

10500

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

GENERAL DESCRIPTION

The 10500 is a high power COMMON BASE BiPolar transistor. It is designed for pulsed systems in the frequency band 1025 - 1150 MHz, with the pulse width and duty required for MODE-S, TACAN & 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.

ABSOLUTE MAXIMUM RATINGS

Maximum Power Dissipation @ 25°C² 1700 Watts

Maximum Voltage and Current

BVces Collector to Base Voltage 65 Volts

BVebo Emitter to Base Voltage 3.5 Volts

Ic Collector Current 40 Amps

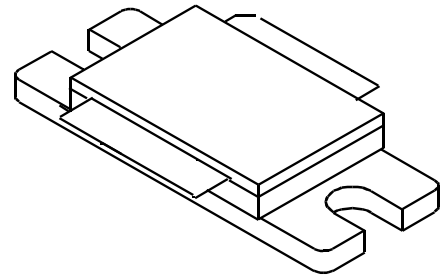
Maximum Temperatures

Storage Temperature - 65 to + 200°C

Operating Junction Temperature + 230°C

CASE OUTLINE

55ST Style 1



ELECTRICAL CHARACTERISTICS @ 25 °C

SYMBOL	CHARACTERISTICS	TEST CONDITIONS	MIN	TYP	MAX	UNITS
P_{out}	Power Out	F = 1090 MHz	500			Watts
P_{in}	Power Input	V _{cc} = 50 Volts			70	Watts
P_g	Power Gain	PW = 32 μsec	8.5			dB
η_c	Collector Efficiency	DF = 2%		50		%
P_d	Pulse Droop	F = 1090 MHz		0.5		dB
VSWR	Load Mismatch Tolerance				4:1	

BVebo*	Emitter to Base Breakdown	I _e = 50 mA	3.5			Volts
BVces	Collector to Emitter Breakdown	I _c = 100 mA	65			Volts
h_{FE}*	DC - Current Gain	I _c = 5 A, V _{ce} = 5 V	20			
θ_{jc}¹	Thermal Resistance				0.12	°C/W

Note 1: At rated output power and pulse conditions

*: Not measurable due to internal EB returns

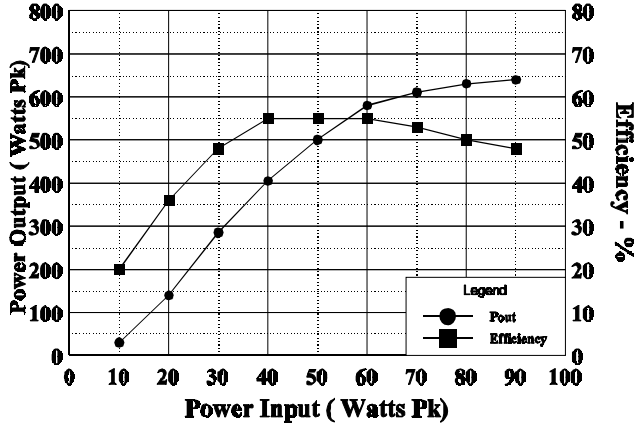
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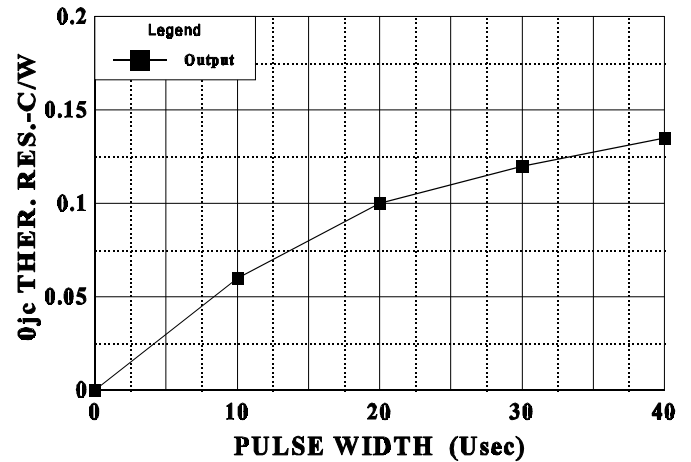
Power Output & Efficiency vs Pin

