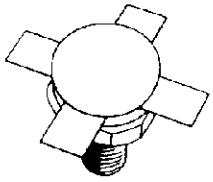
SGS-THOMSON MICROELECTRONICS

SD1727 (THX15)

RF & MICROWAVE TRANSISTORS HF SSB APPLICATIONS

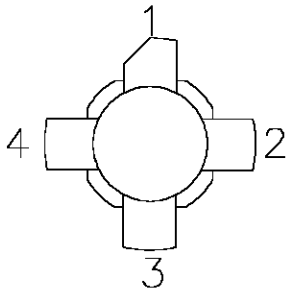
- OPTIMIZED FOR SSB
- 30 MHz
- 50 VOLTS
- IMD –30 dB
- COMMON EMITTER
- GOLD METALLIZATION
- P_{OUT} = 150 W PEP MIN. WITH 14 dB GAIN



.500 4LFL (M164)
epoxy sealed

ORDER CODE	BRANDING
SD1727	THX15

PIN CONNECTION



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

DESCRIPTION

The SD1727 is a 50 V epitaxial silicon NPN planar transistor designed primarily for SSB communications. This device utilizes emitter ballasting to achieve extreme ruggedness under severe operating conditions.

ABSOLUTE MAXIMUM RATINGS (T_{case} = 25°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	10	A
P_{DISS}	Power Dissipation	233	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	0.75	°C/W

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

STATIC

Symbol	Test Conditions		Value			Unit
			Min.	Typ.	Max.	
BV_{CBO}	I_C = 100mA	I_E = 0mA	110	—	—	V
BV_{CES}	I_C = 100mA	V_{BE} = 0V	110	—	—	V
BV_{CEO}	I_C = 100mA	I_B = 0mA	55	—	—	V
BV_{EBO}	I_E = 10mA	I_C = 0mA	4.0	—	—	V
I_{CEO}	V_{CE} = 30V	I_E = 0mA	—	—	5	mA
I_{CES}	V_{CE} = 60V	I_E = 0mA	—	—	5	mA
h_{FE}	V_{CE} = 6V	I_C = 1.4A	18	—	43.5	—

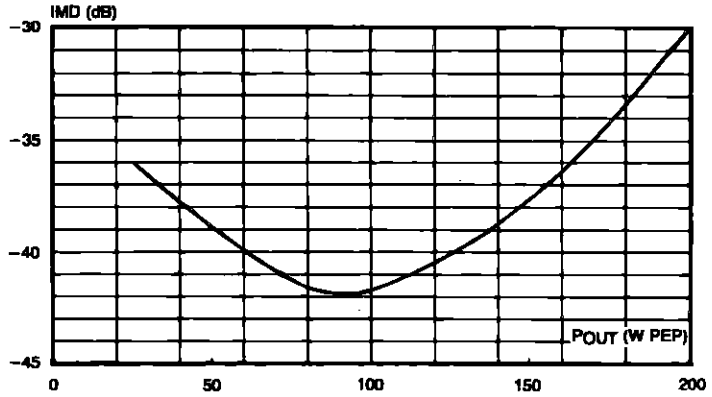
DYNAMIC

Symbol	Test Conditions			Value			Unit
				Min.	Typ.	Max.	
P_{OUT}	f = 30 MHz	V_{CE} = 50 V	I_{CQ} = 100mA	150	—	—	W
G_P*	P_{OUT} = 150 W PEP	V_{CE} = 50 V	I_{CQ} = 100mA	14	—	—	dB
IMD*	P_{OUT} = 150 W PEP	V_{CE} = 50 V	I_{CQ} = 100mA	—	—	–30	dBc
ηc*	P_{OUT} = 150 W PEP	V_{CE} = 50 V	I_{CQ} = 100mA	37	—	—	%
C_{OB}	f = 1 MHz	V_{CB} = 50 V		—	—	220	pF

