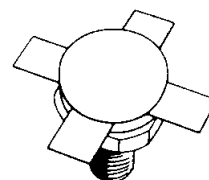


RF & MICROWAVE TRANSISTORS HF SSB APPLICATIONS

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



.500 4LFL (M164)
epoxy sealed

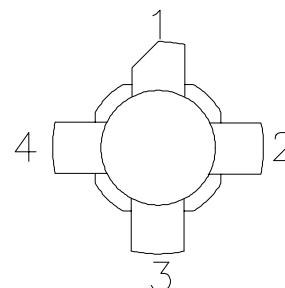
ORDER CODE
SD1727

BRANDING
THX15

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.

PIN CONNECTION



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

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	10	A
P_{DISS}	Power Dissipation	233	W
T_J	Junction Temperature	+200	$^{\circ}\text{C}$
T_{STG}	Storage Temperature	- 65 to +150	$^{\circ}\text{C}$

THERMAL DATA

$R_{TH(j-c)}$	Junction-Case Thermal Resistance	0.75	$^{\circ}\text{C/W}$
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SD1727 (THX15)

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

STATIC

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

DYNAMIC

Symbol	Test Conditions			Value			Unit
				Min.	Typ.	Max.	
P_{OUT}	$f = 30\text{ MHz}$	$V_{\text{CE}} = 50\text{ V}$	$I_{\text{CQ}} = 100\text{mA}$	150	—	—	W
G_{P}^*	$P_{\text{OUT}} = 150\text{ W PEP}$	$V_{\text{CE}} = 50\text{ V}$	$I_{\text{CQ}} = 100\text{mA}$	14	—	—	dB
IMD^*	$P_{\text{OUT}} = 150\text{ W PEP}$	$V_{\text{CE}} = 50\text{ V}$	$I_{\text{CQ}} = 100\text{mA}$	—	—	−30	dBc
η_{c}^*	$P_{\text{OUT}} = 150\text{ W PEP}$	$V_{\text{CE}} = 50\text{ V}$	$I_{\text{CQ}} = 100\text{mA}$	37	—	—	%
C_{OB}	$f = 1\text{ MHz}$	$V_{\text{CB}} = 50\text{ V}$		—	—	220	pF

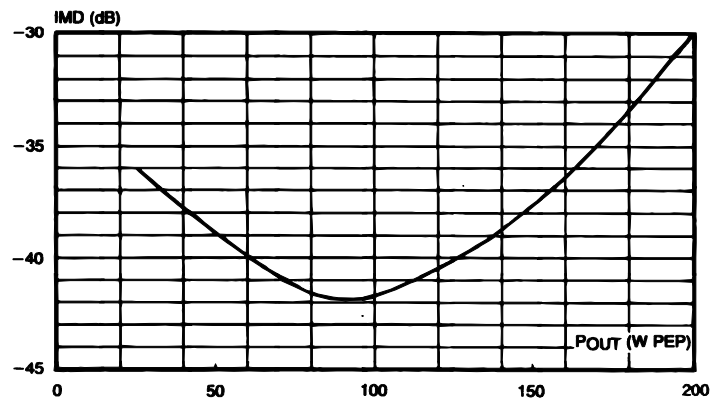
Note: The SD1727 is also usable in Class A at 40 V. Typical performance is:

$P_{\text{OUT}} = 30\text{ W PEP}$, $G_{\text{P}} = 14\text{ dB}$, $\text{IMD} = -40\text{ dBc}$

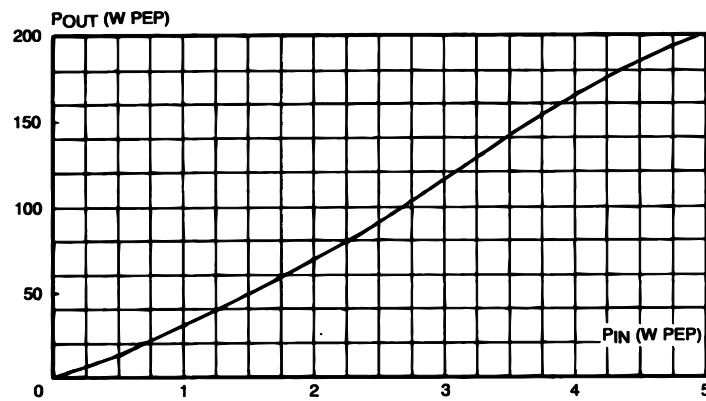
* $f_1 = 30.00\text{ MHz}$; $f_2 = 30.001\text{ MHz}$

