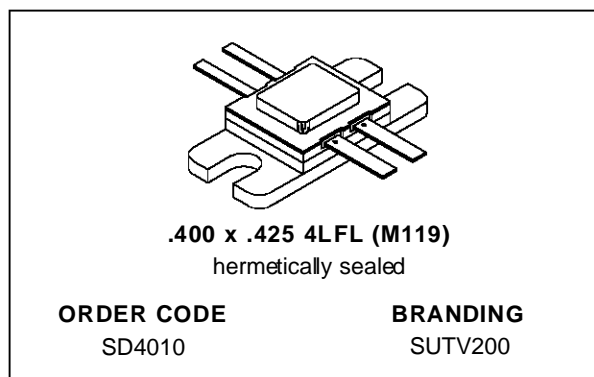
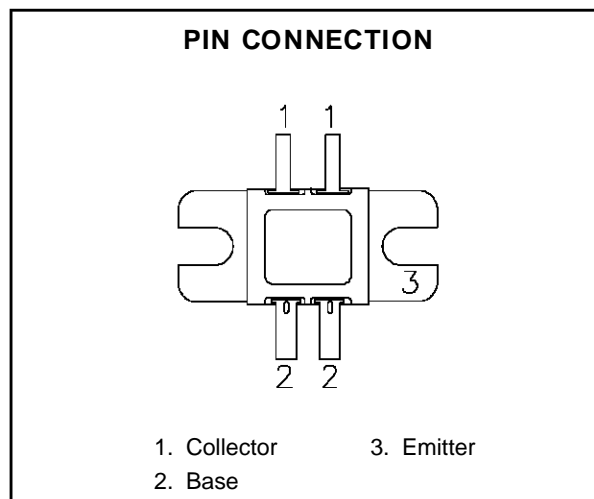


**RF & MICROWAVE TRANSISTORS  
UHF TV LINEAR APPLICATIONS**

- 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


**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.


**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	$^{\circ}C/W$
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# SD4010

## ELECTRICAL SPECIFICATIONS (T<sub>case</sub> = 25°C)

### STATIC

Symbol	Test Conditions		Value			Unit
			Min.	Typ.	Max.	
BV <sub>EBO</sub>	I <sub>E</sub> = 10mA	I <sub>C</sub> = 0mA	3.0	4.0	—	V
BV <sub>CES</sub>	I <sub>C</sub> = 50mA	V <sub>BE</sub> = 0V	60.0	85.0	—	V
BV <sub>CEO</sub>	I <sub>C</sub> = 50mA	I <sub>B</sub> = 0mA	28.0	30.0	—	V
I <sub>CEO</sub>	V <sub>CE</sub> = 26.5V	I <sub>E</sub> = 0mA	—	—	5	mA
h <sub>FE</sub>	V <sub>CE</sub> = 5V	I <sub>C</sub> = 3A	25	50	80	—

Tested Per Side

### DYNAMIC

Symbol	Test Conditions			Value			Unit
				Min.	Typ.	Max.	
P <sub>OUT</sub>	f = 860MHz	V <sub>CE</sub> = 26.5V	P <sub>IN</sub> = 2.2W	20.0	28.0	—	W
G <sub>P</sub>	f = 860MHz	V <sub>CE</sub> = 26.5V	P <sub>OUT</sub> = 20W	9.5	10.5	—	dB
IMD <sub>3</sub>	P <sub>SYNC</sub> = 20W	V <sub>CE</sub> = 26.5V	(note 1)	—	-48	-46	dBc
IP <sub>3</sub>	V <sub>CB</sub> = 26.5V	P <sub>OUT</sub> = 20W	PEP (note 2)	—	55	—	dBm
C <sub>OB</sub>	f = 860MHz	V <sub>CB</sub> = 26.5V	(note 3)	—	25	36	pF
Load* Mismatch	f = 860MHz	V <sub>CE</sub> = 26.5V	P <sub>OUT</sub> = 20W	3:1	10:1	—	VSWR

