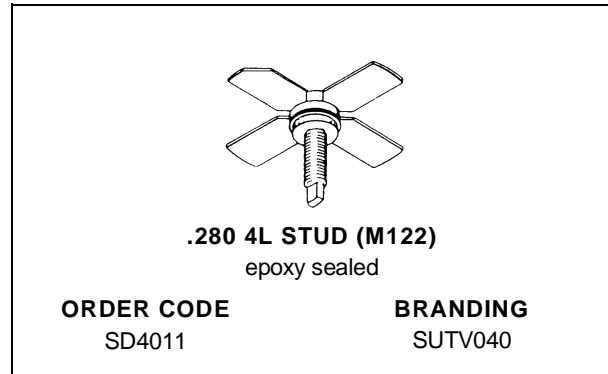


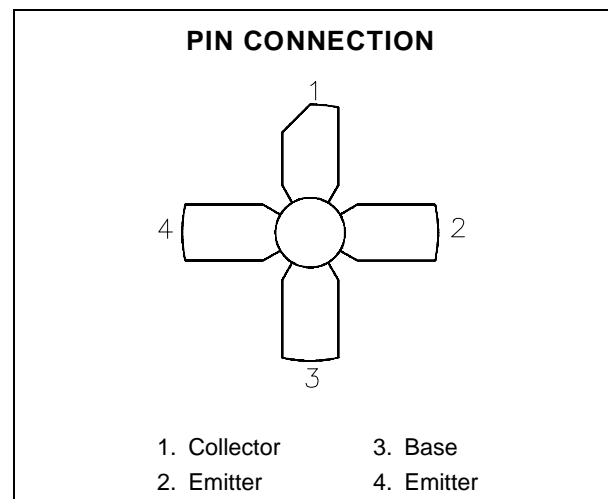
**RF & MICROWAVE TRANSISTORS
UHF TV/LINEAR APPLICATIONS**

- GOLD METALLIZATION
- INTERNAL INPUT MATCHING
- COMMON EMITTER
- OVERLAY GEOMETRY
- CLASS A OPERATION
- METAL/CERAMIC PACKAGE
- $P_{OUT} = 4 \text{ W MIN. WITH } 8 \text{ dB GAIN}$


DESCRIPTION

The SD4011 is a gold metallized NPN silicon bipolar device optimized for Class A operation in TV Band IV/V.

Suitable for a variety of other UHF linear applications, SD4011 is supplied in an industry-standard .280 stud package.


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

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage	65	V
V_{CES}	Collector-Emitter Voltage	65	V
V_{EBO}	Emitter-Base Voltage	3.5	V
I_C	Device Current	1.59	A
P_{DISS}	Power Dissipation	31.8	W
T_J	Junction Temperature	+200	$^{\circ}\text{C}$
T_{STG}	Storage Temperature	- 65 to +150	$^{\circ}\text{C}$

THERMAL DATA

$R_{TH(j-c)}$	Junction-Case Thermal Resistance	5.5	$^{\circ}\text{C/W}$
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SD4011

ELECTRICAL SPECIFICATIONS (T_{case} = 25°C)

STATIC

Symbol	Test Conditions		Value			Unit
			Min.	Typ.	Max.	
BV _{CBO}	I _C = 5mA	I _E = 0mA	65	—	—	V
BV _{EBO}	I _E = 5mA	I _C = 0mA	3.5	—	—	V
BV _{CES}	I _C = 10mA	V _{BE} = 0V	65	—	—	V
BV _{CEO}	I _C = 5mA	I _B = 0mA	20	—	—	V
I _{CBO}	V _{CB} = 40V	I _E = 0mA	—	—	1.0	mA
h _{FE}	V _C = 5V	I _C = 800mA	20	—	200	—

