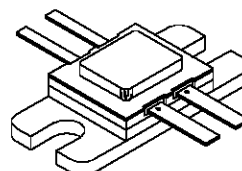


RF & MICROWAVE TRANSISTORS UHF TV LINEAR APPLICATIONS

- 470-860 MHz
- 26.5 VOLTS
- GOLD METALLIZATION
- $P_{OUT} = 20.0W$ MIN. WITH 9.5 dB GAIN
- INTERNAL INPUT MATCHING
- DIFFUSED EMITTER BALLAST RESISTORS



.400 x .425 4LFL (M119)
hermetically sealed

ORDER CODE

SD4010

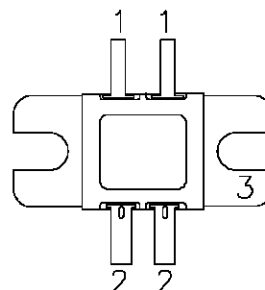
BRANDING

SUTV200

DESCRIPTION

The SD4010 is a gold metallized epitaxial silicon NPN planar transistor using diffused emitter ballast resistors. The SD4010 is intended for use in linear applications up to 1GHz, including UHF television transmitters, transposers and cellular base stations.

PIN CONNECTION



1. Collector

2. Base

3. Emitter

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

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage	60.0	V
V_{CES}	Collector-Emitter Voltage	60.0	V
V_{EBO}	Emitter-Base Voltage	4.0	V
I_C	Device Current (Maximum)	11.0	A
P_{DISS}	Power Dissipation	88.8	W
T_J	Junction Temperature	+200	$^{\circ}C$
T_{STG}	Storage Temperature	- 65 to +150	$^{\circ}C$

THERMAL DATA

$R_{TH(j-c)}$	Junction-Case Thermal Resistance	1.9	$^{\circ}C/W$
---------------	----------------------------------	-----	---------------

SD4010

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

STATIC

Symbol	Test Conditions	Value			Unit
		Min.	Typ.	Max.	
BV_{EBO}	$I_E = 10mA$ $I_C = 0mA$	3.0	4.0	—	V
BV_{CES}	$I_C = 50mA$ $V_{BE} = 0V$	60.0	85.0	—	V
BV_{CEO}	$I_C = 50mA$ $I_B = 0mA$	28.0	30.0	—	V
I_{CEO}	$V_{CE} = 26.5V$ $I_E = 0mA$	—	—	5	mA
h_{FE}	$V_{CE} = 5V$ $I_C = 3A$	25	50	80	—

Tested Per Side

DYNAMIC

Symbol	Test Conditions	Value			Unit
		Min.	Typ.	Max.	
P_{OUT}	$f = 860MHz$ $V_{CE} = 26.5V$ $P_{IN} = 2.2W$	20.0	28.0	—	W
G_P	$f = 860MHz$ $V_{CE} = 26.5V$ $P_{OUT} = 20W$	9.5	10.5	—	dB
IMD_3	$P_{SYNC} = 20W$ $V_{CE} = 26.5V$ (note 1)	—	-48	-46	dBc
IP_3	$V_{CB} = 26.5V$ $P_{OUT} = 20W$ PEP (note 2)	—	55	—	dBm
C_{OB}	$f = 860MHz$ $V_{CB} = 26.5V$ (note 3)	—	25	36	pF
Load* Mismatch	$f = 860MHz$ $V_{CE} = 26.5V$ $P_{OUT} = 20W$	3:1	10:1	—	VSWR

$I_{CQ} = I_C = 2.7A$ (1.35A per Side)

*VSWR tested for a minimum of 3:1 SWR at all phase angles.

Note 1: Three Tone IMD Testing (CCIR)

$f_1 = 860.0MHz/ -8dB$ ref. to P_{SYNC} - Visual

$f_2 = 863.5MHz/ -16dB$ ref. to P_{SYNC} - Color Subcarrier

$f_3 = 864.5MHz/ -7dB$ ref. to P_{SYNC} - Aural

Note 2: IP_3 Calculated Based on Two-Tone IMD Testing:

