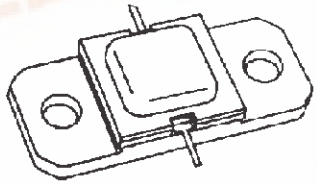
AM1517-025

RF & MICROWAVE TRANSISTORS SATELLITE COMMUNICATIONS APPLICATIONS

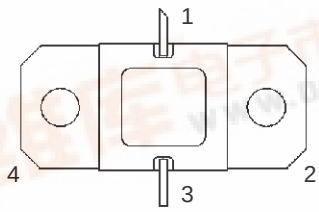
- REFRACTORY/GOLD METALLIZATION
- EMITTER SITE BALLASTED
- ∞:1 VSWR CAPABILITY
- LOW THERMAL RESISTANCE
- INPUT/OUTPUT MATCHING
- OVERLAY GEOMETRY
- METALLIC/CERAMIC HERMETIC PACKAGE
- P_{OUT} = 25 W MIN. WITH 8.5 dB GAIN



SO42
hermetically sealed

ORDER CODE	BRANDING
AM1517-025	1517-25

PIN CONNECTION



1. Collector
2. Base
3. Emitter
4. Base

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 ∞: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 AMPAC™ Hermetic/Ceramic package with internal Input/Output matching structures.

ABSOLUTE MAXIMUM RATINGS (T_{CASE} = 25 ^{0}C)

Symbol	Parameter	Value	Unit
P_{DISS}	Power Dissipation* ($T_C \leq$ 50 ^{0}C)	45	W
I_C	Device Current*	2.5	A
V_{CC}	Collector-Supply Voltage*	30	V
T_j	Junction Temperature	200	^{0}C
T_{STG}	Storage Temperature	-65 to +200	^{0}C

THERMAL DATA

$R_{th(j-c)}$	Junction-Case Thermal Resistance*	3.3	^{0}C/W

* Applies only to rated RF amplifier operation

ELECTRICAL SPECIFICATION (T_{CASE} = 25 ^{0}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.

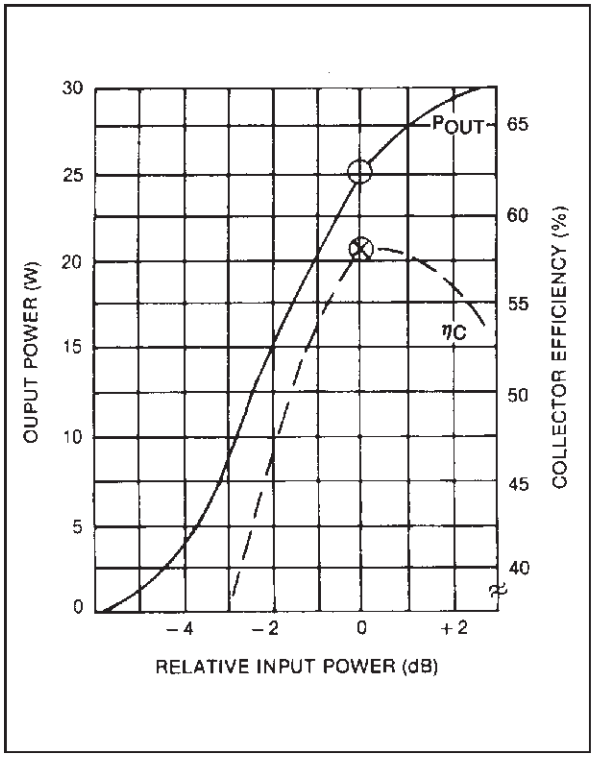
Alpha-Suffix added to AM1517 P/N desigates band segment.

