



MS2553C

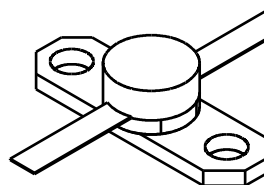
35 Watts, 50 Volts

Pulsed Avionics 1025 to 1150 MHz

GENERAL DESCRIPTION

The **MS2553C** is a medium power COMMON BASE bipolar transistor. It is designed for pulsed systems in the frequency band 1025-1150 MHz. The device has gold thin-film metallization and diffused ballasting for proven highest MTTF. The transistor includes input prematch for broadband capability. Low thermal resistance package reduces junction temperature, extends life.

CASE OUTLINE M220 (Common Base)



ABSOLUTE MAXIMUM RATINGS

Power Dissipation

Device Dissipation @25°C (P_d) 175 W (At rated pulse condition)

Voltage and Current

Collector to Base Voltage (BV_{ces}) 65 V

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

Collector Current (I_c) 4.0 A

Temperatures

Storage Temperature -65 to +150 °C

Operating Junction Temperature +200 °C

ELECTRICAL CHARACTERISTICS @ 25°C

SYMBOL	CHARACTERISTICS	TEST CONDITIONS	MIN	TYP	MAX	UNITS
BV_{EBO}	Emitter - Base Breakdown	$I_e = 10mA$	3.5			V
BV_{CBO}	Collector - Base Breakdown	$I_c = 20mA$	65			V
BV_{CEO}	Collector - Emitter Breakdown	$I_c = 20mA$	25			V
h_{FE}	DC – Current Gain	$I_c = 500mA$, $V_{ce} = 5V$	20			-
$\theta_{jc}^{1,2}$	Thermal Resistance				0.5	°C/W

FUNCTIONAL CHARACTERISTICS @ 25°C, $V_{cc} = 50V$

P_{OUT}	Power Out	F = 1025/1090/1150 MHz, PW = 10μsec, DF = 1%, $P_{IN} = 3.2W$	35			W
P_{IN}	Power Input				3.2	W
G_p	Power Gain		10.5			dB
η_c	Collector Efficiency		40			%
P_d	Pulse Droop				1	dB
ρ_a	Load Mismatch				10:1	-

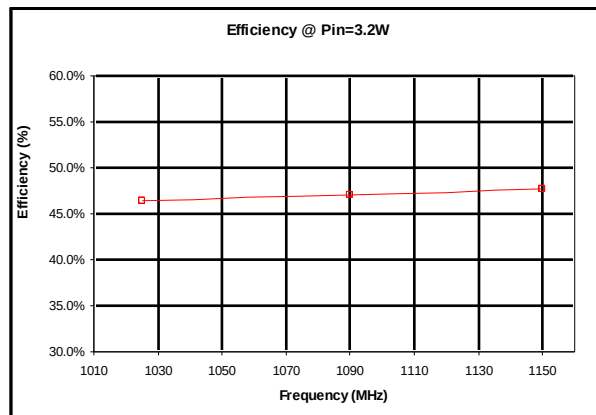
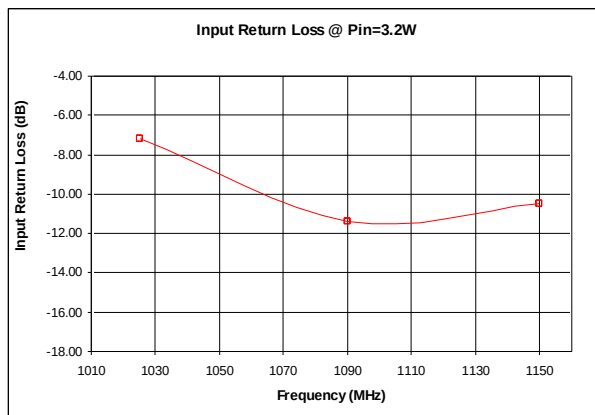
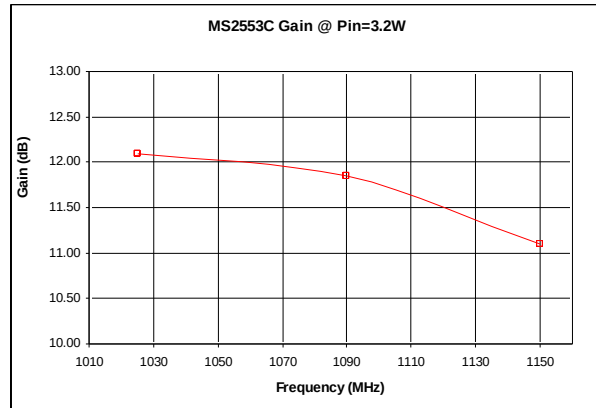
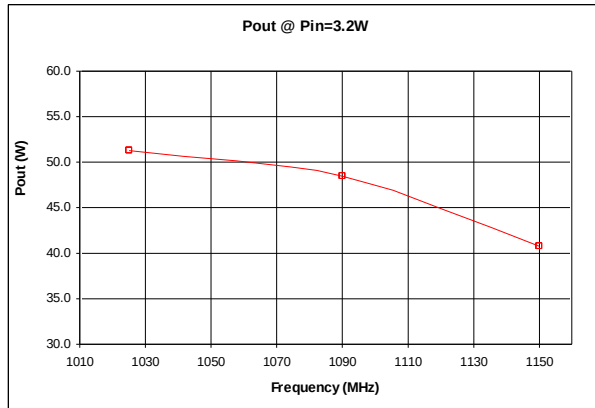
NOTES: 1. At rated output power and pulse conditions