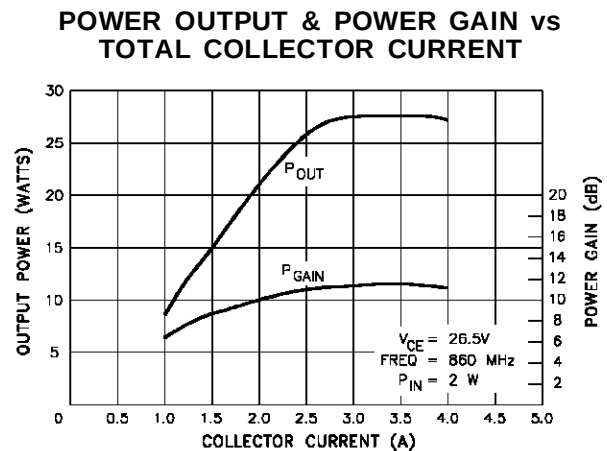
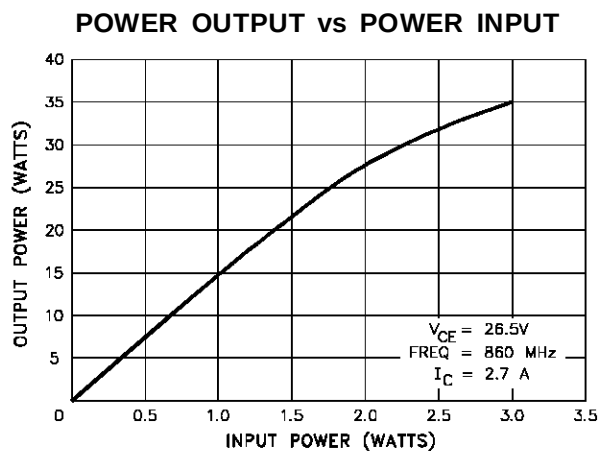
$f_1 = 900.0 MHz/ -6dB$ ref. to P_{OUT}

