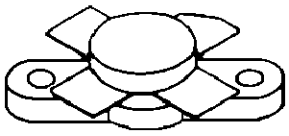
SGS-THOMSON MICROELECTRONICS

SD1457

RF & MICROWAVE TRANSISTORS FM BROADCAST APPLICATIONS

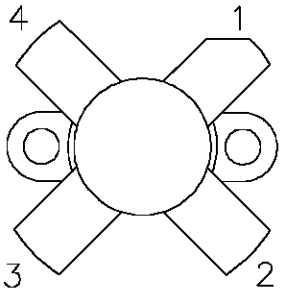
- 108 MHz
- 28 VOLTS
- EFFICIENCY 75%
- COMMON EMITTER
- GOLD METALLIZATION
- P_{OUT} = 75 W MIN. WITH 10.0 dB GAIN



.500 4LFL (M174)
epoxy sealed

ORDER CODE	BRANDING
SD1457	SD1457

PIN CONNECTION



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

DESCRIPTION

The SD1457 is a 28 V gold metallized epitaxial silicon NPN planar transistor designed for FM VHF broadcast transmitters.

This device utlizes diffused emitter resistors to achieve infinite VSWR at rated operating conditions.

ABSOLUTE MAXIMUM RATINGS (T_{case} = 25°C)

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage	65	V
V_{CEO}	Collector-Emitter Voltage	30	V
V_{CES}	Collector-Emitter Voltage	60	V
V_{EBO}	Emitter-Base Voltage	4.0	V
I_C	Device Current	10	A
P_{DISS}	Power Dissipation	100	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	1.5	°C/W

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

STATIC

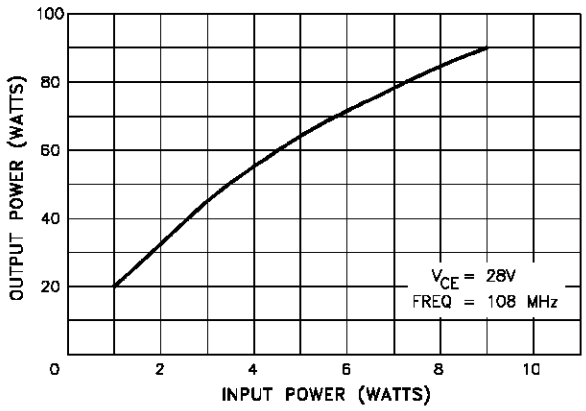
Symbol	Test Conditions		Value			Unit
			Min.	Typ.	Max.	
BV_{CBO}	I_C = 50mA	I_E = 0mA	65	—	—	V
BV_{CER}	I_C = 50mA	R_{BE} = 10Ω	60	—	—	V
BV_{CEO}	I_C = 50mA	I_B = 0mA	30	—	—	V
BV_{EBO}	I_E = 10mA	I_C = 0mA	4.0	—	—	V
h_{FE}	V_{CE} = 5V	I_C = 1A	20	—	150	—

DYNAMIC

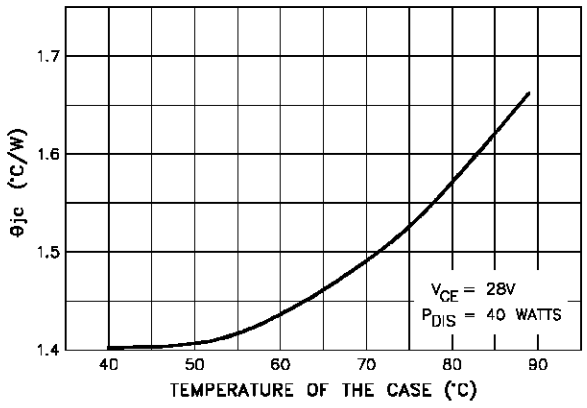
Symbol	Test Conditions			Value			Unit
				Min.	Typ.	Max.	
P_{OUT}	f = 108 MHz	P_{IN} = 7.5 W	V_{CE} = 28 V	75	—	—	W
G_P	f = 108 MHz	P_{IN} = 7.5 W	V_{CE} = 28 V	10	—	—	dB
ηc	f = 108 MHz	P_{IN} = 7.5 W	V_{CE} = 28 V	70	—	—	%
C_{OB}	f = 1 MHz	V_{CB} = 30 V		—	—	85	pF

