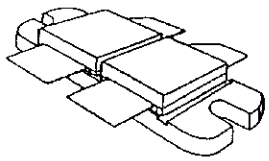
SGS-THOMSON MICROELECTRONICS

SD1476

RF & MICROWAVE TRANSISTORS TV/LINEAR APPLICATIONS

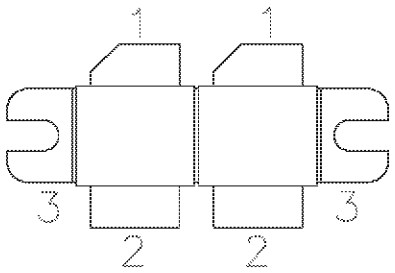
- 55 - 88 MHz
- 32 VOLTS
- COMMON EMITTER
- GOLD METALLIZATION
- INTERNAL INPUT MATCHING
- CLASS AB PUSH PULL
- HIGH SATURATED POWER CAPABILITY
- DIFFUSED EMITTER BALLAST RESISTORS
- DESIGNED FOR HIGH POWER LINEAR OPERATION
- P_{OUT} = 240 W MIN. WITH 12.0 dB GAIN



2 x .437 x .450 2LFL (M165)
epoxy sealed

ORDER CODE	BRANDING
SD1476	SD1476

PIN CONNECTION



1. Collector
2. Base
3. Emitter

DESCRIPTION

The SD1476 is a gold metallized epitaxial silicon NPN planar transistor using diffused emitter ballast resistors for high linearity Class AB operation in VHF and Band I television transmitters and transposers.

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

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage	70	V
V_{CEO}	Collector-Emitter Voltage	40	V
V_{EBO}	Emitter-Base Voltage	4.0	V
I_C	Device Current	25	A
P_{DISS}	Power Dissipation	430	W
T_J	Junction Temperature	+200	°C
T_{STG}	Storage Temperature	– 50 to +150	°C

THERMAL DATA

$R_{TH(j-c)}$	Junction-Case Thermal Resistance	0.4	°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	70	—	—	V
BV_{CER}	I_C = 50mA	R_{BE} = 51Ω	68	—	—	V
BV_{CEO}	I_C = 100mA	I_B = 0mA	40	—	—	V
BV_{EBO}	I_E = 20mA	I_C = 0mA	4.0	—	—	V
I_{CEO}	V_{CE} = 30V	I_E = 0mA	—	—	10	mA
I_{CBO}	V_{CB} = 30V	I_E = 0mA	—	—	10	mA
h_{FE}	V_{CE} = 5V	I_C = 7A	10	—	50	—

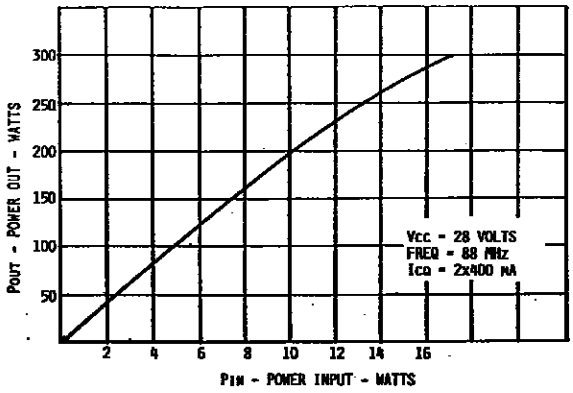
DYNAMIC

Symbol	Test Conditions			Value			Unit
				Min.	Typ.	Max.	
P_{OUT}*	f = 88 MHz	V_{CE} = 32 V	I_{CQ} = 2 x 400mA	240	—	—	W
G_P	f = 88 MHz	V_{CE} = 32 V	I_{CQ} = 2 x 400mA	12	—	—	dB
ηc	f = 88 MHz	V_{CE} = 32 V	I_{CQ} = 2 x 400mA	50	—	—	%
C_{OB}	f = 1 MHz	V_{CB} = 28 V		—	—	220	pF

