



10502

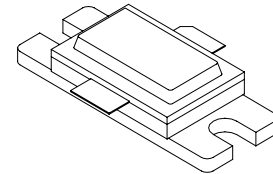
**500 Watts, 50 Volts, Pulsed
Avionics 1030 / 1090 MHz**

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

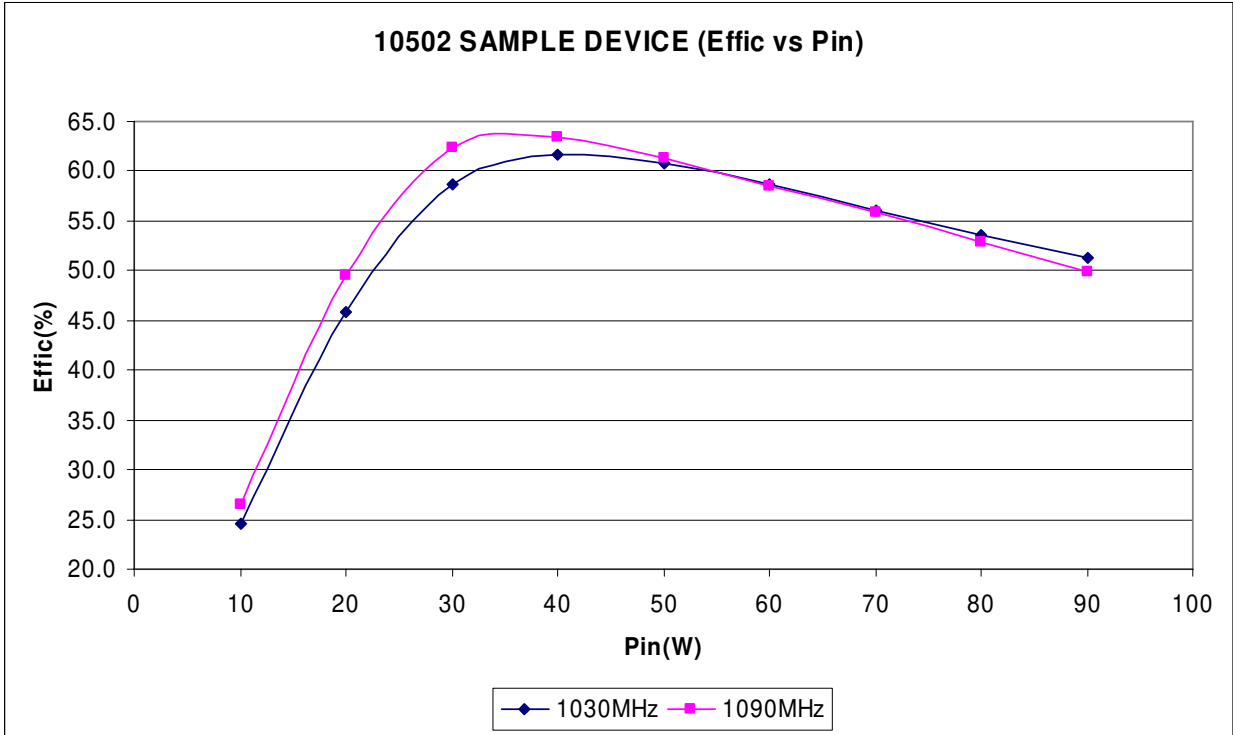
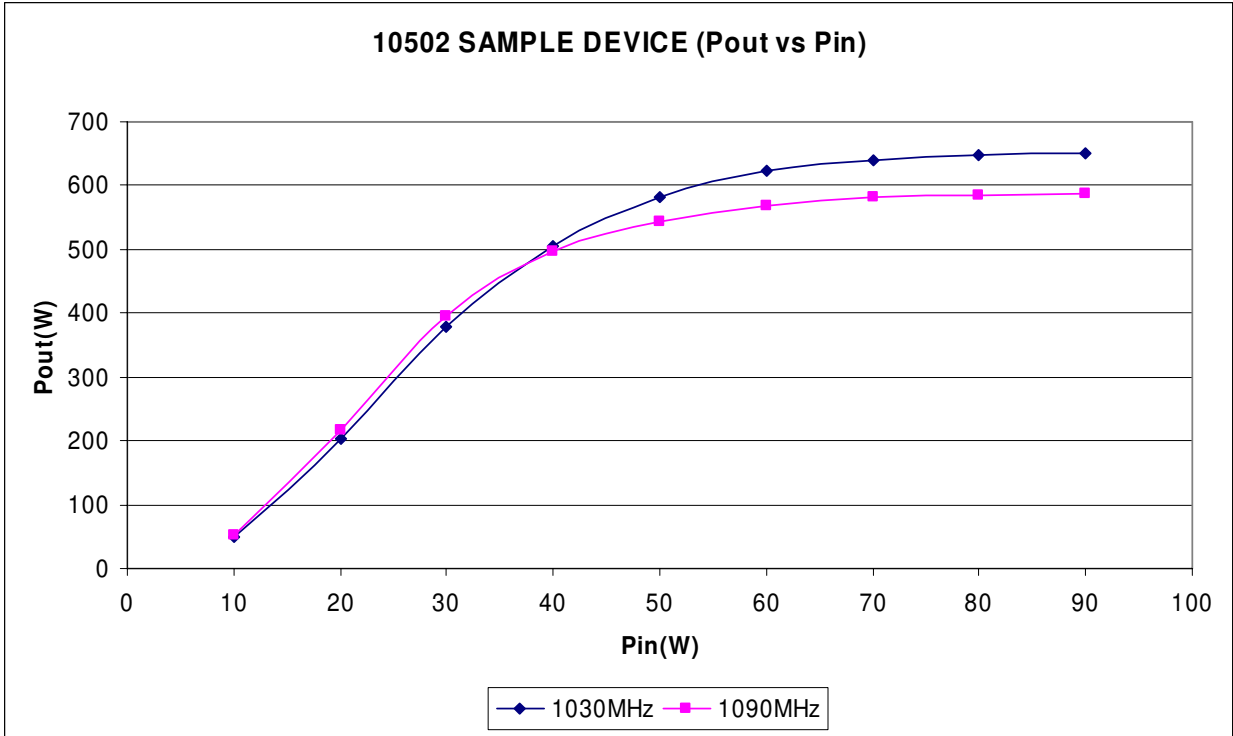
SYMBOL	CHARACTERISTICS	TEST CONDITIONS	MIN	TYP	MAX	UNITS
P _{OUT}	Output Power	F = 1030/1090 MHz	500			W
P _{IN}	Input Power	V _{CC} = 50 Volts			70	W
P _G	Power Gain	PW = 32 μsec, DF = 2%	8.5			dB
η _c	Collector Efficiency		40			%
RL	Return Loss		10			dB
VSWR	Load Mismatch Tolerance ¹	F = 1090 MHz	10:1			