M - 1620 - 1660 MHz

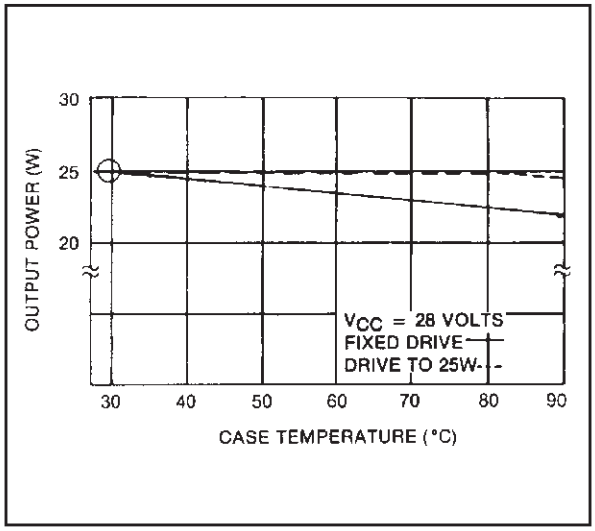
S - 1625 - 1675 MHz

TYPICAL PERFORMANCE

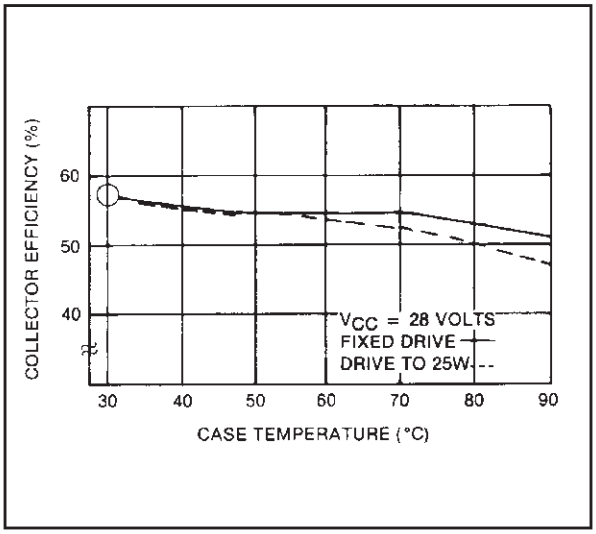
Output Power & Collector Efficiency vs Input Power



