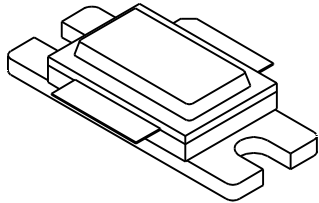




**TAN500**  
**500 Watts, 50 Volts**  
**Pulsed Avionics 960 to 1215 MHz**

<p><b>GENERAL DESCRIPTION</b></p> <p>The <b>TAN 500</b> is a high power COMMON BASE bipolar transistor. It is designed for pulsed systems in the frequency band 960-1215 MHz. The device has gold thin-film metallization and diffused ballasting for proven highest MTTF. The transistor includes input and output prematch for broadband capability. Low thermal resistance package reduces junction temperature, extends life.</p>	<p><b>CASE OUTLINE</b>  <b>55ST Style 1</b>  <b>(Common Base)</b></p> 
<p><b>ABSOLUTE MAXIMUM RATINGS</b></p> <p><b>Power Dissipation</b>  Device Dissipation @25°C (P<sub>d</sub>)      2500 W (At rated pulse condition)</p> <p><b>Voltage and Current</b>  Collector to Base Voltage (BV<sub>ces</sub>)      65 V  Emitter to Base Voltage (BV<sub>ebo</sub>)      3.0 V  Collector Current (I<sub>c</sub>)      50 A</p> <p><b>Temperatures</b>  Storage Temperature      -65 to +200 °C  Operating Junction Temperature      +200 °C</p>	

**ELECTRICAL CHARACTERISTICS @ 25°C**

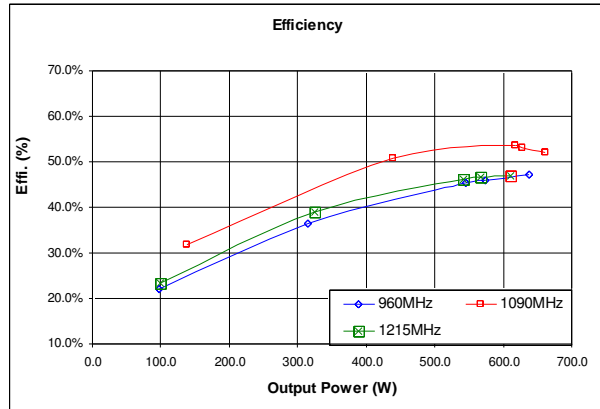
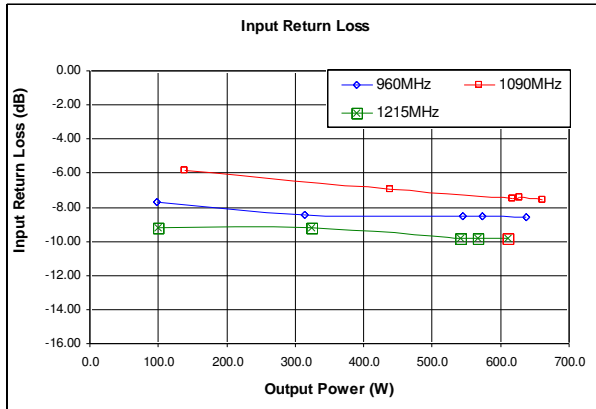
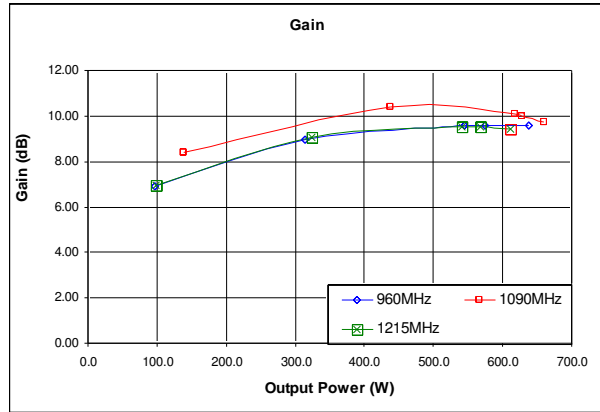
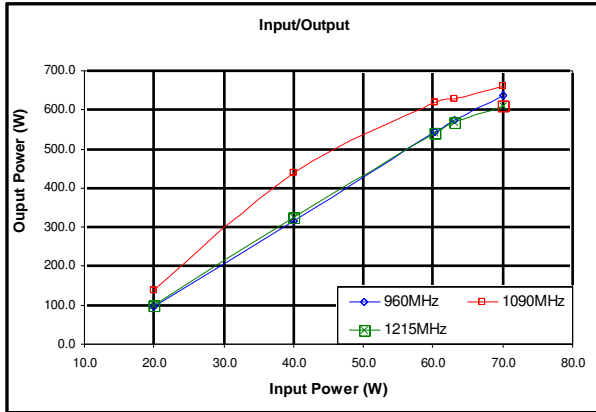
SYMBOL	CHARACTERISTICS	TEST CONDITIONS	MIN	TYP	MAX	UNITS
BV <sub>ebo</sub>	Emitter to Base Breakdown	I <sub>e</sub> = 30 mA	3.0			V
BV <sub>ces</sub>	Collector to Emitter Breakdown	I <sub>c</sub> = 50 mA	75			V
h <sub>FE</sub>	DC – Current Gain	I <sub>c</sub> = 1A, V <sub>ce</sub> = 5V	20			-
θ <sub>jc</sub> <sup>1,2</sup>	Thermal Resistance			0.07		°C/W