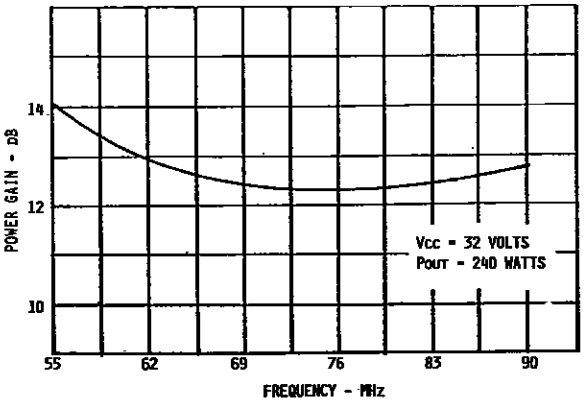
Note: *1 dB Compression

TYPICAL PERFORMANCE

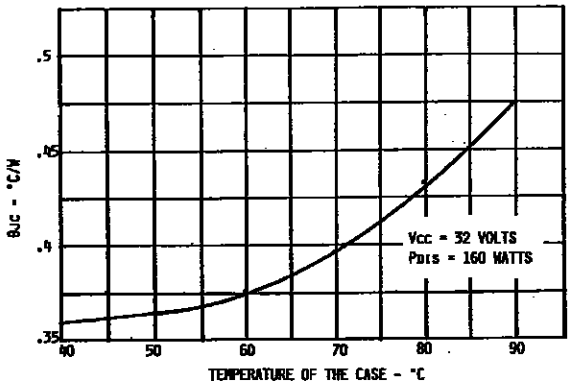
POWER OUTPUT vs POWER INPUT



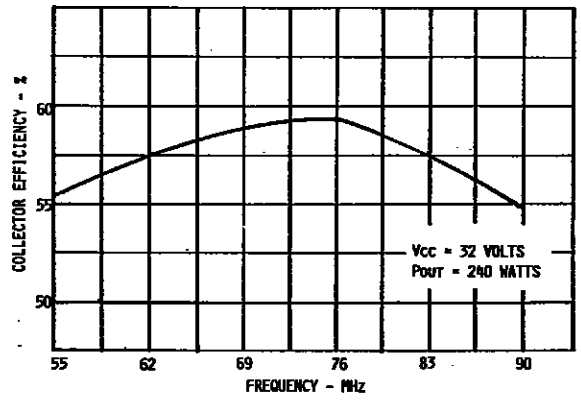
POWER GAIN vs FREQUENCY



THERMAL RESISTANCE vs CASE TEMPERATURE

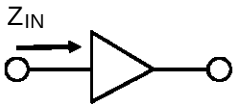


COLLECTOR EFFICIENCY vs FREQUENCY

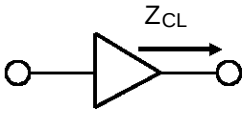