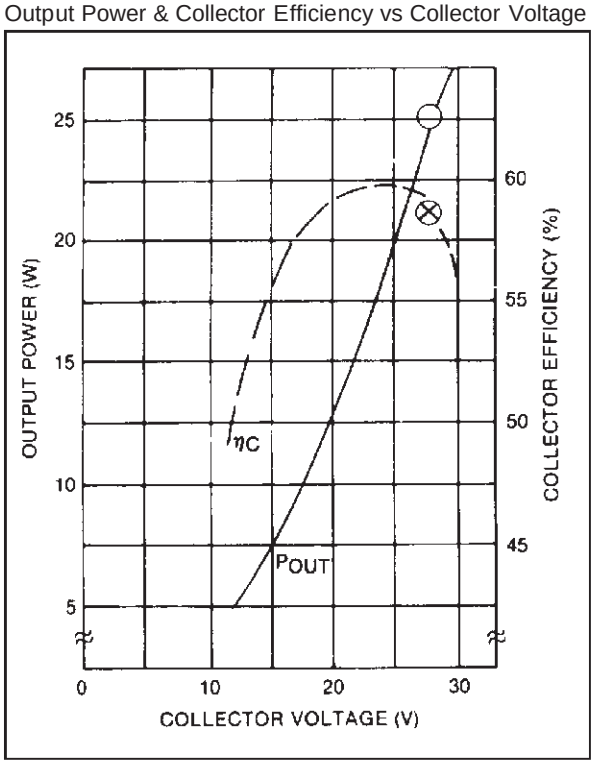
Output Power vs Case Temperature



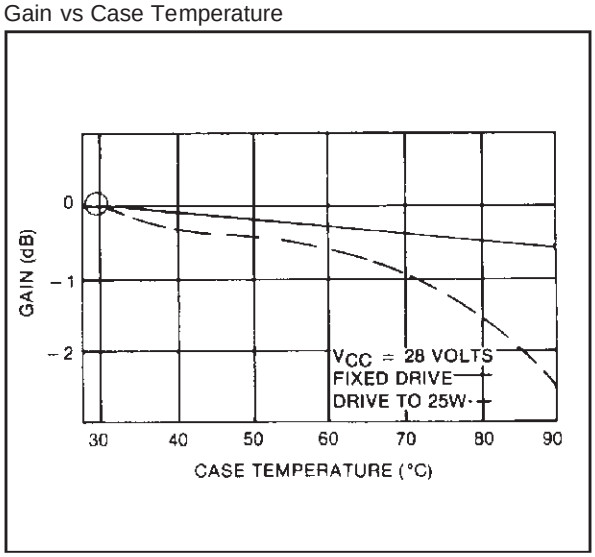
Collector Efficiency vs Case Temperature