TYPICAL PERFORMANCE

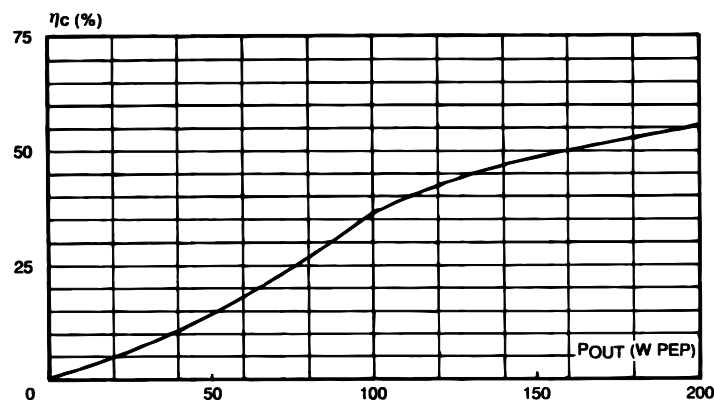
INTERMODULATION DISTORTION vs POWER
OUTPUT PEP



POWER OUTPUT PEP vs POWER INPUT

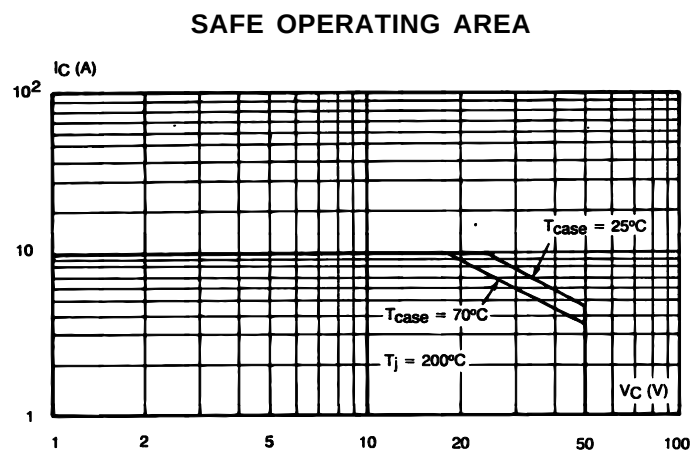
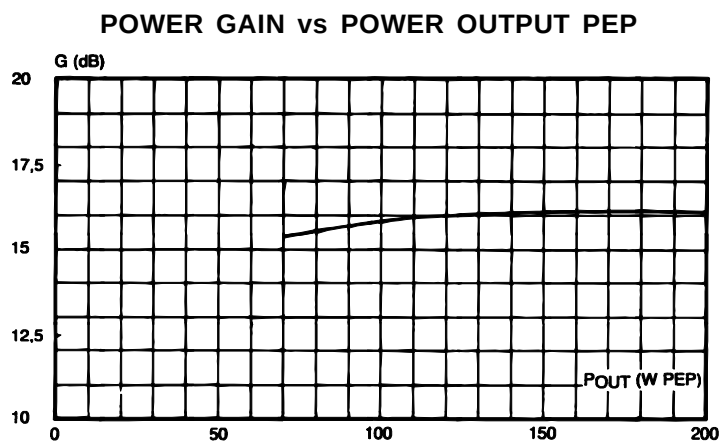
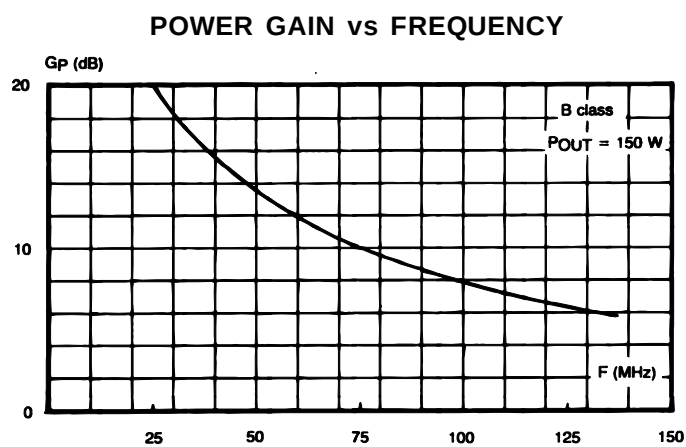


