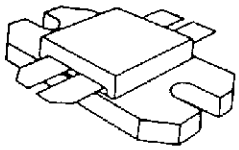
SGS-THOMSON MICROELECTRONICS

SD1489

RF & MICROWAVE TRANSISTORS TV/LINEAR APPLICATIONS

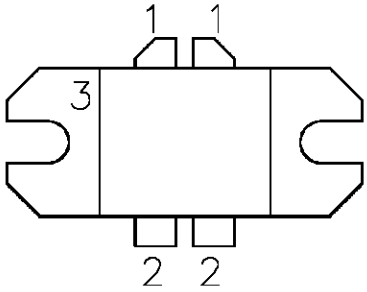
- 470 - 860 MHz
- 28 VOLTS
- CLASS AB PUSH PULL
- DESIGNED FOR HIGH POWER LINEAR OPERATION
- HIGH SATURATED POWER CAPABILITY
- GOLD METALLIZATION
- DIFFUSED EMITTER BALLAST RESISTORS
- COMMON EMITTER CONFIGURATION
- INTERNAL INPUT MATCHING
- P_{OUT} = 50 W MIN. WITH 6.5 dB GAIN



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

ORDER CODE	BRANDING
SD1489	SD1489

PIN CONNECTION



1. Collector
2. Base
3. Emitter

DESCRIPTION

The SD1489 is a gold metallized epitaxial silicon NPN planar transistor using diffused emitter ballast resistors for high linearity Class AB 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	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_{CBO}	I_C = 50mA	I_E = 0mA	45	—	—	V
BV_{CER}	I_C = 20mA	R_{BE} = 10Ω	40	—	—	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} = 28V	I_E = 0mA	—	—	5	mA
h_{FE}	V_{CE} = 5V	I_C = 3A	10	—	80	—

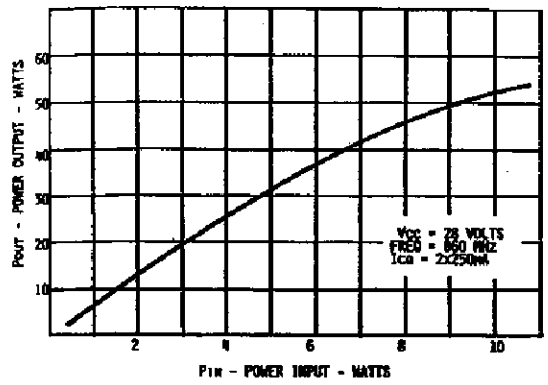
DYNAMIC

Symbol	Test Conditions			Value			Unit
				Min.	Typ.	Max.	
P_{OUT}	f = 860 MHz	V_{CE} = 28 V	I_{CQ} = 2 x 250 mA	50	—	—	W
G_P	f = 860 MHz	V_{CE} = 28 V	I_{CQ} = 2 x 250 mA	6.8	—	—	dB
η_C	f = 860 MHz	V_{CE} = 28 V	I_{CQ} = 2 x 250 mA	—	45	—	%
C_{OB}	f = 1 MHz	V_{CB} = 28 V		—	70	—	pF

Note: Pulse Width = 10μSec, Duty Cycle = 1%

TYPICAL PERFORMANCE

OUTPUT POWER vs POWER INPUT



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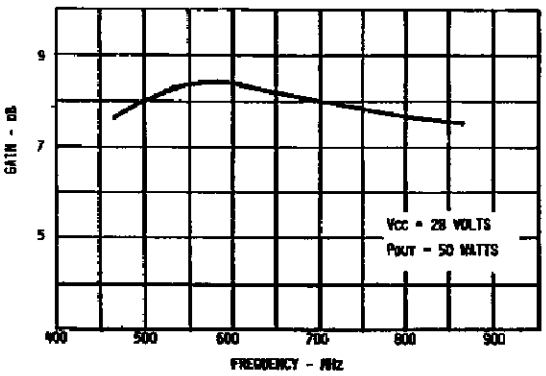
BROADBAND POWER GAIN vs FREQUENCY



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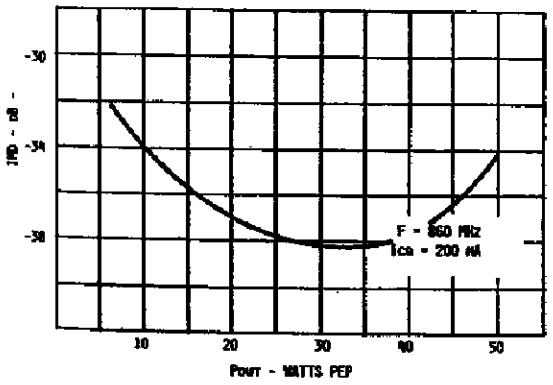
INTERMODULATION DISTORTION vs OUTPUT POWER



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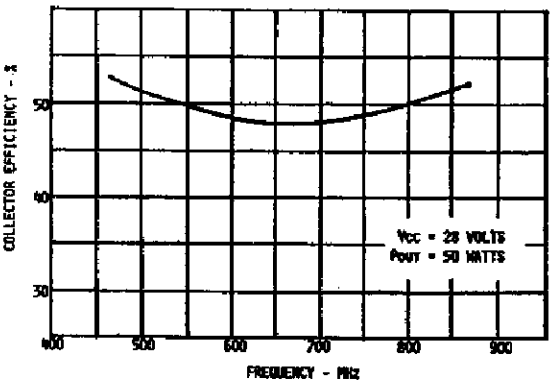
COLLECTOR EFFICIENCY vs FREQUENCY



