



MDS500L

500 Watts, 50 Volts, Pulsed
Avionics 1030 MHz

PRELIMINARY

GENERAL DESCRIPTION

The MDS500L is a high power COMMON BASE bipolar transistor. It is designed for MODE-S ELM systems in the 1030 MHz frequency band. The transistor includes input prematch for broadband performance. The device has gold thin-film metallization and diffused ballasting in a hermetically sealed package for proven highest MTTF.

ABSOLUTE MAXIMUM RATINGS

Maximum Power Dissipation

Device Dissipation @25 C¹ 833 W

Maximum Voltage and Current

Collector to Emitter Voltage (BV_{ces}) 70 V

Emitter to Base Voltage (BV_{ebo}) 3.5 V

Peak Collector Current (I_c) 25 A

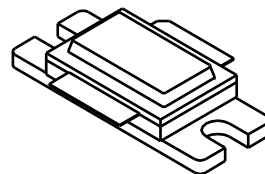
Maximum Temperatures

Storage Temperature -65 to +150 C

Operating Junction Temperature +200 C

CASE OUTLINE

55ST Style 1



ELECTRICAL CHARACTERISTICS @ 25 C

SYMBOL	CHARACTERISTICS	TEST CONDITIONS	MIN	TYP	MAX	UNITS
P _{out}	Power Out	F = 1030 MHz	500			W
P _{in}	Power Input	V _{cc} = 50 Volts			70	W
P _g	Power Gain	PW = Note 2	8.5			dB
_c	Collector Efficiency	DF = Note 2		50		%
VSWR	Load Mismatch Tolerance	F = 1030 MHz			3:1	
Pd ¹	Pulse Droop	F = 1030 MHz			0.8	dB
Trise ¹	Rise Time				100	nSec

FUNCTIONAL CHARACTERISTICS @ 25 C

BV _{ebo}	Emitter to Base Breakdown	I _e = 30 mA	3.0			V
BV _{ces}	Collector to Emitter Breakdown	I _c = 50 mA	70			V
BV _{cbo}	Collector to Base Breakdown	I _c = 50 mA	70			V
I _{ces}	Collector to Emitter Leakage	V _{ce} = 50V			15	mA
h _{FE}	DC – Current Gain	V _{ce} = 5V, I _c = 1.0 A	20			
jc ¹	Thermal Resistance				0.21	C/W