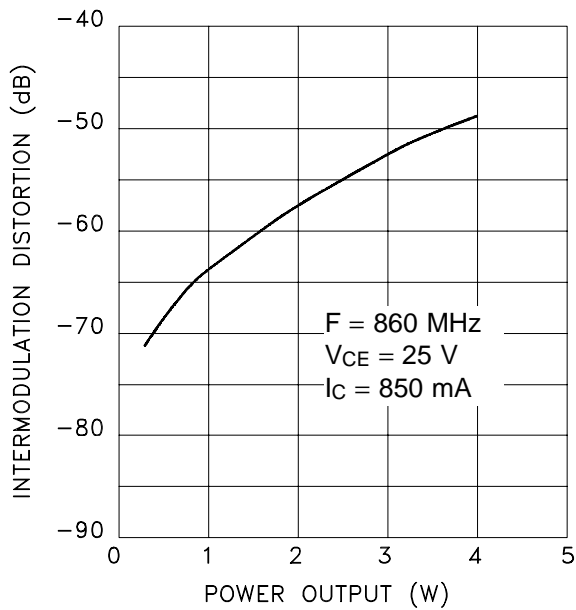
DYNAMIC

Symbol	Test Conditions			Value			Unit
				Min.	Typ.	Max.	
P _{OUT}	f = 860 MHz	V _{CE} = 25 V	I _C = 850 mA	4	—	—	W
G _P	f = 860 MHz	V _{CE} = 25 V	I _C = 850 mA	8.0	—	—	dB
IMD ₃	f = 860 MHz	V _{CE} = 25 V	I _C = 850 mA	-60	—	—	dBc
C _{OB}	f = 1 MHz	V _{CE} = 25 V		—	13	20	pF

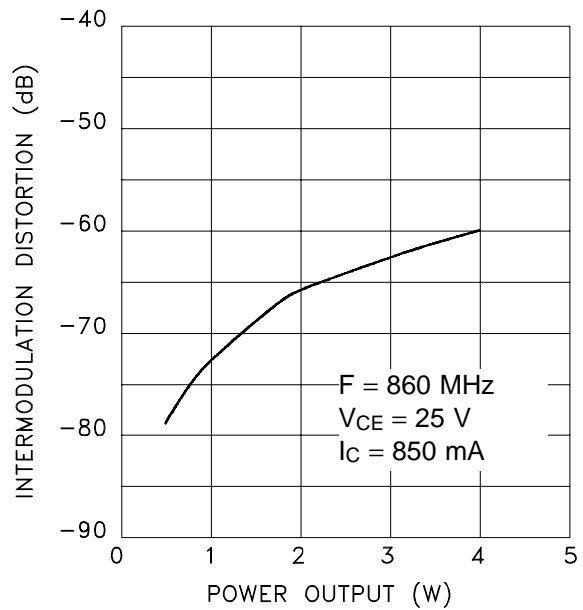
Note: P_{IN} = 0.63

TYPICAL PERFORMANCE

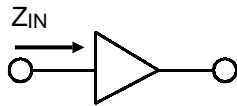
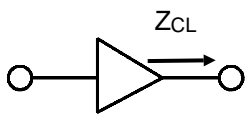
INTERMODULATION DISTORTION vs POWER OUTPUT



INTERMODULATION DISTORTION (3 TONES) vs POWER OUTPUT



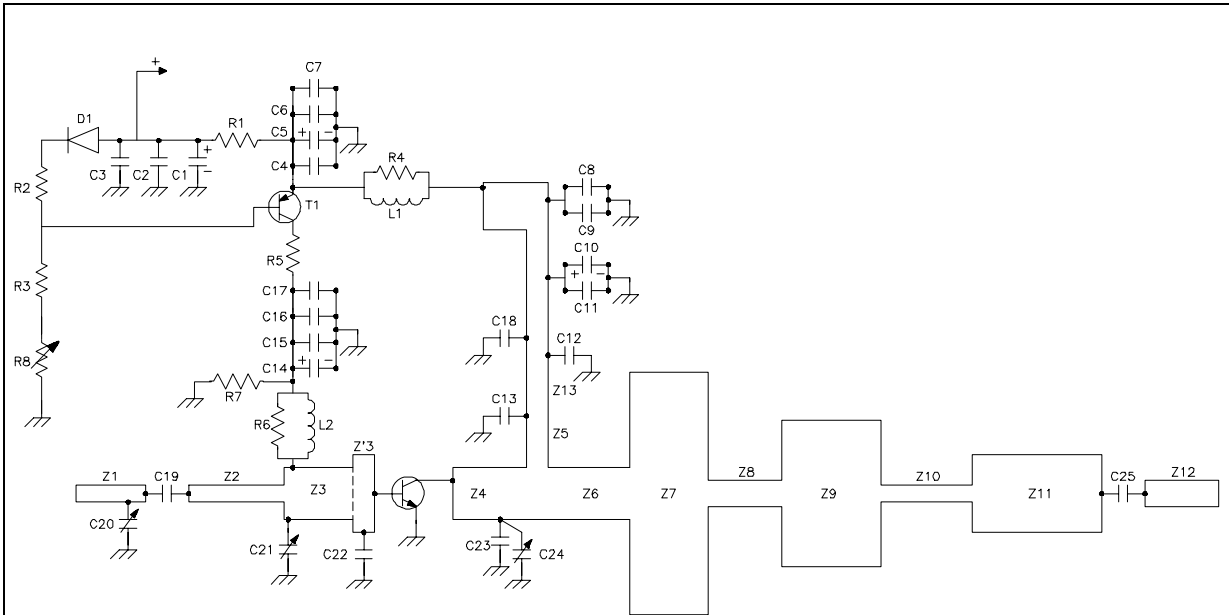
IMPEDANCE DATA

TYPICAL INPUT
IMPEDANCETYPICAL COLLECTOR
LOAD IMPEDANCE

FREQ.	Z _{IN} (Ω)	Z _{CL} (Ω)
470 MHz	2.26 + j 1.67	11.30 + j 5.23
600 MHz	1.93 + j 1.96	10.65 + j 2.91
700 MHz	1.40 + j 2.38	8.41 + j 6.07
860 MHz	1.19 + j 3.45	5.63 + j 4.17

