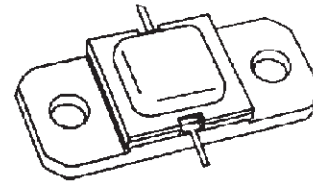




AM1517-025

RF & MICROWAVE TRANSISTORS SATELLITE COMMUNICATIONS APPLICATIONS

- REFRACTORY/GOLD METALLIZATION
- EMITTER SITE BALLASTED
- $\infty:1$ VSWR CAPABILITY
- LOW THERMAL RESISTANCE
- INPUT/OUTPUT MATCHING
- OVERLAY GEOMETRY
- METALLIC/CERAMIC HERMETIC PACKAGE
- $P_{OUT} = 25$ W MIN. WITH 8.5 dB GAIN



SO42

hermetically sealed

ORDER CODE

AM1517-025

BRANDING

1517-25

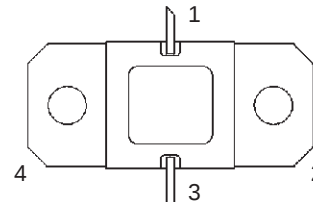
DESCRIPTION

The AM1517-025 power transistor is designed specifically for Satellite communications applications in the 1.5 - 1.7 frequency range.

The device is capable of withstanding any mismatch load condition at any phase angle (VSWR $\infty:1$) under full rated conditions. The unit is an overlay, emitter site ballasted, geometry utilizing a refractory/Gold metallization system.

The AM1517-025 is supplied in the AMPACTM Hermetic/Ceramic package with internal Input/Output matching structures.

PIN CONNECTION



1. Collector

3. Emitter

2. Base

4. Base

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

Symbol	Parameter	Value	Unit
P_{DISS}	Power Dissipation* ($T_C \leq 50^{\circ}C$)	45	W
I_C	Device Current*	2.5	A
V_{CC}	Collector-Supply Voltage*	30	V
T_j	Junction Temperature	200	$^{\circ}C$
T_{STG}	Storage Temperature	-65 to +200	$^{\circ}C$

THERMAL DATA

$R_{th(j-c)}$	Junction-Case Thermal Resistance*	3.3	$^{\circ}C/W$
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* Applies only to rated RF amplifier operation

May 2000

1/8

ELECTRICAL SPECIFICATION($T_{CASE} = 25^{\circ}C$)**STATIC**

Symbol	Parameter	Min.	Typ.	Max.	Unit
BV _{CBO}	I _C = 8 mA I _E = 0 mA	45	---	---	V
BV _{EBO}	I _E = 8 mA I _C = 0 mA	3.0	---	---	V
I _{CBO}	V _{CB} = 28 V	---	---	2	mA
h _{FE}	V _{CE} = 5 V I _C = 1.6 A	15	---	150	---

REF. 1015989D

DYNAMIC

Symbol	Parameter	Min.	Typ.	Max.	Unit
P _{OUT}	f = 1.5 - 1.7 GHz P _{IN} = 3.5 W V _{CC} = 28 V	25	---	---	W
η _D	f = 1.5 - 1.7 GHz P _{IN} = 3.5 W V _{CC} = 28 V	50	--	---	%
G _P	f = 1.5 - 1.7 GHz P _{IN} = 3.5 W V _{CC} = 28 V	8.5	---	---	dB

Note: AM1517 series vary P_{IN} to achieve P_{OUT}; performance guaranteed in 50 MHz increments.

