GHz TECHNOLOGY
RF·MICROWAVE SILICON POWER TRANSISTORS

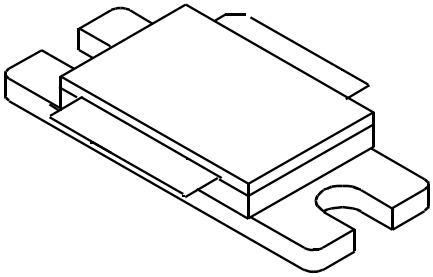
10500

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.

CASE OUTLINE
55ST Style 1



ABSOLUTE MAXIMUM RATINGS

Maximum Power Dissipation @ 25°C[2]	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

ELECTRICAL CHARACTERISTICS @ 25 °C

SYMBOL	CHARACTERISTICS	TEST CONDITIONS	MIN	TYP	MAX	UNITS
Pout	Power Out	F = 1090 MHz	500			Watts
Pin	Power Input	Vcc = 50 Volts			70	Watts
Pg	Power Gain	PW = 32 μsec	8.5			dB
η_c	Collector Efficiency	DF = 2%		50		%
Pd	Pulse Droop	F = 1090 MHz		0.5		dB
VSWR	Load Mismatch Tolerance				4:1	

BVebo*	Emitter to Base Breakdown	Ie = 50 mA	3.5			Volts
BVces	Collector to Emitter Breakdown	Ic = 100 mA	65			Volts
$\mathbf{h_{FE}}$*	DC - Current Gain	Ic = 5 A, Vce = 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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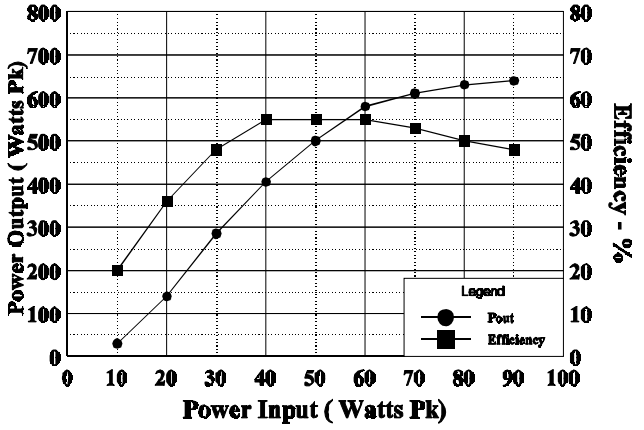
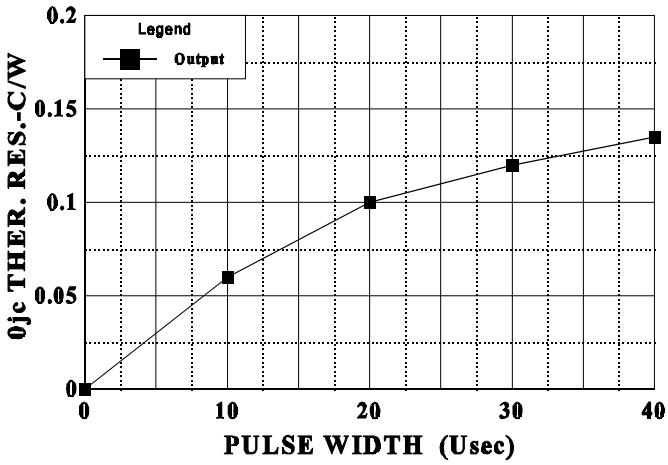
Power Output & Efficiency vs Pin

