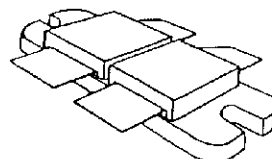


RF & MICROWAVE TRANSISTORS 800/900 MHz APPLICATIONS

- 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

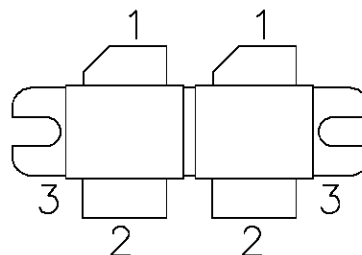
ORDER CODE
SD1660

BRANDING
SD1660

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.

PIN CONNECTION



1. Collector 3. Emitter
2. Base

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	$^{\circ}\text{C/W}$
---------------	----------------------------------	------	----------------------

SD1660

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

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

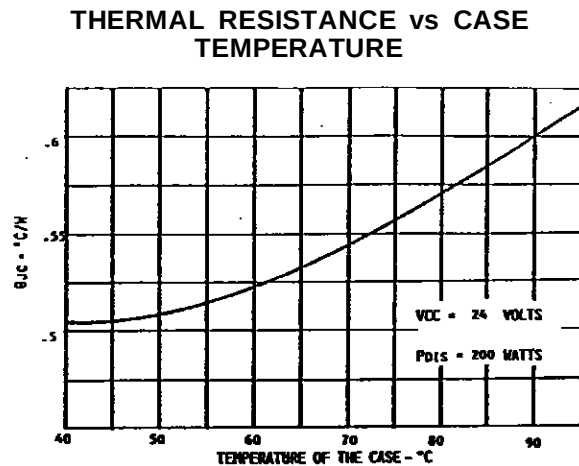
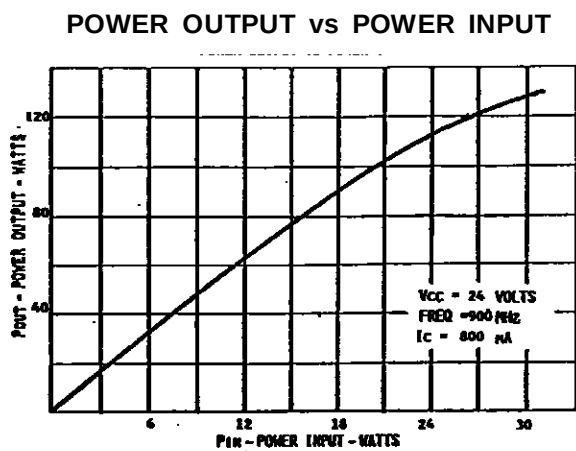
DYNAMIC

Symbol	Test Conditions	Value			Unit
		Min.	Typ.	Max.	
P_{OUT}^*	$f = 900\text{ MHz}$ $V_{CE} = 24\text{ V}$ $I_{CQ} = 2 \times 400mA$	120	—	—	W
G_P^*	$f = 900\text{ MHz}$ $V_{CE} = 24\text{ V}$ $I_{CQ} = 2 \times 400mA$	6.0	—	—	dB
IMD^{**}	$f = 900\text{ MHz}$ $V_{CE} = 24\text{ V}$ $I_{CQ} = 2 \times 400mA$	—	-32	—	dBc
η_c	$f = 900\text{ MHz}$ $V_{CE} = 24\text{ V}$ $I_{CQ} = 2 \times 400mA$	50	—	—	%
C_{OB}	$f = 1\text{ MHz}$ $V_{CB} = 28\text{ V}$	—	—	100	pF

Note: * @ 1 dB Compression

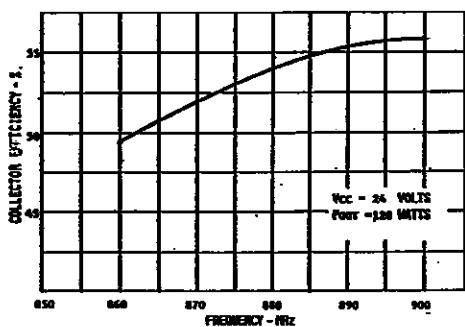
** $P_{OUT} = 120W$ PEP, $\Delta F = 600KHz$ (2 tones)

TYPICAL PERFORMANCE

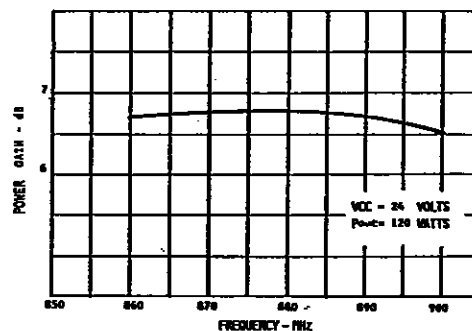


TYPICAL PERFORMANCE (cont'd)