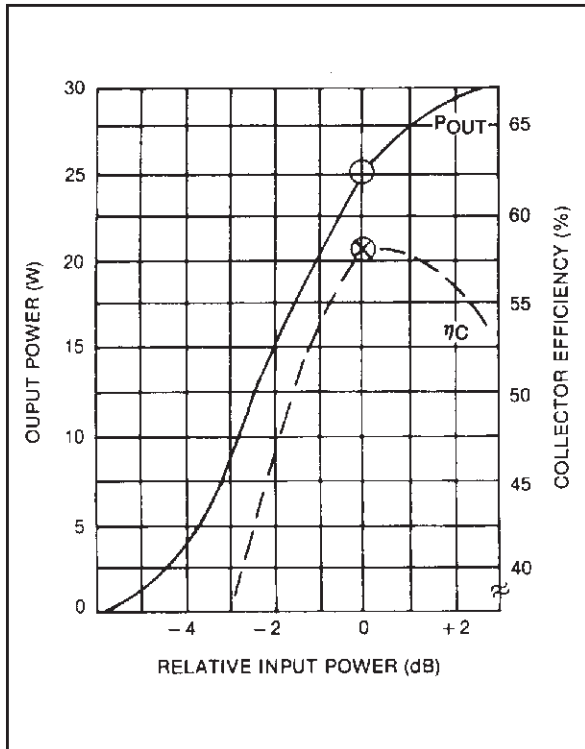
Alpha-Suffix added to AM1517 P/N designates band segment.

M - 1620 - 1660 MHz

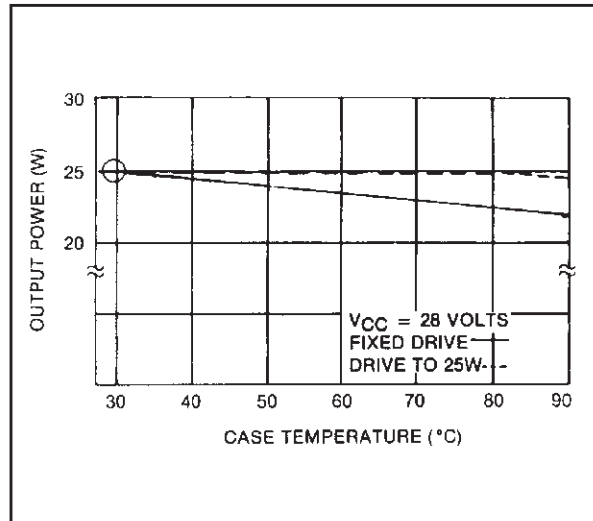
S - 1625 - 1675 MHz

TYPICAL PERFORMANCE

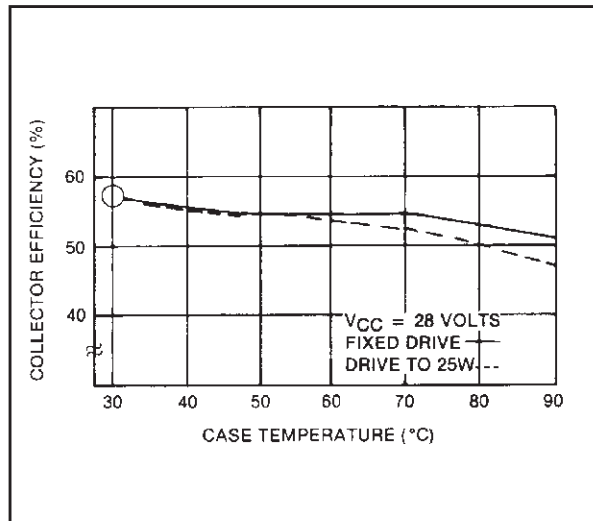
Output Power & Collector Efficiency vs Input Power



