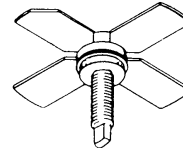


RF & MICROWAVE TRANSISTORS UHF TV/LINEAR APPLICATIONS

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



.280 4L STUD (M122)
epoxy sealed

ORDER CODE
SD4011

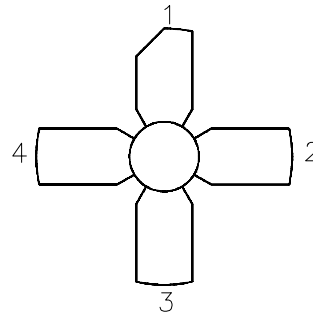
BRANDING
SUTV040

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.

PIN CONNECTION



- | | |
|--------------|------------|
| 1. Collector | 3. Base |
| 2. Emitter | 4. Emitter |

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

STATIC

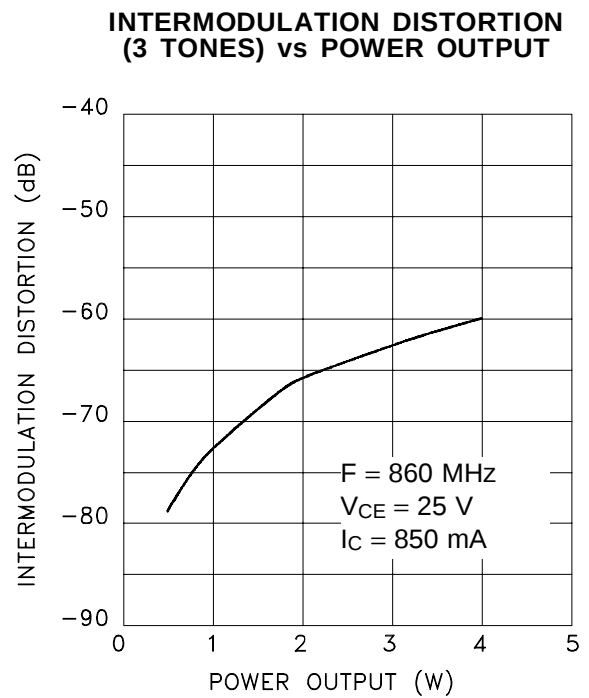
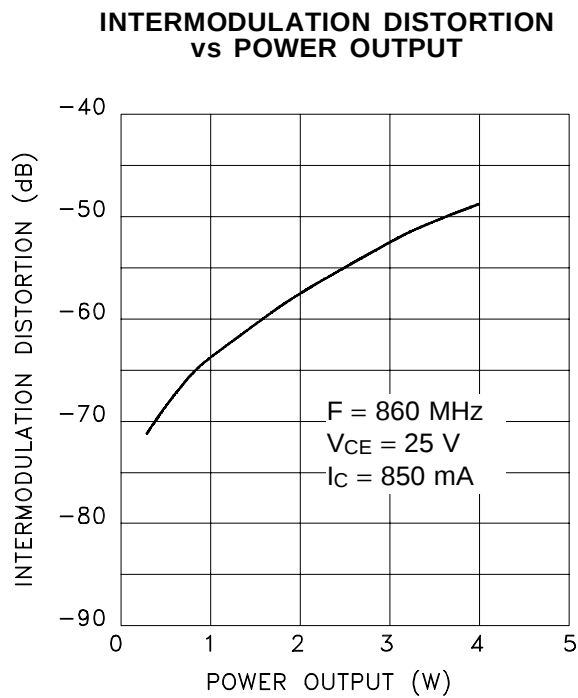
Symbol	Test Conditions		Value			Unit
			Min.	Typ.	Max.	
BV_{CBO}	$I_{\text{C}} = 5\text{mA}$	$I_{\text{E}} = 0\text{mA}$	65	—	—	V
BV_{EBO}	$I_{\text{E}} = 5\text{mA}$	$I_{\text{C}} = 0\text{mA}$	3.5	—	—	V
BV_{CES}	$I_{\text{C}} = 10\text{mA}$	$V_{\text{BE}} = 0\text{V}$	65	—	—	V
BV_{CEO}	$I_{\text{C}} = 5\text{mA}$	$I_{\text{B}} = 0\text{mA}$	20	—	—	V
I_{CBO}	$V_{\text{CB}} = 40\text{V}$	$I_{\text{E}} = 0\text{mA}$	—	—	1.0	mA
h_{FE}	$V_{\text{C}} = 5\text{V}$	$I_{\text{C}} = 800\text{mA}$	20	—	200	—

DYNAMIC

Symbol	Test Conditions			Value			Unit
				Min.	Typ.	Max.	
P_{OUT}	$f = 860\text{ MHz}$	$V_{\text{CE}} = 25\text{ V}$	$I_{\text{C}} = 850\text{ mA}$	4	—	—	W
G_{P}	$f = 860\text{ MHz}$	$V_{\text{CE}} = 25\text{ V}$	$I_{\text{C}} = 850\text{ mA}$	8.0	—	—	dB
IMD_3	$f = 860\text{ MHz}$	$V_{\text{CE}} = 25\text{ V}$	$I_{\text{C}} = 850\text{ mA}$	-60	—	—	dBc
C_{OB}	$f = 1\text{ MHz}$	$V_{\text{CE}} = 25\text{ V}$		—	13	20	pF