**FUNCTIONAL CHARACTERISTICS @ 25°C**

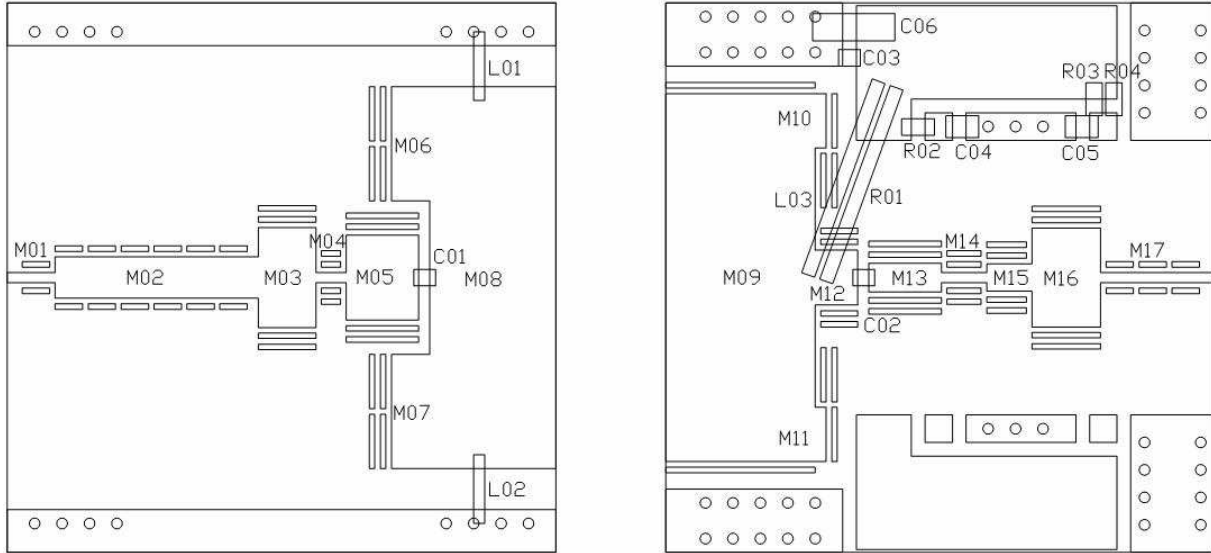
SYMBOL	CHARACTERISTICS	TEST CONDITIONS	MIN	TYP	MAX	UNITS
P <sub>out</sub>	Power Out	F = 960/1090/1215 MHz VCC = 50V PW = 10µs, DF = 10% P <sub>in</sub> = 63W	500			W
P <sub>in</sub>	Power Input				63	W
G <sub>p</sub>	Power Gain		9.0			dB
η <sub>c</sub>	Collector Efficiency		40			%
P <sub>d</sub>	Pulse Droop				0.5	dB
T <sub>r</sub> <sup>1</sup>	Rise Time				110	ns
?á	Load Mismatch				3:1	-

NOTES: 1. At rated output power, pulse conditions and MSC fixture  
2. Pulse Format: PW=10µs, DF=10%  
Rev. B – May. 2008

