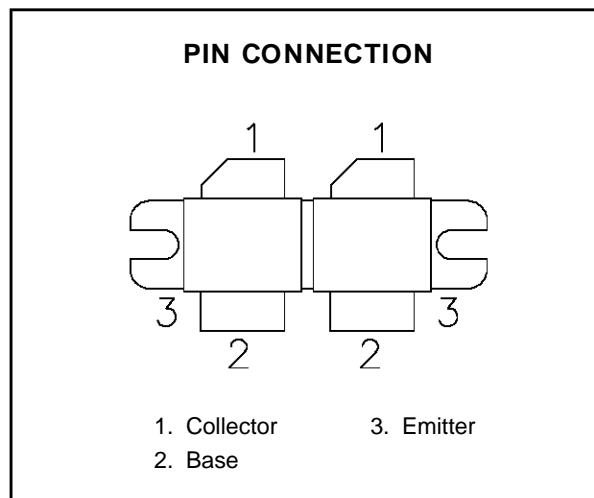
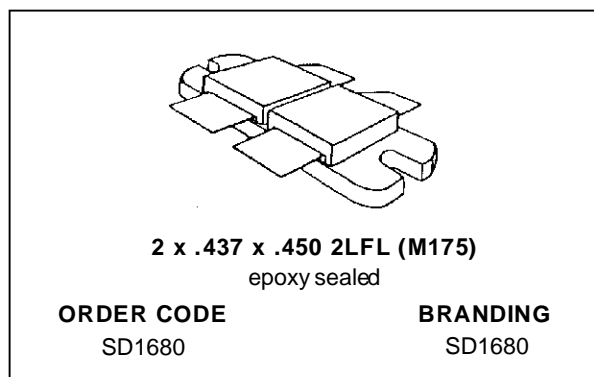


**RF & MICROWAVE TRANSISTORS  
800/900 MHz APPLICATIONS**

- 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
- $P_{OUT} = 100 \text{ W MIN. WITH } 7.0 \text{ dB GAIN}$


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

# SD1680

## ELECTRICAL SPECIFICATIONS (T<sub>case</sub> = 25°C)

### STATIC

Symbol	Test Conditions		Value			Unit
			Min.	Typ.	Max.	
BV <sub>CBO</sub>	I <sub>C</sub> = 100mA	I <sub>E</sub> = 0mA	60	—	—	V
BV <sub>CEO</sub>	I <sub>C</sub> = 100mA	I <sub>B</sub> = 0mA	30	—	—	V
BV <sub>EBO</sub>	I <sub>E</sub> = 50mA	I <sub>C</sub> = 0mA	3.0	—	—	V
I <sub>CES</sub>	V <sub>CE</sub> = 28V	I <sub>E</sub> = 0mA	—	—	10	mA
h <sub>FE</sub>	V <sub>CE</sub> = 5V	I <sub>C</sub> = 3A	15	—	70	—

Tested Per Side

### DYNAMIC

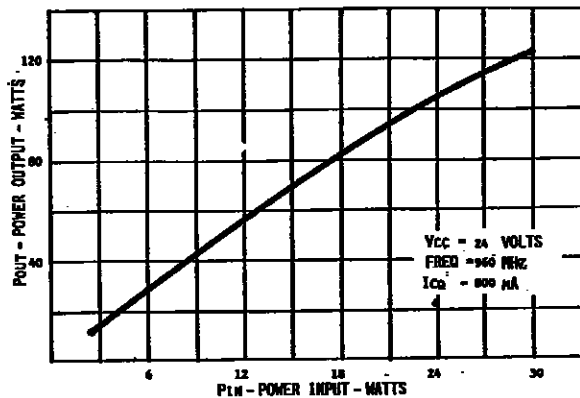
Symbol	Test Conditions			Value			Unit
				Min.	Typ.	Max.	
P <sub>OUT</sub> *	f = 900 MHz	V <sub>CE</sub> = 24 V	I <sub>CQ</sub> = 2 x 300 mA	120	—	—	W
G <sub>P</sub> *	f = 900 MHz	V <sub>CE</sub> = 24 V	I <sub>CQ</sub> = 2 x 300 mA	7.0	—	—	dB
IMD**	f = 900 MHz	V <sub>CE</sub> = 24 V	I <sub>CQ</sub> = 2 x 300 mA	—	-32	—	dBc
η <sub>c</sub>	f = 900 MHz	V <sub>CE</sub> = 24 V	I <sub>CQ</sub> = 2 x 300 mA	45	—	—	%
C <sub>OB</sub>	f = 1 MHz	V <sub>CB</sub> = 28 V		—	—	100	pF

