



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

DESCRIPTION

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

ABSOLUTE MAXIMUM RATINGS (T_{case} = 25°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	°C
T_{STG}	Storage Temperature	– 65 to +150	°C

THERMAL DATA

$R_{TH(j-c)}$	Junction-Case Thermal Resistance	0.6	°C/W

ELECTRICAL SPECIFICATIONS (T_{case} = 25°C)

STATIC

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

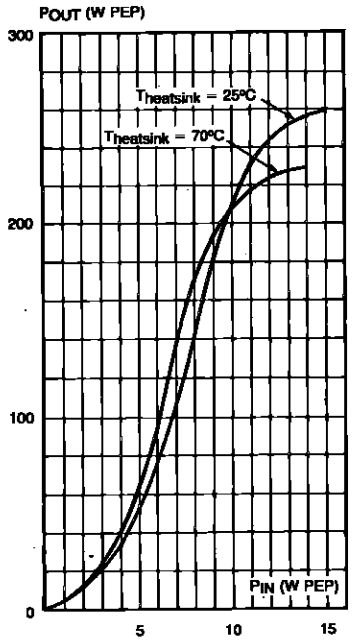
DYNAMIC

Symbol	Test Conditions			Value			Unit
				Min.	Typ.	Max.	
P_{OUT}	f = 30 MHz	V_{CE} = 28 V	I_{CQ} = 750 mA	220	—	—	W
P_G*	P_{OUT} = 220 W PEP	V_{CE} = 28 V	I_{CQ} = 750 mA	12	—	—	dB
IMD*	P_{OUT} = 220 W PEP	V_{CE} = 28 V	I_{CQ} = 750 mA	—	—	–30	dBc
η_C*	P_{OUT} = 220 W PEP	V_{CE} = 28 V	I_{CQ} = 750 mA	40	—	—	%
C_{OB}	f = 1 MHz	V_{CB} = 28 V		—	450	—	pF
Load Mismatch	P_{OUT} = 220 W PEP	V_{CE} = 28 V	I_{CQ} = 750 mA	—	∞:1	—	VSWR

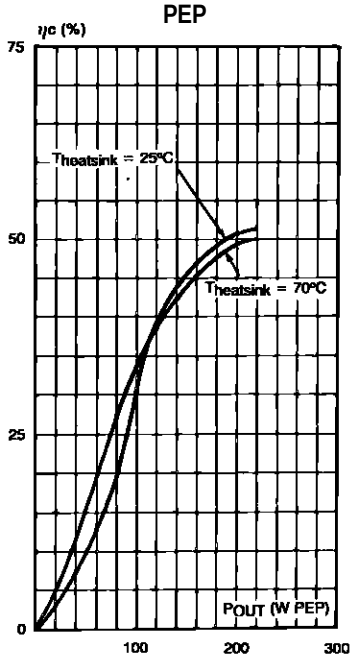
Note: * f_1 = 30.00 MHz, f_2 = 30.001 MHz

TYPICAL PERFORMANCE

POWER OUTPUT PEP vs POWER INPUT

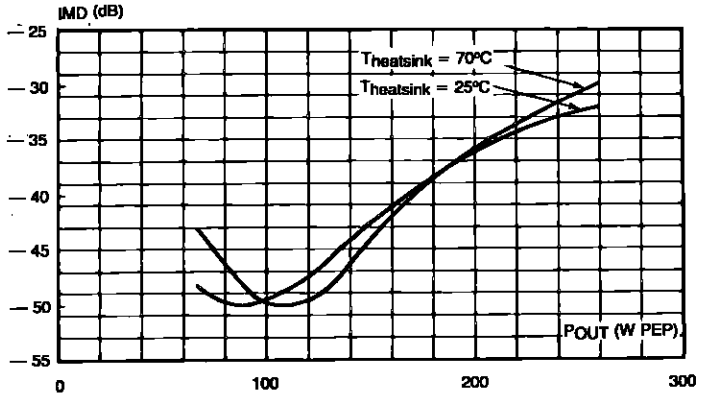


COLLECTOR EFFICIENCY vs POWER OUTPUT PEP

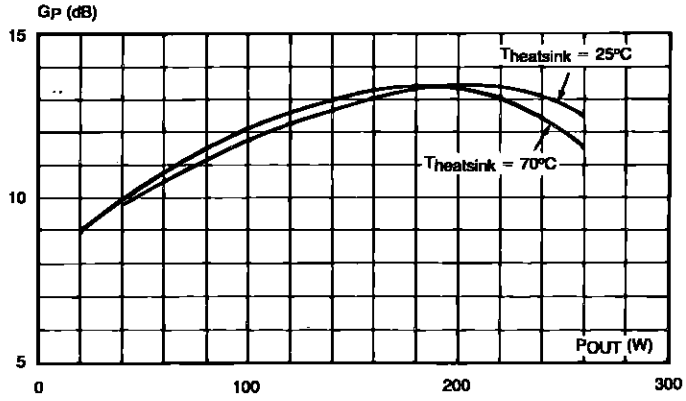


TYPICAL PERFORMANCE (cont'd)