**Typical Performance (960/1090/1215 MHz)**

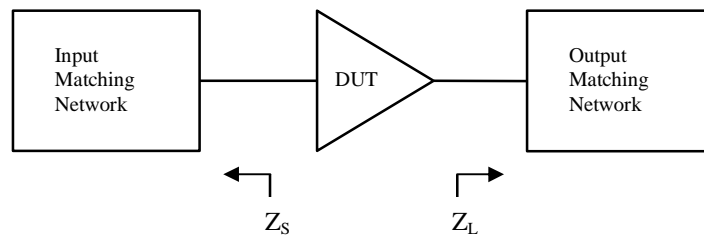


TAN500 Test Circuit Layout



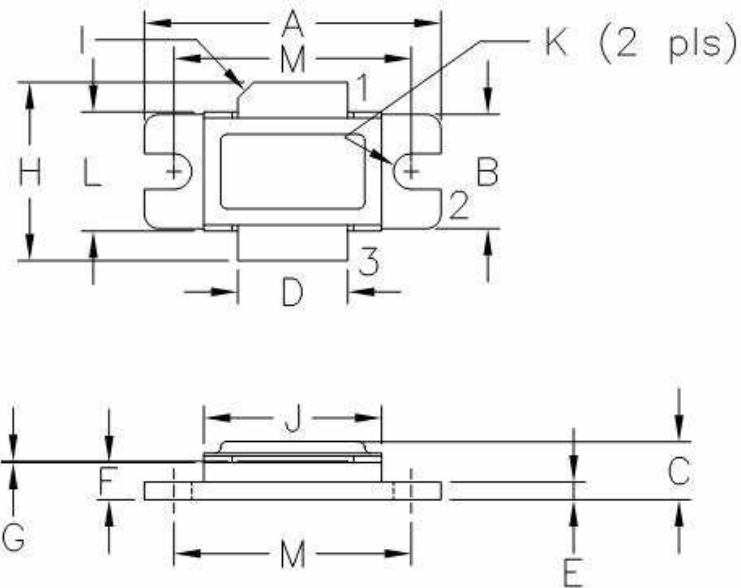
TAN500 Test Circuit Component Designations and Values

Part	Description	Part	Description
C01	9.1pF Chip Capacitor (ATC 600F)	C04	100nF Chip Capacitor (ATC 200B)
C02	10pF Chip Capacitor (ATC 600F)	C05	1000pF Chip Capacitor (ATC 200B)
C03	43pF Chip Capacitor (ATC 600F)	C06	2200uF, 63V Electrolytic Capacitor
L01, L02	18 AWG, Length: 0.42"±	L03	18 AWG, Length: 0.85"±
R01	2.4Ω, 1/4W Radial Resistor, Length: 0.85"±	R02	2.4Ω, 1/4W Chip Resistor
R03, R04	1.5Ω, 1/4W Chip Resistor	PCB	Rogers RT6006, ε <sub>r</sub> 6.15, 25mils, 1oz
M01	36 x 175 mils (W x L)	M02	150 x 740 mils (W x L)
M03	364 x 210 mils (W x L)	M04	36 x 110 mils (W x L)
M05	310 x 265 mils (W x L)	M06, M07	415 x 140 mils (W x L)
M08	1390 x 460 mils (W x L)	M09	1340 x 545 mils (W x L)
M10, M11	198 x 40 mils (W x L)	M12	200 x 155 mils (W x L)
M13	106 x 265 mils (W x L)	M14	36 x 165 mils (W x L)
M15	100 x 165 mils (W x L)	M16	360 x 250 mils (W x L)
M17	36 x 415 mils (W x L)		

**Typical Impedance Values**


Frequency (MHz)	$Z_S$ ( $?j$ )	$Z_L$ ( $?j$ )
<b>960</b>	<b>0.67 - j2.14</b>	<b>0.96 - j1.54</b>
<b>1030</b>	<b>0.90 - j1.51</b>	<b>1.53 - j1.33</b>
<b>1090</b>	<b>1.21 - j1.14</b>	<b>1.58 - j1.46</b>
<b>1150</b>	<b>1.47 - j1.11</b>	<b>1.33 - j1.67</b>
<b>1215</b>	<b>1.32 - j1.23</b>	<b>1.87 - j1.47</b>

\*  $V_{CC} = 50V$ ,  $P_{IN} = 63$   $P_{OUT} > 500W$   
 \* Pulse Format: PW = 10 $\mu$ s, DF = 10%



DIM	MILLIMETER	±TOL	INCHES	±TOL
A	25.40	.25	1.000	.010
B	9.78	.25	.385	.010
C	4.00	.19	.142	.007
D	9.40	.13	.370	.005
E	1.53	.13	.060	.005
F	3.18	.13	.125	.005
G	0.08	+05/-00	.003	+002/ -000
H	19.05	0.51	.750	.020
I	45°	5°	45°	5°
J	15.24	.25	.600	.010
K	3.05 DIA	.13	.120 DIA	.005
L	10.15	.13	.400	.005
M	20.32	.25	.800	.010

**STYLE 1:**  
 PIN 1 = COLLECTOR  
 2 = BASE  
 3 = EMITTER

**STYLE 2:**  
 PIN 1 = COLLECTOR  
 2 = EMITTER  
 3 = BASE

