10502

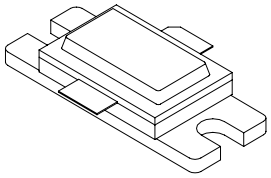
500 Watts, 50 Volts, Pulsed Avionics 1030 / 1090 MHz

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°C[1]	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			

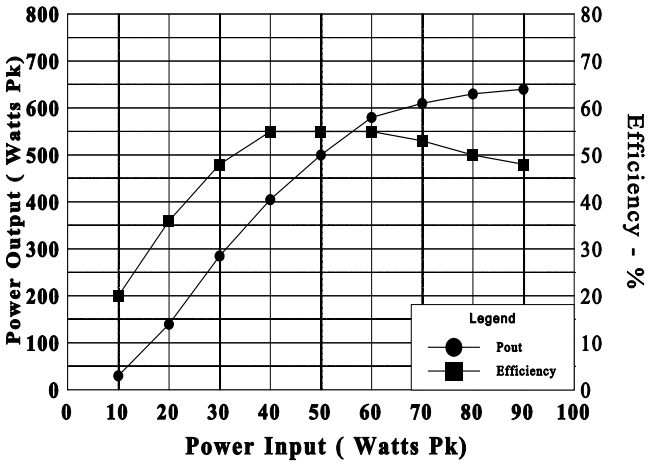
BVebo	Emitter to Base Breakdown	Ie = 50 mA	3.5			Volts
BVces	Collector to Emitter Breakdown	Ic = 100 mA	65			Volts
h_{FE}	DC - Current Gain	Ic = 5 A, Vce = 5 V	20			
θjc[1]	Thermal Resistance				0.12	°C/W

Note 1: At rated output power and pulse conditions

Rev. - Sep 1998

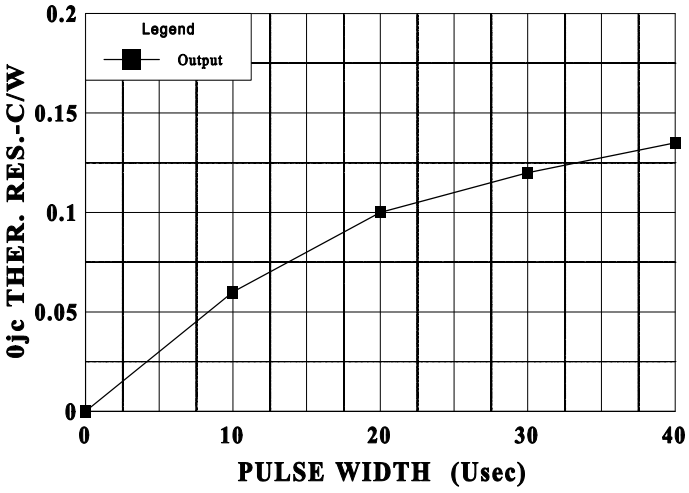
Power Output & Efficiency vs Pin

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



THERMAL RESISTANCE VS PULSE WIDTH

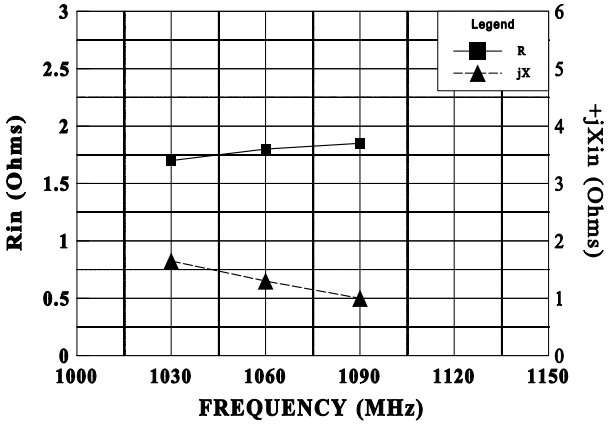
Vcc - 50 V, Tf = 30 C



Burst Width = 128 μs, L.T.D. = 1%

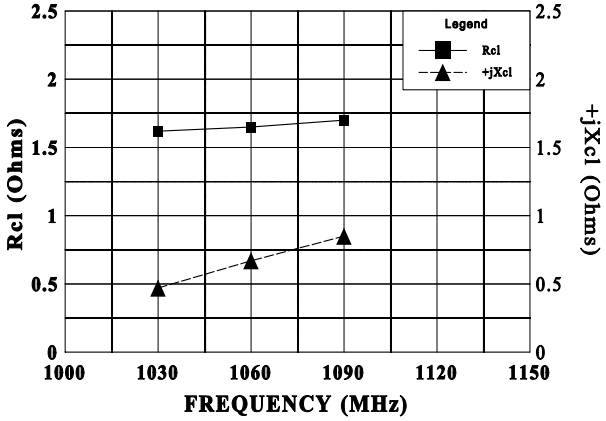
SERIES INPUT IMPEDANCE VS FREQUENCY

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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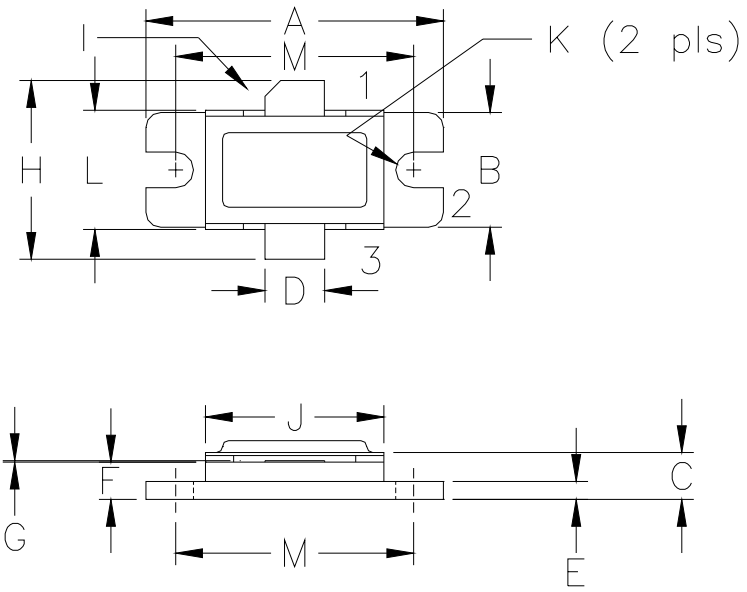
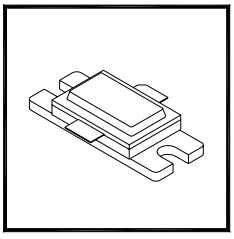
REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED



DIM	MILLIMETER	TOL	INCHES	TOL
A	25.40	.25	1.000	.010
B	9.78	.25	.385	.010
C	3.61	.19	.142	.007
D	5.08	.13	.200	.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



GHz TECHNOLOGY
RF – MICROWAVE SILICON POWER TRANSISTORS

DWG NO. 55SM