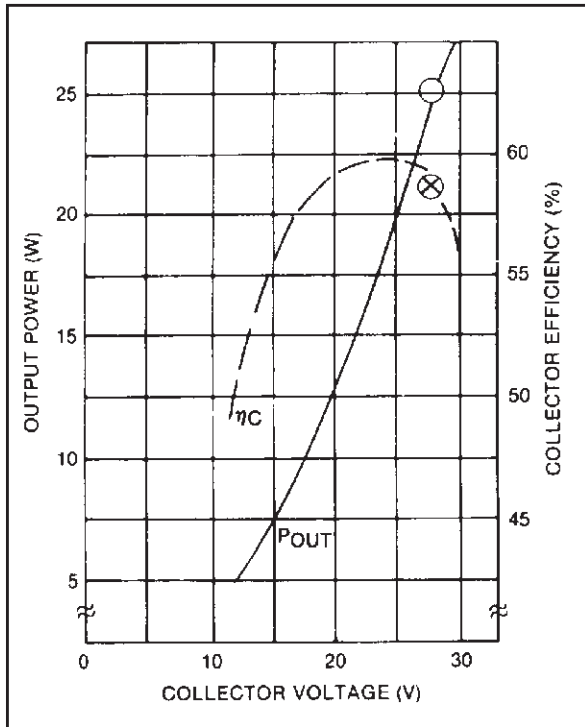
Output Power vs Case Temperature



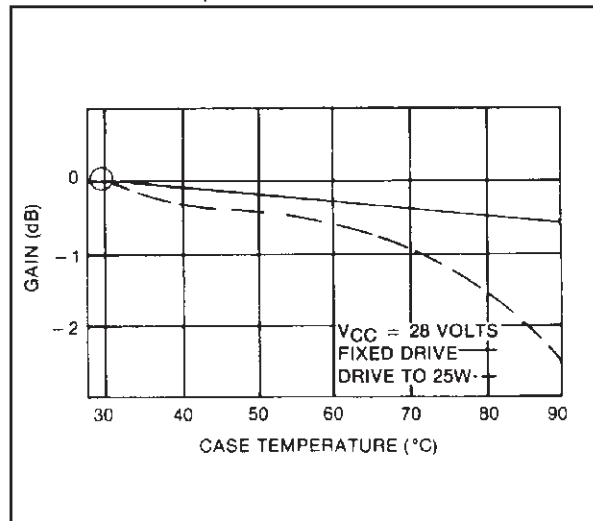
Collector Efficiency vs Case Temperature