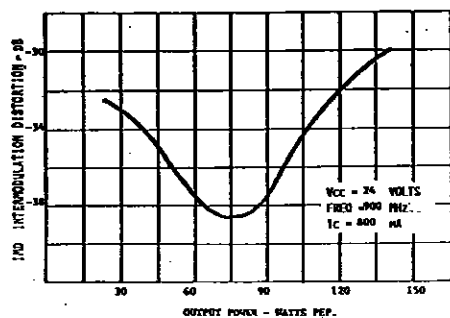
COLLECTOR EFFICIENCY vs FREQUENCY



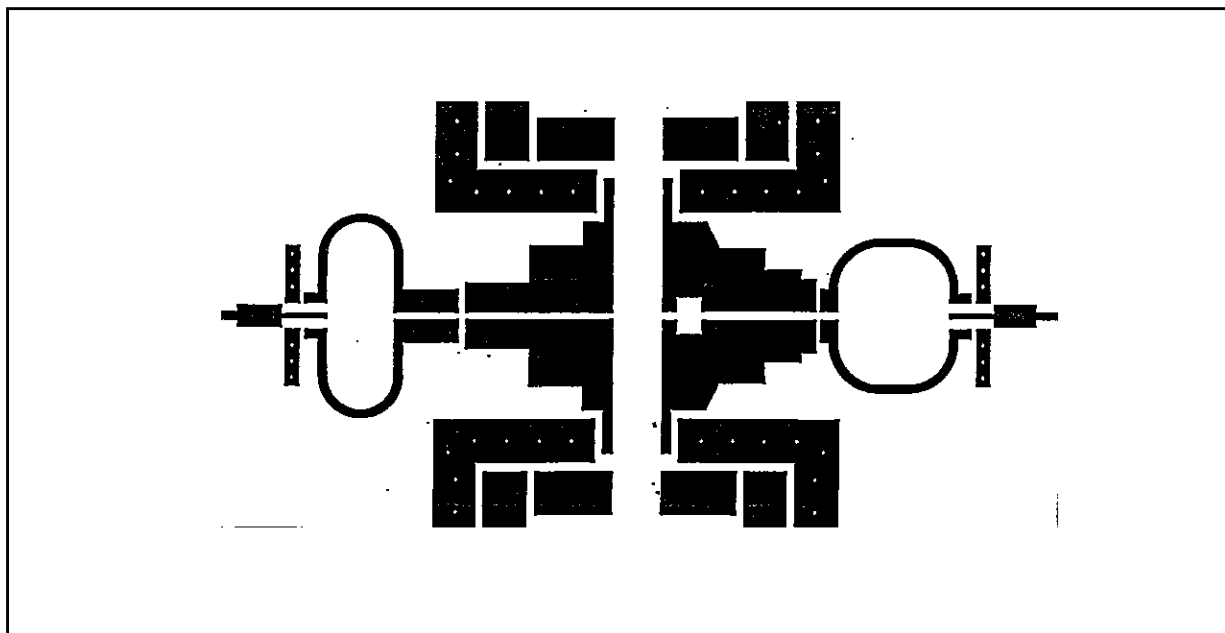
BROADBAND POWER GAIN vs FREQUENCY



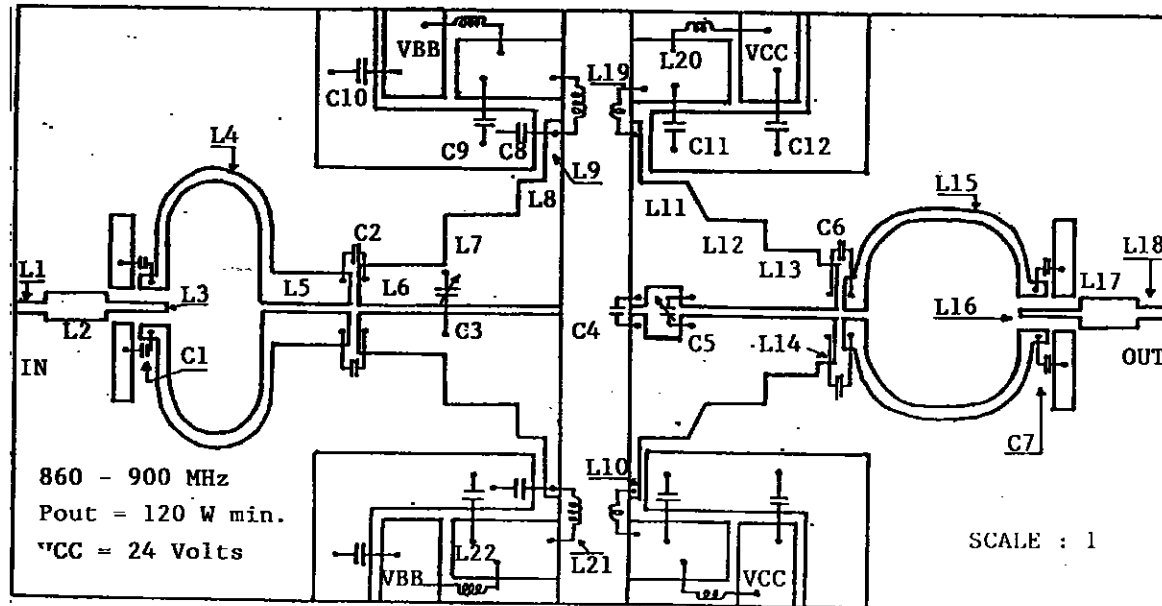
INTERMODULATION DISTORTION vs POWER OUTPUT



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

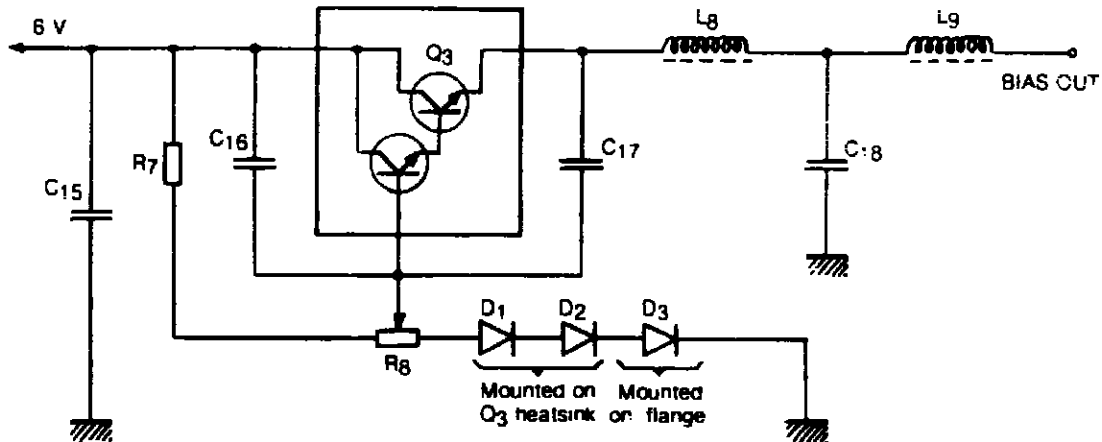
L14 : Printed Line 19Ω 3.5mm

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

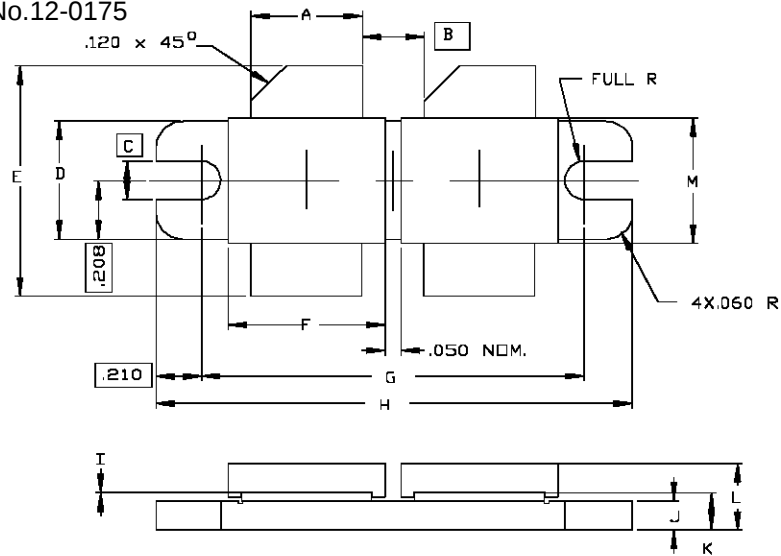
Q3 : BDX 63B

R7 : 470 Ω , 1/2W

R8 : 100 Ω , Trimpot

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			

Information furnished is believed to be accurate and reliable. However, SGS-THOMSON Microelectronics assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of SGS-THOMSON Microelectronics. Specifications mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied. SGS-THOMSON Microelectronics products are not authorized for use as critical components in life support devices or systems without express written approval of SGS-THOMSON Microelectronics.

© 1994 SGS-THOMSON Microelectronics - All Rights Reserved

SGS-THOMSON Microelectronics GROUP OF COMPANIES

Australia - Brazil - France - Germany - Hong Kong - Italy - Japan - Korea - Malaysia - Malta - Morocco - The Netherlands -
Singapore - Spain - Sweden - Switzerland - Taiwan - Thailand - United Kingdom - U.S.A