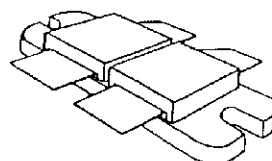


RF & MICROWAVE TRANSISTORS 800/900 MHz APPLICATIONS

- 915 - 960 MHz
- 24 VOLTS
- CLASS AB PUSH PULL
- INTERNAL INPUT MATCHING
- DESIGNED FOR HIGH POWER LINEAR OPERATION
- HIGH SATURATED POWER CAPABILITY
- GOLD METALLIZATION FOR HIGH RELIABILITY
- DIFFUSED EMITTER BALLAST RESISTORS
- COMMON EMITTER CONFIGURATION
- $P_{OUT} = 100\text{ W MIN. WITH } 7.0\text{ dB GAIN}$

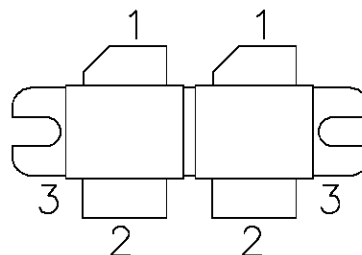


2 x .437 x .450 2LFL (M175)
epoxy sealed

ORDER CODE
SD1680

BRANDING
SD1680

PIN CONNECTION



1. Collector 3. Emitter
2. Base

DESCRIPTION

The SD1680 is a gold metallized epitaxial silicon NPN planar transistor using diffused emitter ballast resistors for high linearity Class AB operation in cellular base station applications.

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

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage	60	V
V_{CEO}	Collector-Emitter Voltage	30	V
V_{EBO}	Emitter-Base Voltage	3.0	V
I_C	Device Current	25	A
P_{DISS}	Power Dissipation	310	W
T_J	Junction Temperature	+200	$^{\circ}\text{C}$
T_{STG}	Storage Temperature	- 55 to +150	$^{\circ}\text{C}$

THERMAL DATA

$R_{TH(j-c)}$	Junction-Case Thermal Resistance	0.55	$^{\circ}\text{C/W}$
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SD1680

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

STATIC

Symbol	Test Conditions	Value			Unit
		Min.	Typ.	Max.	
BV_{CBO}	$I_C = 100\text{mA}$ $I_E = 0\text{mA}$	60	—	—	V
BV_{CEO}	$I_C = 100\text{mA}$ $I_B = 0\text{mA}$	30	—	—	V
BV_{EBO}	$I_E = 50\text{mA}$ $I_C = 0\text{mA}$	3.0	—	—	V
I_{CES}	$V_{CE} = 28\text{V}$ $I_E = 0\text{mA}$	—	—	10	mA
h_{FE}	$V_{CE} = 5\text{V}$ $I_C = 3\text{A}$	15	—	70	—

Tested Per Side

DYNAMIC

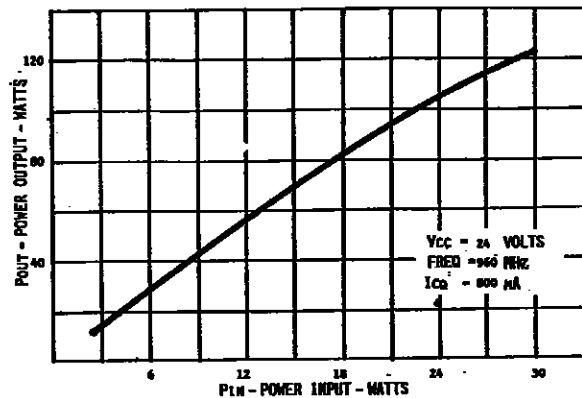
Symbol	Test Conditions	Value			Unit
		Min.	Typ.	Max.	
P_{OUT}^*	$f = 900\text{ MHz}$ $V_{CE} = 24\text{ V}$ $I_{CQ} = 2 \times 300\text{ mA}$	120	—	—	W
G_P^*	$f = 900\text{ MHz}$ $V_{CE} = 24\text{ V}$ $I_{CQ} = 2 \times 300\text{ mA}$	7.0	—	—	dB
IMD^{**}	$f = 900\text{ MHz}$ $V_{CE} = 24\text{ V}$ $I_{CQ} = 2 \times 300\text{ mA}$	—	-32	—	dBc
η_c	$f = 900\text{ MHz}$ $V_{CE} = 24\text{ V}$ $I_{CQ} = 2 \times 300\text{ mA}$	45	—	—	%
C_{OB}	$f = 1\text{ MHz}$ $V_{CB} = 28\text{ V}$	—	—	100	pF

