



10502

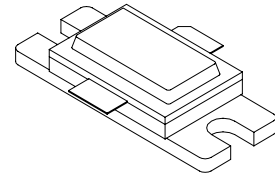
500 Watts, 50 Volts, Pulsed
Avionics 1030 / 1090 MHz

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
Common Base



ABSOLUTE MAXIMUM RATINGS

Maximum Power Dissipation

Device Dissipation @ 25°C¹ 1458 Watts

Maximum Voltage and Current

BV_{ces} Collector to Emitter Voltage 65 Volts

BV_{ebo} Emitter to Base Voltage 3.5 Volts

I_c Collector Current 40 Amps

Maximum Temperatures

Storage Temperature - 65 to + 200°C

Operating Junction Temperature + 230°C

ELECTRICAL CHARACTERISTICS @ 25 °C

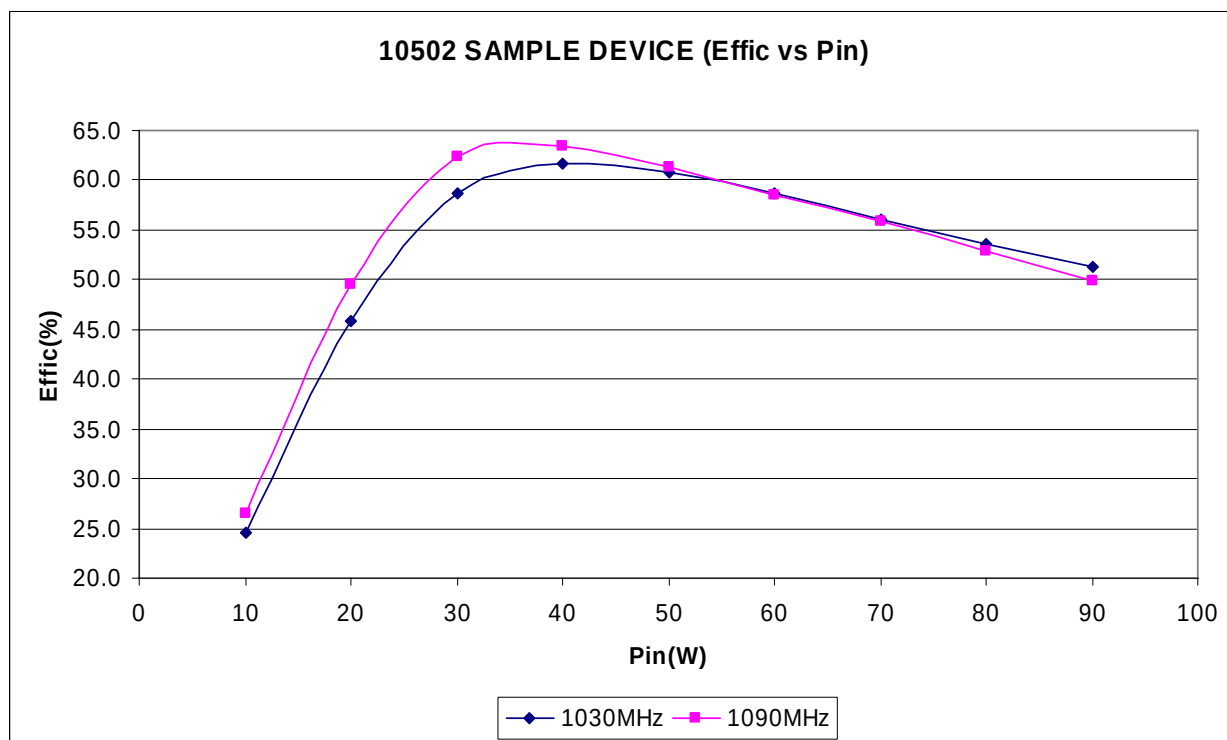
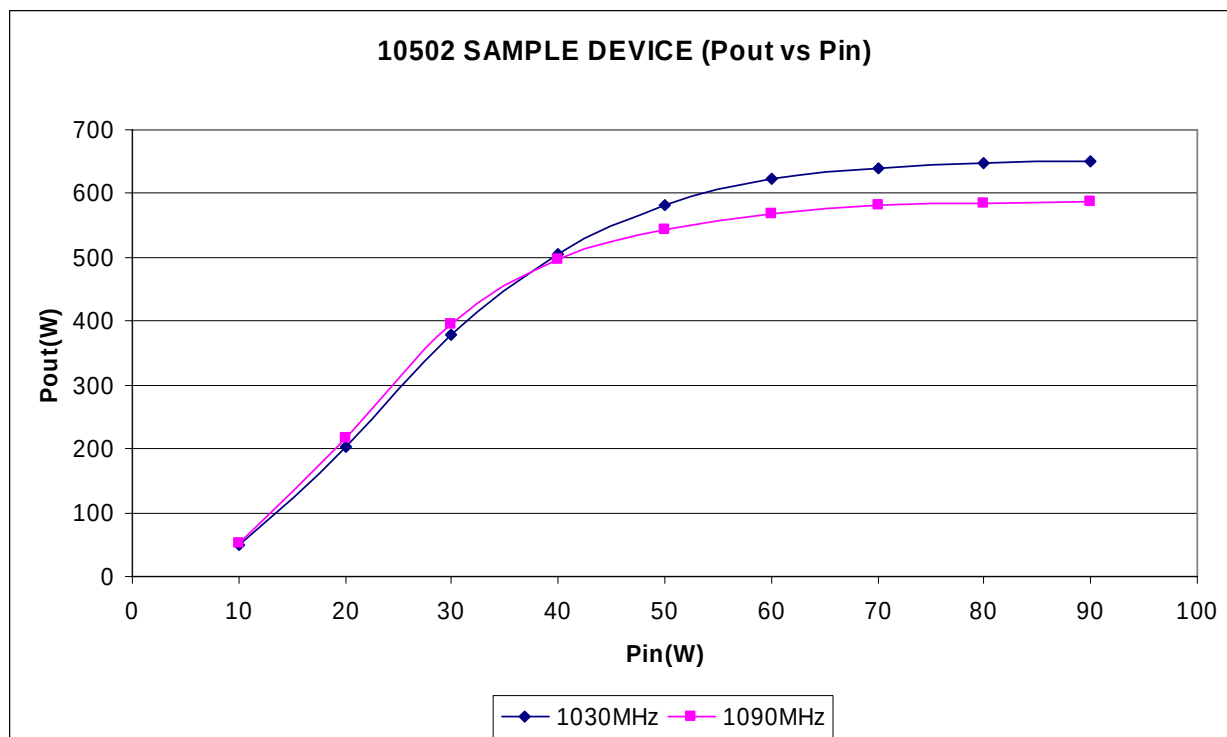
SYMBOL	CHARACTERISTICS	TEST CONDITIONS	MIN	TYP	MAX	UNITS
P _{OUT}	Output Power	F = 1030/1090 MHz	500			W
P _{IN}	Input Power	V _{CC} = 50 Volts			70	W
P _G	Power Gain	PW = 32 μsec, DF = 2%	8.5			dB
η _c	Collector Efficiency		40			%
RL	Return Loss		10			dB
VSWR	Load Mismatch Tolerance ¹	F = 1090 MHz	10:1			

