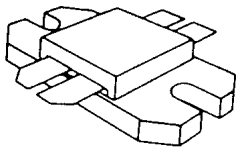
SGS-THOMSON MICROELECTRONICS

SD1490

RF & MICROWAVE TRANSISTORS TV/LINEAR APPLICATIONS

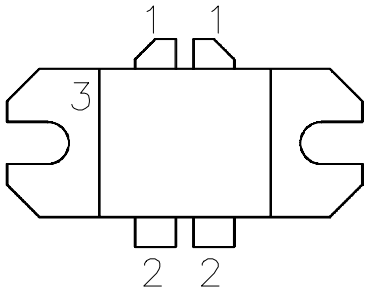
- 470 - 860 MHz
- 28 VOLTS
- CLASS A PUSH PULL
- DESIGNED FOR HIGH POWER LINEAR OPERATION
- HIGH SATURATED POWER CAPABILITY
- GOLD METALLIZATION
- DIFFUSED EMITTER BALLAST RESISTORS
- COMMON EMITTER CONFIGURATION
- INTERNAL INPUT MATCHING
- P_{OUT} = 25 W MIN. WITH 9.0 dB GAIN



.438 x .450 2LFL (M173)
epoxy sealed

ORDER CODE	BRANDING
SD1490	SD1490

PIN CONNECTION



1. Collector
2. Base
3. Emitter

DESCRIPTION

The SD1490 is a gold metallized epitaxial silicon NPN planar transistor using diffused emitter ballast resistors for high linearity Class A operation in UHF and Band IV, V television transmitters and transposers.

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

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage	45	V
V_{CEO}	Collector-Emitter Voltage	30	V
V_{EBO}	Emitter-Base Voltage	3.0	V
I_C	Device Current	8	A
P_{DISS}	Power Dissipation	135	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	1.3	°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	45	—	—	V
BV_{CEO}	I_C = 200mA	I_B = 0mA	30	—	—	V
BV_{EBO}	I_E = 10mA	I_C = 0mA	3.0	—	—	V
I_{CEO}	V_{CE} = 25V	I_E = 0mA	—	—	5	mA
h_{FE}	V_{CE} = 5V	I_C = 3A	10	—	80	—

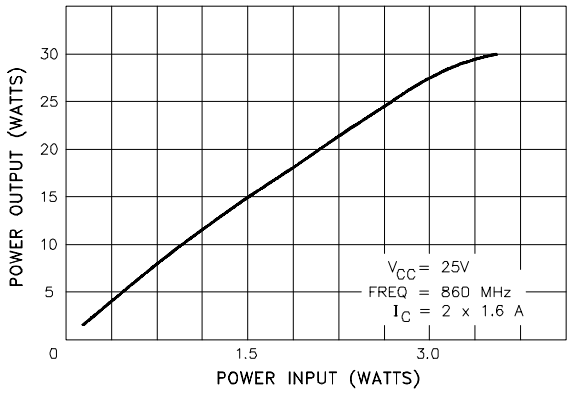
DYNAMIC

Symbol	Test Conditions			Value			Unit
				Min.	Typ.	Max.	
P_{OUT}	f = 860 MHz	V_{CE} = 25 V	I_C = 3.2 A	25	—	—	W
G_P	f = 860 MHz	V_{CE} = 25 V	I_C = 3.2 A	8.0	—	—	dB
CMOD	f = 860 MHz	V_{CE} = 25 V	P_{REF} = 25 W	—	—	20	%
IMD_3*	f = 860 MHz	V_{CE} = 25 V	P_{REF} = 25 W	—	—	–45	dB
C_{OB}	f = 1 MHz	V_{CB} = 28 V		—	70	—	pF

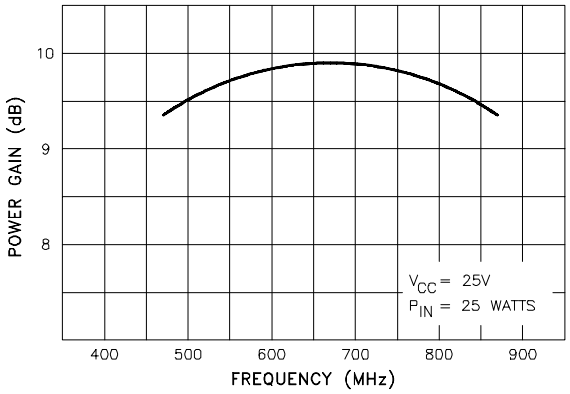
Note: * 3 Tone Testing (— 8, — 10, — 16 dB Relative to P_{REF})