INTERMODULATION DISTORTION vs POWER OUTPUT PEP



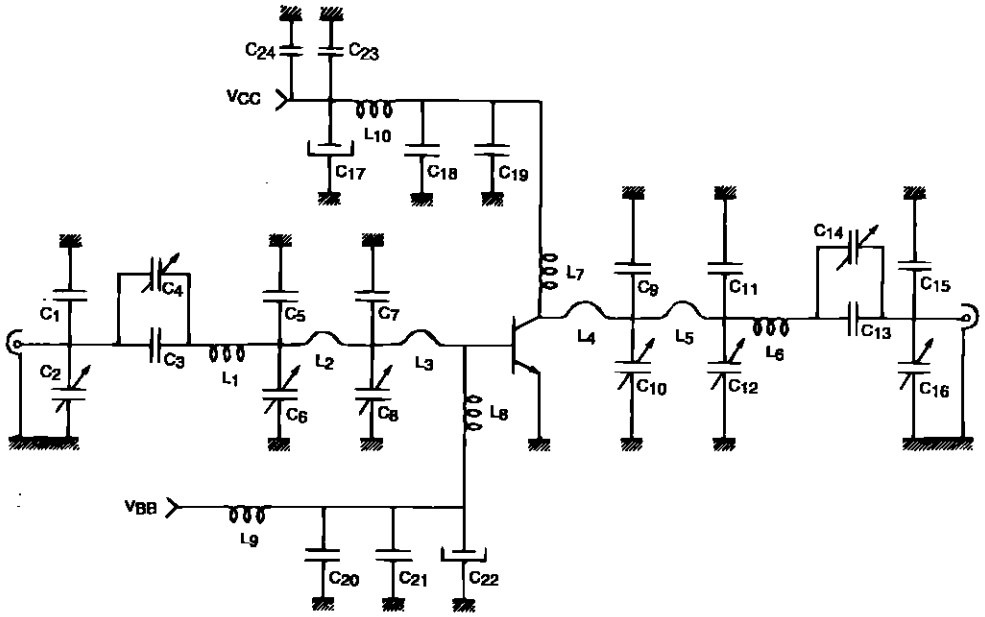
POWER GAIN vs POWER OUTPUT



IMPEDANCE DATA

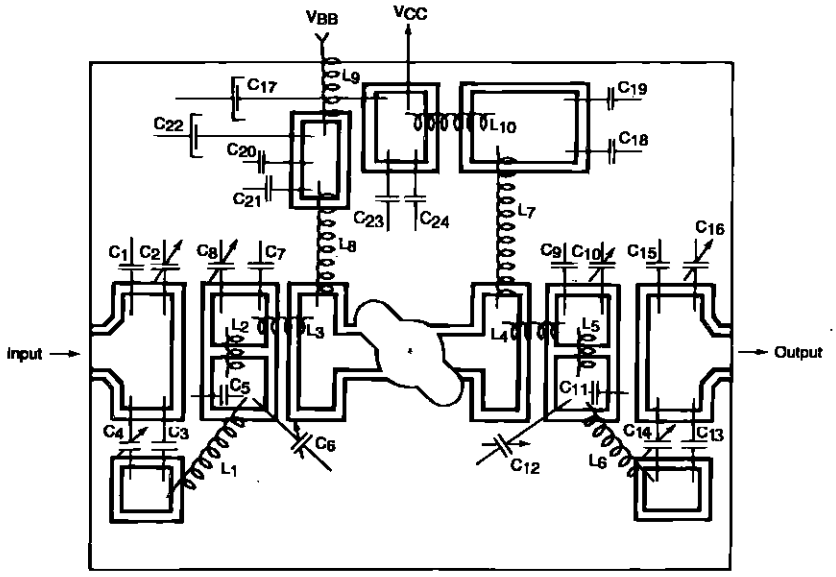
FREQ.	Z_{IN} (Ω)	Z_{CL} (Ω)
30 MHz	1.15 + j 0.41	1.25 + j 1.92