Note: \* @ 1 dB Compression

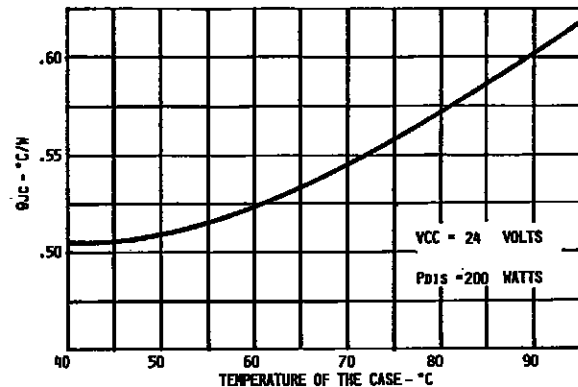
\*\* P<sub>OUT</sub> = 100W PEP, ΔF = 400KHz (2 tones)

### TYPICAL PERFORMANCE

POWER OUTPUT vs POWER INPUT

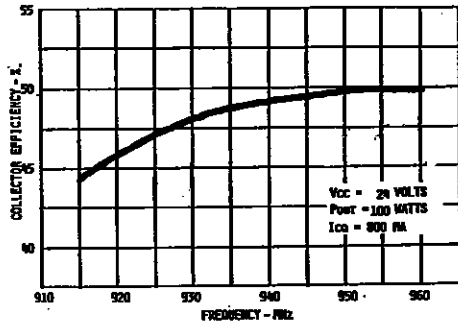


THERMAL RESISTANCE vs CASE TEMPERATURE

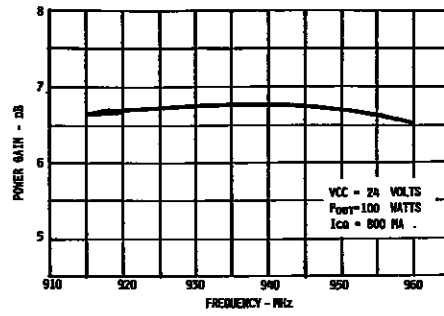


## TYPICAL PERFORMANCE (cont'd)

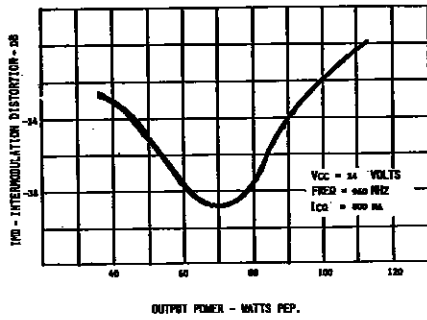