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



THERMAL RESISTANCE VS PULSE WIDTH

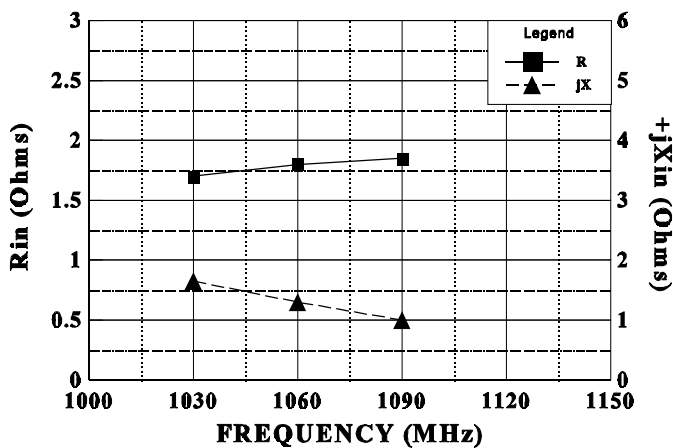
Vcc = 50 V, Tf = 30 C



Burst Width = 128 μs, L.T.D. = 1%

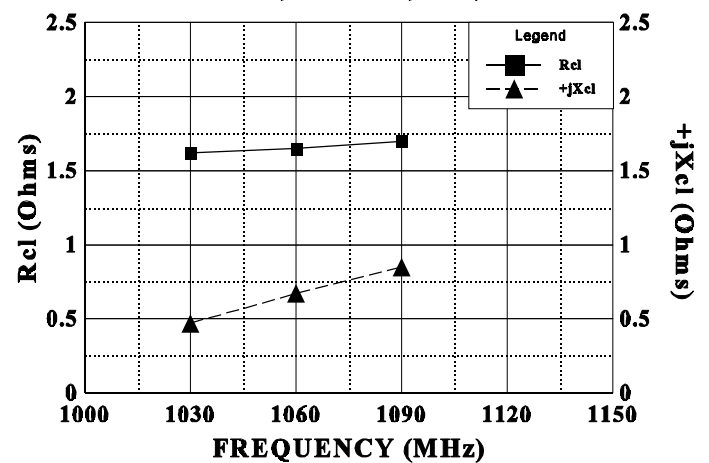
SERIES INPUT IMPEDANCE VS FREQUENCY

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



SERIES LOAD IMPEDANCE VS FREQUENCY

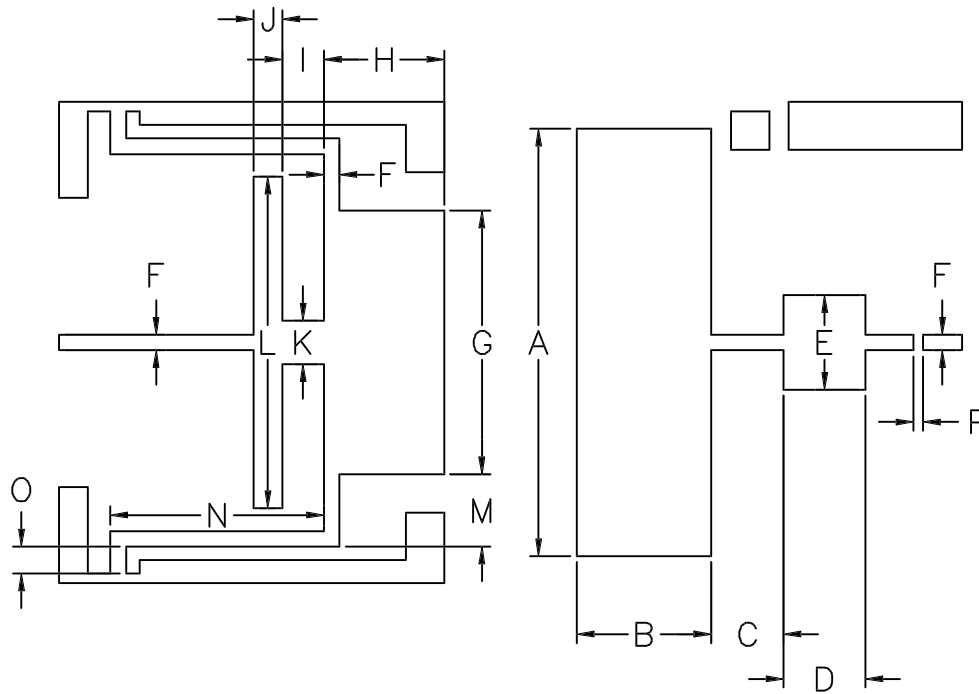
Vcc = 50 V, Pin = 65 W, 32 us, 2%



November 3, 1997

REVISIONS

ZONE	REV	DESCRIPTION	DATE	APPROVED
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DIM	INCHES
A	2.220
B	.700
C	.375
D	.425
E	.490
F	.081
G	1.370
H	.625
I	.216
J	.150
K	.225
L	1.720
M	.375
N	1.108
O	.140
P	.050

MATERIAL = TEFLON FIBRE GLASS
 DIELECTRIC THICKNESS = 0.030"
 Er = 2.55



CAGE 0PJR2	DWG NO.	10500	REV	C
	SCALE	1/1	SHEET	