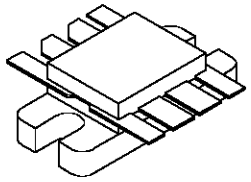
SGS-THOMSON MICROELECTRONICS

SD1456 (TCC3100)

RF & MICROWAVE TRANSISTORS TV/LINEAR APPLICATIONS

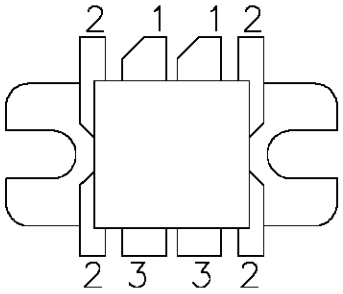
- 170 - 230 MHz
- 28 VOLTS
- CLASS AB PUSH PULL
- DESIGNED FOR HIGH POWER LINEAR OPERATION
- HIGH SATURATED POWER CAPABILITY
- GOLD METALLIZATION
- DIFFUSED EMITTER BALLAST RESISTORS
- COMMON EMITTER CONFIGURATION
- P_{OUT} = 100 W MIN. WITH 11.0 dB GAIN



.400 x .425 8LFL (M168)
epoxy sealed

ORDER CODE	BRANDING
SD1456	TCC3100

PIN CONNECTION



1. Collector
2. Emitter
3. Base

DESCRIPTION

The SD1456 is a gold metallized epitaxial silicon NPN planar transistor using diffused emitter ballast resistors for high linearity Class AB operation in VHF and Band III television transmitters and transposers.

ABSOLUTE MAXIMUM RATINGS (T_{case} = 25°C)

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage	65	V
V_{CEO}	Collector-Emitter Voltage	33	V
V_{EBO}	Emitter-Base Voltage	3.5	V
I_C	Device Current	16	A
P_{DISS}	Power Dissipation	150	W
T_J	Junction Temperature	+200	°C
T_{STG}	Storage Temperature	– 65 to +150	°C

THERMAL DATA

$R_{TH(j-c)}$	Junction-Case Thermal Resistance	1.2	°C/W

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

STATIC

Symbol	Test Conditions		Value			Unit
			Min.	Typ.	Max.	
BV_{CBO}	I_C = 50mA	I_E = 0mA	65	—	—	V
BV_{CER}	I_C = 50mA	R_{BE} = 15Ω	60	—	—	V
BV_{CEO}	I_C = 50mA	I_B = 0mA	33	—	—	V
BV_{EBO}	I_E = 5mA	I_C = 0mA	3.5	—	—	V
h_{FE}	V_{CE} = 5V	I_C = 500mA	20	—	150	—

DYNAMIC (Class AB)

Symbol	Test Conditions			Value			Unit
				Min.	Typ.	Max.	
P_{OUT}	f = 225 MHz	V_{CE} = 28 V	I_C = 2 x 100 mA	100	—	—	W
G_P	P_{OUT} = 100 W	V_{CE} = 28 V	I_C = 2 x 100 mA	11	—	—	dB
η_C	P_{OUT} = 100 W	V_{CE} = 28 V	I_C = 2 x 100 mA	70	—	—	%
C_{OB}	f = 1 MHz	V_{CB} = 28 V		—	60	—	pF

DYNAMIC (Class A)

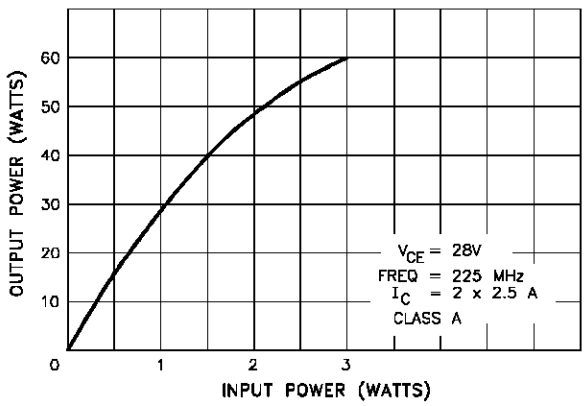
Symbol	Test Conditions			Value			Unit
				Min.	Typ.	Max.	
P_{OUT}*	f = 225 MHz	V_{CE} = 28 V	I_C = 2 x 2.5 A	28	32	—	W
G_P*	P_{IN} = 1.1 W	V_{CE} = 28 V	I_C = 2 x 2.5 A	14	15	—	dB
IMD_3*	P_{IN} = 1.1 W	V_{CE} = 28 V	P_{REF} = 28 W	—	–51	—	dB

Note: * Class A Performance Characteristics Indicate Capability but are not Tested.