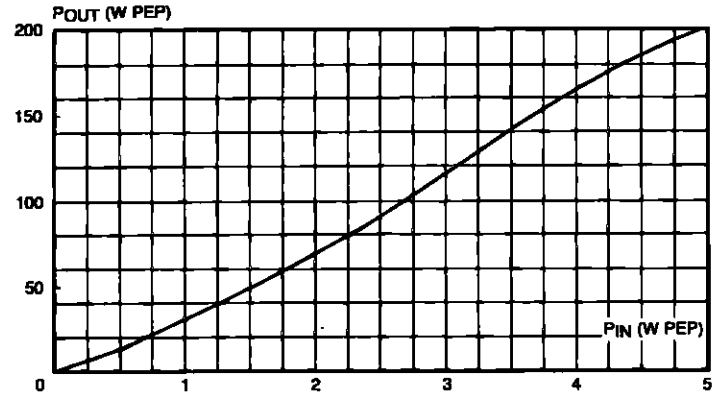
Note: The SD1727 is also usable in Class A at 40 V. Typical performance is:
P_{OUT} = 30 W PEP, G_P = 14 dB, IMD = − 40dBc
* f_1 = 30.00 MHz; f_2 = 30.001 MHz

TYPICAL PERFORMANCE

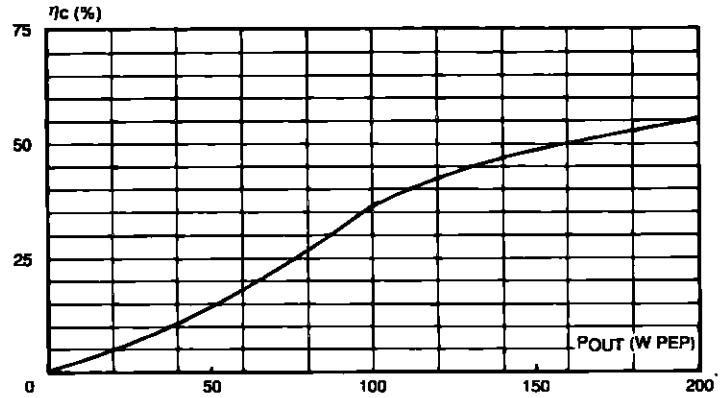
INTERMODULATION DISTORTION vs POWER OUTPUT PEP



POWER OUTPUT PEP vs POWER INPUT



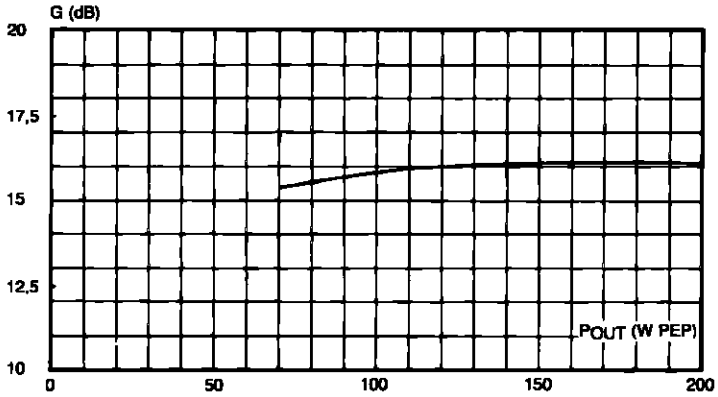
COLLECTOR EFFICIENCY vs POWER OUTPUT PEP



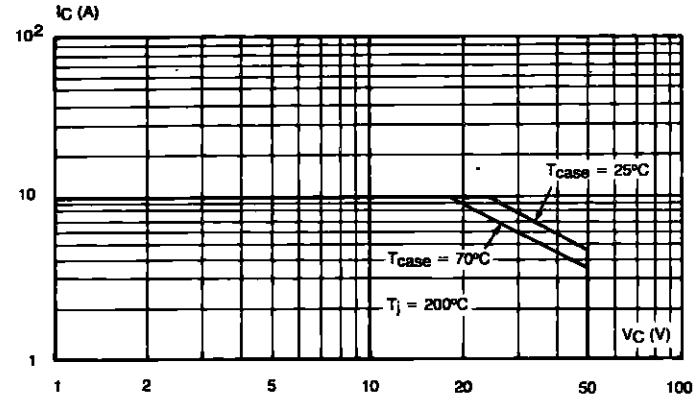
TYPICAL PERFORMANCE (cont'd)

