

# MDS170L

170 Watts, 36 Volts, Pulsed  
Avionics 1030/1090 MHz

## GENERAL DESCRIPTION

The MDS170L is a high power COMMON BASE bipolar transistor. It is designed for pulsed systems in the frequency band 1030 - 1090 MHz. The transistor includes input and output prematch for broadband performance. The device has gold thin-film metallization and diffused ballasting for proven highest MTTF. Low thermal resistance Solder Sealed Package reduces junction temperature, extends life.

## ABSOLUTE MAXIMUM RATINGS

Maximum Power Dissipation @ 25°C<sup>2</sup> 350 Watts

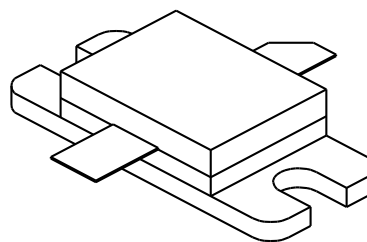
### Maximum Voltage and Current

BVces Collector to Base Voltage 50 Volts  
BVebo Emitter to Base Voltage 3.5 Volts  
Ic Collector Current 15 Amps

### Maximum Temperatures

Storage Temperature - 65 to + 200°C  
Operating Junction Temperature + 200°C

## CASE OUTLINE 55KT, STYLE 1



## ELECTRICAL CHARACTERISTICS @ 25 °C

SYMBOL	CHARACTERISTICS	TEST CONDITIONS	MIN	TYP	MAX	UNITS
P <sub>out</sub>	Power Out	F = 1030 - 1090 MHz	170			Watts
P <sub>in</sub>	Power Input	V <sub>cc</sub> = 36 Volts			34	Watts
P <sub>g</sub>	Power Gain	PW = Note 1	7			dB
η <sub>c</sub>	Collector Efficiency	DF = Note 1		40		%
VSWR	Load Mismatch Tolerance	F = 1030 MHz			10:1	

BVebo	Emitter to Base Breakdown	I <sub>e</sub> = 20 mA				Volts
BVces	Collector to Emitter Breakdown	I <sub>c</sub> = 20 mA				Volts
h <sub>FE</sub>	DC - Current Gain	I <sub>c</sub> = 20 mA, V <sub>ce</sub> = 5 V	20			
θ <sub>jc</sub> <sup>2</sup>	Thermal Resistance				0.5	°C/W

Note 1: MODE- S Pulse Burst, 120 μs at 50% Duty, Long term duty = 5%.

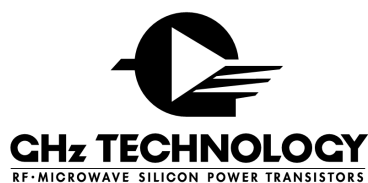
2: At rated pulse conditions

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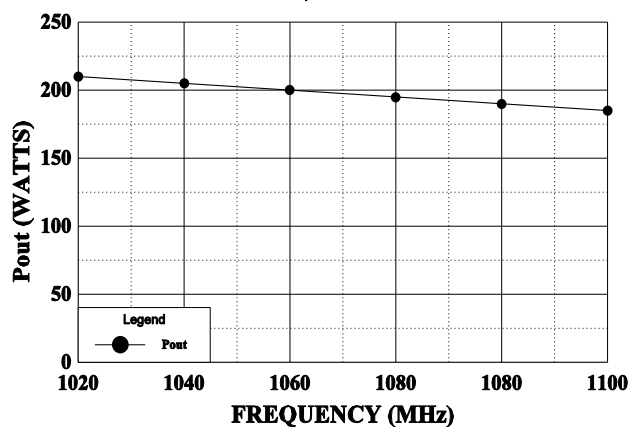
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# MDS170L

