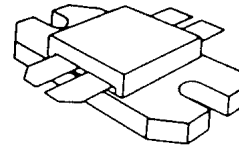


RF & MICROWAVE TRANSISTORS TV/LINEAR APPLICATIONS

- 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
- $P_{OUT} = 25 \text{ W MIN. WITH } 9.0 \text{ dB GAIN}$



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

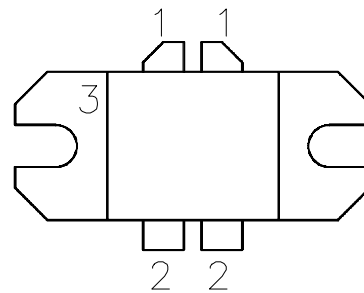
ORDER CODE
SD1490

BRANDING
SD1490

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.

PIN CONNECTION



1. Collector 3. Emitter
2. Base

ABSOLUTE MAXIMUM RATINGS ($T_{case} = 25^{\circ}\text{C}$)

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	$^{\circ}\text{C}$
T_{STG}	Storage Temperature	- 50 to +150	$^{\circ}\text{C}$

THERMAL DATA

$R_{TH(j-c)}$	Junction-Case Thermal Resistance	1.3	$^{\circ}\text{C/W}$
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SD1490

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

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	—

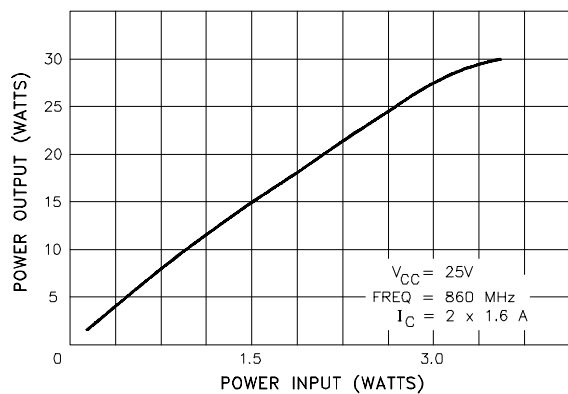
DYNAMIC

Symbol	Test Conditions			Value			Unit
				Min.	Typ.	Max.	
P_{OUT}	$f = 860\text{ MHz}$	$V_{CE} = 25\text{ V}$	$I_C = 3.2\text{ A}$	25	—	—	W
G_P	$f = 860\text{ MHz}$	$V_{CE} = 25\text{ V}$	$I_C = 3.2\text{ A}$	8.0	—	—	dB
CMOD	$f = 860\text{ MHz}$	$V_{CE} = 25\text{ V}$	$P_{REF} = 25\text{ W}$	—	—	20	%
IMD ₃ *	$f = 860\text{ MHz}$	$V_{CE} = 25\text{ V}$	$P_{REF} = 25\text{ W}$	—	—	−45	dB
C_{OB}	$f = 1\text{ MHz}$	$V_{CB} = 28\text{ V}$		—	70	—	pF

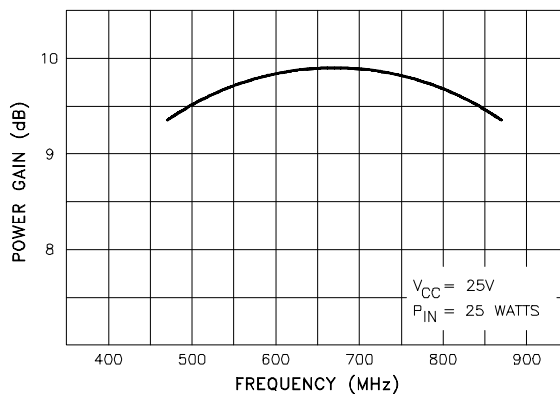
Note: * 3 Tone Testing (− 8, − 10, − 16 dB Relative to P_{REF})