Note: * @ 1 dB Compression

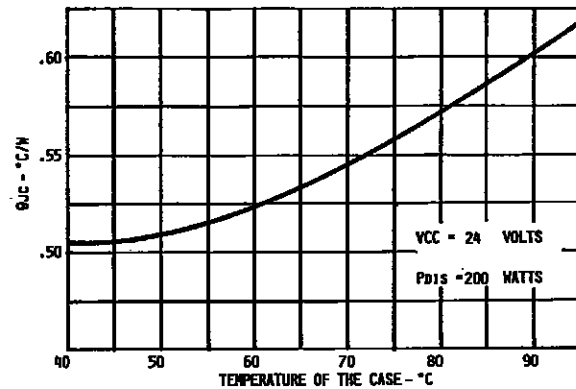
** $P_{OUT} = 100\text{W PEP}$, $\Delta F = 400\text{KHz}$ (2 tones)

TYPICAL PERFORMANCE

POWER OUTPUT vs POWER INPUT

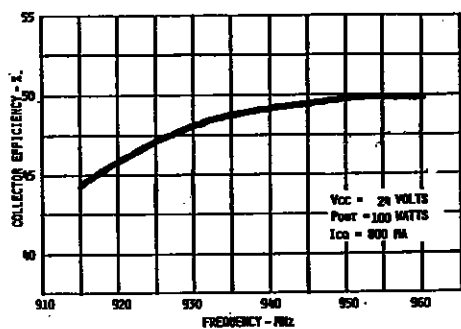


THERMAL RESISTANCE vs CASE TEMPERATURE

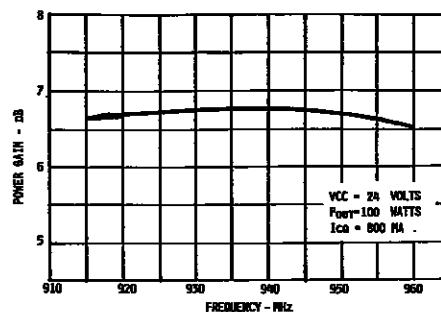


TYPICAL PERFORMANCE (cont'd)