Output Power & Collector Efficiency vs Collector Voltage



Gain vs Case Temperature

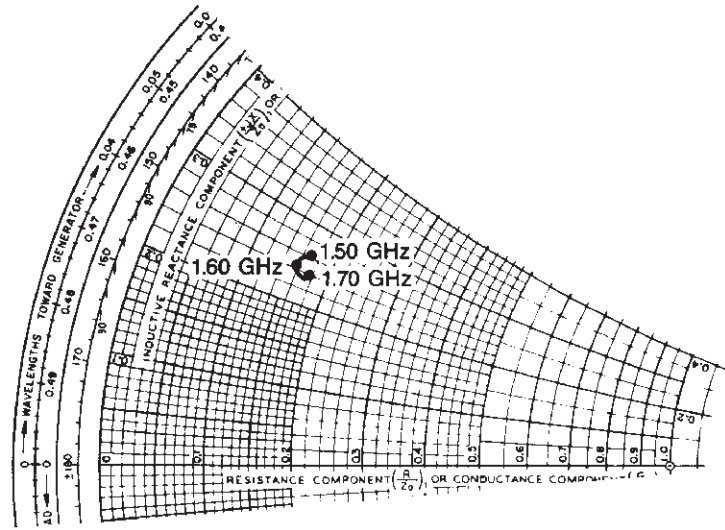


IMPEDANCE DATA

TYPICAL INPUT
IMPEDANCE

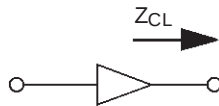


$P_{OUT} = 25\text{ W}$
 $V_{CC} = 28\text{ V}$
 $Z_O = 50\text{ OHMS}$

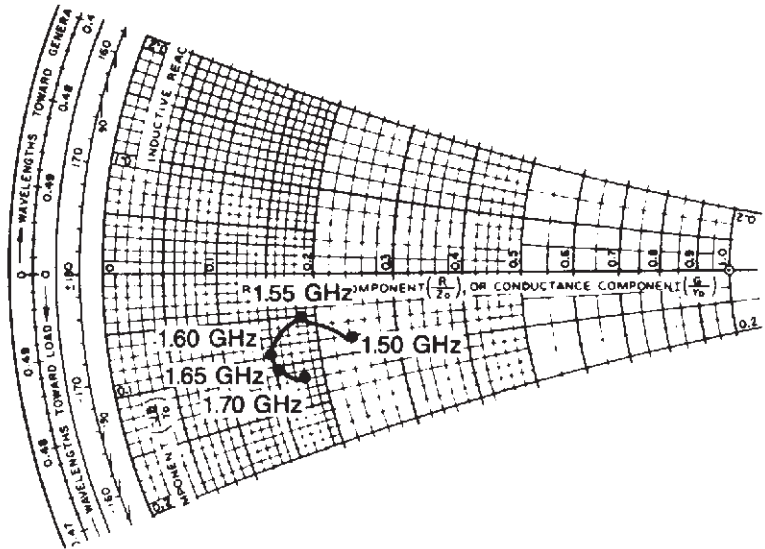


Frequency MHz	Z_{IN} (Ω)	Z_{CL} (Ω)
1.5 GHz	$8.5 + j\ 13.0$	$12.0 - j\ 4.0$
1.6 GHz	$8.0 + j\ 12.5$	$7.5 - j\ 4.5$
1.7 GHz	$9.0 + j\ 12.0$	$9.0 - j\ 6.0$