TYPICAL PERFORMANCE

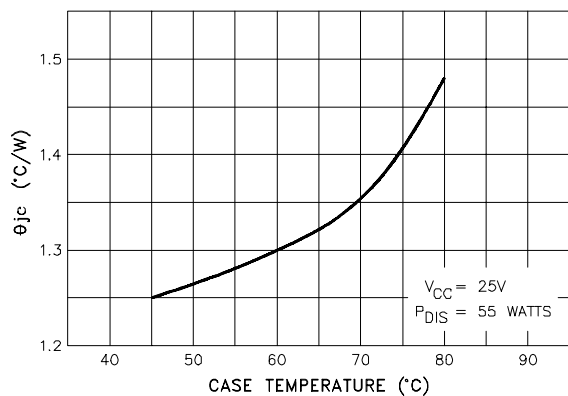
POWER OUTPUT vs POWER INPUT



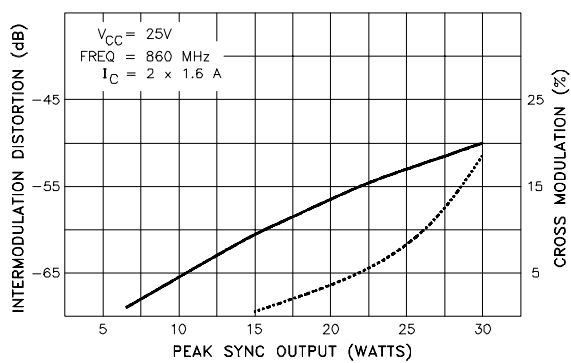
BROADBAND POWER GAIN vs FREQUENCY



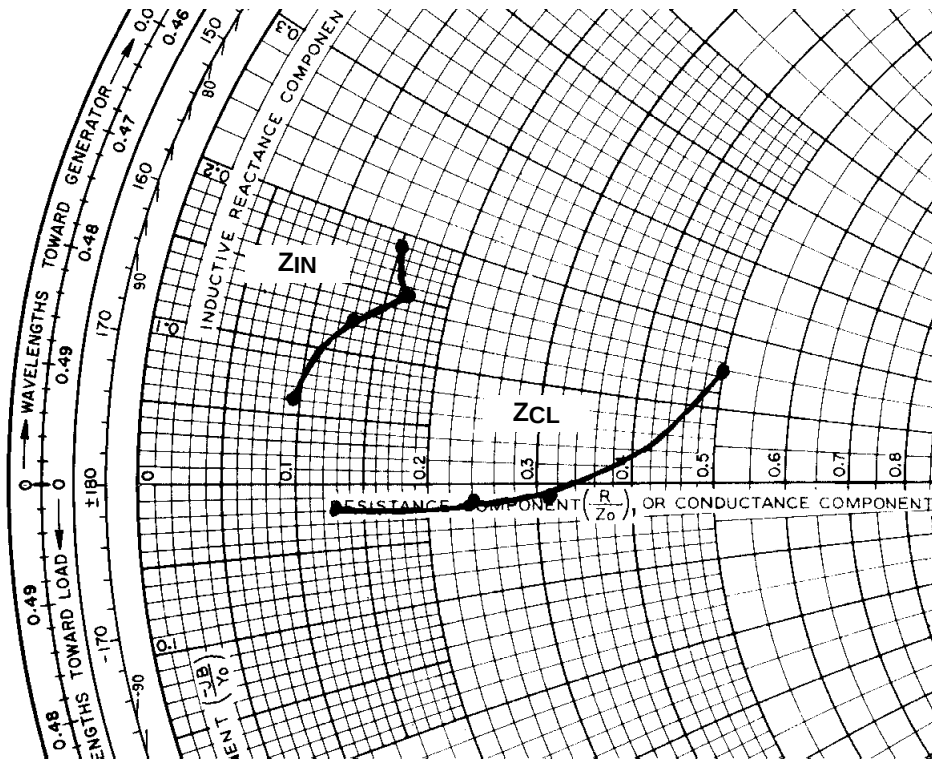
THERMAL RESISTANCE vs CASE TEMPERATURE



CROSS MODULATION & INTERMODULATION vs PEAK SYNC OUTPUT



IMPEDANCE DATA



FREQ.	$Z_{IN} (\Omega)$	$Z_{CL} (\Omega)$
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	$4.7 + j 3.0$	$6.7 - j 0.38$