I<sub>CQ</sub> = I<sub>C</sub> = 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<sub>1</sub> = 860.0MHz/ -8dB ref. to P<sub>SYNC</sub> - Visual

f<sub>2</sub> = 863.5MHz/ -16dB ref. to P<sub>SYNC</sub> - Color Subcarrier

f<sub>3</sub> = 864.5MHz/ -7dB ref. to P<sub>SYNC</sub> - Aural

Note 2: IP<sub>3</sub> Calculated Based on Two-Tone  
IMD Testing:

f<sub>1</sub> = 900.0 MHz/ -6dB ref. to P<sub>OUT</sub>

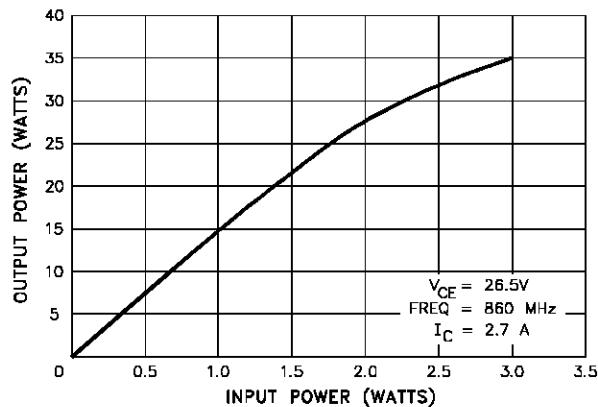
f<sub>2</sub> = 900.1 MHz/ -6dB ref. to P<sub>OUT</sub>