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 _{jc} ¹	Thermal Resistance				0.12	°C/W

Note 1: At rated output power and pulse conditions

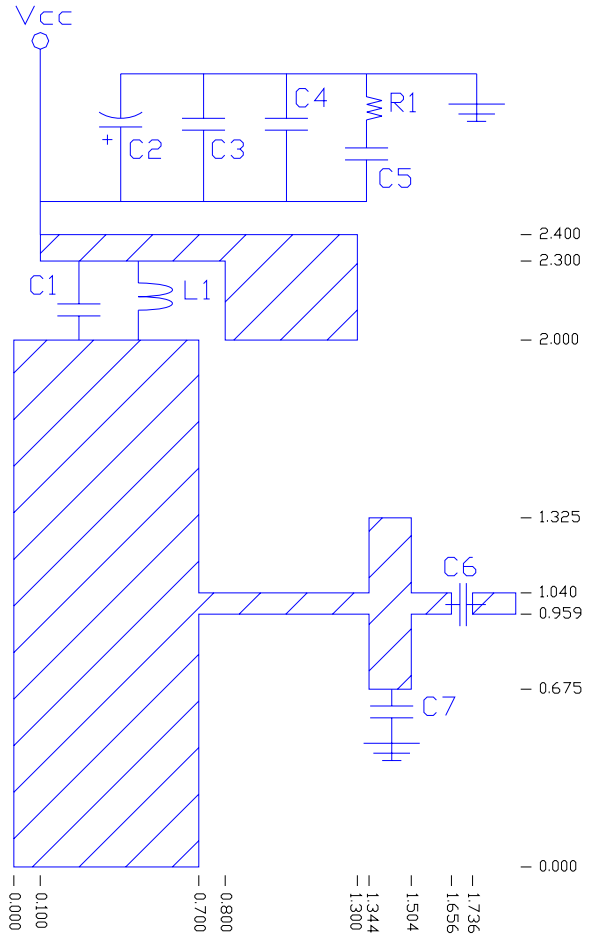
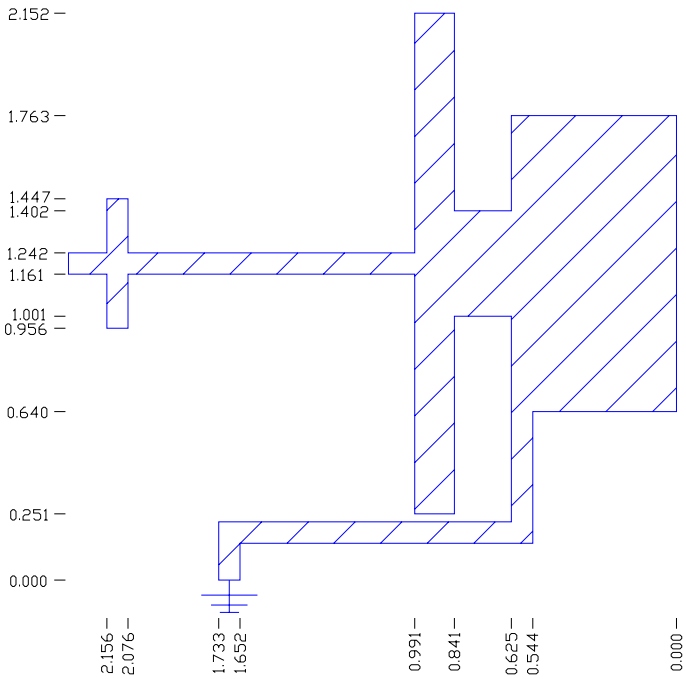
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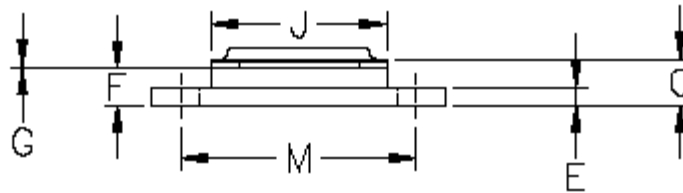
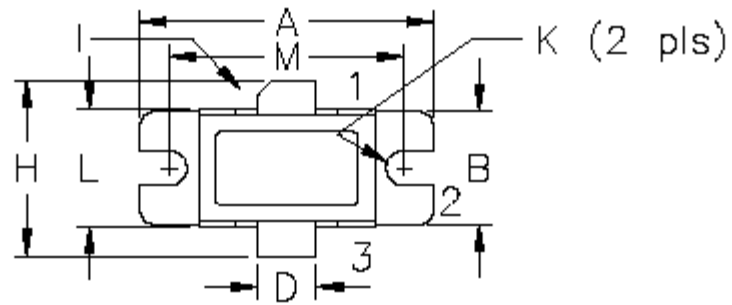
C1=1.5pF ATC Chip Cap; Size B
 C2=4700uF Electrolytic; 63V
 C3=47pF ATC Chip Cap; Size B
 C4=C6=100pF ATC Chip Cap; Size B
 C5=0.1uF ATC Chip Cap; Size B
 C7=0.5pF ATC Chip Cap; Size B
 R1=1ohm Chip Resistor; Size 1206
 L1=18 AWG; 2 Turns; I.D.=0.1"; L=1.4"
 Substrate: Er=2.55; H=31mils



DIMENSIONS IN INCHES

 POWER PRODUCTS GROUP	10502 TEST CIRCUIT	Er=2.55; H=31mils
	Casey Tou	7/13/09

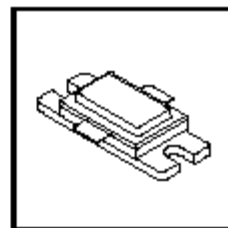
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DIM	MILLIMETER	TOL	INCHES	TOL
A	25.40	.25	1.000	.010
B	9.78	.25	.385	.010
C	4.87	.19	.192	.007
D	5.08	.13	.200	.005
E	1.53	.13	.060	.005
F	3.18	.13	.125	.005
G	0.08	$+.001/-0.000$.003	$+.002/-0.000$
H	19.05	0.51	.750	.020
I	45°	5°	45°	5°
J	15.24	.25	.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