Output Power & Collector Efficiency vs Collector Voltage

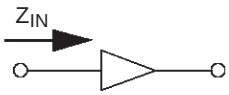


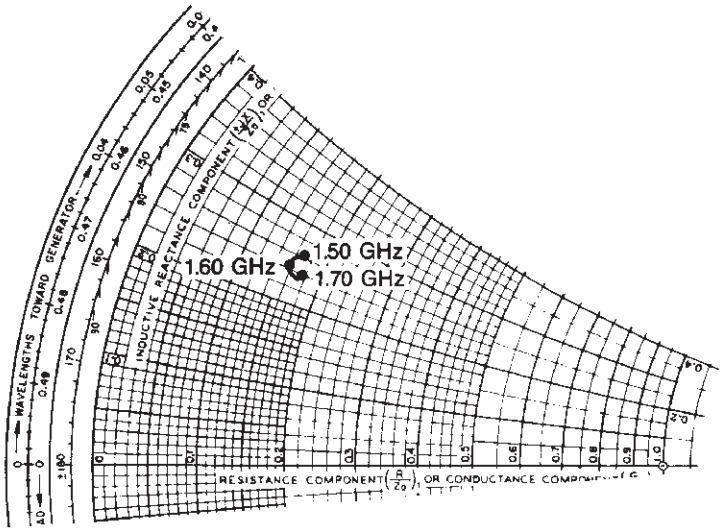
Gain vs Case Temperature



IMPEDANCE DATA

TYPICAL INPUT IMPEDANCE

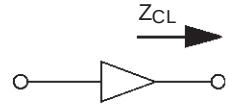


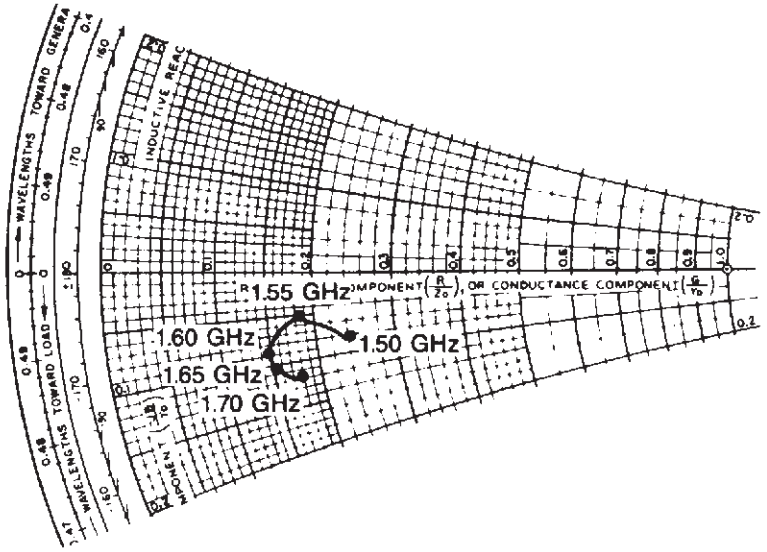


P_{OUT} = 25 W
V_{CC} = 28 V
Z_O = 50 OHMS

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

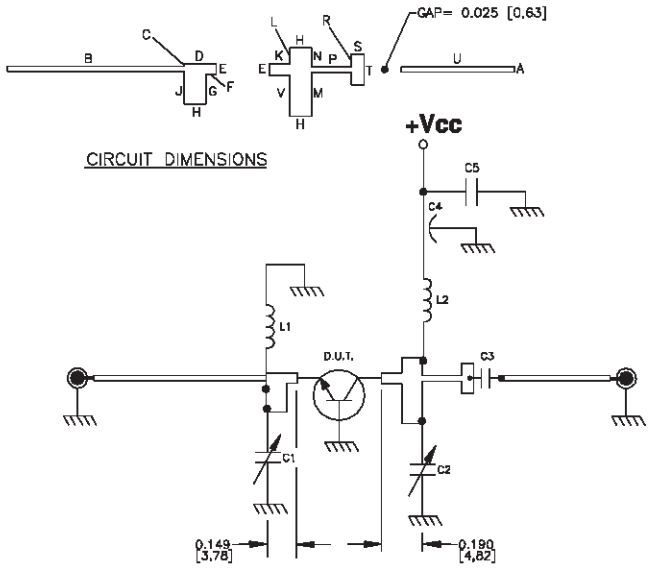
TYPICAL COLLECTOR LOAD IMPEDANCE





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

TEST CIRCUIT SCHEMATIC

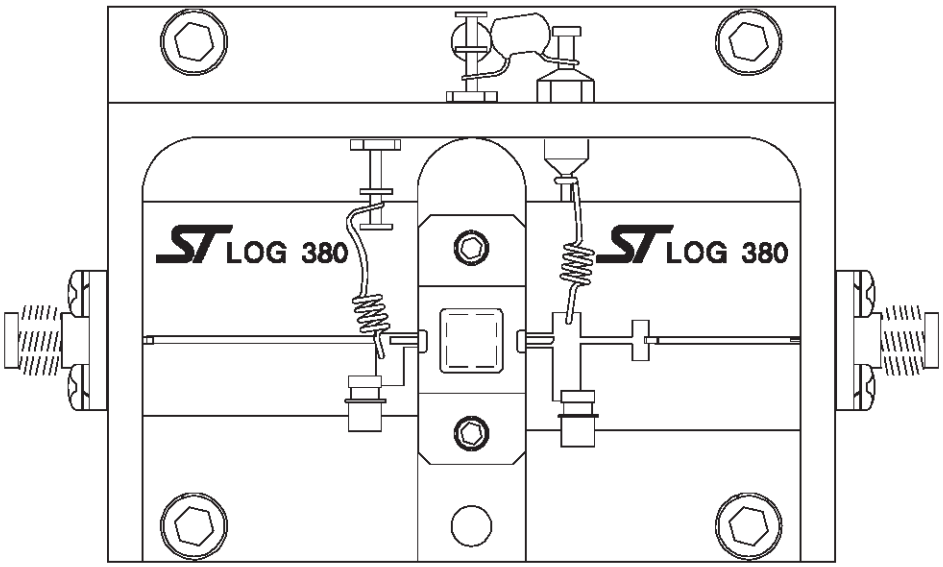


DIMENSION TABLE		
DIM	IN	MM
A	0.025	0,63
B	0.828	21,03
C	0.012	0,30
D	0.150	3,81
E	0.052	1,32
F	0.050	1,27
G	0.138	1,38
H	0.100	2,54
J	0.153	3,88
K	0.098	2,48
L	0.075	1,90
M	0.206	5,23
N	0.087	2,20
P	0.186	4,72
R	0.059	1,49
S	0.060	1,52
T	0.145	3,68
U	0.531	13,48
V	0.193	4,90