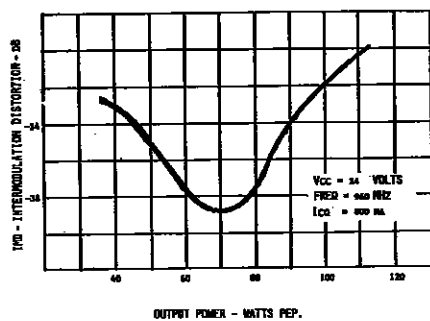
COLLECTOR EFFICIENCY vs FREQUENCY



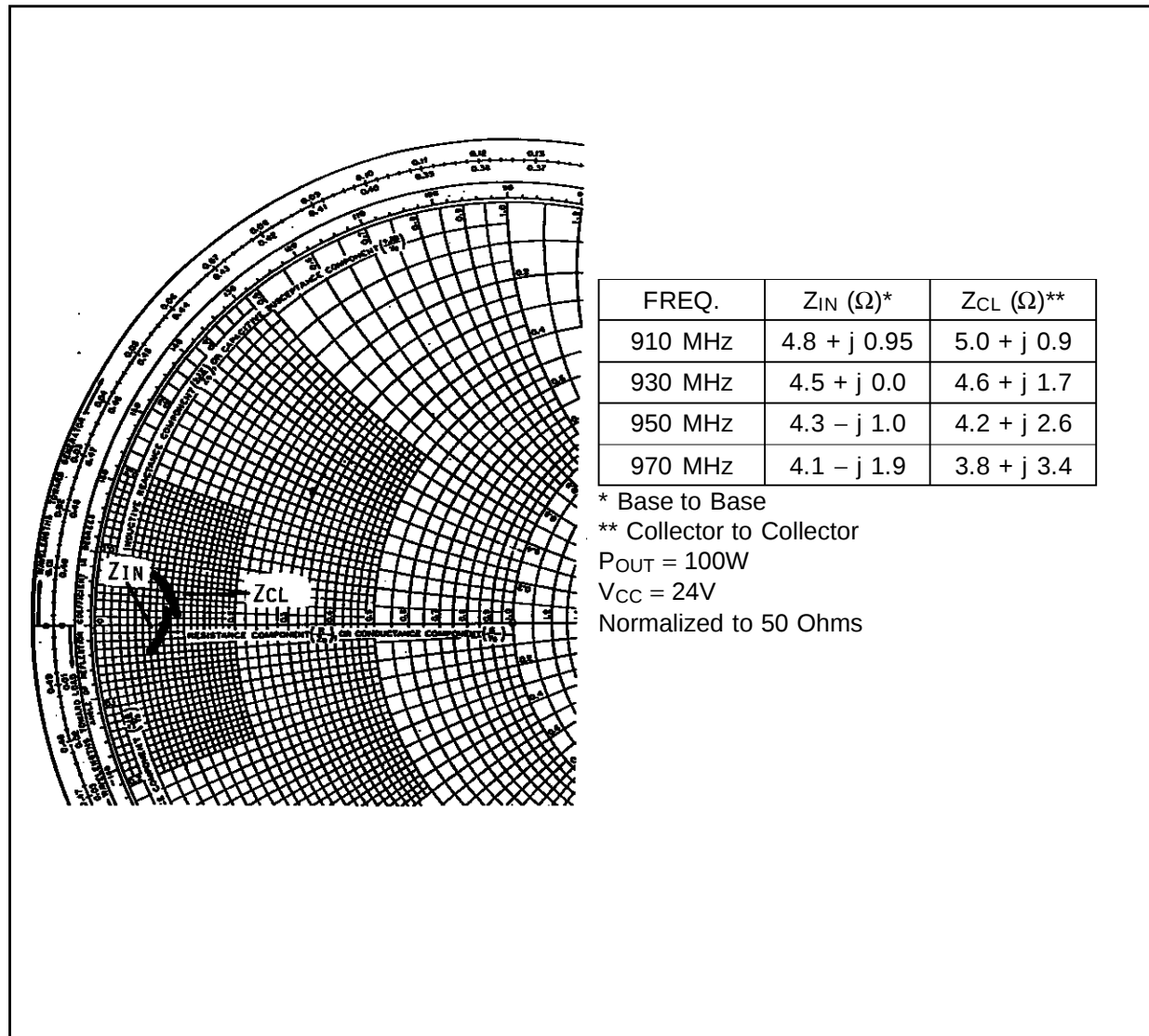
BROADBAND POWER GAIN vs FREQUENCY



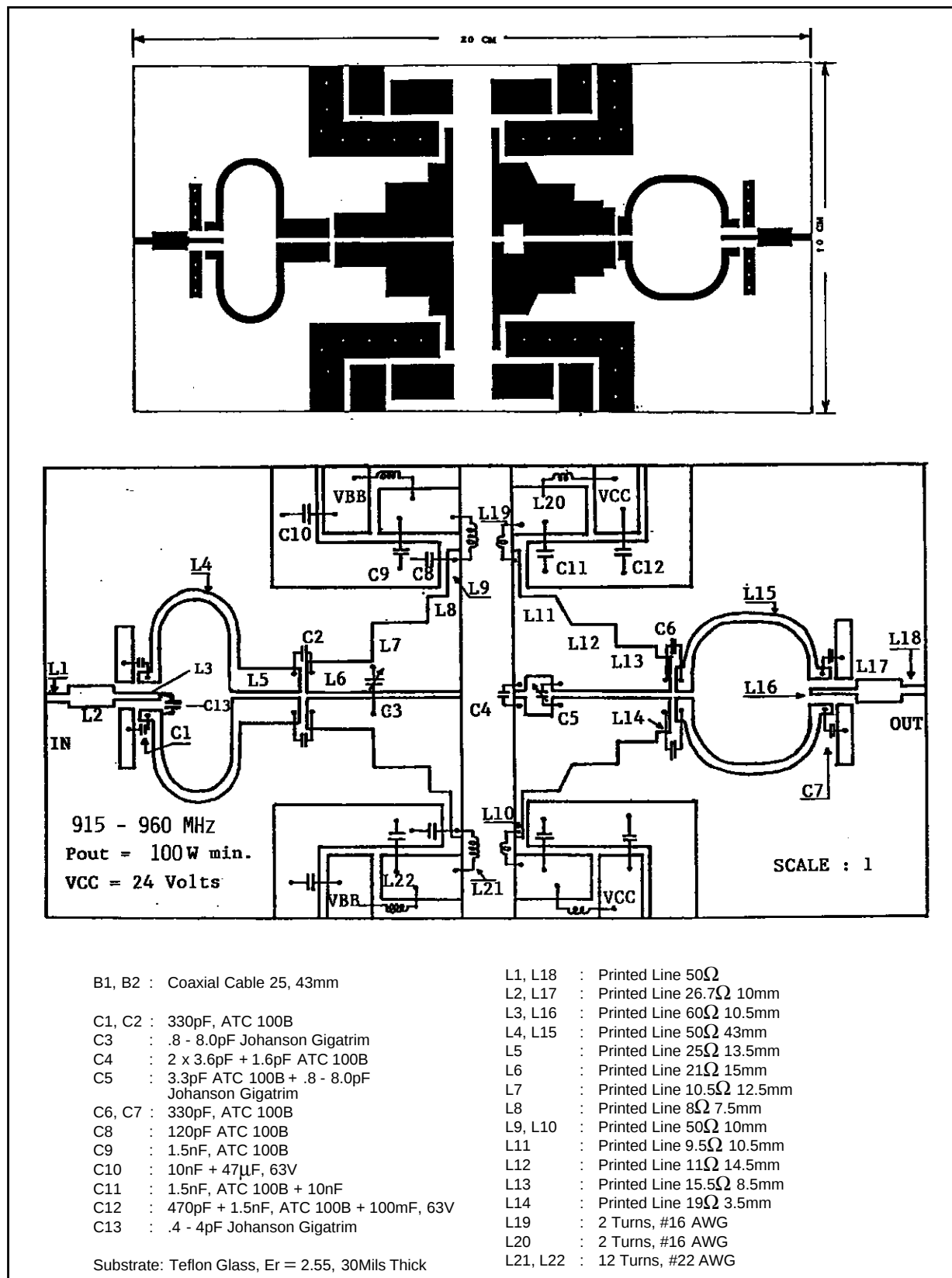
INTERMODULATION DISTORTION vs POWER OUTPUT



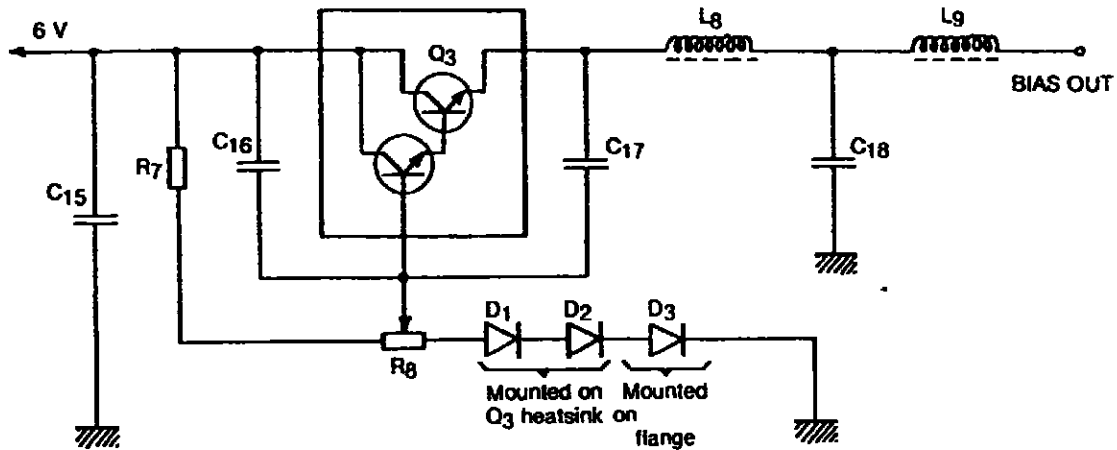
IMPEDANCE DATA



TEST CIRCUIT



BIAS VOLTAGE SOURCE



C15 : 10nF + 100nF + 10μF

C16 : 10nF

C17 : 1μF

C18 : 1.2nF + 27nF + 10μF