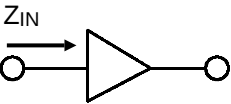
Note: $P_{\text{IN}} = 0.63$

TYPICAL PERFORMANCE

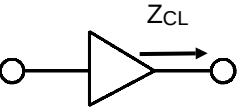


IMPEDANCE DATA

TYPICAL INPUT
IMPEDANCE



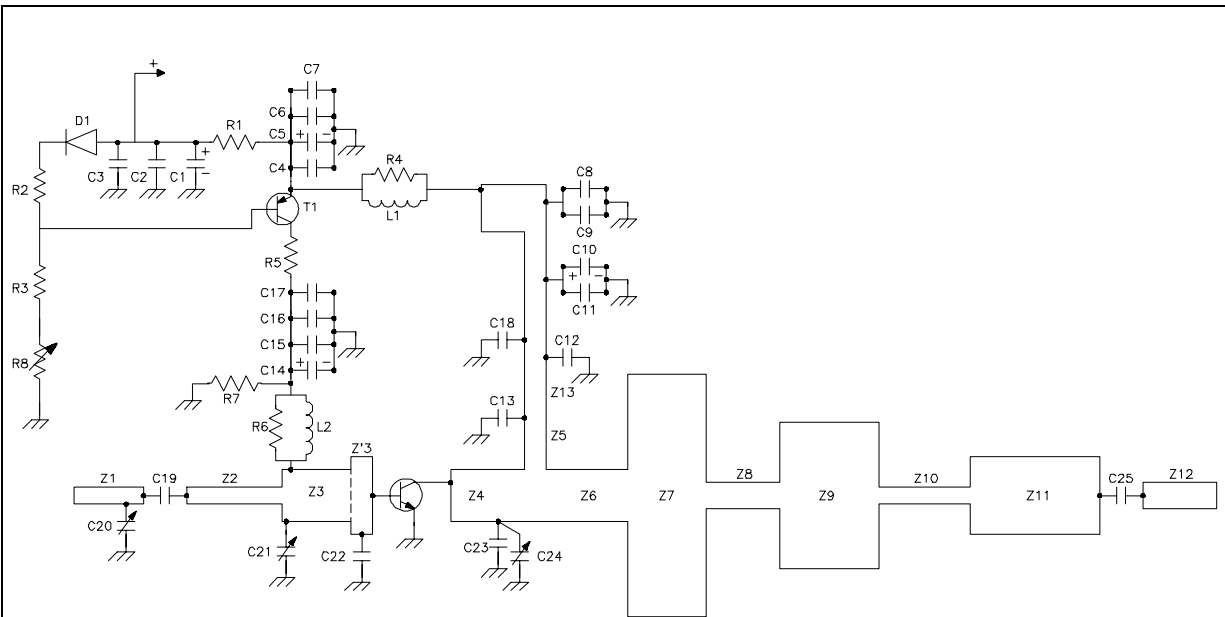
TYPICAL COLLECTOR
LOAD IMPEDANCE



FREQ.	$Z_{IN} (\Omega)$	$Z_{CL} (\Omega)$
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

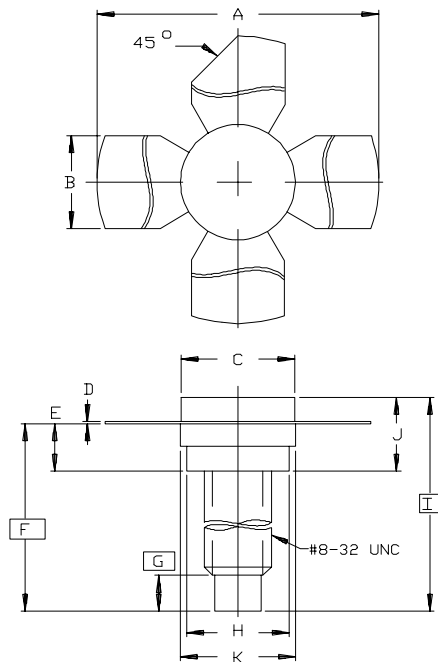


C1	: 22 μ F - 63V - Sprague	C22	: 10pF ATC 100A
C2, C6,		C23	: 15pF ATC 100B
C8, C15	: 4.7nF Chip LCC	D1	: 1N 4001 or 1N 914
C3, C7, C9		L1	: 6 Turns - Wire Dia. 5/10 on 2.5mm Internal Dia.
C11, C16	: 100nF Chip LCC	L2	: 10 to 12 Turns on R6 - Wire Dia. 5/10
C4, C10	: 4.7 μ F - 40V - Sprague	R1	: 2.2 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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