TYPICAL PERFORMANCE

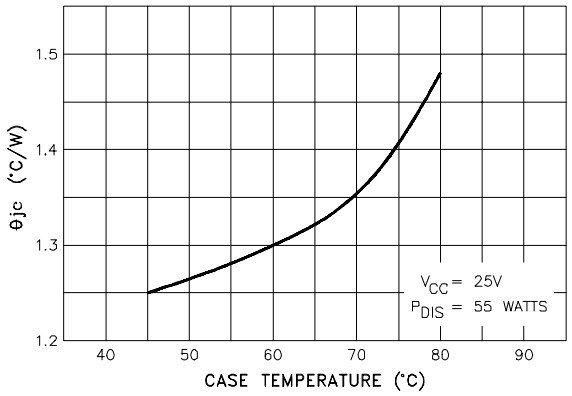
POWER OUTPUT vs POWER INPUT



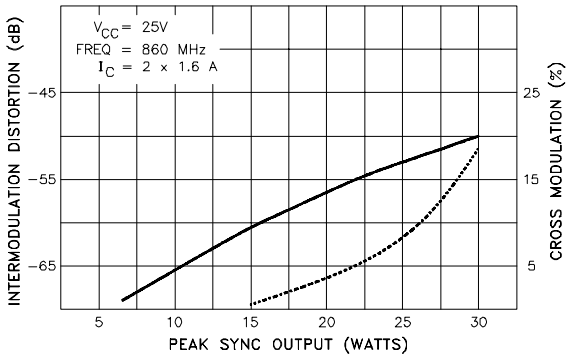
BROADBAND POWER GAIN vs FREQUENCY



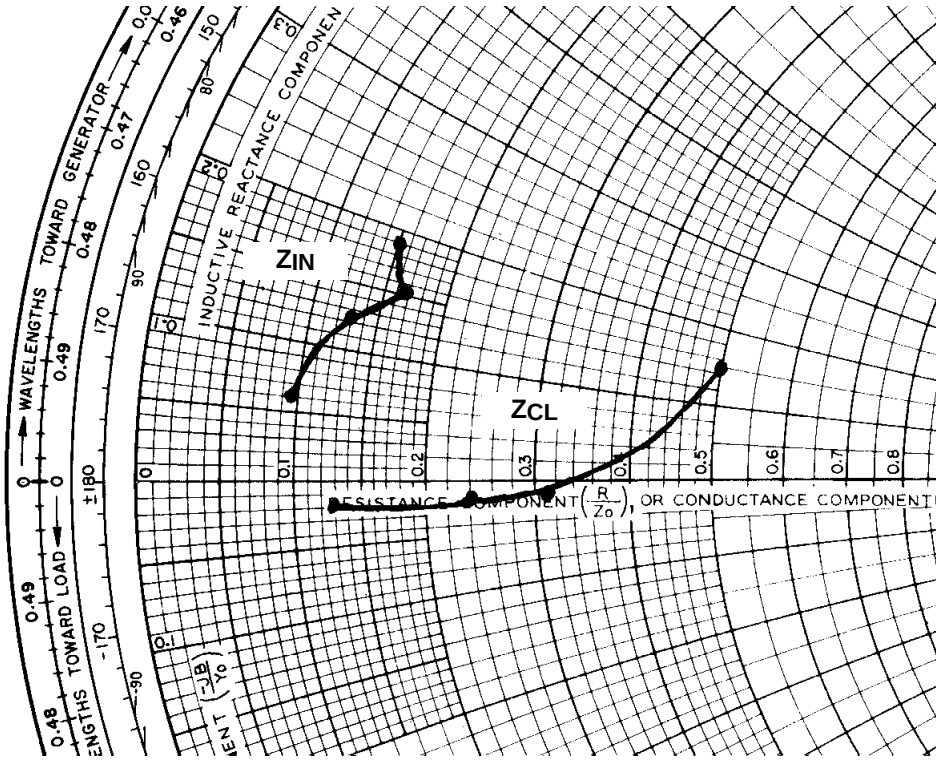
THERMAL RESISTANCE vs CASE TEMPERATURE



CROSS MODULATION & INTERMODULATION vs PEAK SYNC OUTPUT