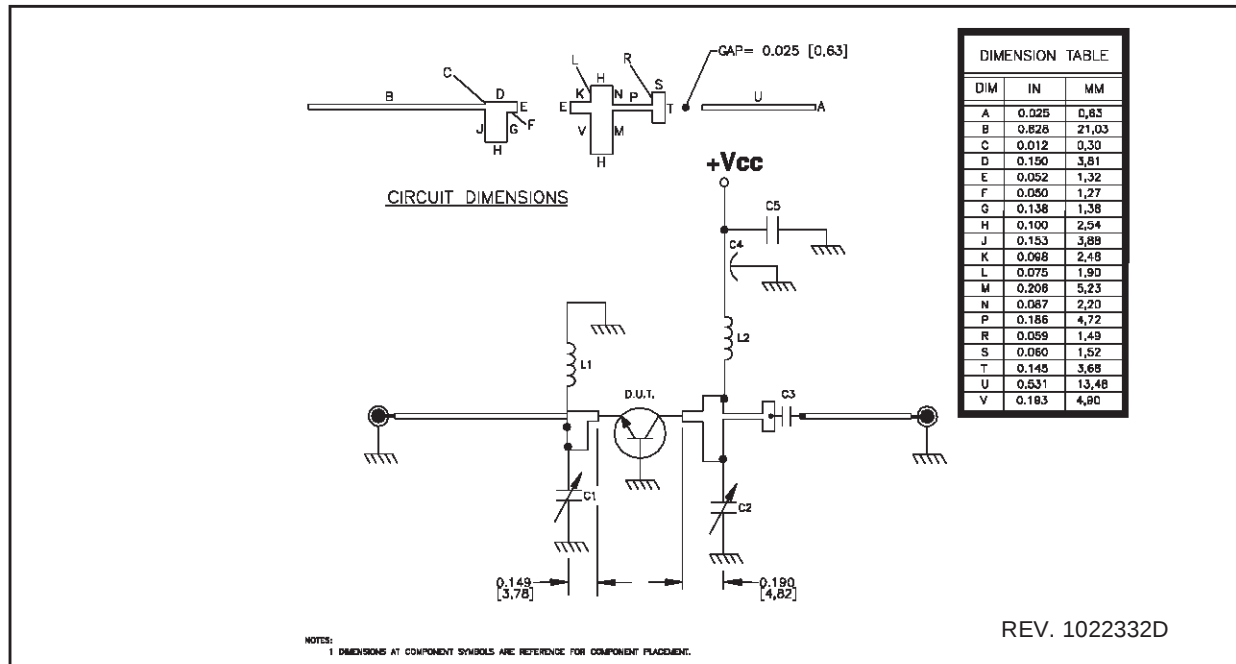
TYPICAL COLLECTOR
LOAD IMPEDANCE



$P_{OUT} = 25\text{ W}$
 $V_{CC} = 28\text{ V}$
 $Z_O = 50\text{ OHMS}$



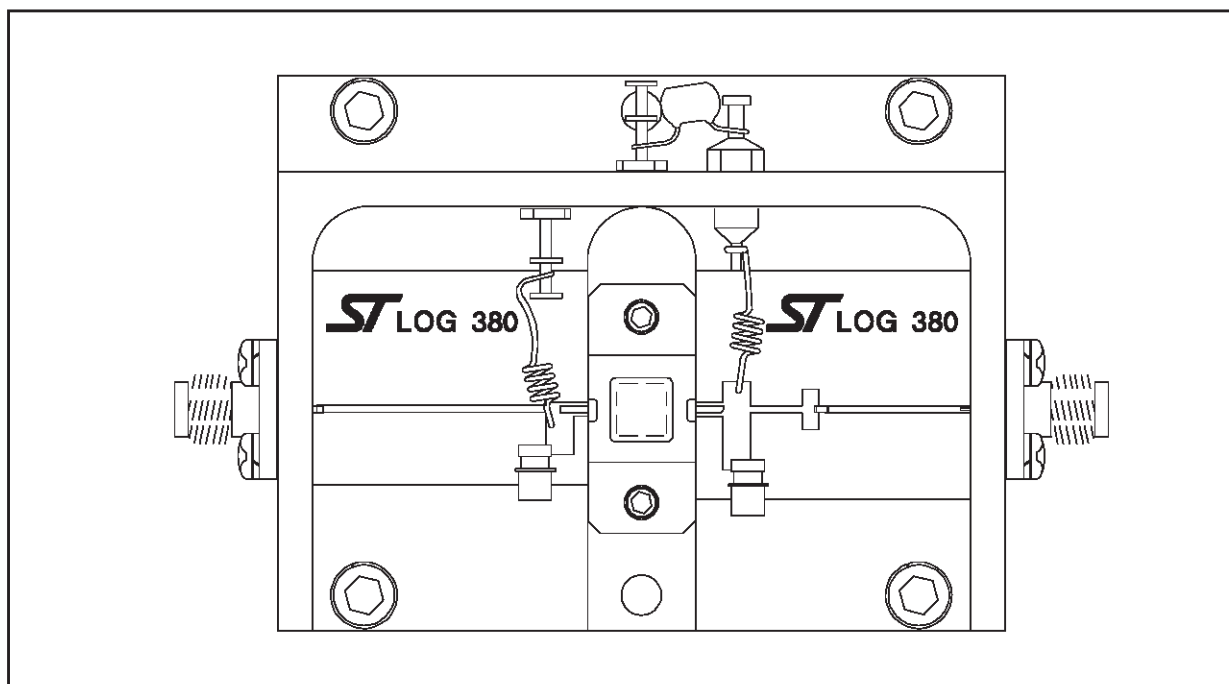
TEST CIRCUIT SCHEMATIC



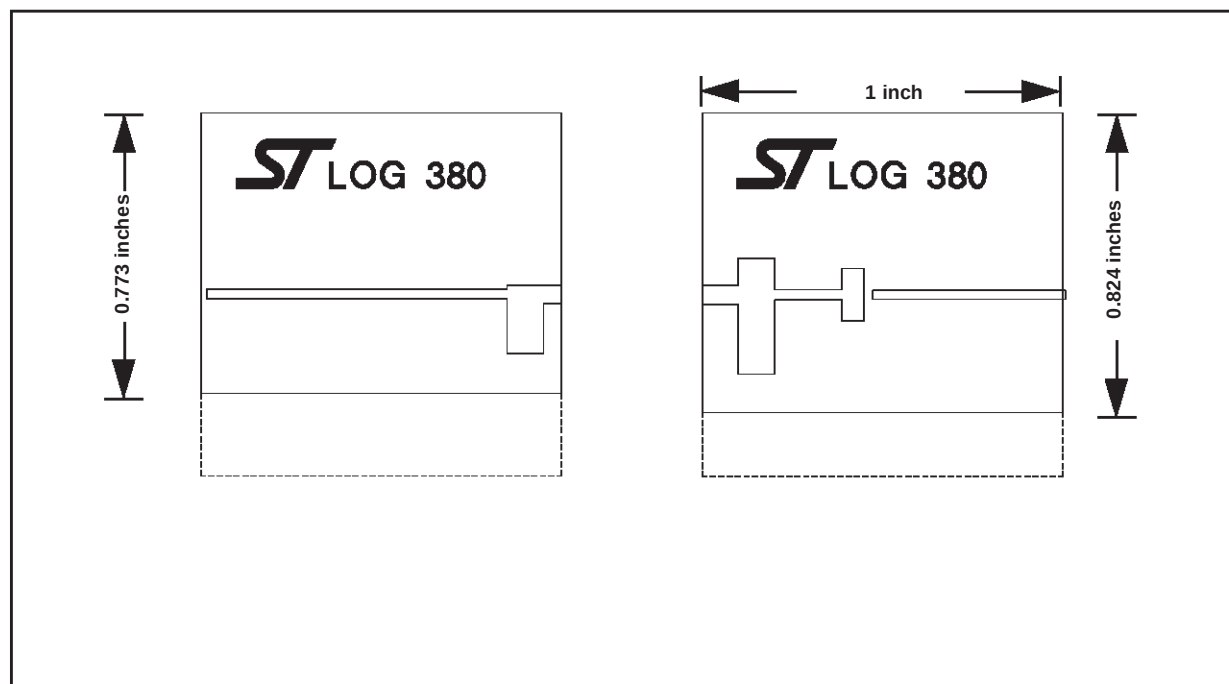
TEST CIRCUIT COMPONENT PART LIST

C1,C2	0.4-2.5pF GIGA TRIM VARIABLE CAPACITOR
C3	100pF SURFACE MOUNT CERAMIC CHIP CAPACITOR
C4	1000pF RESIN SEALED # 8-35 THREADED FEEDTHRU CAPACITOR
C5	0.1μF/50v CERAMIC MOLDED RADIAL LEAD CAPACITOR
L1	3 TURN AIR WOUND COIL #26AWG, ID. 0.070 [1.77] BUS BAR WIRE
L2	3 TURN AIR WOUND COIL #26AWG, ID. 0.070 [1.77] BUS BAR WIRE
