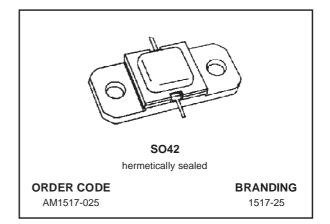


# AM1517-025

# 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<sub>OUT</sub> = 25 W MIN. WITH 8.5 dB GAIN

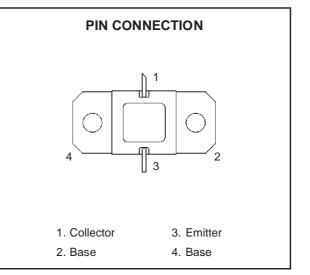


### DESCRIPTION

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 AMPAC<sup>TM</sup> Hermetic/Ceramic package with internal Input/ Output matching structures.



### **ABSOLUTE MAXIMUM RATINGS**(T<sub>CASE</sub> = 25 °C)

Symbol	Parameter	Value	Unit
P <sub>DISS</sub>	Power Dissipation <sup>*</sup> ( T $\leq$ 50 $^{0}$ C)	Dissipation <sup>*</sup> ( T $\propto$ 50 <sup>0</sup> C) 45	
Ic	Device Current*	2.5	А
V <sub>CC</sub>	Collector-Supply Voltage*	30	V
Tj	Junction Temperature	200	0C
T <sub>STG</sub>	Storage Temperature	-65 to +200	0C

#### THERMAL DATA

R <sub>th(j-c)</sub>	Junction-Case Thermal Resistance*	3.3	<sup>0</sup> C/W
* Applies only t	o rated RF amplifier operation	-	
May 2000			1/8

# ELECTRICAL SPECIFICATION(T<sub>CASE</sub> = 25 °C)

### STATIC

		Min.	Тур.	Max.	Unit
BV <sub>CBO</sub>	$I_{C} = 8 \text{ mA}$ $I_{E} = 0 \text{ mA}$	45			V
BV <sub>EBO</sub>	$I_E = 8 \text{ mA}$ $I_C = 0 \text{ mA}$	3.0			V
I <sub>CBO</sub>	V <sub>CB</sub> = 28 V			2	mA
h <sub>FE</sub>	$V_{CE} = 5 V$ $I_{C} = 1.6 A$	15		150	

REF. 1015989D

### DYNAMIC

Symbol	Parameter		Тур.	Max.	Unit
Роит	f = 1.5 - 1.7 GHz PIN = 3.5 W VCC = 28 V	25			W
$\eta_D$	$f = 1.5 - 1.7 \text{ GHz}$ $P_{IN} = 3.5 \text{ W}$ $V_{CC} = 28 \text{ V}$	50			%
GP	$f = 1.5 - 1.7 \text{ GHz}$ $P_{IN} = 3.5 \text{ W}$ $V_{CC} = 28 \text{ V}$	8.5			dB

Note: AM1517 series vary  $\mathsf{P}_{\mathsf{IN}}$  to achieve  $\mathsf{P}_{\mathsf{OUT}}$ ; performance guaranteed in 50 MHz increments.

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

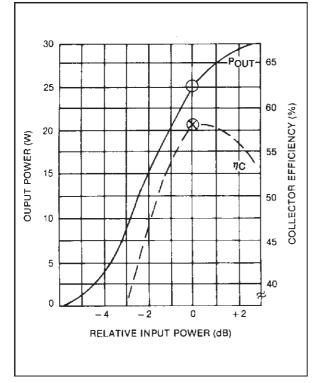
M - 1620 - 1660 MHz

S - 1625 - 1675 MHz

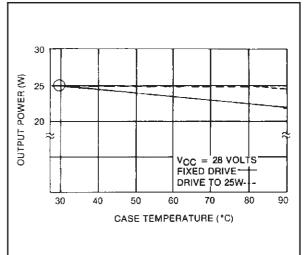
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# TYPICAL PERFORMANCE

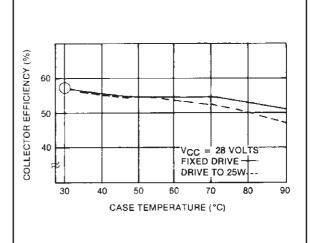
Output Power & Collector Efficiency vs Input Power



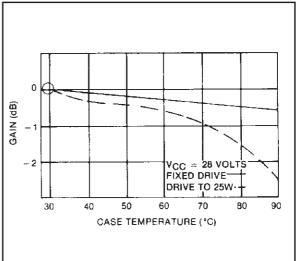
### Output Power vs Case Temperature



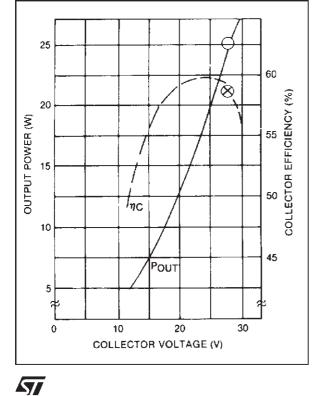
Collector Efficiency vs Case Temperature