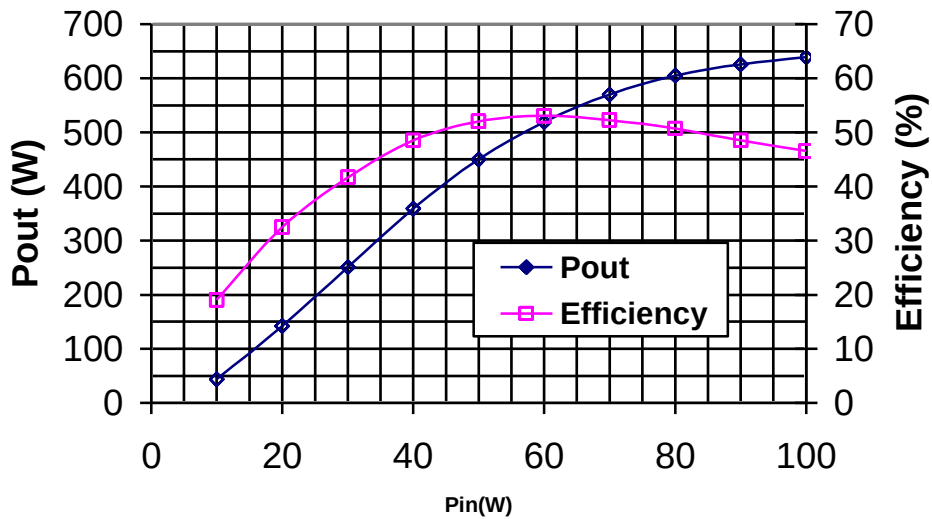
NOTE 1: AT RATED OUTPUT POWER AND PULSE CONDITIONS

NOTE 2: Burst: 32μSec ON/ 18μSec OFF x 48, repeated at 23mSec

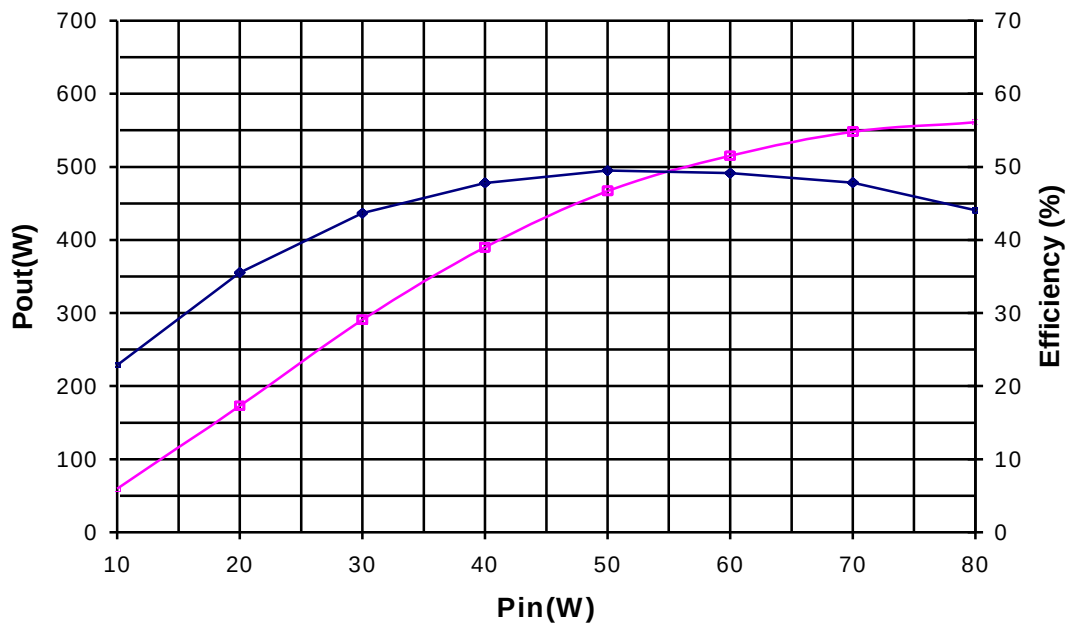
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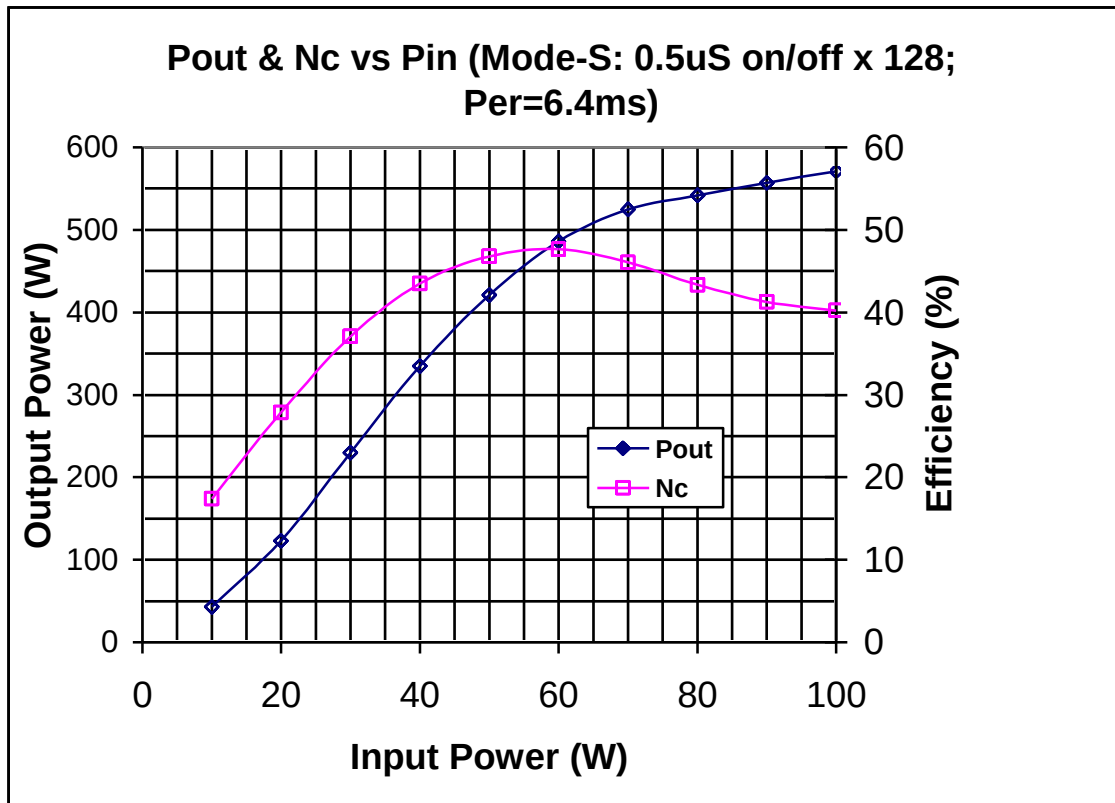
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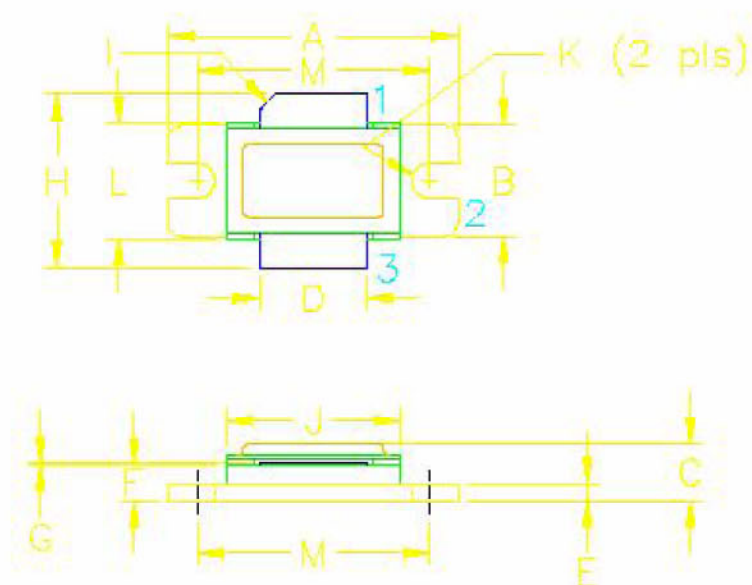
Pout and Nc vs Pin (32us; 2%)



Pout and Nc vs Pin (32us burst, N=48)



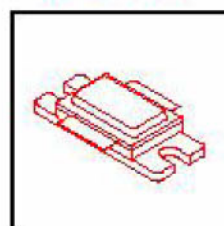




DIM	MILLIMETER	±TOL	INCHES	±TOL
A	25.40	.25	1.000	.010
B	9.78	.25	.385	.010
C	4.00	.19	.142	.007
D	9.40	.13	.370	.005
E	1.53	.13	.060	.005
F	3.18	.13	.125	.005
G	0.08	+.06/- .00	.003	+.002/- .000
H	19.05	0.51	.750	.020
I	45°	5°	45°	5°
J	15.24	.25	.600	.010
K	3.05 DIA	.13	.120 DIA	.005
L	10.15	.13	.400	.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



DWG NO.

55ST