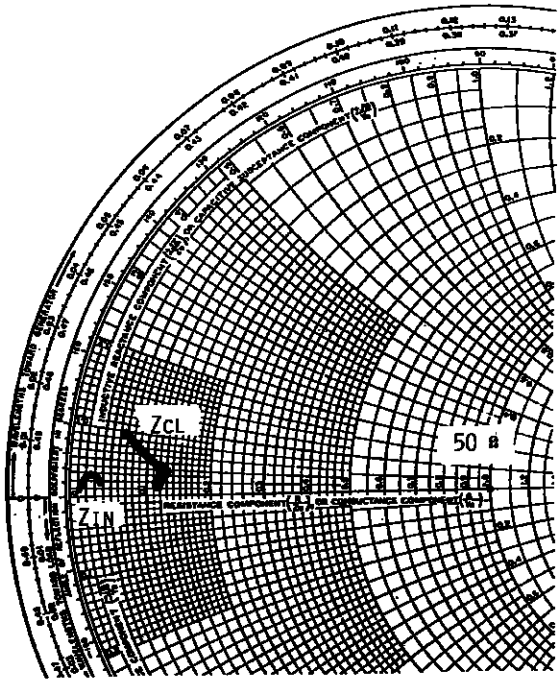
IMPEDANCE DATA

TYPICAL INPUT IMPEDANCE



TYPICAL COLLECTOR LOAD IMPEDANCE

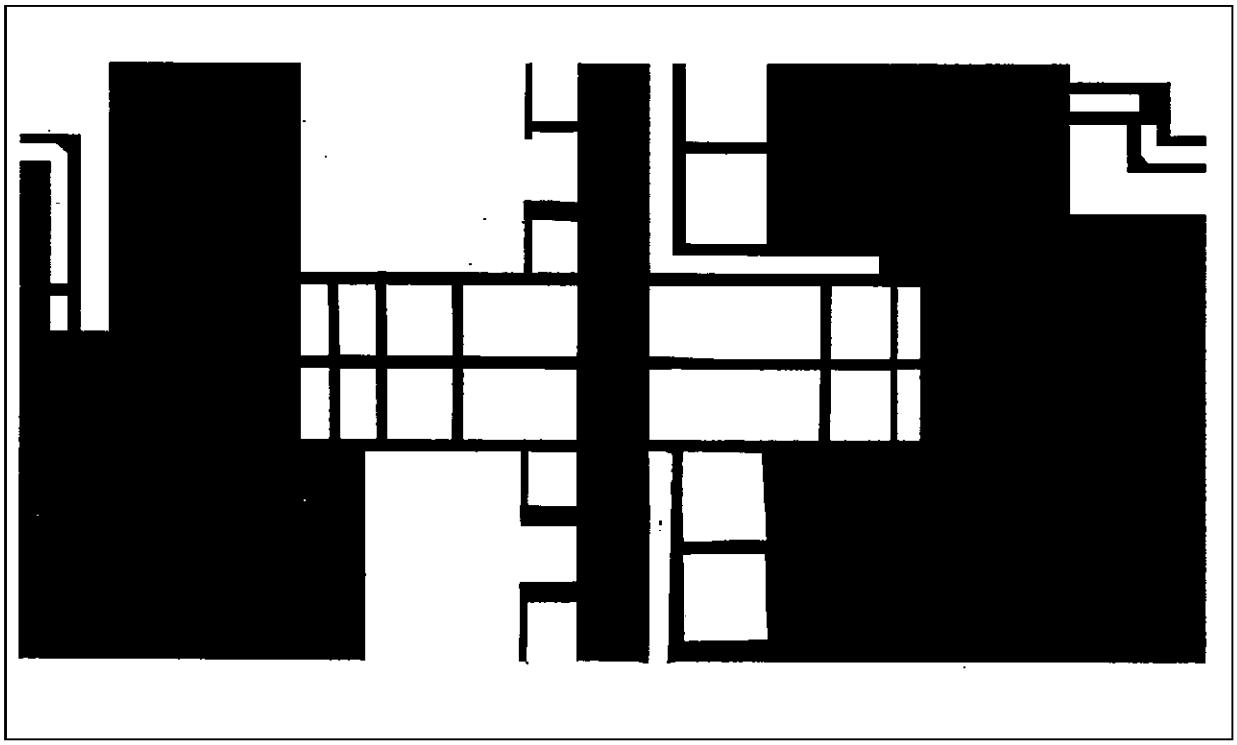




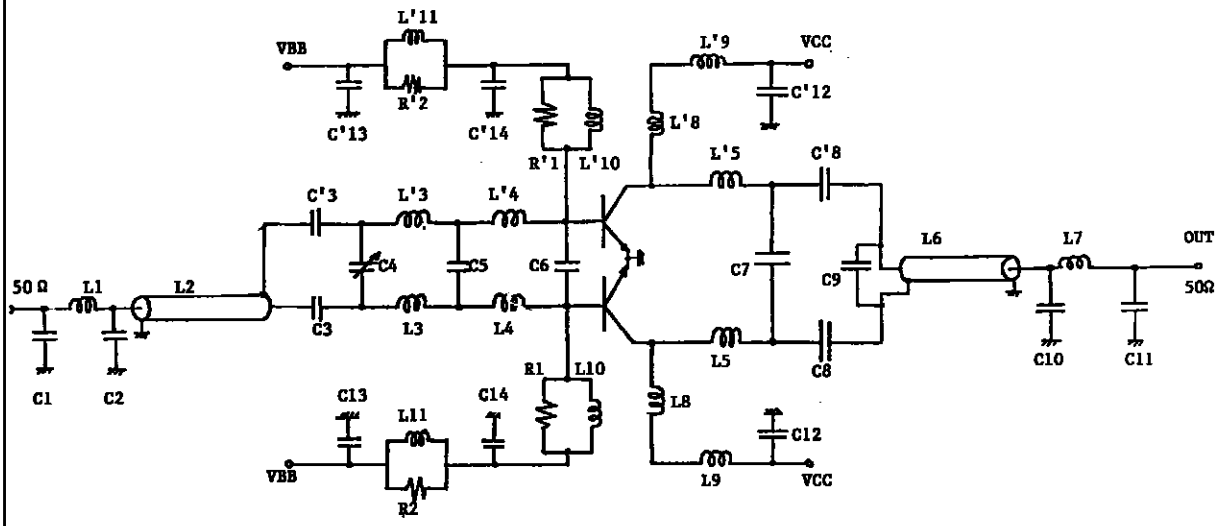
FREQ.	Z_{IN} (Ω)	Z_{CL} (Ω)
55 MHz	1.7 j 1.0	6.1 + j 1.0
65 MHz	1.5 + j 1.3	7.0 + j 2.1
75 MHz	1.0 + j 1.1	6.2 + j 2.0
90 MHz	0.8 + j 0.4	3.4 + j 4.4

