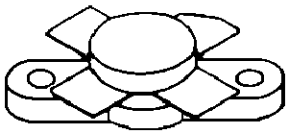
SGS-THOMSON MICROELECTRONICS

SD1729 (TH416)

RF & MICROWAVE TRANSISTORS HF SSB APPLICATIONS

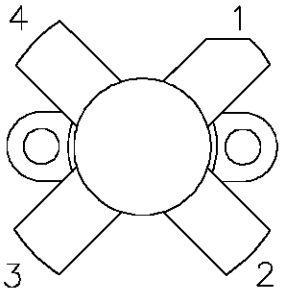
- OPTIMIZED FOR SSB
- 30 MHz
- 28 VOLTS
- IMD –30 dB
- COMMON EMITTER
- GOLD METALLIZATION
- P_{OUT} = 130 W PEP WITH 12 dB GAIN



.500 4LFL (M174)
epoxy sealed

ORDER CODE	BRANDING
SD1729	TH416

PIN CONNECTION



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

DESCRIPTION

The SD1729 is a Class AB 28 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	70	V
V_{CEO}	Collector-Emitter Voltage	35	V
V_{EBO}	Emitter-Base Voltage	4.0	V
I_C	Device Current	12	A
P_{DISS}	Power Dissipation	175	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	1.0	°C/W

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

STATIC

Symbol	Test Conditions		Value			Unit
			Min.	Typ.	Max.	
BV_{CES}	I_C = 50 mA	V_{BE} = 0 V	70	—	—	V
BV_{CEO}	I_C = 100 mA	I_B = 0 mA	35	—	—	V
BV_{EBO}	I_E = 20 mA	I_C = 0 mA	4.0	—	—	V
I_{CES}	V_{CE} = 35 V	I_E = 0 mA	—	—	20	mA
h_{FE}	V_{CE} = 5 V	I_C = 7 A	18	—	50	—

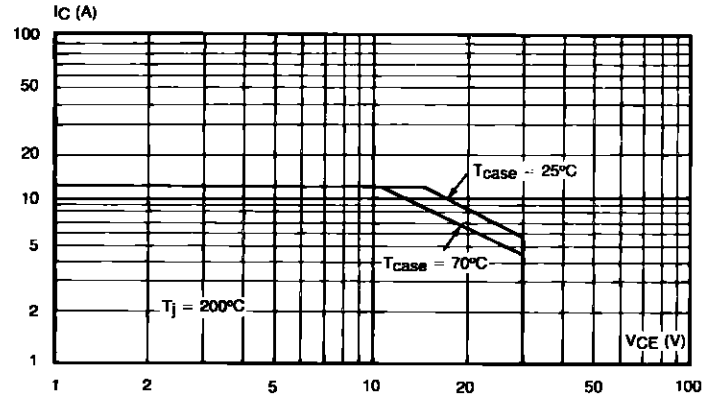
DYNAMIC

Symbol	Test Conditions			Value			Unit
				Min.	Typ.	Max.	
P_{OUT}	f = 30 MHz	V_{CE} = 28 V	I_{CQ} = 150 mA	130	—	—	W
G_P	P_{OUT} = 130 W PEP	V_{CE} = 28 V	I_{CQ} = 150 mA	12	—	—	dB
IMD*	P_{OUT} = 130 W PEP	V_{CE} = 28 V	I_{CQ} = 150 mA	—	—	–30	dBc
η_C	P_{OUT} = 130 W PEP	V_{CE} = 28 V	I_{CQ} = 150 mA	37	—	—	%
C_{OB}	f = 1 MHz	V_{CB} = 28 V		—	220	—	pF