BV _{EBO}	Emitter to Base Breakdown	I _e = 15 mA	3.5			Volts
BV _{CES}	Collector to Emitter Breakdown	I _c = 60 mA	65			Volts
I _{CBO}	Collector to Base Leakage	V _{CB} = 36V			25	mA
h _{FE}	DC - Current Gain	I _c = 5 A, V _{ce} = 5 V	20			
θ _j c ¹	Thermal Resistance				0.12	°C/W

Note 1: At rated output power and pulse conditions

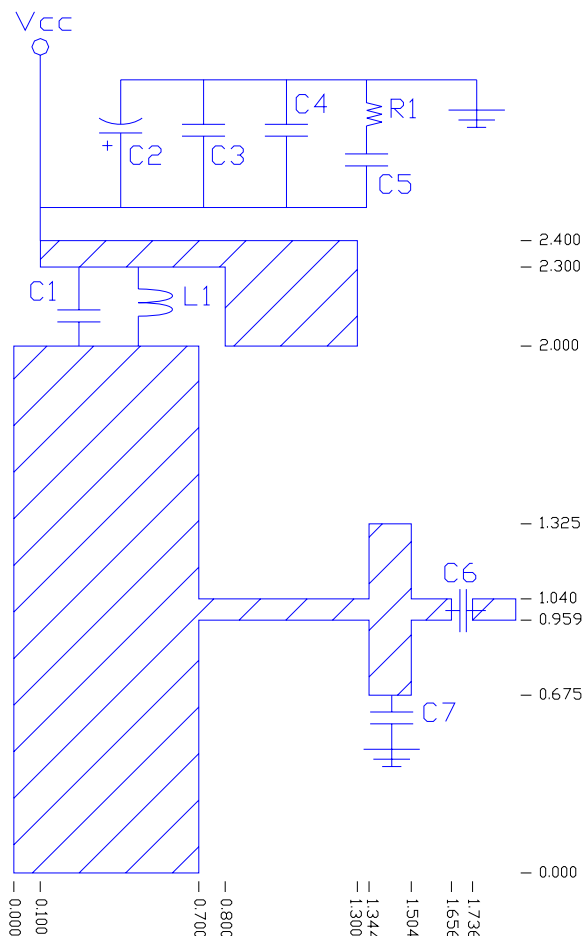
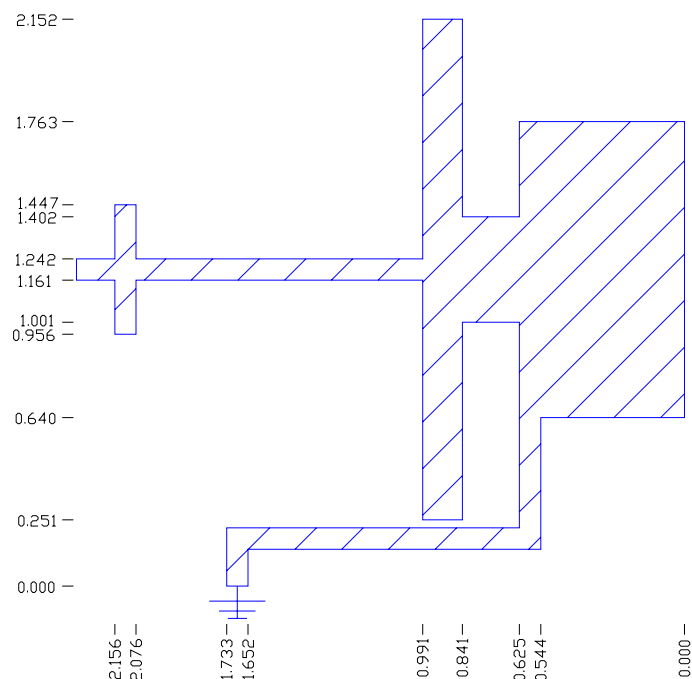
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C1=1.5pF ATC Chip Cap; Size B
 C2=4700uF Electrolytic; 63V
 C3=47pF ATC Chip Cap; Size B
 C4=C6=100pF ATC Chip Cap; Size B
 C5=0.1uF ATC Chip Cap; Size B
 C7=0.5pF ATC Chip Cap; Size B
 R1=1ohm Chip Resistor; Size 1206
 L1=18 AWG; 2 Turns; I.D.=0.1"; L=1.4"
 Substrate: Er=2.55; H=31mils

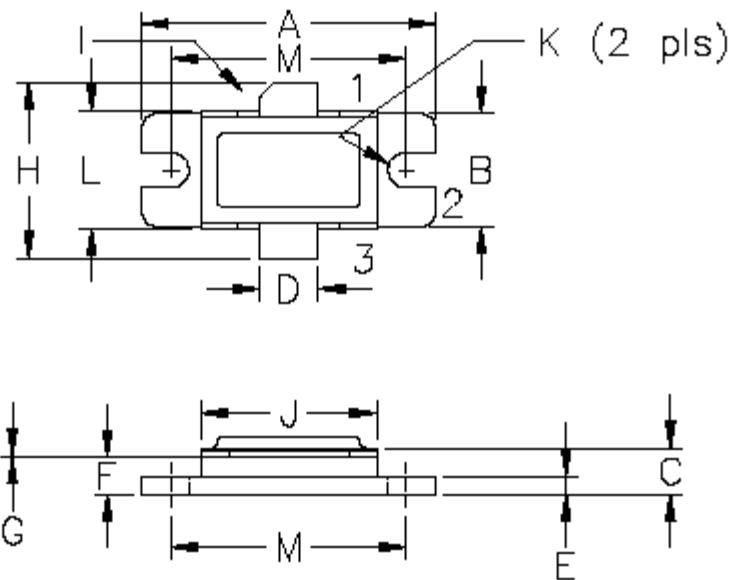


DIMENSIONS IN INCHES



10502 TEST CIRCUIT Er=2.55; H=31mils
Casey Tou 7/13/09 Scale: 1/1 REV 1

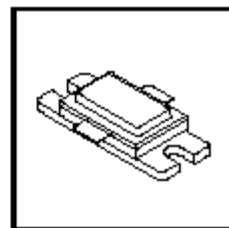
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DIM	MILLIMETER	TOL	INCHES	TOL
A	25.40	.25	1.000	.010
B	9.78	.25	.385	.010
C	4.87	.19	.192	.007
D	5.08	.13	.200	.005
E	1.53	.13	.060	.005
F	3.18	.13	.125	.005
G	0.08	+.00/-0.00	.003	+.002/-0.000
H	19.05	0.51	.750	.020
I	45°	5°	45°	5°
J	15.24	.25	.600	.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



DWG NO.

55SM