COLLECTOR EFFICIENCY vs FREQUENCY



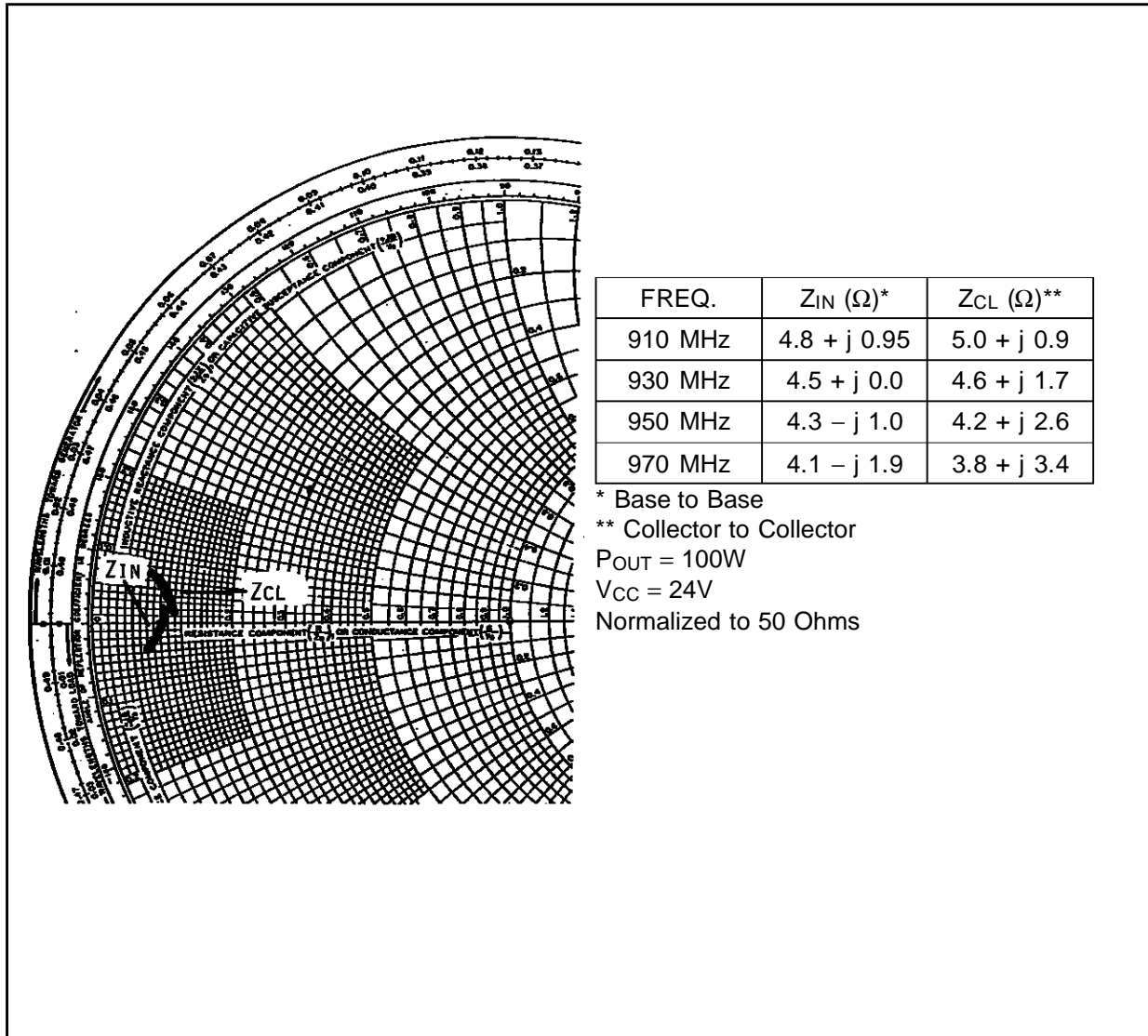
BROADBAND POWER GAIN vs FREQUENCY



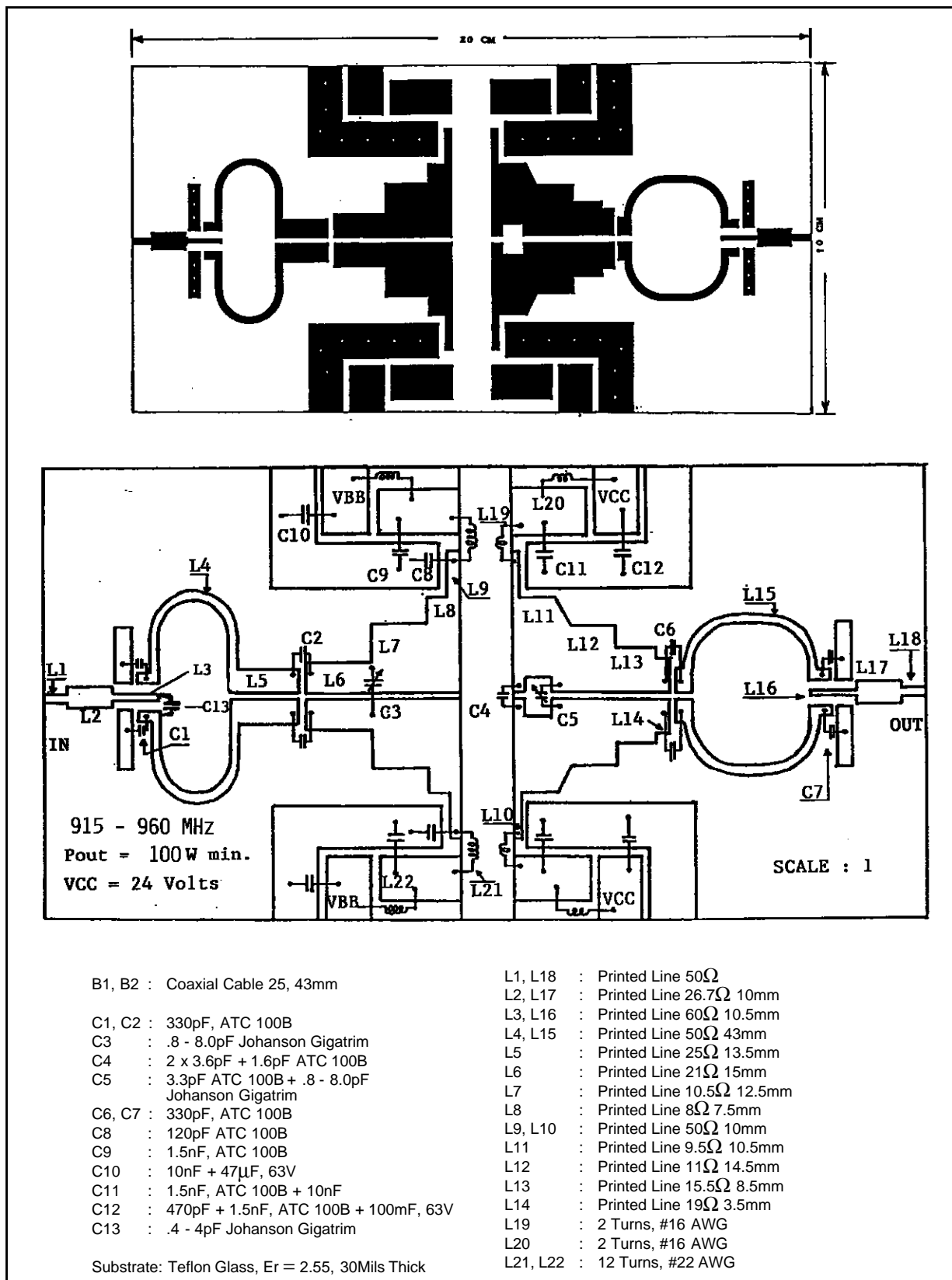
INTERMODULATION DISTORTION vs POWER OUTPUT