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



THERMAL RESISTANCE VS PULSE WIDTH

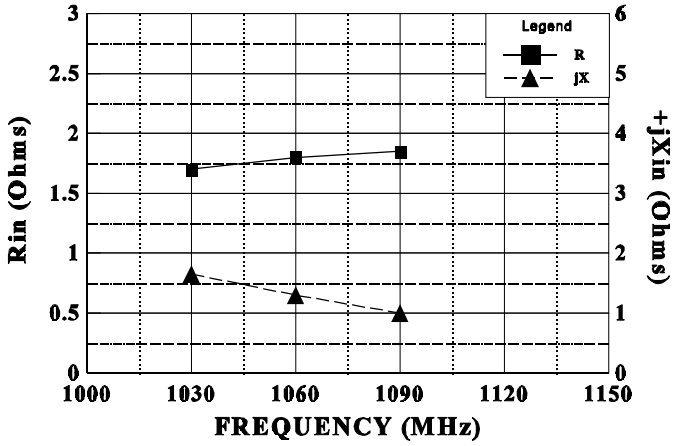
Vcc - 50 V, Tf = 30 C



Burst Width = 128 μs, L.T.D. = 1%

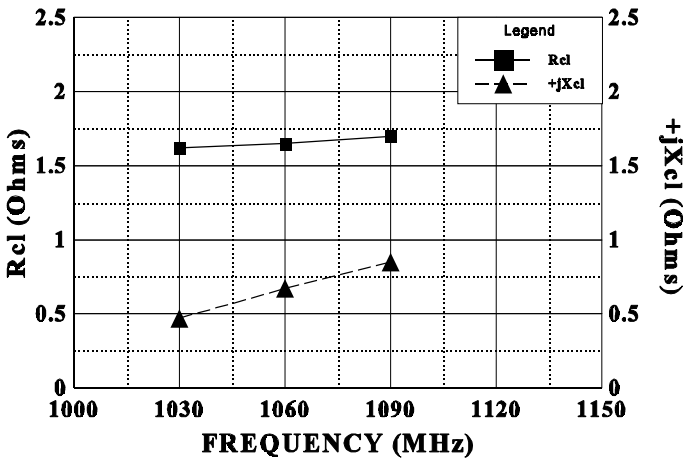
SERIES INPUT IMPEDANCE VS FREQUENCY

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



SERIES LOAD IMPEDANCE VS FREQUENCY

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



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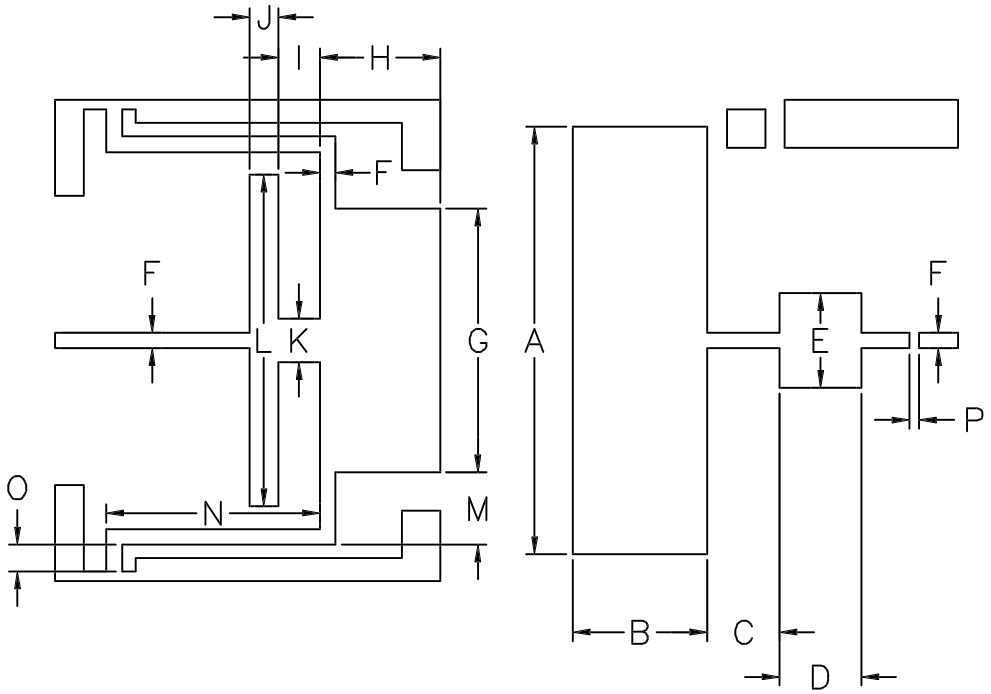
REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED



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

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