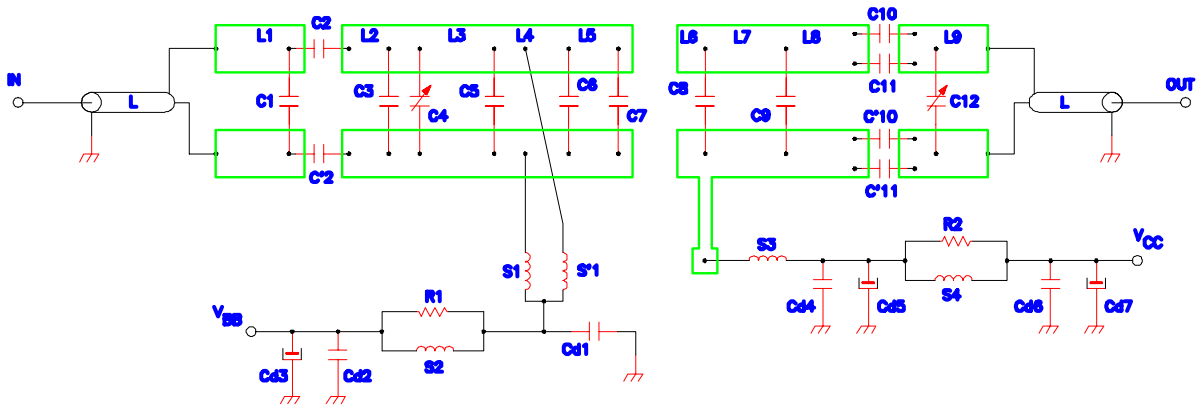
IMPEDANCE DATA



FREQ.	Z_{IN} (Ω)	Z_{CL} (Ω)
470 MHz	7.5 + j 9.5	25 + j 7.5
590 MHz	8.2 + j 7.5	15.6 – j 0.13
710 MHz	6.6 + j 6.2	11.9 – j 0.28
860 MHz	4.7 + j 3.0	6.7 – j 0.38

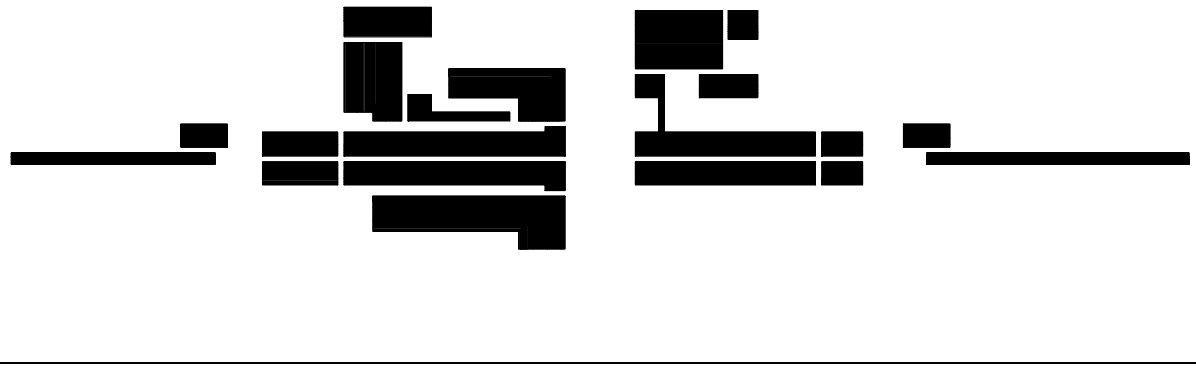
P_{OUT} = 25 W
V_{CC} = 25 V
I_C = 3.2 A
Normalized to 50 Ohms