P_{OUT} = 240 W
V_{CC} = 32 V

PRINTED CIRCUIT BOARD LAYOUT



TEST CIRCUIT



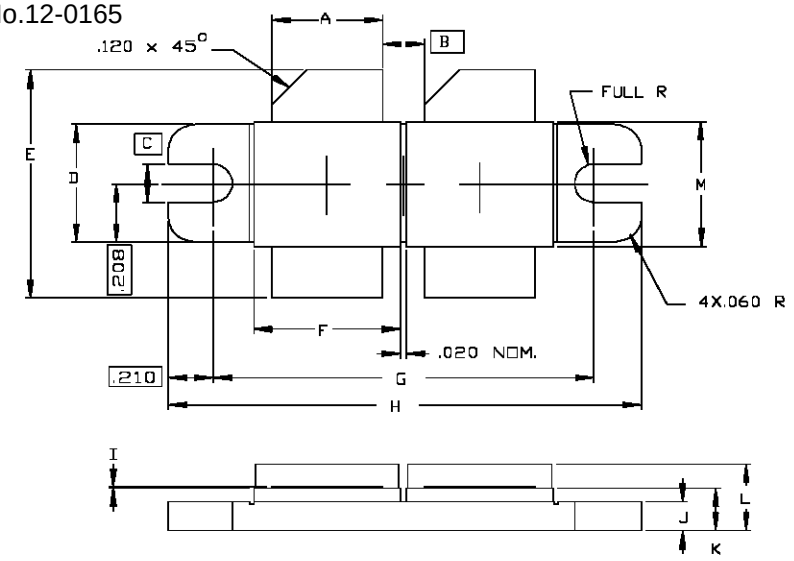
C1	:	10pF + 33pF, ATC 100B
C2	:	47pF, ATC 100B
C3, C'3	:	1.5nF + 2.2nF, ATC 100B
C4	:	4 - 60pF, Arco 404
C5	:	2 x 100pF + 47pF, ATC 100B
C6	:	2 x 330pF + 3 x 180pF +270pF, ATC 100B
C7	:	150pF + 10pF, ATC 100B
C8, C'8	:	4.7nF, ATC 100B
C9	:	4 - 40pF, Arco 403
C10	:	10pF, ATC 100B
C11	:	43pF, ATC 100B
C12, C'12	:	1µF 63V, LCC CPM13B
C13, C'13	:	82nF 100V, LCC 745
C14, C'14	:	270nF 63V, LCC7950

L1, L7	:	4 Turns Diameter 7mm, Wire Diameter 1.5mm
L2	:	7 Turns Diameter 25mm, Coaxial Cable Zc = 25Ω
L3, L'3	:	2 Turns Diameter 2.5mm, Wire Diameter 0.8mm
L4, L'4	:	Length 15mm, Wire Diameter 1.5mm
L5, L'5	:	Length 30mm, Wire Diameter 1.5mm
L6	:	6 Turns Diameter 25mm, Coaxial Cable Zc = 25Ω
L8, L'8	:	16 Turns Diameter, Wire Diameter 1.5mm
L9, L'9	:	1 Turn, Wire Diameter 1.5mm in Ferrite (stackpole 57 33 12)
L10, L'10		
L11, L'11	:	14 Turns, Wire Diameter 0.6mm Around Resistor 1W
R1, R'1		
R2, R'2	:	180Ω, 1W

Material : Epoxy 63 mil, Er = 2.55

PACKAGE MECHANICAL DATA

Ref.: Dwg. No.12-0165



SGS-THOMSON MICROELECTRONICS			CONT'D		
	MINIMUM Inches/mm	MAXIMUM Inches/mm		MINIMUM Inches/mm	MAXIMUM Inches/mm
A	.373/9,47	.385/9,78	K	.135/3,43	.155/3,94
B	.122/3,10		L		.250/6,35
C	.125/3,18		M	.425/10,80	.435/11,05
D	.411/10,44	.421/10,69			
E	.825/20,96	.865/21,97			
F	.495/12,57	.505/12,83			
G	1.255/31,88	1.265/32,13			
H	1.675/42,55	1.685/42,80			
I	.002/0,05	.006/0,15			
J	.095/2,41	.105/2,67			