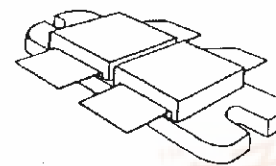




SD1660

RF & MICROWAVE TRANSISTORS 800/900 MHz APPLICATIONS

- 860 - 900 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
- $P_{OUT} = 120 \text{ W MIN. WITH } 6.0 \text{ dB GAIN}$

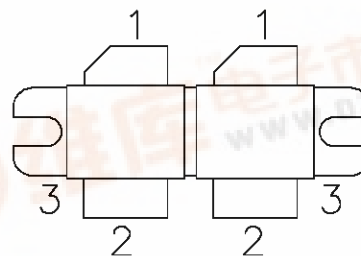


2 x .437 x .450 2LFL (M175)
epoxy sealed

ORDER CODE
SD1660

BRANDING
SD1660

PIN CONNECTION



1. Collector 3. Emitter
2. Base

DESCRIPTION

The SD1660 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

$R_{\theta(j-c)}$	Junction-Case Thermal Resistance	0.55	$^{\circ}\text{C/W}$
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SD1660

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

STATIC

Symbol	Test Conditions		Value			Unit
			Min.	Typ.	Max.	
BV _{CBO}	I _C = 100mA	I _E = 0mA	60	—	—	V
BV _{CEO}	I _C = 100mA	I _B = 0mA	30	—	—	V
BV _{EBO}	I _E = 50mA	I _C = 0mA	3.0	—	—	V
I _{CES}	V _{CE} = 28V	I _E = 0mA	—	—	10	mA
h _{FE}	V _{CE} = 5V	I _C = 3A	15	—	70	—

Tested Per Side

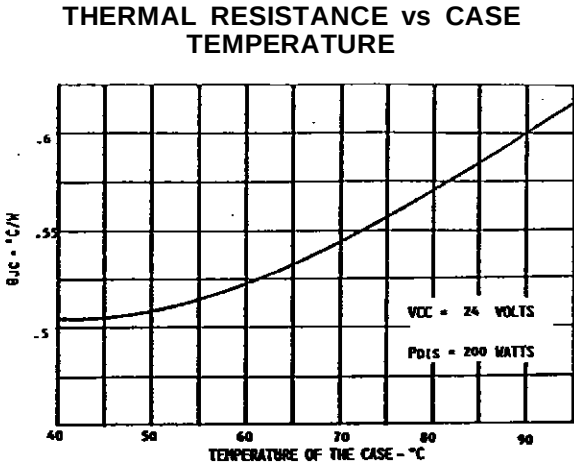
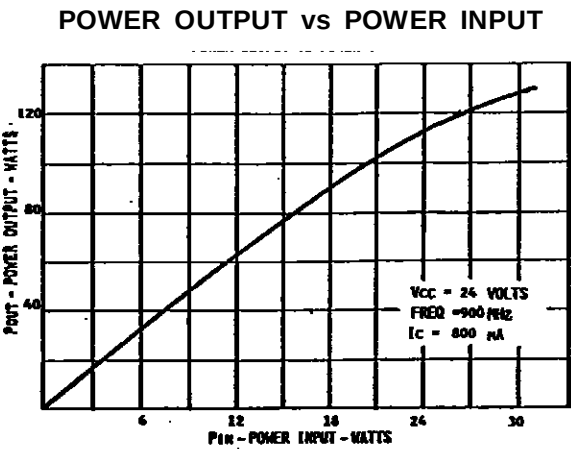
DYNAMIC

Symbol	Test Conditions			Value			Unit
				Min.	Typ.	Max.	
P _{OUT} *	f = 900 MHz	V _{CE} = 24 V	I _{CQ} = 2 x 400mA	120	—	—	W
G _P *	f = 900 MHz	V _{CE} = 24 V	I _{CQ} = 2 x 400mA	6.0	—	—	dB
IMD**	f = 900 MHz	V _{CE} = 24 V	I _{CQ} = 2 x 400mA	—	-32	—	dBc
η _c	f = 900 MHz	V _{CE} = 24 V	I _{CQ} = 2 x 400mA	50	—	—	%
C _{OB}	f = 1 MHz	V _{CB} = 28 V		—	—	100	pF

Note: * @ 1 dB Compression

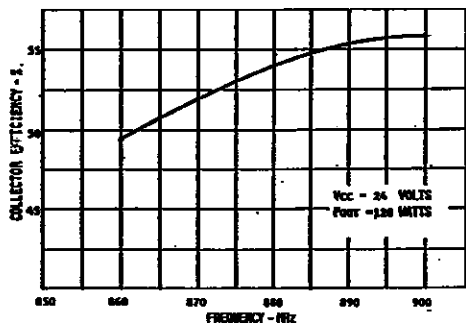
** P_{OUT} = 120W PEP, Δ F = 600KHz (2 tones)