POWER GAIN vs FREQUENCY

POWER GAIN vs POWER OUTPUT PEP

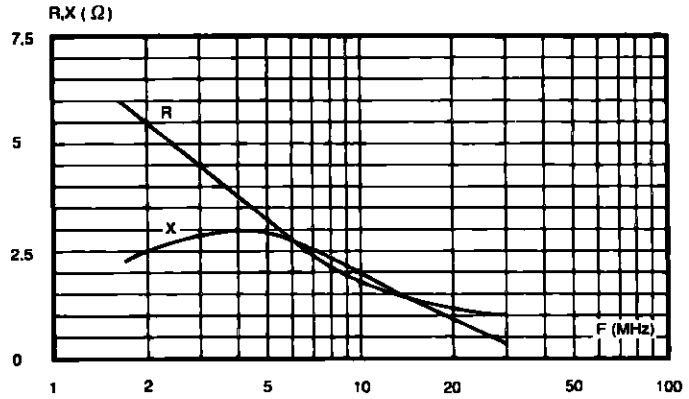


SAFE OPERATING AREA

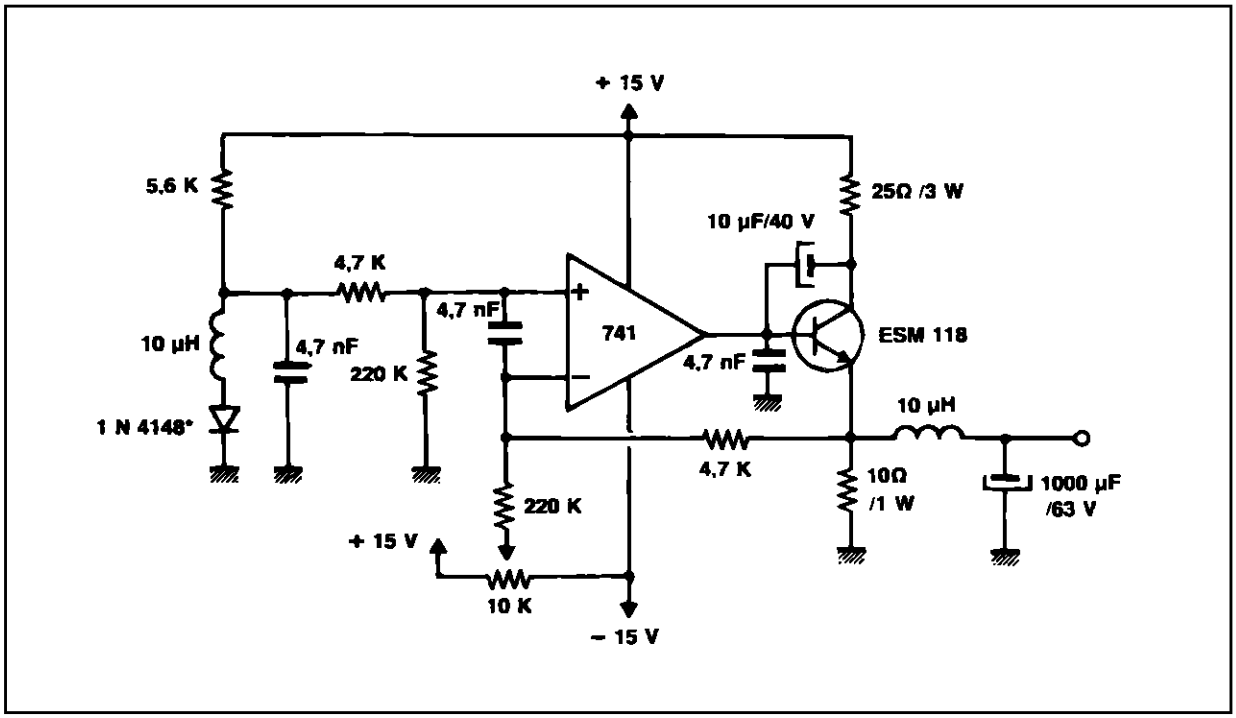


IMPEDANCE DATA

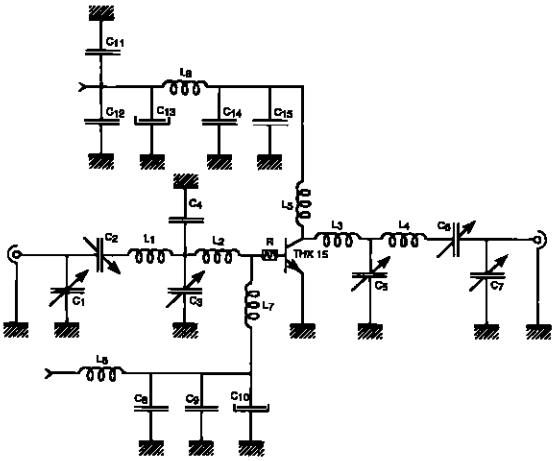
TYPICAL INPUT IMPEDANCE



BIAS CRCUIT



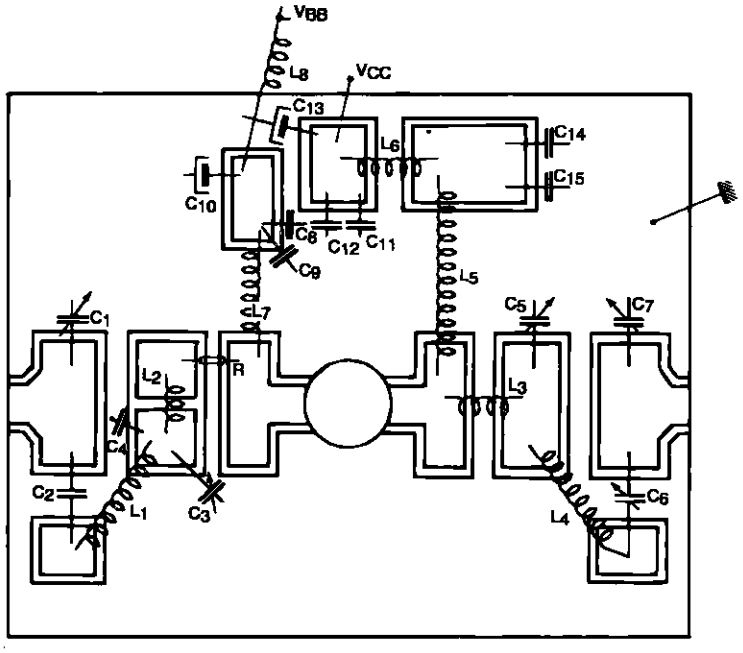
TEST CIRCUIT - CLASS AB - 30 MHz



C1	:	Arco 427
C2	:	Arco 4611
C3	:	Arco 4615
C4	:	220pF
C5, C6	:	Arco 4215
C7	:	Arco 426
C8, C12	:	100nF 63V
C9, C11		
C15	:	1nF
C10	:	470µF 40V
C13	:	220µF 63V
C14	:	10nF

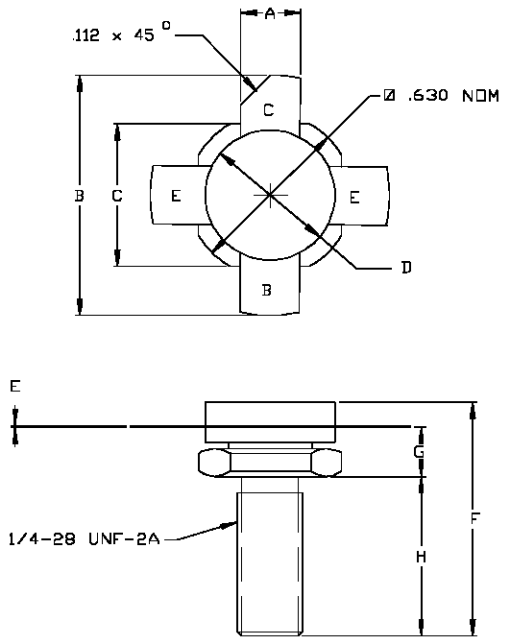
L1	:	5 Turns Diameter 8mm, 1.3mm Wire, Length 15mm
L2	:	Hair Pin Copper Foil 20 x 5mm, 0.2mm Thick
L3	:	1 Turn Diameter 10mm, 1.3mm Wire, Length 8mm
L4	:	6 Turns Diameter 8mm, 1.3mm Wire, Length 25mm
L5	:	4 Turns Diameter 12mm, 2mm Wire, Length 25mm
L6, L7		
L8	:	Choke
R	:	0.6Ω

MOUNTING CIRCUIT - CLASS AB - 30MHz



PACKAGE MECHANICAL DATA

Ref.: Dwg. No.12-0164



SGS-THOMSON MICROELECTRONICS		
	MINIMUM Inches/mm	MAXIMUM Inches/mm
A	.220/5,59	.230/5,84
B		1.050/26,67
C	.545/13,84	.555/14,10
D	.495/12,57	.505/12,83
E	.003/0,08	.007/0,18
F		.830/21,08
G	.185/4,70	.198/5,03
H	.497/12,62	.530/13,46