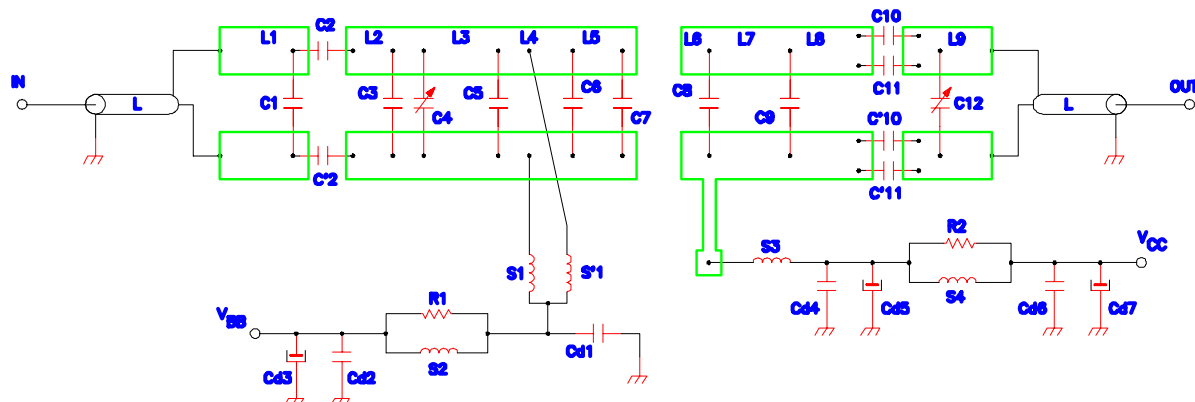
$P_{OUT} = 25 \text{ W}$

$V_{CC} = 25 \text{ V}$

$I_C = 3.2 \text{ A}$

Normalized to 50 Ohms

TEST CIRCUIT



C1 : 1.5pF ATC 100A
 C2, C'2 : 100pF ATC 100A
 C3, C12 : .5 - 4.5pF Airtronic Adjustable
 C4, C5 : 2.7pF ATC 100A
 C6 : 10pF ATC 100A
 C7 : 18pF ATC 100A
 C8 : 6.8pF ATC 100A
 C9 : 1.5pF ATC 100A + 1.8pF ATC 100A
 C10, C'10 : 100pF ATC 100A
 C11, C'11 : 120pF ATC 100A

Cd1 : 100pF ATC 100A
 Cd2 : 47pF AATC 100B + 1000pF ATC 100B
 Cd3 : 500μF 25V
 Cd4 : 100pF ATC 100A
 Cd5 : 22μF 35V
 Cd6 : 1000pF ATC 100B
 Cd7 : 47μF 63V