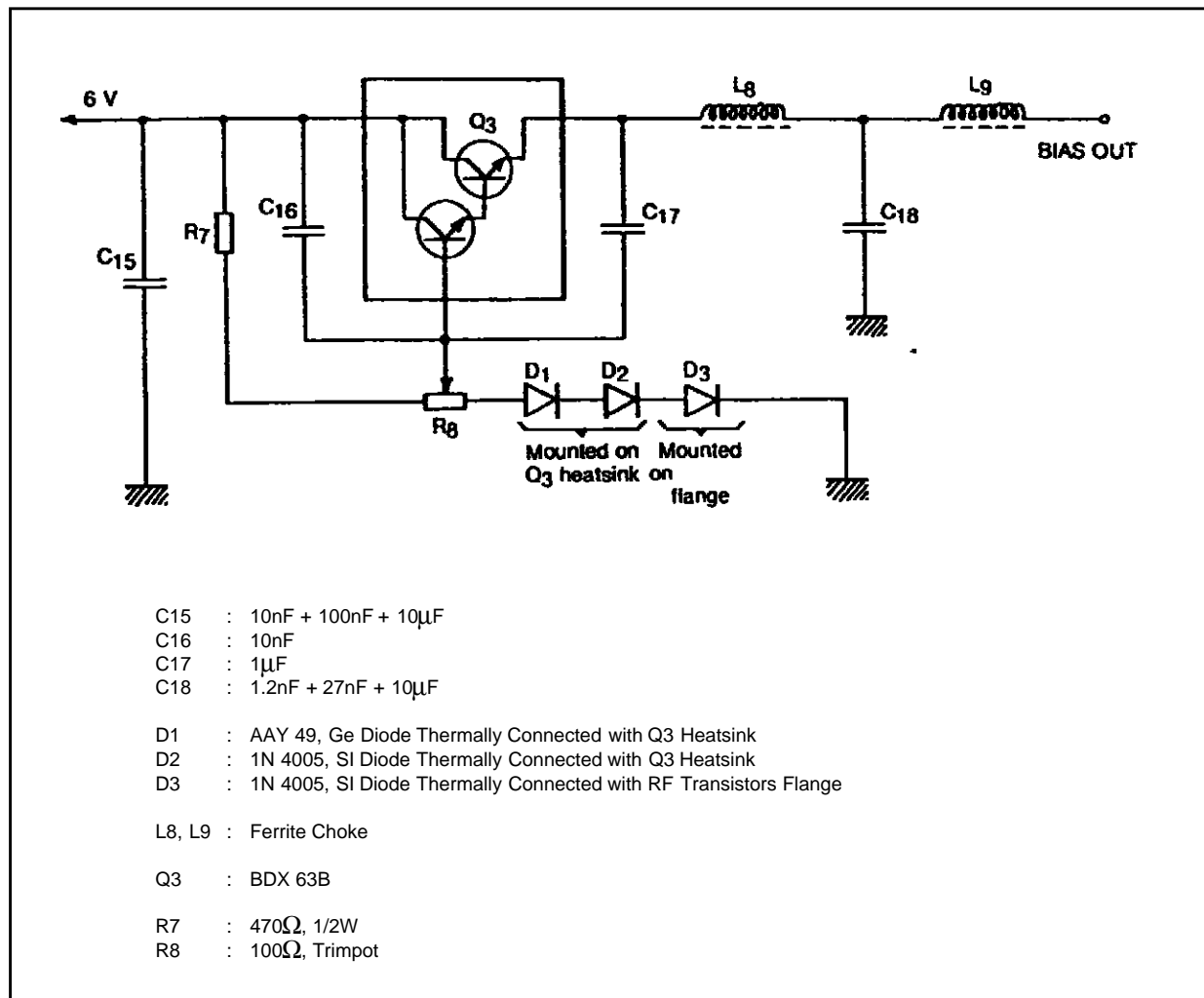
IMPEDANCE DATA



## TEST CIRCUIT

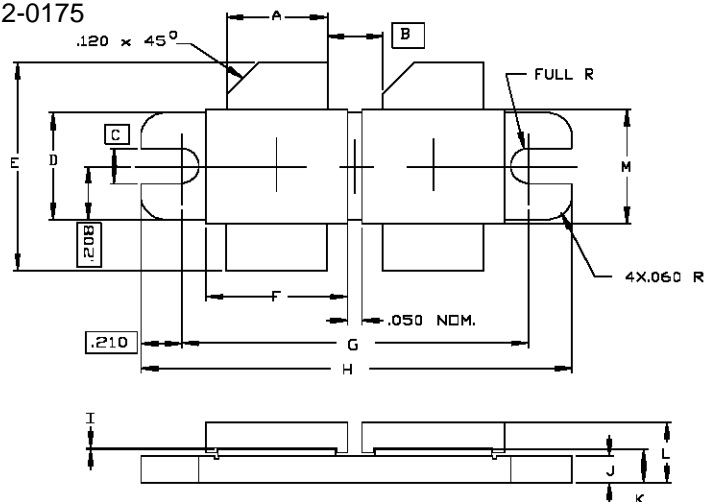


## BIAS VOLTAGE SOURCE



## 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