D1 : AAY 49, Ge Diode Thermally Connected with Q3 Heatsink

D2 : 1N 4005, SI Diode Thermally Connected with Q3 Heatsink

D3 : 1N 4005, SI Diode Thermally Connected with RF Transistors Flange

L8, L9 : Ferrite Choke

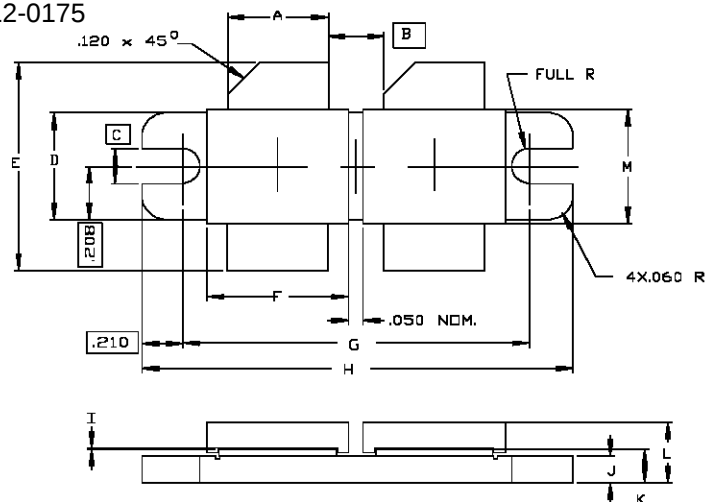
Q3 : BDX 63B

R7 : 470Ω, 1/2W

R8 : 100Ω, Trimpot

PACKAGE MECHANICAL DATA

Ref.: Dwg. No.12-0175



SGS-THOMSON MICROELECTRONICS			CONT'D		
	MINIMUM Inches/mm	MAXIMUM Inches/mm		MINIMUM Inches/mm	MAXIMUM Inches/mm
A	.373/9,47	.385/9,78	K	.115/2,92	.135/3,43
B	.190/4,83		L		.250/6,35
C	.130/3,30		M	.445/11,30	.455/11,56
D	.411/10,44	.421/10,69			
E	.825/20,96	.865/21,97			
F	.525/13,34	.535/13,59			
G	1.255/31,88	1.265/32,13			
H	1.675/42,55	1.685/42,80			
I	.002/0,05	.006/0,15			
J	.095/2,41	.105/2,67			

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