COLLECTOR EFFICIENCY vs POWER OUTPUT PEP



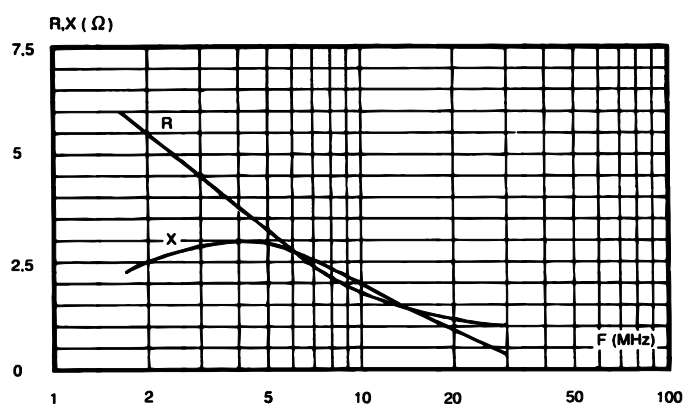
SD1727 (THX15)

TYPICAL PERFORMANCE (cont'd)

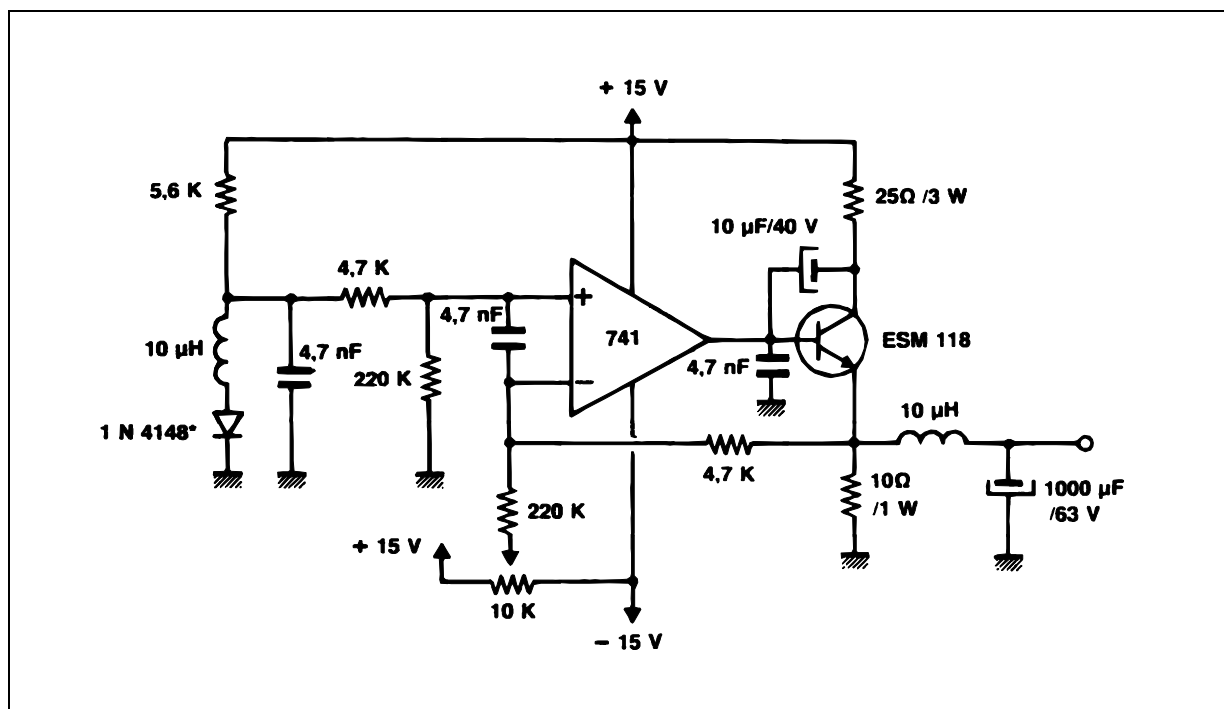


IMPEDANCE DATA

TYPICAL INPUT IMPEDANCE

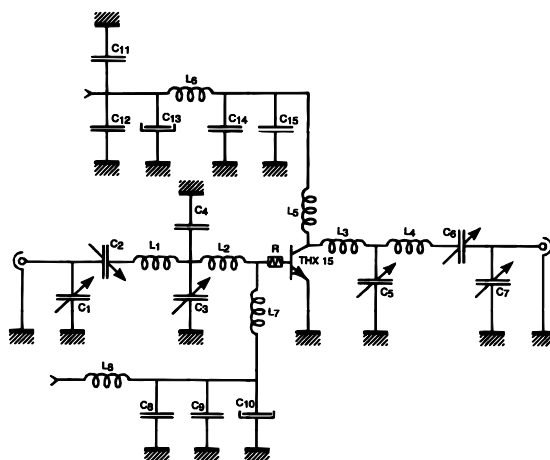


BIAS CIRCUIT



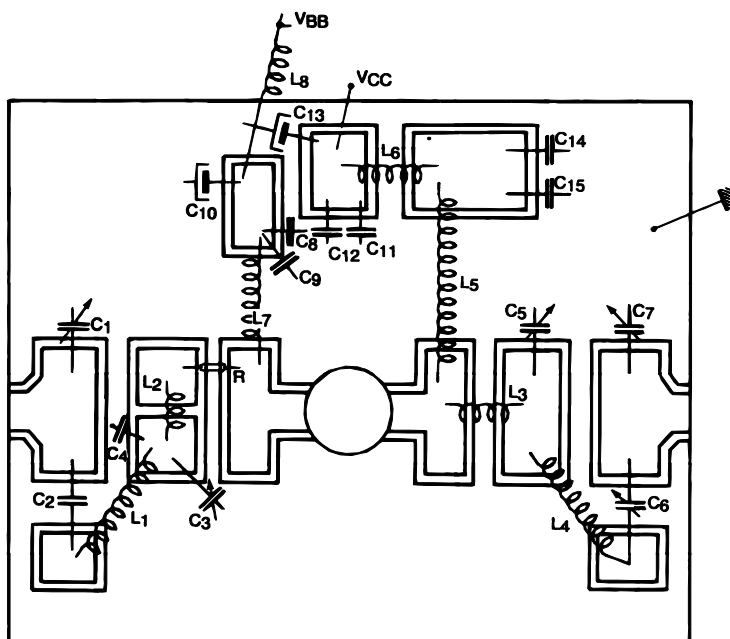
SD1727 (THX15)

TEST CIRCUIT - CLASS AB - 30 MHz



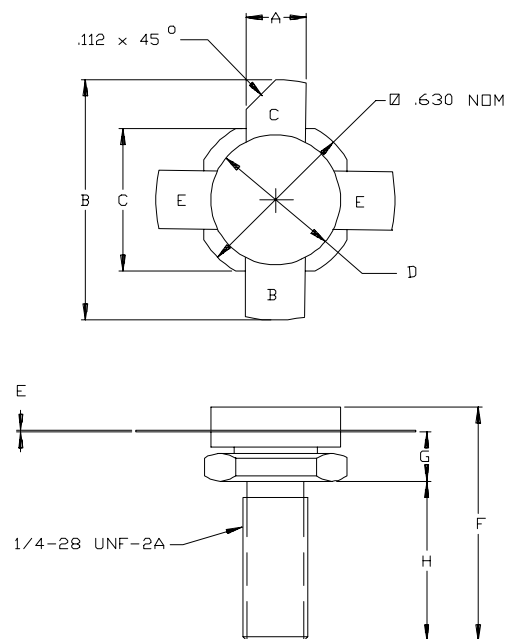
C1	: Arco 427	L1	: 5 Turns Diameter 8mm, 1.3mm Wire, Length 15mm
C2	: Arco 4611	L2	: Hair Pin Copper Foil 20 x 5mm, 0.2mm Thick
C3	: Arco 4615	L3	: 1 Turn Diameter 10mm, 1.3mm Wire, Length 8mm
C4	: 220pF	L4	: 6 Turns Diameter 8mm, 1.3mm Wire, Length 25mm
C5, C6	: Arco 4215	L5	: 4 Turns Diameter 12mm, 2mm Wire, Length 25mm
C7	: Arco 426	L6, L7	
C8, C12	: 100nF 63V	L8	: Choke
C9, C11		R	: 0.6Ω
C15	: 1nF		
C10	: 470μF 40V		
C13	: 220μF 63V		
C14	: 10nF		

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

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