$f_2 = 900.1 MHz/ -6dB$ ref. to P_{OUT}

IMD_3 (Typ) < -36dBc

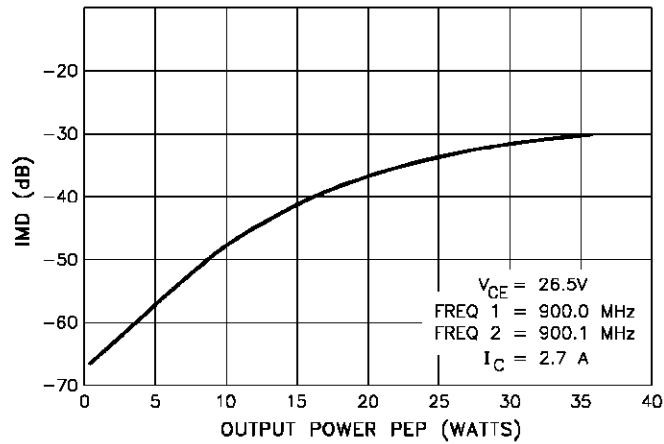
Note 3: Tested Per Side

TYPICAL PERFORMANCE

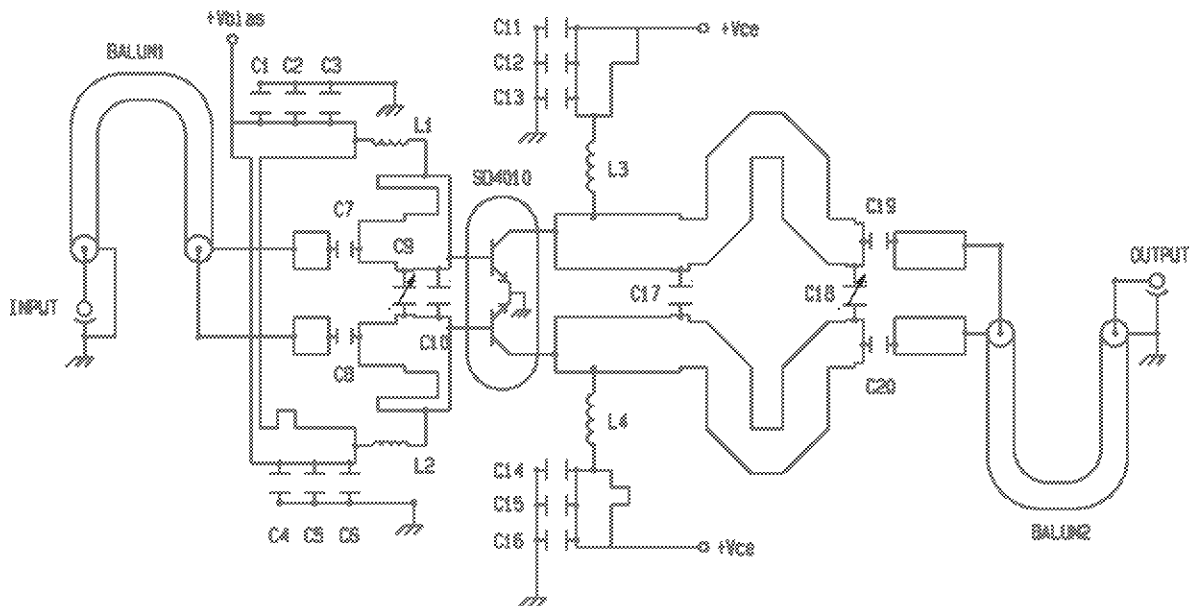


TYPICAL PERFORMANCE (cont'd)

INTERMODULATION DISTORTION vs POWER OUTPUT



TEST CIRCUIT SCHEMATIC



Balun 1, 2 : 50Ω Coaxial Cable, $\lambda/4$ @ 860 MHz

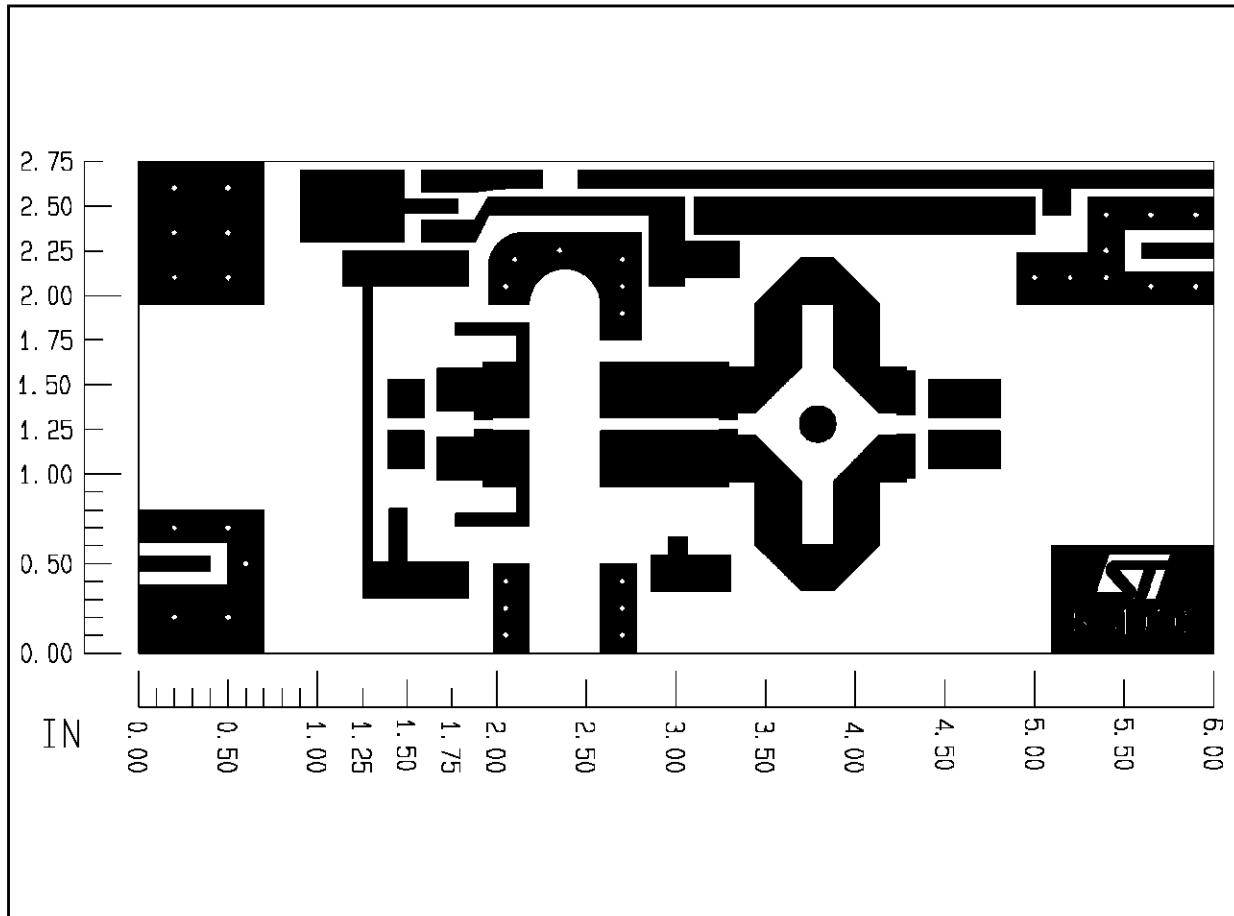
C1, C4,
 C11, C16 : $100\mu F$, 50V Electrolytic
 C2, C5,
 C12, C15 : $10\mu F$, 35V Tantalum
 C3, C6, C7 C8,
 C19, C20 : 75 pF Ceramic Chip, ATC B
 C9, C18 : 0.4 - 2.5 pF Variable, JOHANSON Giga-trim
 C10 : 2pF Ceramic Chip, ATC B
 C17 : 5pF Ceramic Chip, ATC B

