



10502

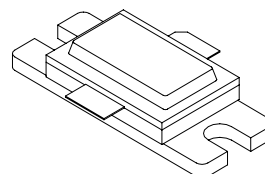
500 Watts, 50 Volts, Pulsed
Avionics 1030 / 1090 MHz

GENERAL DESCRIPTION

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 & 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.

CASE OUTLINE

55SM-1
Common Base



ABSOLUTE MAXIMUM RATINGS

Maximum Power Dissipation

Device Dissipation @ 25°C¹ 1458 Watts

Maximum Voltage and Current

BVces Collector to Emitter Voltage 65 Volts

BVebo Emitter to Base Voltage 3.5 Volts

Ic Collector Current 40 Amps

Maximum Temperatures

Storage Temperature - 65 to + 200°C

Operating Junction Temperature + 230°C

ELECTRICAL CHARACTERISTICS @ 25 °C

SYMBOL	CHARACTERISTICS	TEST CONDITIONS	MIN	TYP	MAX	UNITS
P _{out}	Power Output	F = 1030/1090 MHz	500			W
P _g	Power Gain	V _{cc} = 50 Volts	8.5			dB
P _{out}	Power Input	PW = 32 µsec, DF = 2%			70	W
η _c	Collector Efficiency		40			%
R _L	Return Loss		-10			dB
VSWR	Load Mismatch Tolerance ¹	F = 1090 MHz	10:1			

BVebo	Emitter to Base Breakdown	Ie = 50 mA	3.5			Volts
BVces	Collector to Emitter Breakdown	Ic = 100 mA	65			Volts
h _{FE}	DC - Current Gain	Ic = 5 A, Vce = 5 V	20			
θjc ¹	Thermal Resistance				0.12	°C/W

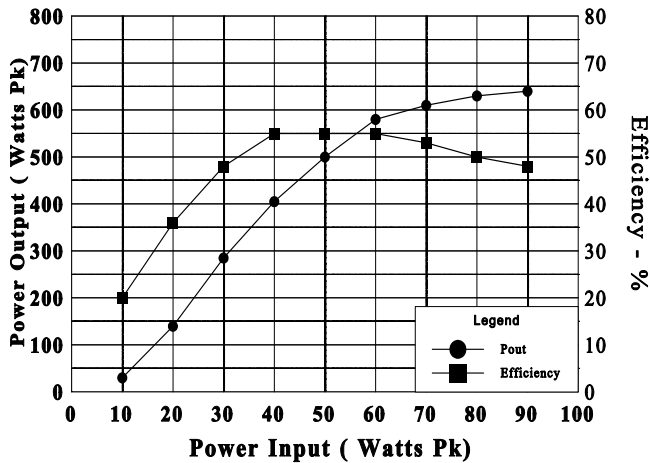
Note 1: At rated output power and pulse conditions

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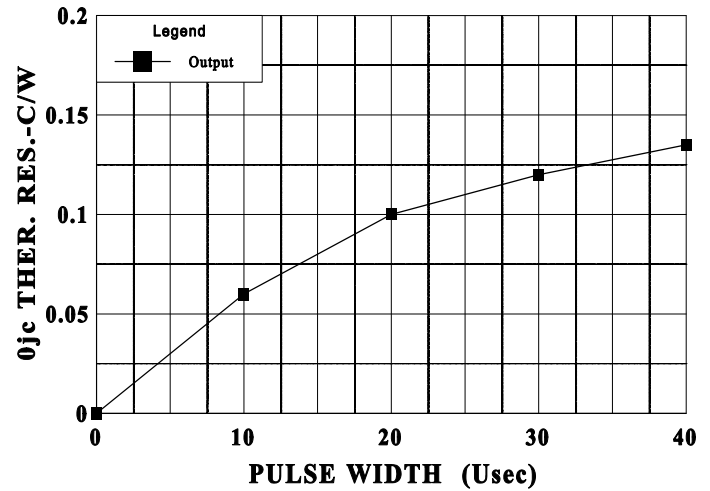
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Power Output & Efficiency vs Pin

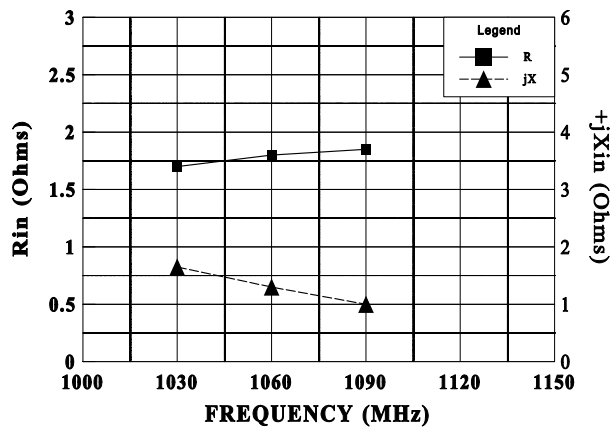
1090 MHz, 50 V, PW 0.5us, 50%, 128 us,

**THERMAL RESISTANCE VS PULSE WIDTH**

Vcc - 50 V, Tf = 30 C

*Burst Width = 128 μ s, 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%