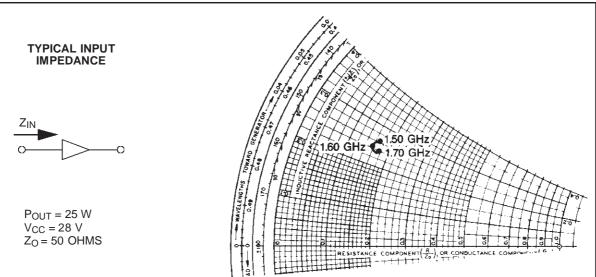


Output Power & Collector Efficiency vs Collector Voltage

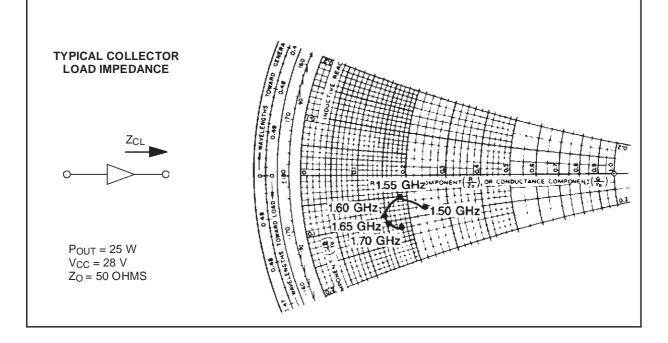


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### **IMPEDANCE DATA**

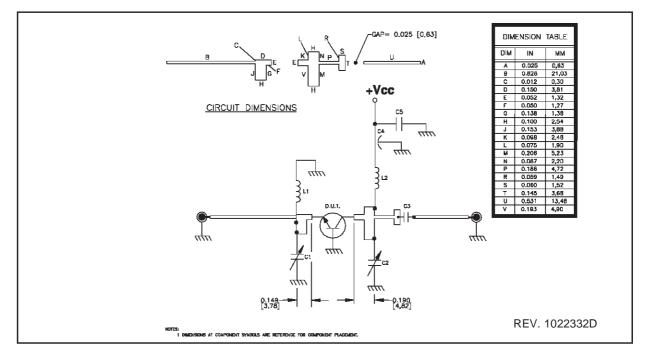


Frequency MHz	Z <sub>IN</sub> (Q)	Ζ <sub>CL</sub> (Ω)
1.5 GHz	8.5 + j 13.0	12.0 - j 4.0
1.6 GHz	8.0 + j 12.5	7.5 - j 4.5
1.7 GHz	9.0 + j 12.0	9.0 - j 6.0



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### **TEST CIRCUIT SCHEMATIC**



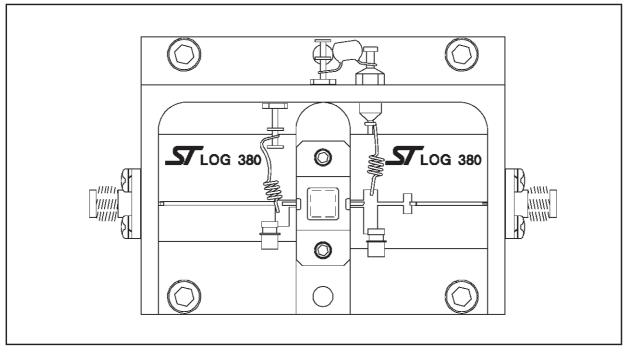
### **TEST CIRCUIT COMPONENT PART LIST**

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. $\epsilon_{\rm r=9.6,}$ 200 MICROINCHES Au, BOTH SIDES

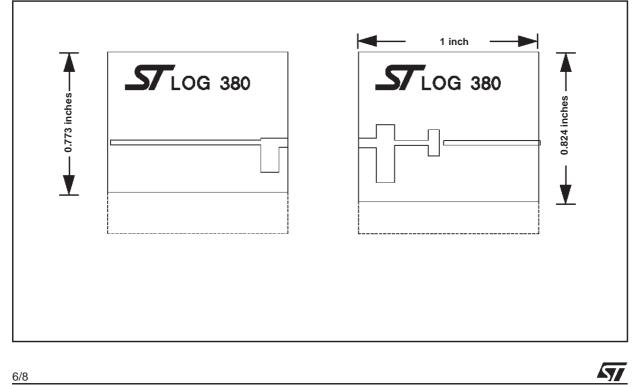
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## AM1517-025

## **TEST CIRCUIT**



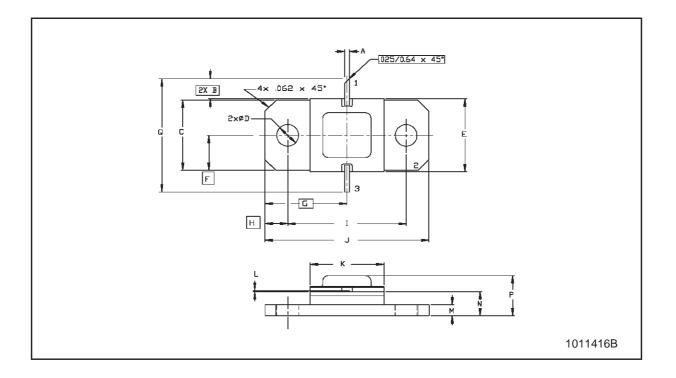
### **TEST CIRCUIT PHOTOMASTER**



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DIM.		mm			Inch	
DINI.	MIN.	TYP.	MAX	MIN.	TYP.	MAX
A	0.51		0.76	.020		.030
В		6.35			.250	
С	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	
Н		3.18			.125	
I	16.26		16.76	.640		.660
J	22.61		23.11	.890		.910
К	10.03		10.54	.395		.415
L	0.10		0.18	.004		.006
М	1.32		1.83	.052		.072
N	2.84		3.35	.112		.132
Р			5.84			.230
Q	22.35		23.37	.880		.920

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



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