L1, L2 : 7 Turns, 0.12" I.D., #22 AWG (1:1)
 L3, L4 : 5 Turns, 0.12" I.D., #22 AWG (1:1)

See Photomaster for Microstrip Lines

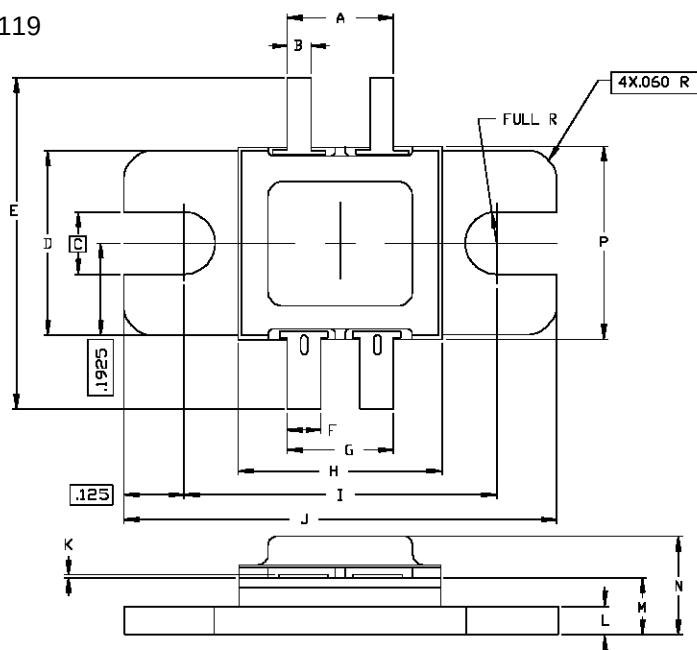
Board
 Material: ROGERS Ultra-Lam Er = 2.55, Height = 0.030",
 2 oz. Cu.

PHOTOMASTER OF TEST CIRCUIT



PACKAGE MECHANICAL DATA

Ref. Dwg. No.: 12-0119



SGS-THOMSON MICROELECTRONICS			CONT'D		
	MINIMUM Inches/mm	MAXIMUM Inches/mm		MINIMUM Inches/mm	MAXIMUM Inches/mm
A	.210/5,33	.230/5,84	K	.002/0,05	.006/0,15
B	.045/1,14	.055/1,40	L	.058/1,47	.065/1,65
C	.130/3,30		M	.115/2,92	.130/3,30
D	.380/9,65	.390/9,91	N	----	.230/5,84
E	.770/19,56	.830/21,08	P	.395/10,03	.408/10,36
F	.070/1,78	.080/2,03			
G	.215/5,46	.235/5,97			
H	.420/10,67	.433/11,00			
I	.645/16,38	.655/16,64			
J	.895/22,73	.905/22,99			

Information furnished is believed to be accurate and reliable. However, SGS-THOMSON Microelectronics assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of SGS-THOMSON Microelectronics. Specifications mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied. SGS-THOMSON Microelectronics products are not authorized for use as critical components in life support devices or systems without express written approval of SGS-THOMSON Microelectronics.

© 1994 SGS-THOMSON Microelectronics - All Rights Reserved

SGS-THOMSON Microelectronics GROUP OF COMPANIES

Australia - Brazil - France - Germany - Hong Kong - Italy - Japan - Korea - Malaysia - Malta - Morocco - The Netherlands - Singapore - Spain - Sweden - Switzerland - Taiwan - Thailand - United Kingdom - U.S.A