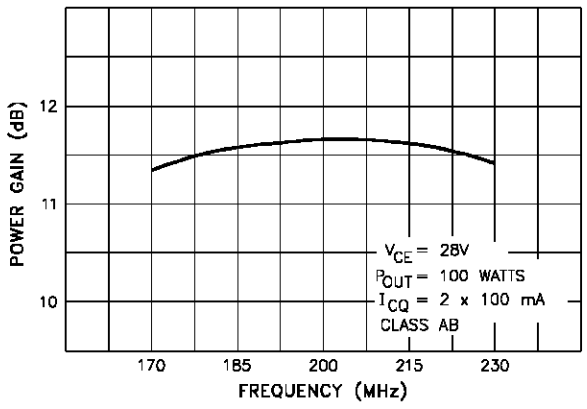
IMD3 - 3 Tone Meaurement; –8, –7, –16dB relative to P_{REF}

TYPICAL PERFORMANCE

POWER OUTPUT vs POWER INPUT

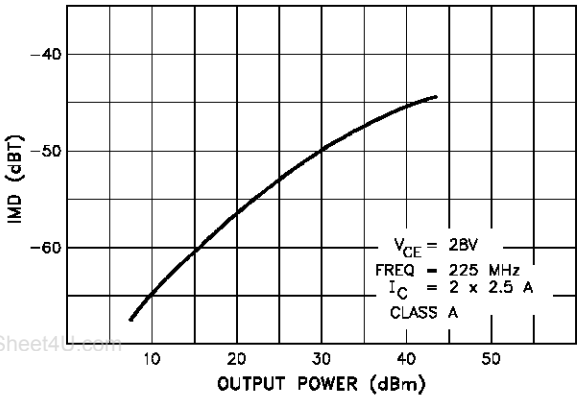


BROADBAND POWER GAIN vs FREQUENCY

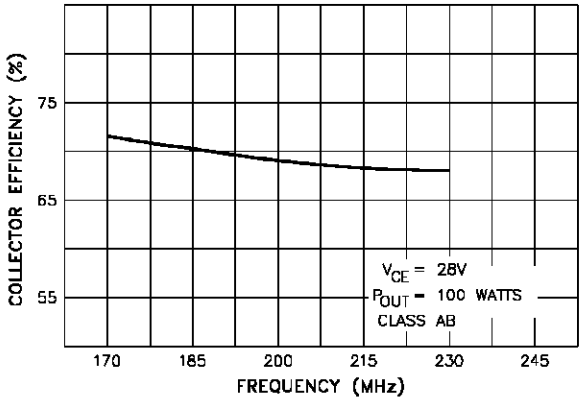


TYPICAL PERFORMANCE (cont'd)

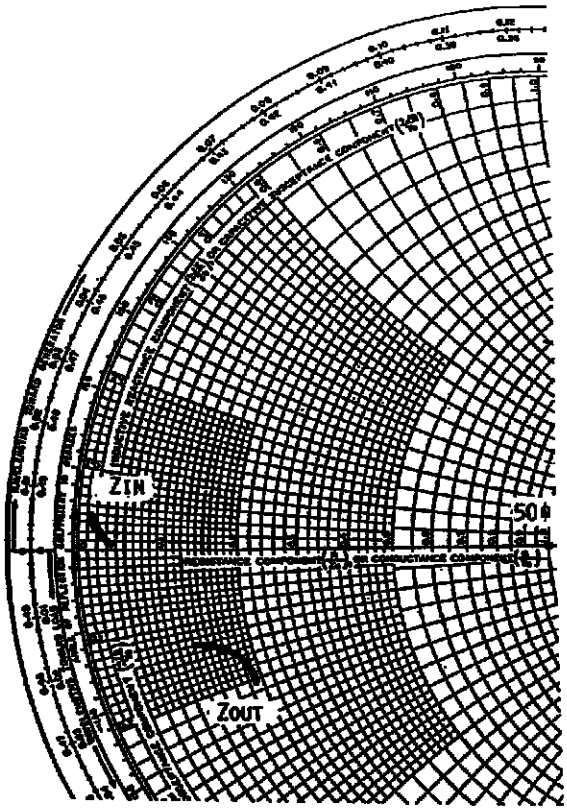
INTERMODULATION DISTORTION vs POWER OUTPUT