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

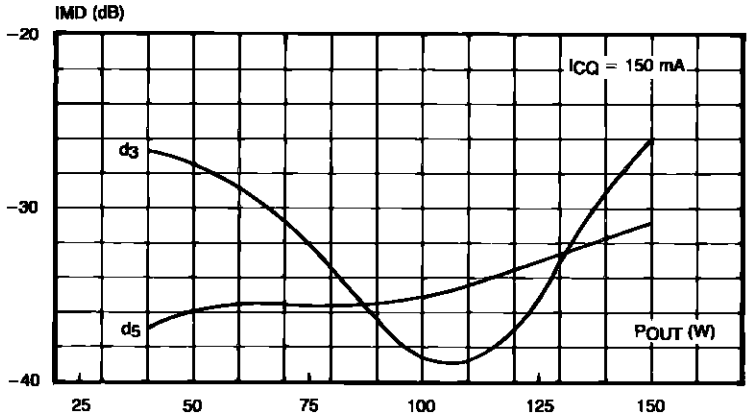
TYPICAL PERFORMANCE

SAFE OPERATING AREA

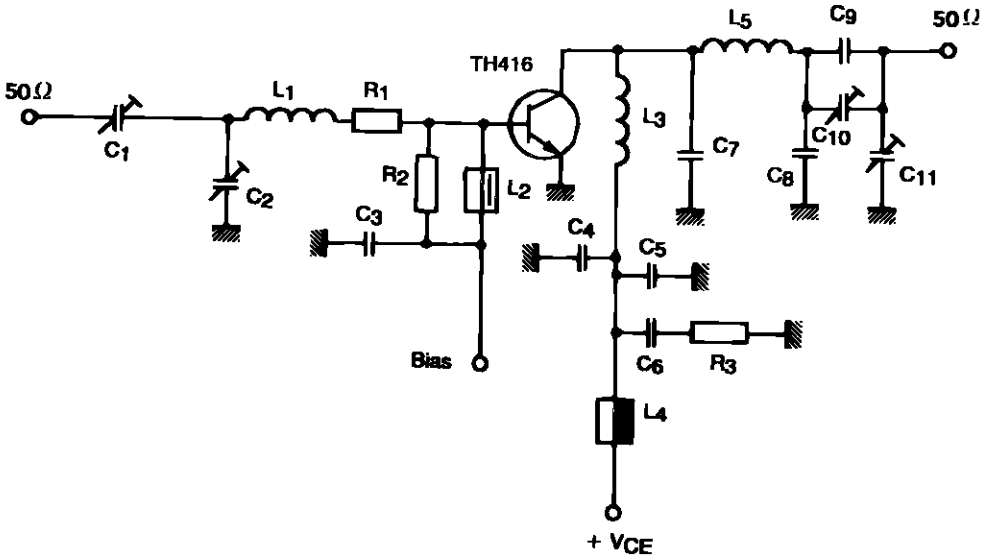


TYPICAL PERFORMANCE (cont'd)

INTERMODULATION DISTORTION vs POWER OUTPUT



TEST CIRCUIT

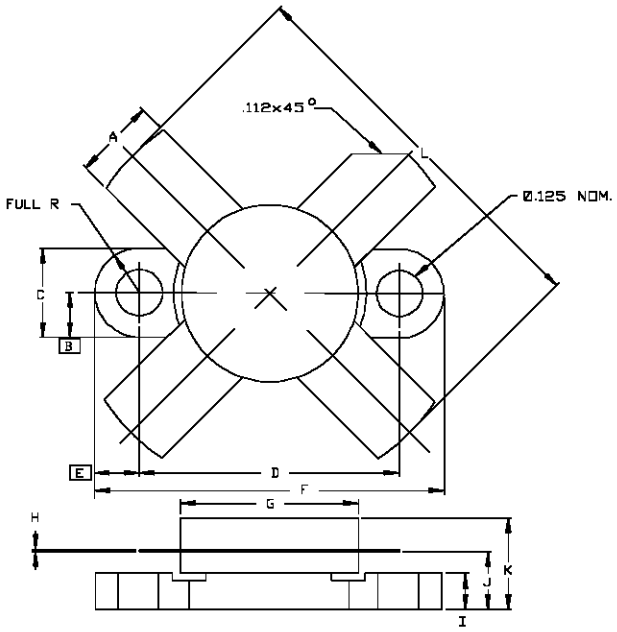


C1	:	20 - 120pF
C2	:	50 - 300pF
C3, C4	:	3.9nF
C5	:	100nF
C6	:	2.2µF
C7	:	2 x 180pF in Parallel
C8	:	3 x 56pF and 33pF in Parallel
C9	:	4 x 56pF and 68pF in Parallel
C10, C11	:	360pF

L1	:	88nF
L2	:	22µH Choke Coil
L3, L5	:	80nF
L4	:	Ferroxcube Choke Coil
R1	:	0.55Ω
R2	:	27Ω
R3	:	4.7Ω

PACKAGE MECHANICAL DATA

Ref.: Dwg. No.12-0174



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			