BOARD	ALUMINA CERAMIC SUBSTRATE, HIGH POLISHED 1.0" SQ [25.40], 0.025" [0.63] THK. $\epsilon_r=9.6$, 200 MICROINCHES Au, BOTH SIDES

TEST CIRCUIT

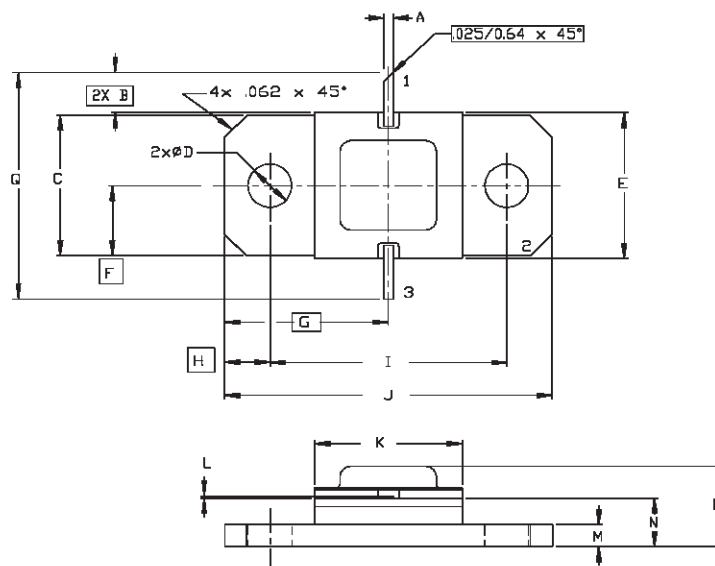


TEST CIRCUIT PHOTOMASTER



SO42 (.400 X .400 2/L HERM W/FLG) MECHANICAL DATA

DIM.	mm			Inch		
	MIN.	TYP.	MAX	MIN.	TYP.	MAX
A	0.51		0.76	.020		.030
B		6.35			.250	
C	9.55		10.06	.376		.396
D	2.79		3.30	.110		.130
E	10.03		10.34	.395		.407
F		4.90			.193	
G		11.43			.450	
H		3.18			.125	
I	16.26		16.76	.640		.660
J	22.61		23.11	.890		.910
K	10.03		10.54	.395		.415
L	0.10		0.18	.004		.006
M	1.32		1.83	.052		.072
N	2.84		3.35	.112		.132
P			5.84			.230
Q	22.35		23.37	.880		.920



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