COLLECTOR EFFICIENCY vs FREQUENCY



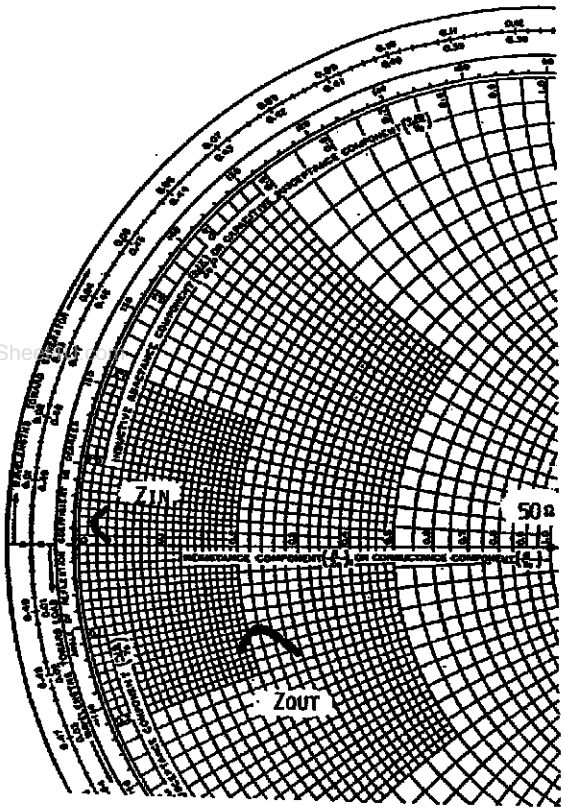
IMPEDANCE DATA



FREQ.	Z_{IN} (Ω)	Z_{OUT} (Ω)
170 MHz	1.3 + j 0.6	9.5 – j 10.0
200 MHz	1.0 + j 1.0	9.0 – j 8.0
230 MHz	0.9 + j 1.8	6.3 – j 6.5

P_{OUT} = 100 W
V_{CE} = 28 V
I_{CQ} = 2 x 100 mA
Class AB

IMPEDANCE DATA

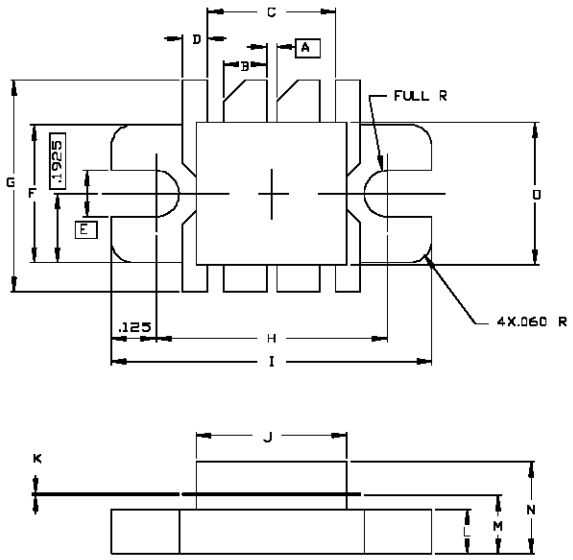


FREQ.	Z_{IN} (Ω)	Z_{OUT} (Ω)
170 MHz	1.05 + j 0.65	13.5 – j 9.0
200 MHz	0.9 + j 1.1	11.0 – j 6.5
230 MHz	1.25 + j 1.8	9.5 – j 7.7

V_{CE} = 28 V
I_{CQ} = 2 x 2.5 A
Class A

PACKAGE MECHANICAL DATA

Ref.: Dwg. No.12-0168



SGS-THOMSON MICROELECTRONICS		
	MINIMUM Inches/mm	MAXIMUM Inches/mm
A	.030/0,76	
B	.115/2,92	.125/3,18
C	.360/9,14	
D	.065/1,65	.075/1,91
E	.130/3,30	
F	.380/9,65	.390/9,91
G	.735/18,67	.765/19,43
H	.645/16,38	.655/16,64
I	.895/22,73	.905/22,99
J	.420/10,67	.430/10,92

CONT'D		
	MINIMUM Inches/mm	MAXIMUM Inches/mm
K	.003/0,08	.007/0,18
L	.120/3,05	.130/3,30
M	.159/4,04	.175/4,45
N		.280/7,11
O	.395/10,03	.405/10,29