IMD<sub>3</sub> (Typ) < -36dBc

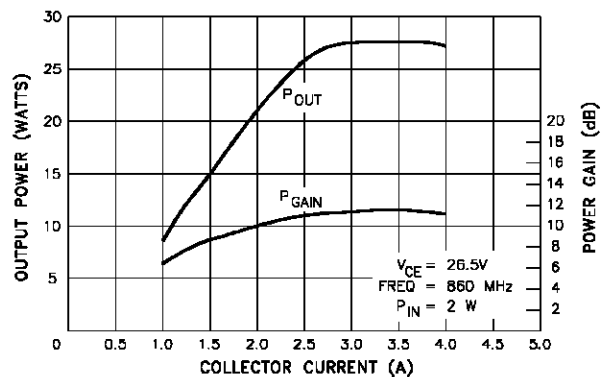
Note 3: Tested Per Side

### TYPICAL PERFORMANCE

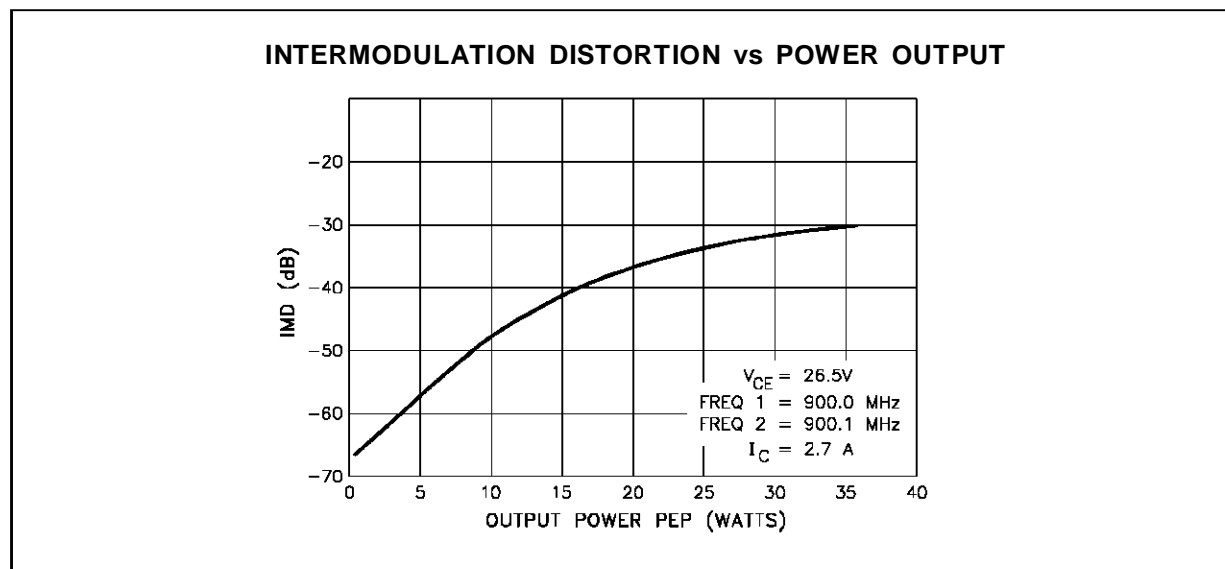
POWER OUTPUT vs POWER INPUT



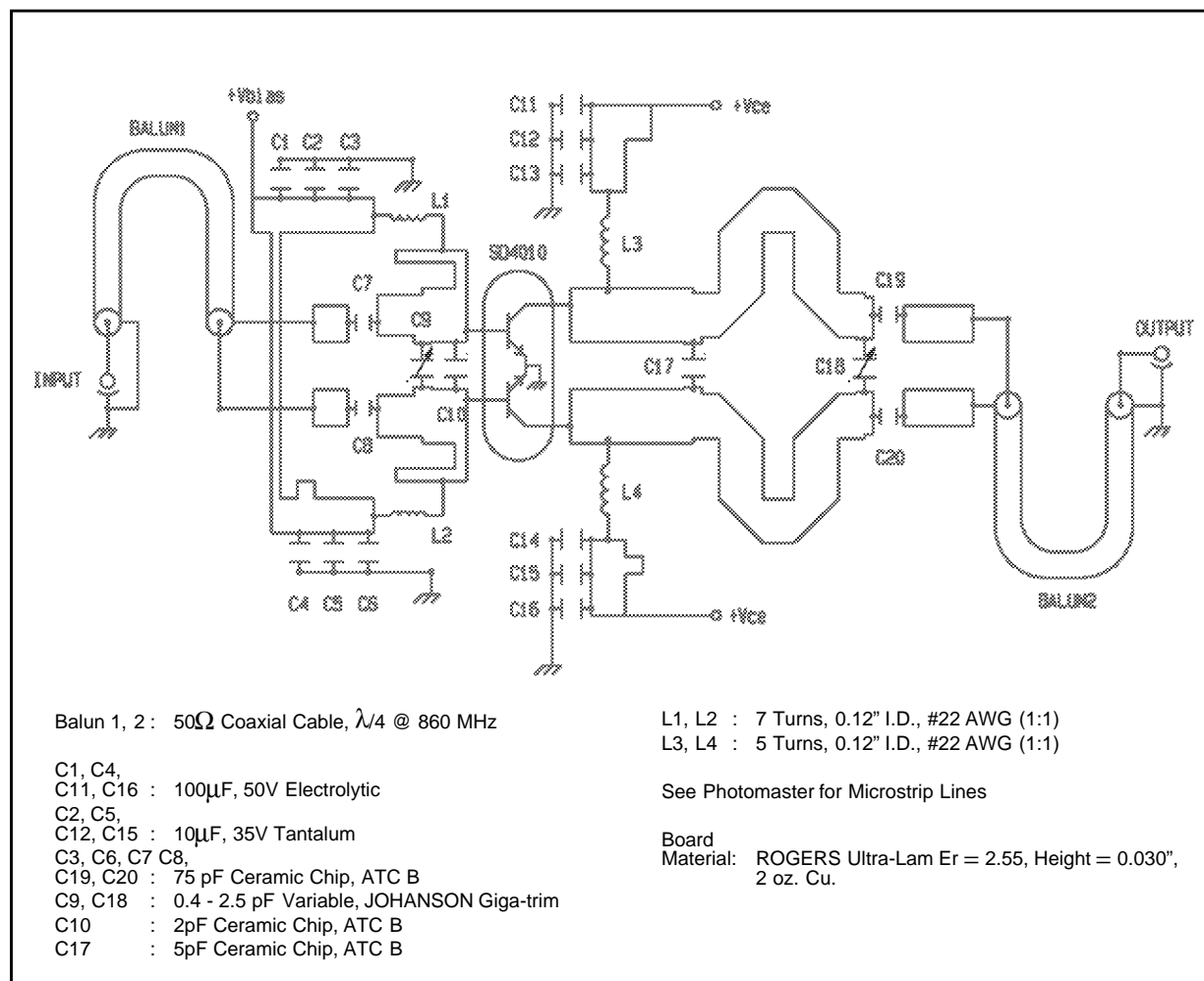
POWER OUTPUT & POWER GAIN vs  
TOTAL COLLECTOR CURRENT