TEST CIRCUIT



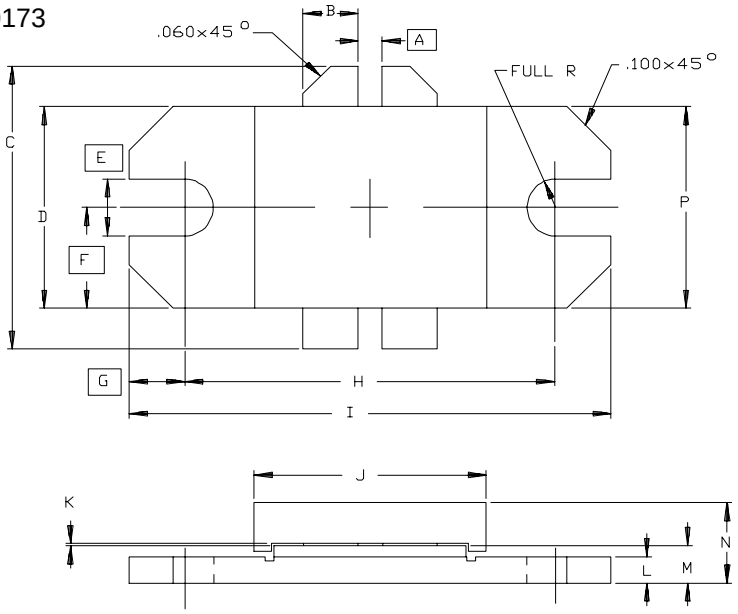
C1	:	1.5pF ATC 100A	L	:	Coaxial Cable Zo = 50Ω Length λ/4 at 680 MHz
C2, C'2	:	100pF ATC 100A	L1	:	Printed Transmission Line Zo = 25Ω Length 12mm
C3, C12	:	.5 - 4.5pF Airtronic Adjustable	L2	:	Printed Transmission Line Zo = 25Ω Length 12mm
C4, C5	:	2.7pF ATC 100A	L3	:	Printed Transmission Line Zo = 25Ω Length 10mm
C6	:	10pF ATC 100A	L4	:	Printed Transmission Line Zo = 25Ω Length 9mm
C7	:	18pF ATC 100A	L5	:	Printed Transmission Line Zo = 25Ω Length 5.5mm
C8	:	6.8pF ATC 100A	L6	:	Printed Transmission Line Zo = 25Ω Length 6mm
C9	:	1.5pF ATC 100A + 1.8pF ATC 100A	L7	:	Printed Transmission Line Zo = 25Ω Length 14.5mm
C10, C'10	:	100pF ATC 100A	L8	:	Printed Transmission Line Zo = 25Ω Length 10mm
C11, C'11	:	120pF ATC 100A	L9	:	Printed Transmission Line Zo = 25Ω Length 7mm
Cd1	:	100pF ATC 100A	R1	:	150 Ω 1/4 W
Cd2	:	47pF AATC 100B + 1000pF ATC 100B	R2	:	51 Ω 1/4 W
Cd3	:	500µF 25V			
Cd4	:	100pF ATC 100A	S1, S'1	:	10 Turns of .35mm Wire on 2mm Diameter
Cd5	:	22µF 35V	S2	:	9 Turns of .35mm Wire on R1
Cd6	:	1000pF ATC 100B	S3	:	2 Turns of .8mm Wire on 4mm Diater
Cd7	:	47µF 63V	S4	:	5 Turns of .8mm Wire on R2
			Board:		Er = 2.55, .020" Thick

TEST CIRCUIT LAYOUT



PACKAGE MECHANICAL DATA

Ref.: Dwg. No.12-0173



SGS-THOMSON MICROELECTRONICS		
	MINIMUM Inches/mm	MAXIMUM Inches/mm
A	.055/1,40	
B	.120/3,05	.130/3,30
C		.785/19,94
D	.455/11,56	.465/11,81
E	.125/3,18	
F	.230/5,84	
G	.128/3,25	
H	.838/21,28	.850/21,59
I	1.095/27,81	1.105/28,07
J	.525/13,34	.535/13,59

CONT'D		
	MINIMUM Inches/mm	MAXIMUM Inches/mm
K	.002/0,05	.006/0,15
L	.055/1,40	.065/1,65
M	.080/2,03	.095/2,41
N		.195/4,95
P	.455/11,56	.465/11,81