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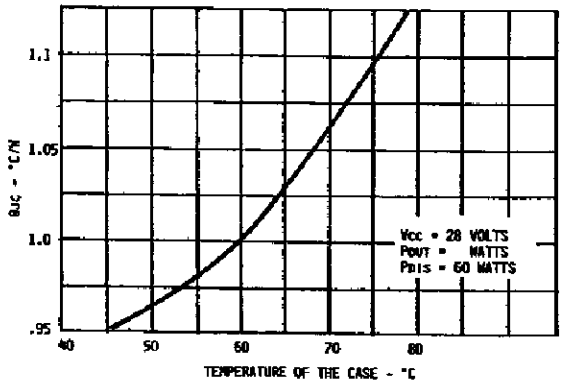
THERMAL RESISTANCE vs CASE TEMPERATURE



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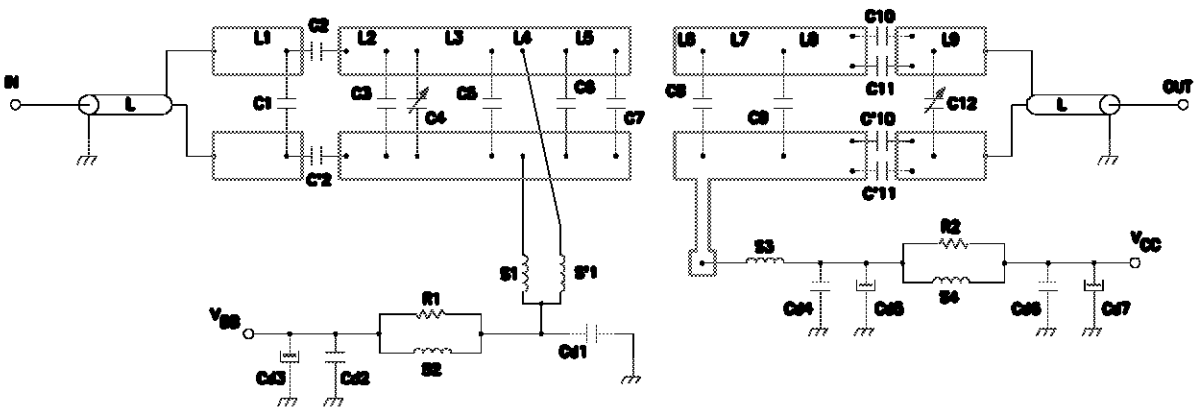
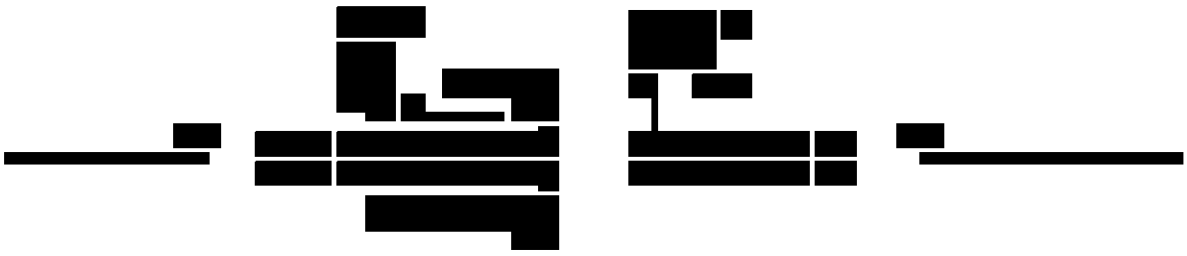
TEST CIRCUIT



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

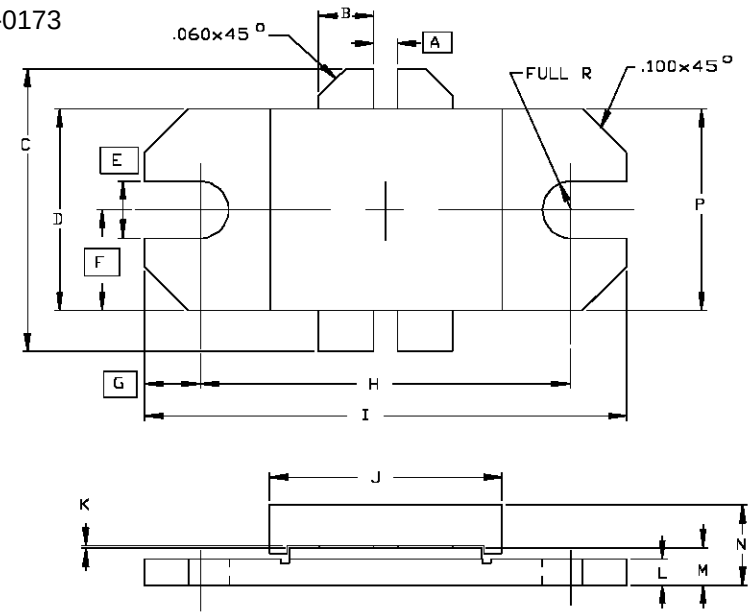
L	:	Coaxial Cable Zo = 50Ω Length λ/4 at 680 MHz
L1	:	Printed Transmissiion Line Zo = 25Ω Length 12mm
L2	:	Printed Transmission Line Zo = 25Ω Length 12mm
L3	:	Printed Transmission Line Zo = 25Ω Length 10mm
L4	:	Printed Transmission Line Zo = 25Ω Length 9mm
L5	:	Printed Transmission Line Zo = 25Ω Length 5.5mm
L6	:	Printed Transmission Line Zo = 25Ω Length 6mm
L7	:	Printed Transmission Line Zo = 25Ω Length 14.5mm
L8	:	Printed Transmission Line Zo = 25Ω Length 12mm
L9	:	Printed Transmission Line Zo = 25Ω Length 7mm
R1	:	150 Ω 1/4 W
R2	:	51 Ω 1/4W
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 Diameter
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