TEST CIRCUIT

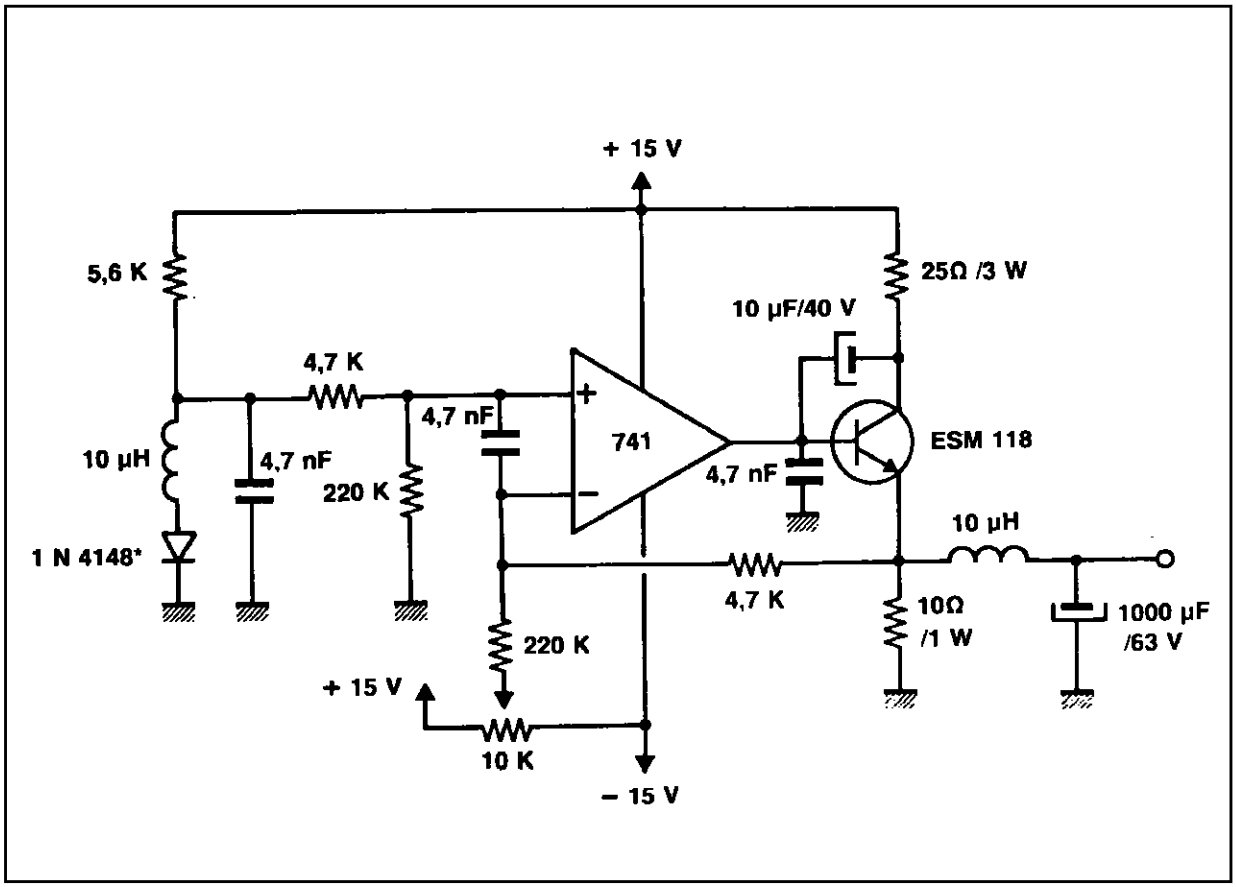


C1 : 180pF
C2, C4, C6, C8, C10, C12
C14, C16 : Arco 428
C3 : 820pF
C5, C13 : 680pF
C7, C11 : 1.2nF
C9 : 1.5nF
C17, C22 : 470µF, 40V
C18 : 10nF
C19, C21
C23 : 1nF
C20, C24 : 100nF, 63V

L1 : 3 Turns, Diameter 10mm, 1.3mm Wire, Length 10mm
L2, L5 : Hair Pin Copper foil 40 x 5mm, 0.2mm Thick
L3, L4 : Hair Pin Copper Foil 10 x 5mm, 0.2mm Thick
L6 : 5 Turns, Diameter 10mm, 1.3mm Wire, Length 15mm
L7 : 3 Turns, Diameter 10mm, 1.3mm Wire, Length 25mm
L8 : Choke
L9 : Choke
L10 : Choke

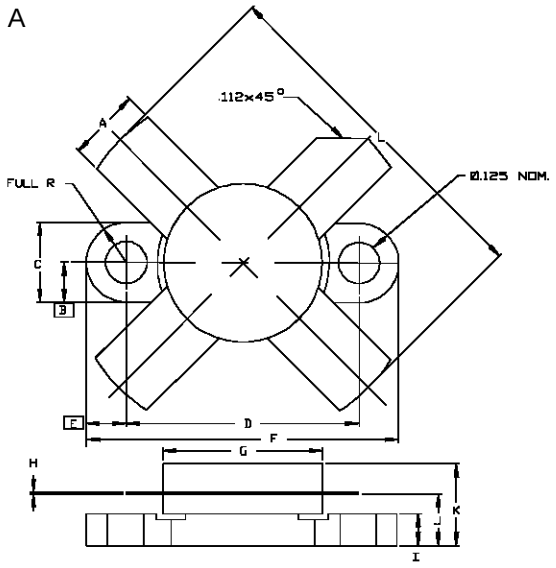


BIAS CIRCUIT



PACKAGE MECHANICAL DATA

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



SGS-THOMSON MICROELECTRONICS		
	MINIMUM Inches/mm	MAXIMUM Inches/mm
A	.220/5,59	.230/5,84
B	.125/3,18	
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

CONT'D		
	MINIMUM Inches/mm	MAXIMUM Inches/mm
K		.280/7,11
L		1.050/26,67