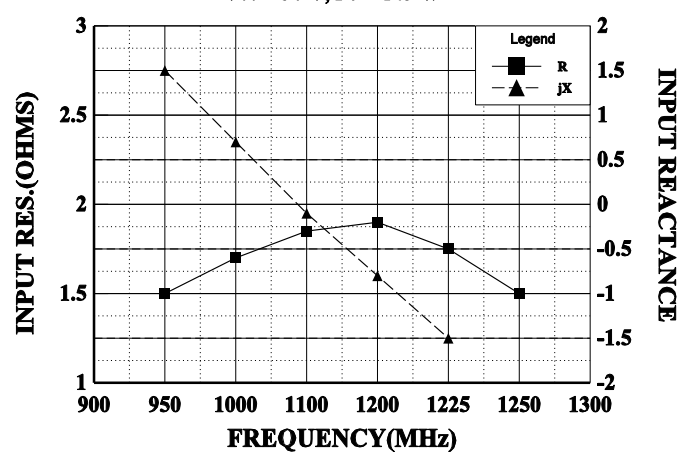
## POWER OUTPUT vs FREQUENCY

$V_{cc} = 36\text{ V}$ ,  $P_{in} = 34\text{ W}$



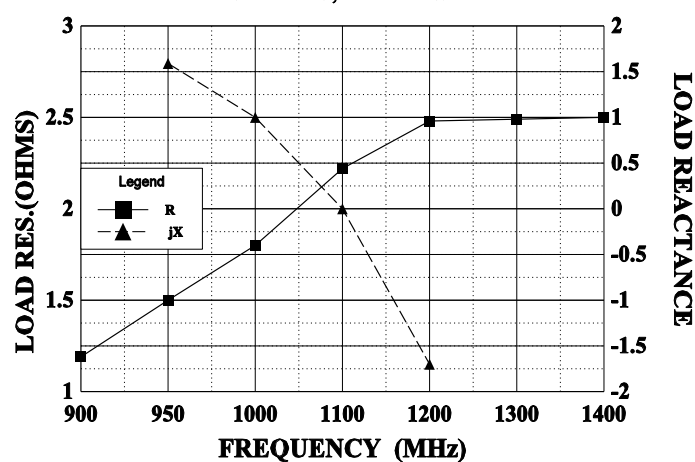
## SERIES INPUT IMPEDANCE vs FREQUENCY

$V_{cc} = 36\text{ V}$ ,  $P_o = 145\text{ W}$



## SERIES LOAD IMPEDANCE vs FREQUENCY

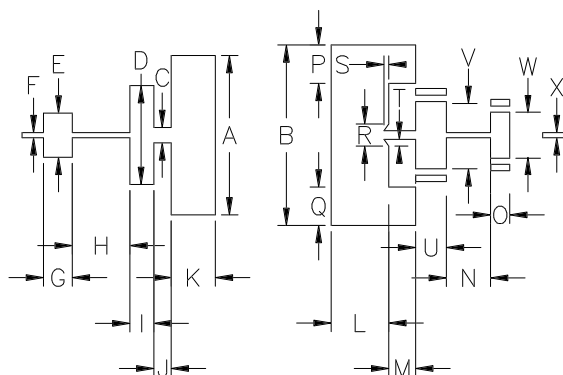
$V_{cc} = 36\text{ V}$ ,  $P_o = 145\text{ W}$



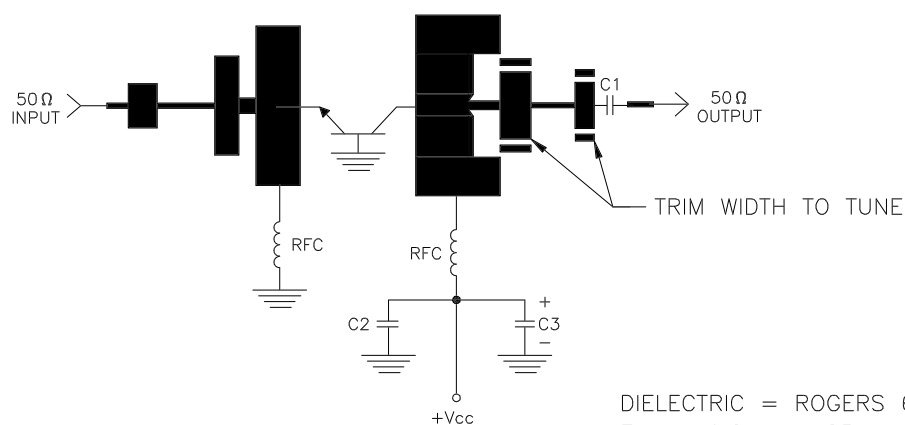
REVISIONS

ZONE	REV	DESCRIPTION	DATE	APPROVED
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DIM	INCHES
A	.830
B	.940
C	.080
D	.515
E	.230
F	.026
G	.150
H	.300
I	.125
J	.090
K	.230
L	.300
M	.140
N	.230
O	.100
P	.200
Q	.200
R	.115
S	.025
T	.035
U	.160
V	.350
W	.240
X	.026



MDS170L TEST CIRCUIT



DIELECTRIC = ROGERS 6010  
Er = 10.2, t = 25  
C1, C2 = 82pF CHIP ATC "A"  
C3 = 1000 MFD @ 50V  
RFC = 5 turns #22 wire 1/16" I.D.



CHz TECHNOLOGY

CAGE  
OPJR2

DWG NO.

MDS 170L

REV  
A

SCALE

1/1

SHEET