TYPICAL PERFORMANCE

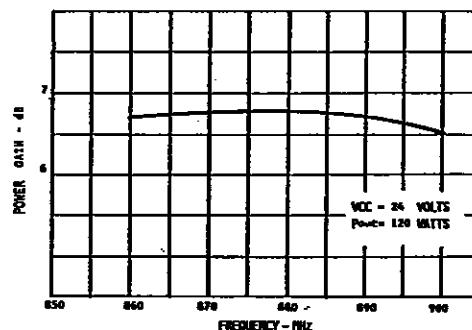


TYPICAL PERFORMANCE (cont'd)

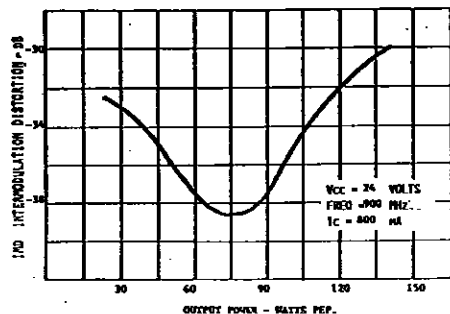
COLLECTOR EFFICIENCY vs FREQUENCY



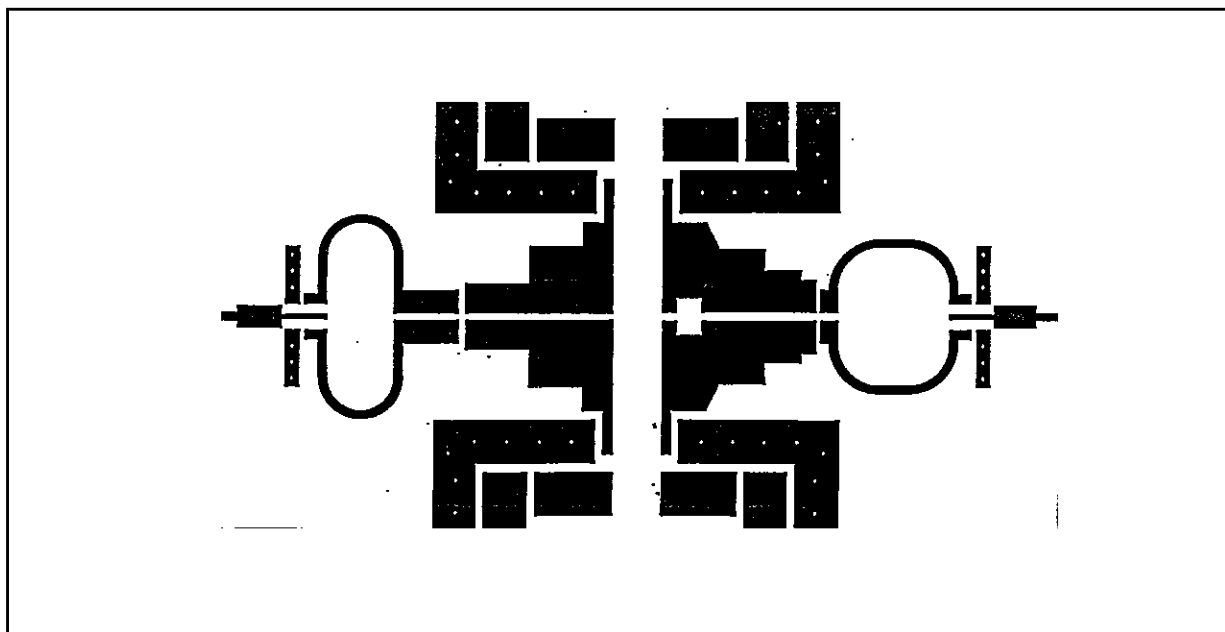
BROADBAND POWER GAIN vs FREQUENCY



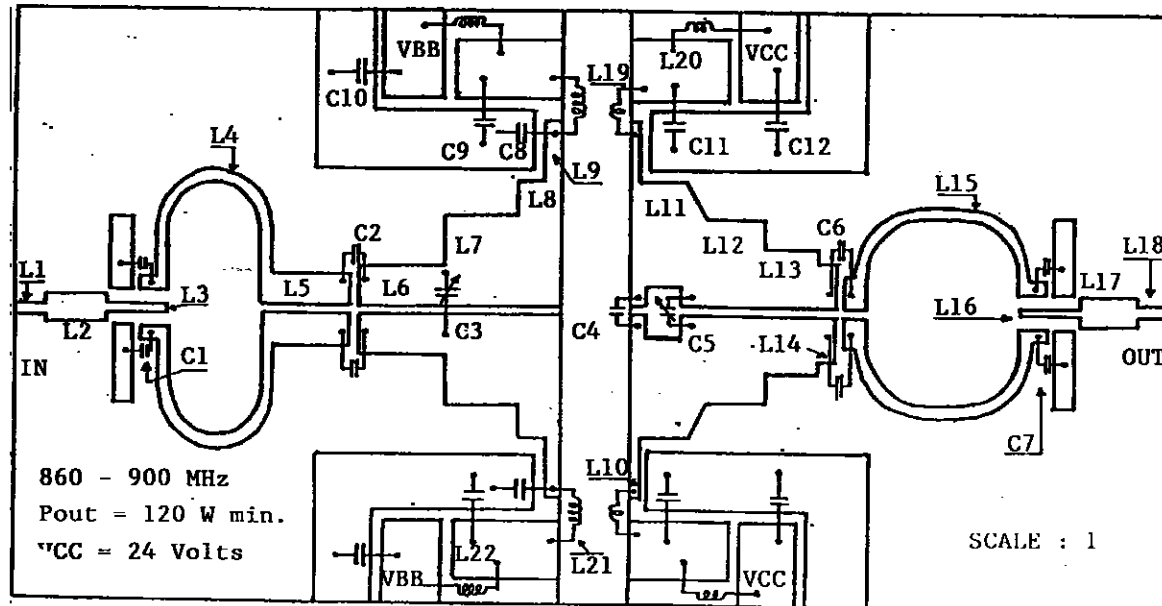
INTERMODULATION DISTORTION vs POWER OUTPUT



PHOTOMASTER OF TEST CIRCUIT



TEST CIRCUIT



B1, B2 : Coaxial Cable 25.43mm

C1, C2 : 330pF, ATC 100B

C3 : .8 - 8.0pF Johanson Gigatrim

C4 : 4.7 + 3.9pF, ATC 100B

C5 : 3.9 + 1.7pF, ATC 100B + .8 - 8.0pF