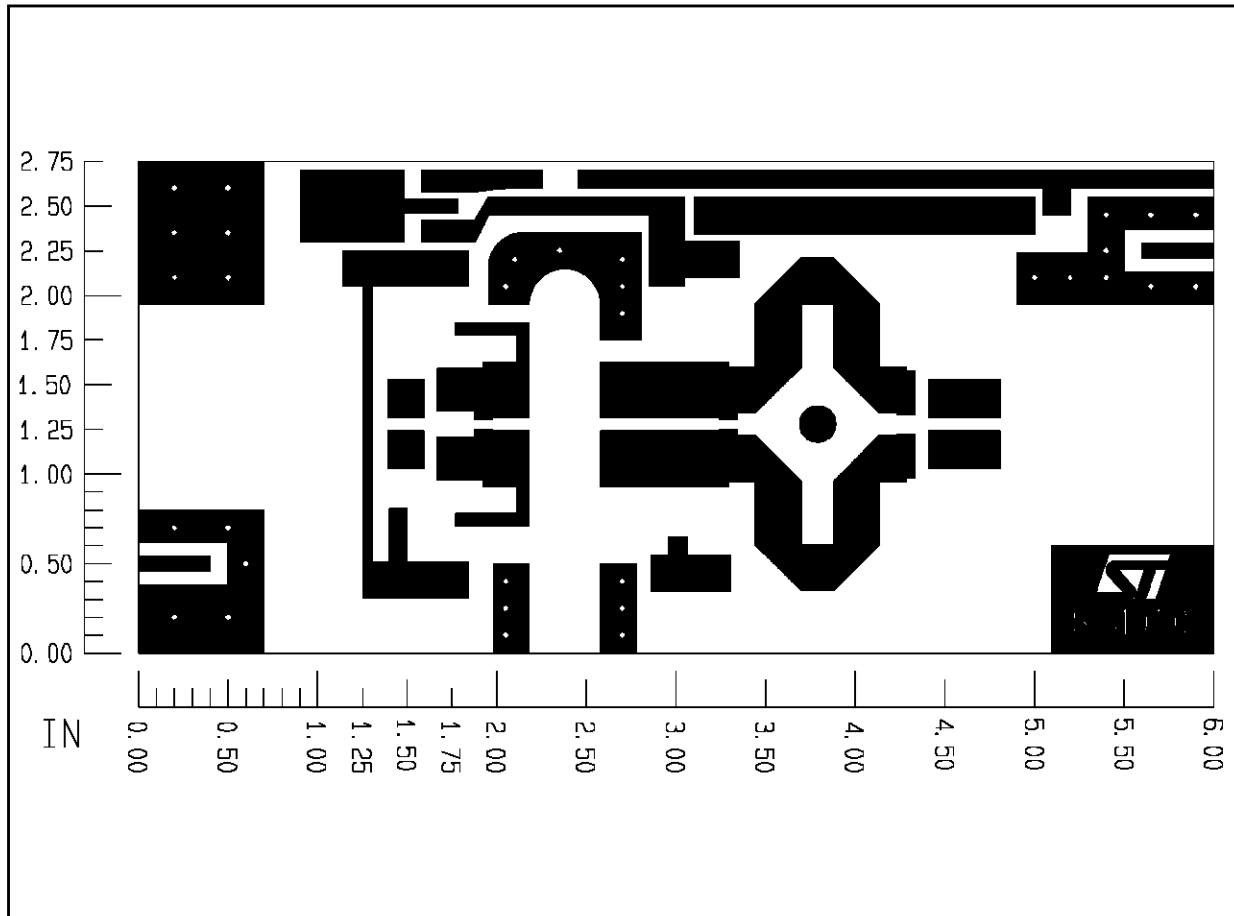
## TYPICAL PERFORMANCE (cont'd)



## TEST CIRCUIT SCHEMATIC

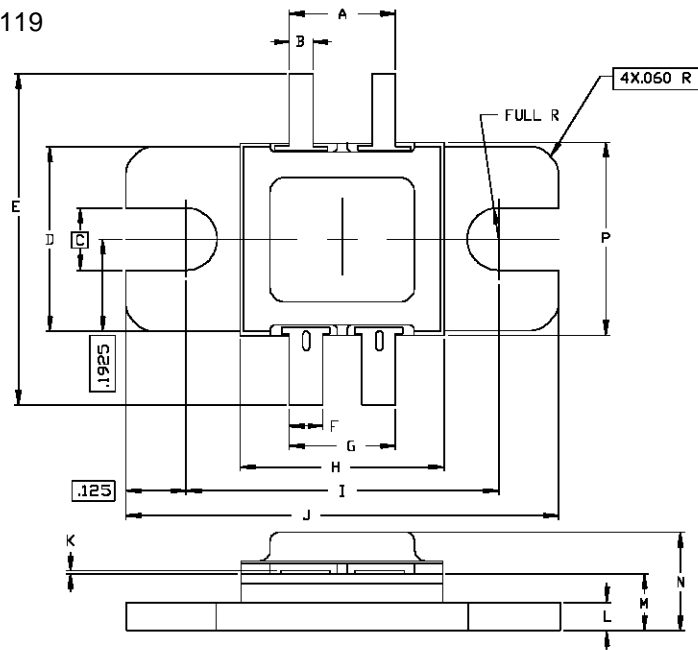


PHOTOMASTER OF TEST CIRCUIT



## 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			

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