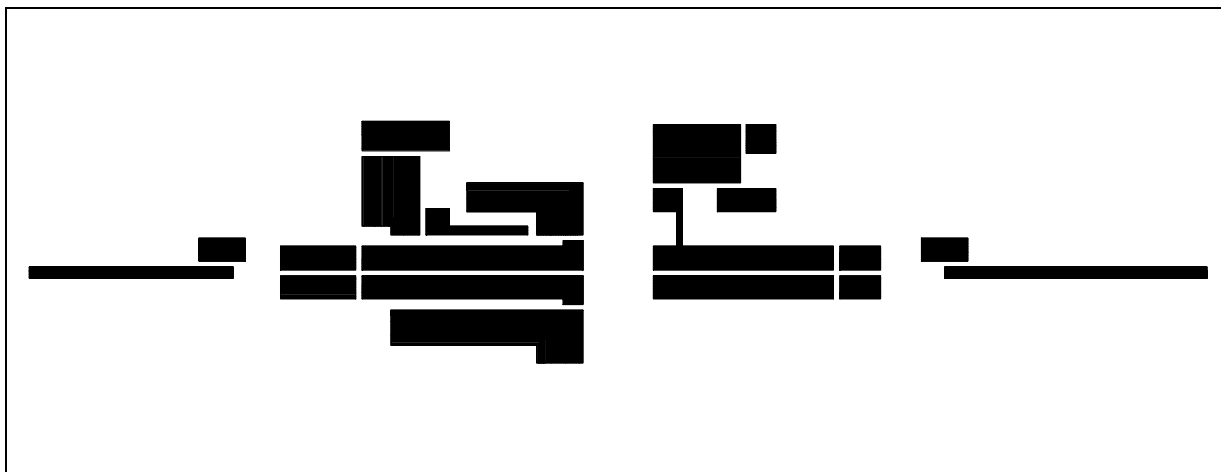
L : Coaxial Cable $Z_0 = 50\Omega$ Length $\lambda/4$ at 680 MHz
 L1 : Printed Transmission Line $Z_0 = 25\Omega$ Length 12mm
 L2 : Printed Transmission Line $Z_0 = 25\Omega$ Length 12mm
 L3 : Printed Transmission Line $Z_0 = 25\Omega$ Length 10mm
 L4 : Printed Transmission Line $Z_0 = 25\Omega$ Length 9mm
 L5 : Printed Transmission Line $Z_0 = 25\Omega$ Length 5.5mm
 L6 : Printed Transmission Line $Z_0 = 25\Omega$ Length 6mm
 L7 : Printed Transmission Line $Z_0 = 25\Omega$ Length 14.5mm
 L8 : Printed Transmission Line $Z_0 = 25\Omega$ Length 10mm
 L9 : Printed Transmission Line $Z_0 = 25\Omega$ Length 7mm

R1 : 150 Ω 1/4 W
 R2 : 51 Ω 1/4 W

S1, S'1 : 10 Turns of .35mm Wire on 2mm Diameter
 S2 : 9 Turns of .35mm Wire on R1
 S3 : 2 Turns of .8mm Wire on 4mm Diater
 S4 : 5 Turns of .8mm Wire on R2

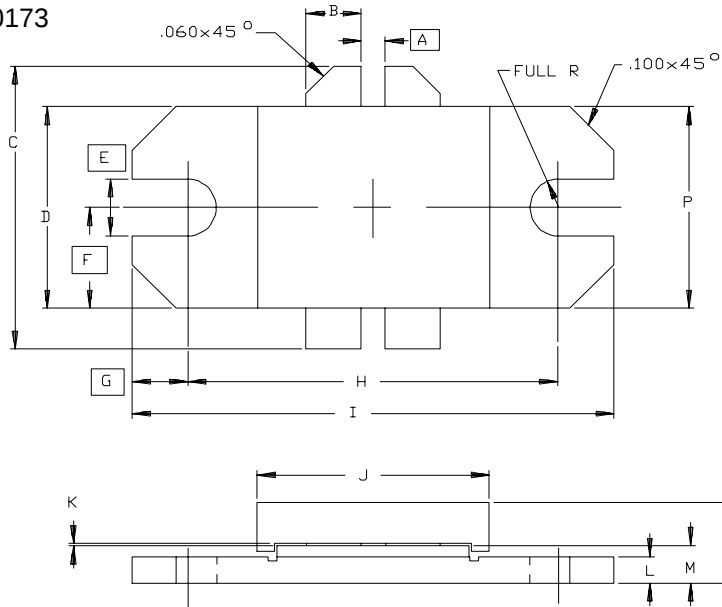
Board: Er = 2.55, .020" Thick

TEST CIRCUIT LAYOUT



PACKAGE MECHANICAL DATA

Ref.: Dwg. No.12-0173



SGS-THOMSON MICROELECTRONICS			CONT'D		
	MINIMUM Inches/mm	MAXIMUM Inches/mm		MINIMUM Inches/mm	MAXIMUM Inches/mm
A	.055/1,40		K	.002/0,05	.006/0,15
B	.120/3,05	.130/3,30	L	.055/1,40	.065/1,65
C		.785/19,94	M	.080/2,03	.095/2,41
D	.455/11,56	.465/11,81	N		.195/4,95
E	.125/3,18		P	.455/11,56	.465/11,81
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			

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