Johanson Gigatrim

C6, C7 : 330pF, ATC 100B

C8 : 120pF ATC 100B

C9 : 1.5nF, ATC 100B

C10 : 10nF + 47μF, 63V

C11 : 1.5nF, ATC 100B + 10nF

C12 : 470pF + 1.5nF, ATC 100B + 100mF, 63V

Substrate: Teflon Glass, Er = 2.55, 30Mils Thick

L1, L18 : Printed Line 50Ω

L2, L17 : Printed Line 26.7Ω 10mm

L3, L16 : Printed Line 60Ω 10.5mm

L4, L15 : Printed Line 50Ω 43mm

L5 : Printed Line 25Ω 13.5mm

L6 : Printed Line 21Ω 15mm

L7 : Printed Line 10.5Ω 12.5mm

L8 : Printed Line 8Ω 7.5mm

L9, L10 : Printed Line 50Ω 10mm

L11 : Printed Line 9.5Ω 10.5mm

L12 : Printed Line 11Ω 14.5mm

L13 : Printed Line 15.5Ω 8.5mm

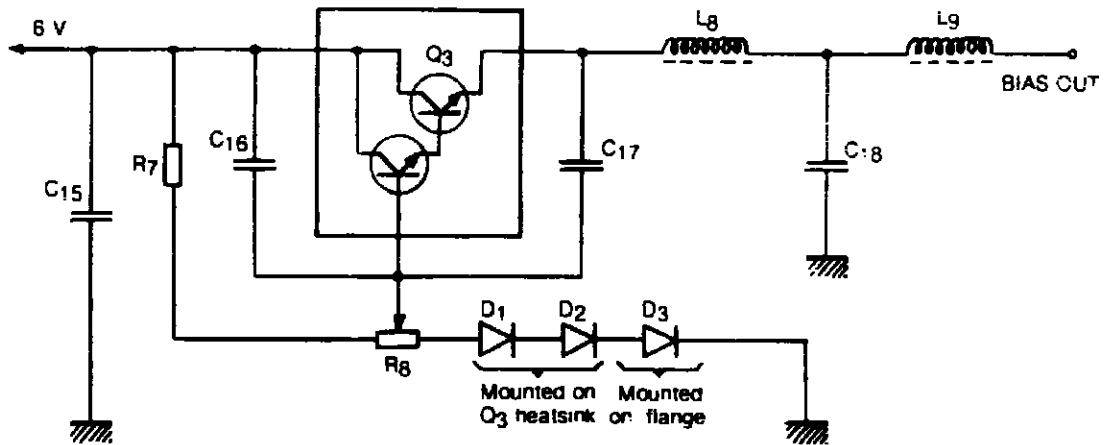
L14 : Printed Line 19Ω 3.5mm

L19 : 2 Turns, #16 AWG

L20 : 2 Turns, #16 AWG

L21, L22 : 12 Turns, #22 AWG

BIAS VOLTAGE SOURCE



C15 : 10nF + 100nF + 10 μ F

C16 : 10nF

C17 : 1 μ F

C18 : 1.2nF + 27nF + 10 μ F

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

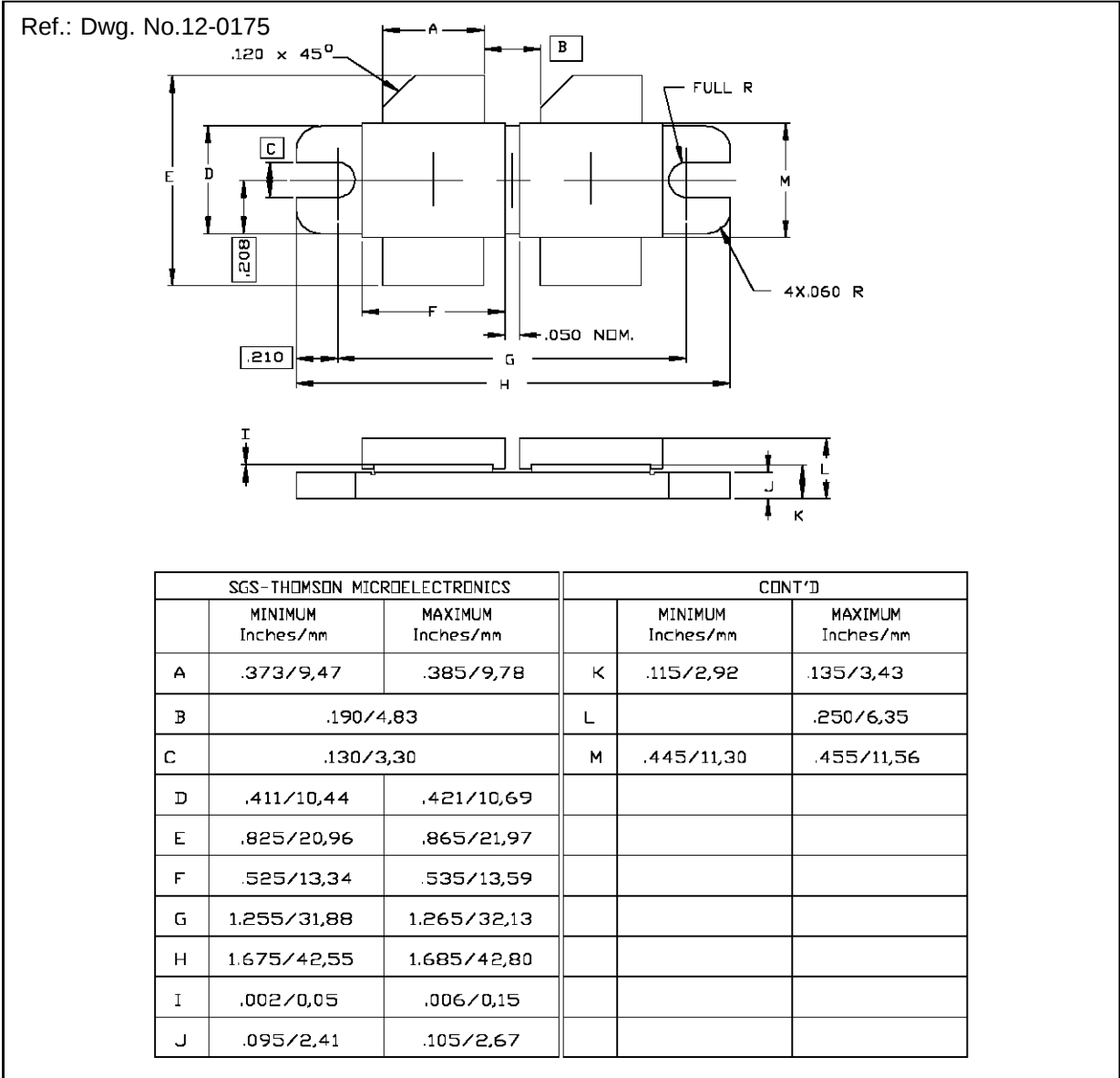
Q3 : BDX 63B

R7 : 470 Ω , 1/2W

R8 : 100 Ω , Trimpot

SD1660

PACKAGE MECHANICAL DATA



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