TYPICAL PERFORMANCE

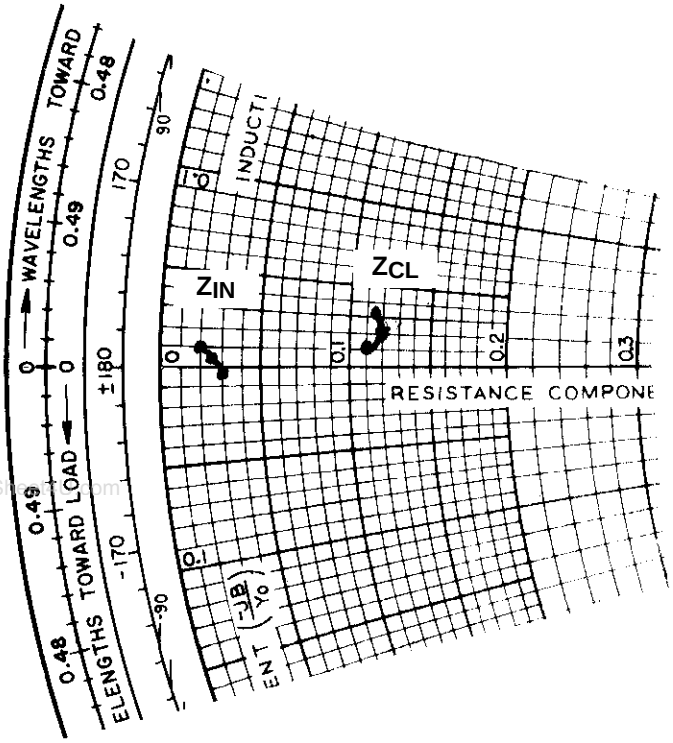
POWER OUTPUT vs POWER INPUT



THERMAL RESISTANCE vs CASE TEMPERATURE

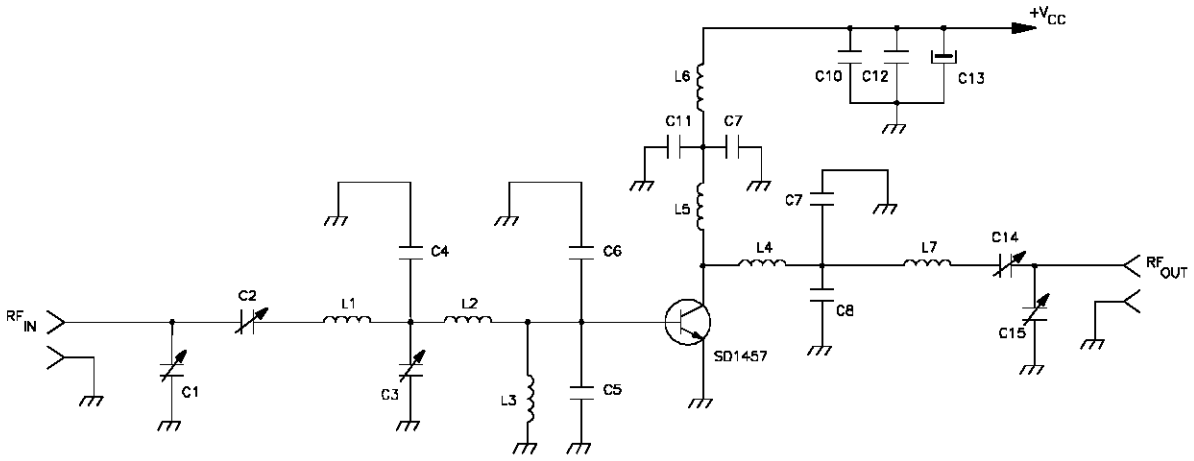


IMPEDANCE DATA



FREQ.	Z_{IN} (Ω)	Z_{CL} (Ω)
88 MHz	1.4 + j 0.1	5.5 + j 0.7
98 MHz	1.2 + j 0.3	6.1 + j 1.1
100 MHz	1.0 + j 0.5	5.7 + j 1.6

TEST CIRCUIT



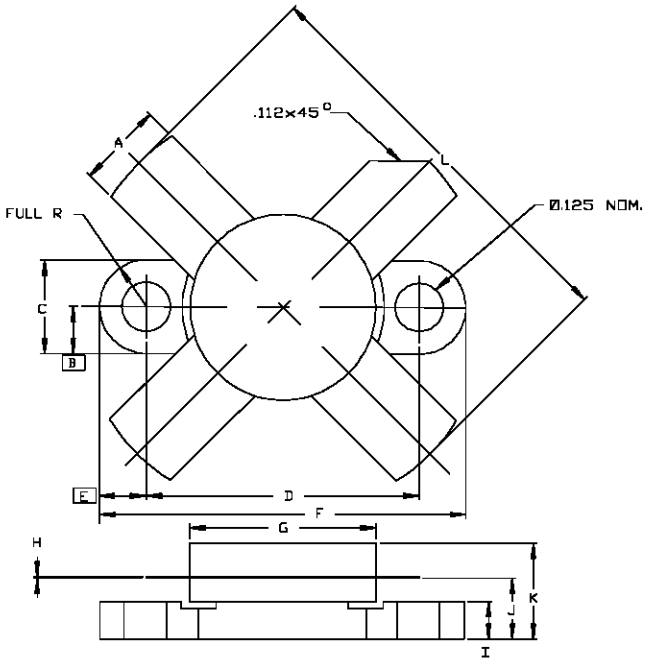
C1, C2, C14	:	24 - 200pF, Arco 425
C3	:	16 - 100pF, Arco 423
C4	:	62pF, Unelco Capacitor
C5, C6	:	330pF, Unelco Capacitor
C7, C10	:	1000pF, Unelco Capacitor
C8, C9	:	36pF, Unelco Capacitor
C11, C12	:	0.1µF, Disc Capacitor
C13	:	100µF, 63V, Electrolytic Capacitor
C15	:	25 - 150pF, Arco 424

L1	:	3 Turns, 1mm Wire, 6mm I.D.
L2	:	1/2 Turn, 1.4mm Wire, 15mm Length
L3	:	0.7µH, Molded Choke
L4	:	1/2 Turn, 2mm Wire, 20mm Length
L5	:	4 Turns, 1mm Wire, 6mm I.D.
L6	:	4 Turns, 1.2mm Wire on Ferrite Core
L7	:	3 Turns, 1.4mm Wire, 8mm I.D.

Board Material: Epoxy Glass

PACKAGE MECHANICAL DATA

Ref.: Dwg. No.12-0174



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