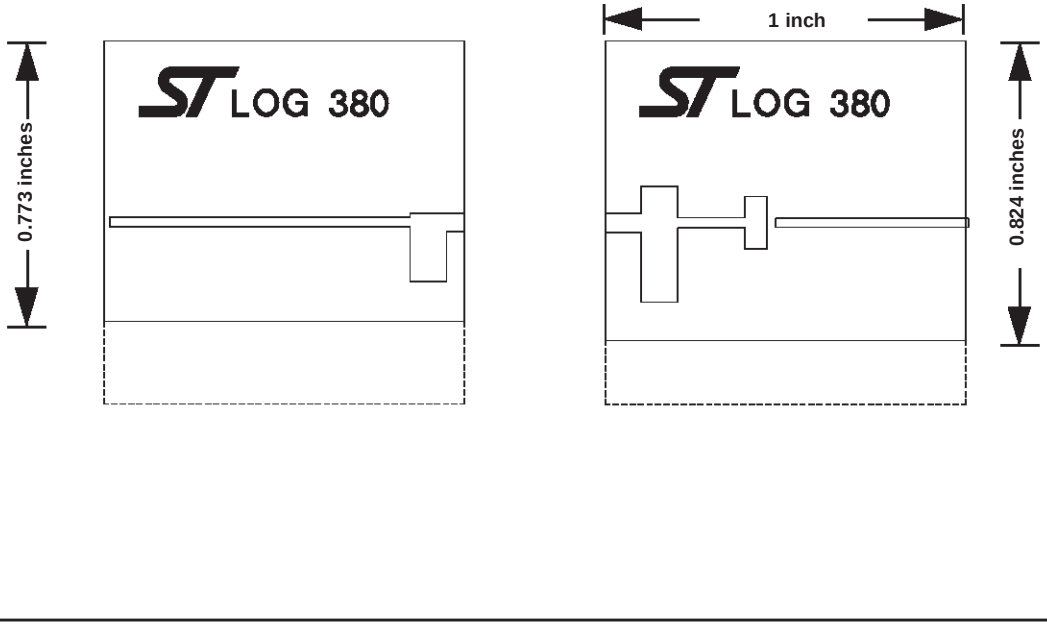
TEST CIRCUIT COMPONENT PART LIST

C1,C2	0.4-2.5pF GIGA TRIM VARIABILE 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. εr=9.6, 200 MICROINCHES Au, BOTH SIDES

TEST CIRCUIT

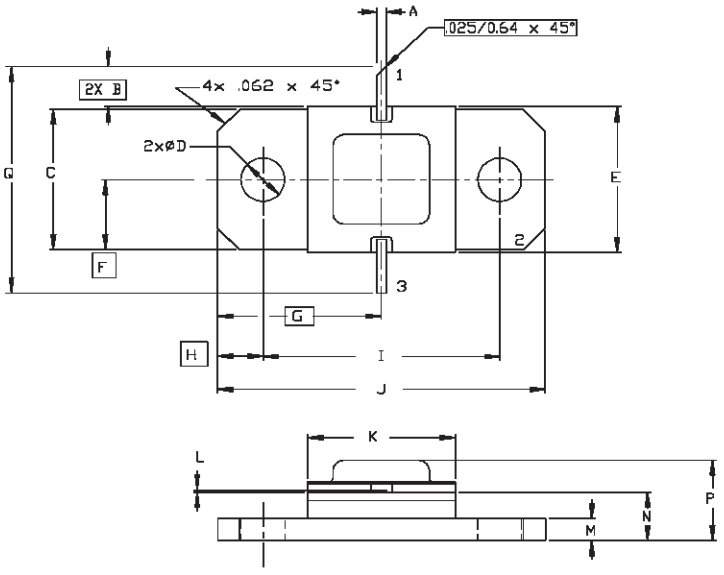


TEST CIRCUIT PHOTOMASTER



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



1011416B