Normalized to 50 ohms

TEST CIRCUIT

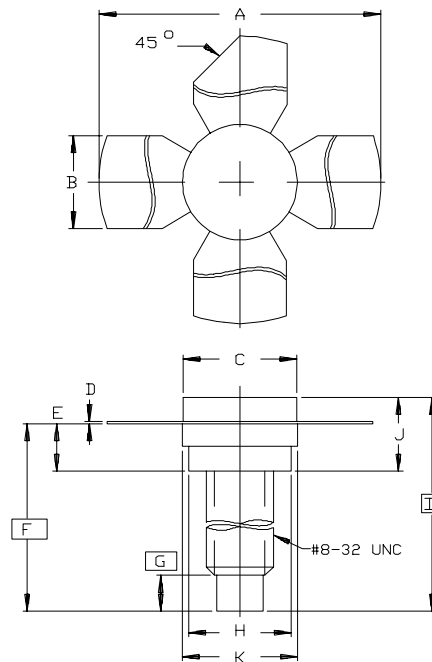


- | | | | |
|------------|------------------------------------|--------|---|
| C1 | : 22 μ F - 63V - Sprague | C22 | : 10pF ATC 100A |
| C2, C6, | | C23 | : 15pF ATC 100B |
| C8, C15 | : 4.7nF Chip LCC | D1 | : 1N 4001 or 1N 914 |
| C3, C7, C9 | | L1 | : 6 Turns - Wire Dia. 5/10 on 2.5mm Internal Dia. |
| C11, C16 | : 100nF Chip LCC | L2 | : 10 to 12 Turns on R6 - Wire Dia. 5/10 |
| C4, C10 | : 4.7 μ F - 40V - Sprague | R1 | : 2.2 Ω - 3W - Sfernice |
| C5, C14 | : 4.7 μ F - 63V - Sprague | R2 | : 100 Ω - 1/2W |
| C12, C17, | | R3 | : 510 Ω - 1/2W |
| C18 | : 470pF Chip LCC | R4, R6 | : 100 Ω - 1/2W |
| C13, C25 | : 47pF ATC 100B | R5, R7 | : 56 Ω - 1W |
| C19 | : 47pF ATC 100A | R8 | : 3.3k Ω Adjustable |
| C20 | : 0.5 - 4.5pF Adjustable Airtronic | T1 | : BDX 54 B |
| C21, C24 | : 0.8 - 5pF Adjustable Johanson | | |

- | | |
|-----|---|
| Z1 | : 50 Ω transmission line - length 18mm |
| Z2 | : 50 Ω transmission line - length 22mm |
| Z3 | : 16.4 Ω transmission line - length 12mm |
| Z'3 | : 10.5 Ω transmission line - length 3.5mm |
| Z4 | : 20 Ω transmission line - length 13mm |
| Z5 | : 50 Ω transmission line - length 2.5mm |
| Z6 | : 20 Ω transmission line - length 23mm |
| Z7 | : 4 Ω transmission line - length 8% λ g at 860MHz |
| Z8 | : 55 Ω transmission line - length 7.5% λ g at 860MHz |
| Z9 | : 7.5 Ω transmission line - length 8% λ g at 860MHz |
| Z10 | : 100 Ω transmission line - length 8% λ g at 860MHz |
| Z11 | : 20 Ω transmission line - length 8% λ g at 860MHz |
| Z12 | : 50 Ω transmission line - length 5mm |
| Z13 | : 50 Ω transmission line - length 12mm |

PACKAGE MECHANICAL DATA

Ref.: Dwg. No. 12-0122



SGS-THOMSON MICROELECTRONICS		
	MINIMUM Inches/mm	MAXIMUM Inches/mm
A	1.010/25,65	1.055/26,80
B	.220/5,59	.230/5,84
C	.270/6,86	.285/7,24
D	.003/0,08	.007/0,18
E	.117/2,97	.137/3,48
F	.572/14,53	
G	.130/3,30	
H	.245/6,22	.255/6,48
I	.640/16,26	
J	.175/4,45	.217/5,51
K	.275/6,99	.285/7,24

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