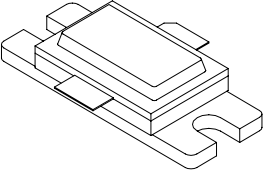




# 10502

500 Watts, 50 Volts, Pulsed  
Avionics 1030 / 1090 MHz

<p><b>GENERAL DESCRIPTION</b></p> <p>The 10502 is a high power COMMON BASE bipolar transistor. It is designed for pulsed systems in the frequency band 1030/1090 MHz, with the pulse width and duty required for MODE-S &amp; TCAS applications. 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>55SM-1</b> <b>Common Base</b></p> 
<p><b>ABSOLUTE MAXIMUM RATINGS</b></p> <p><b>Maximum Power Dissipation</b> Device Dissipation @ 25°C<sup>1</sup> 1458 Watts</p> <p><b>Maximum Voltage and Current</b></p> <p>BVces Collector to Emitter Voltage 65 Volts BVebo Emitter to Base Voltage 3.5 Volts Ic Collector Current 40 Amps</p> <p><b>Maximum Temperatures</b></p> <p>Storage Temperature - 65 to + 200°C Operating Junction Temperature + 230°C</p>	

**ELECTRICAL CHARACTERISTICS @ 25 °C**

SYMBOL	CHARACTERISTICS	TEST CONDITIONS	MIN	TYP	MAX	UNITS
P <sub>out</sub>	Power Output	F = 1030/1090 MHz	500			W
P <sub>g</sub>	Power Gain	V <sub>cc</sub> = 50 Volts	8.5			dB
P <sub>in</sub>	Power Input	PW = 32 μsec, DF = 2%			70	W
η <sub>c</sub>	Collector Efficiency		40			%
R <sub>L</sub>	Return Loss		-10			dB
VSWR	Load Mismatch Tolerance <sup>1</sup>	F = 1090 MHz	10:1			
<b>BVebo</b>	Emitter to Base Breakdown	I <sub>e</sub> = 50 mA	3.5			Volts
<b>BVces</b>	Collector to Emitter Breakdown	I <sub>c</sub> = 100 mA	65			Volts
<b>h<sub>FE</sub></b>	DC - Current Gain	I <sub>c</sub> = 5 A, V <sub>ce</sub> = 5 V	20			
<b>θ<sub>jc</sub></b> <sup>1</sup>	Thermal Resistance				0.12	°C/W

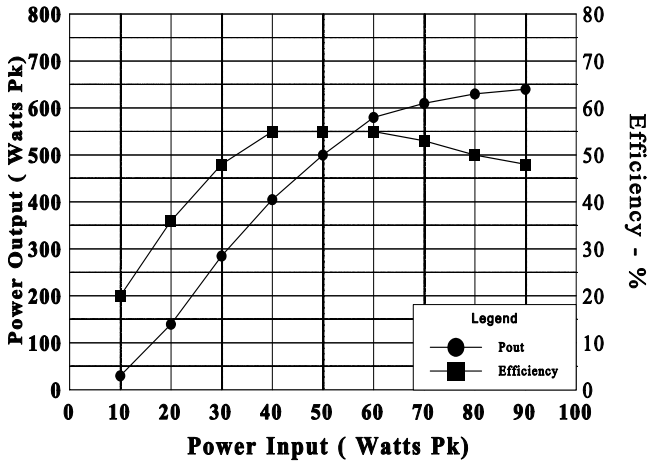
Note 1: At rated output power and pulse conditions

Rev. - Sep 1998

Advanced Power Technology reserves the right to change, without notice, the specifications and information contained herein. Visit our web site at [www.advancedpower.com](http://www.advancedpower.com) or contact our factory direct.

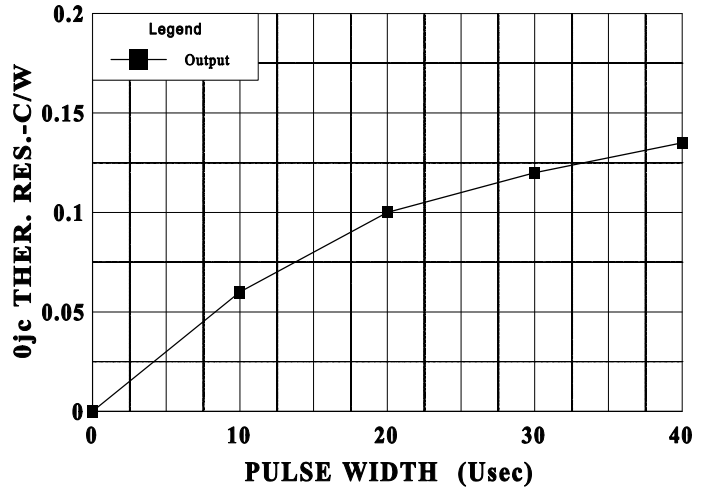
**Power Output & Efficiency vs Pin**

1090 MHz, 50 V, PW 0.5us, 50%, 128 us,



**THERMAL RESISTANCE VS PULSE WIDTH**

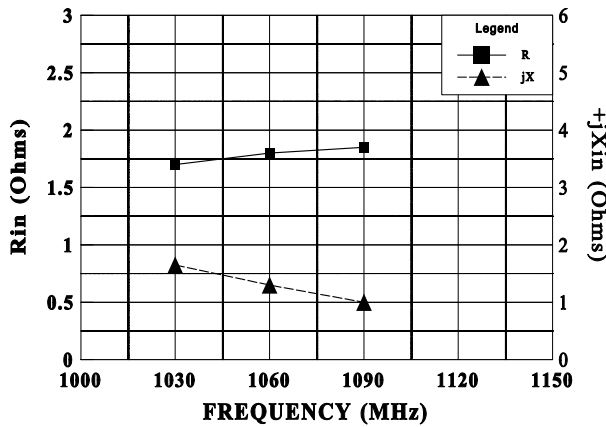
Vcc - 50 V, Tf = 30 C



*Burst Width = 128 μs, L.T.D. = 1%*

**SERIES INPUT IMPEDANCE VS FREQUENCY**

Vcc = 50 V, Pi = 65W, 32 us, 2%



**SERIES LOAD IMPEDANCE VS FREQUENCY**

Vcc = 50 V, Pin = 65 W, 32 us, 2%