2. Pulse Format: PW=10μs, DF=1%

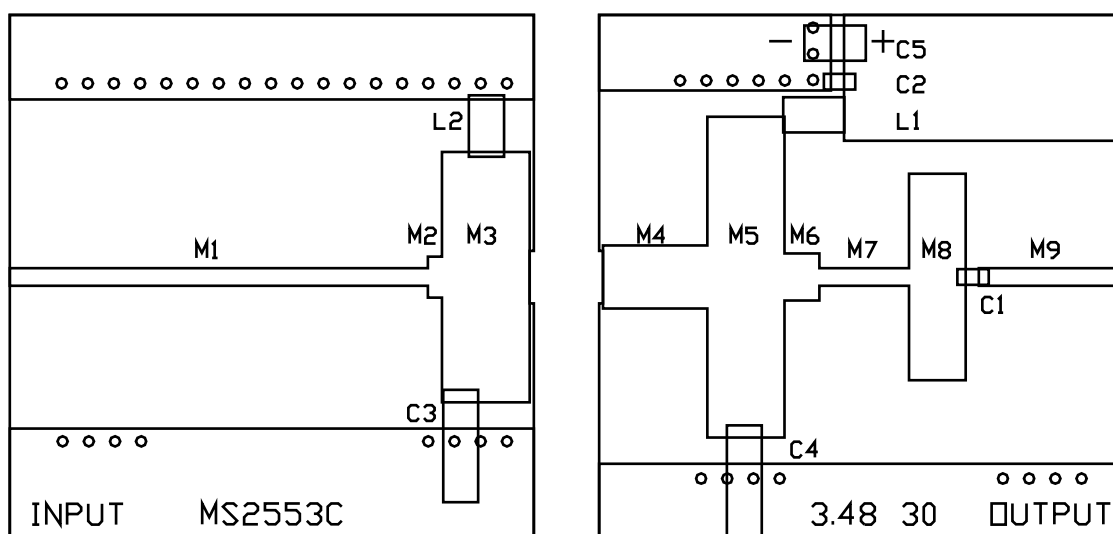
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Typical Performance (1025MHz ~ 1150MHz)



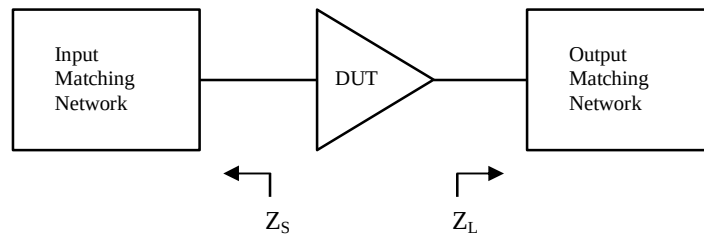
MS2553C Test Circuit Layout



MS2553C Test Circuit Component Designations and Values

Part	Description	Part	Description
C1, C2	100pF Chip Capacitor (ATC 100B)	C3, C4	.35-3.5pF Johanson Capacitor, JMC5801
C5	220uF 63V Electrolytic Capacitor	L1, L2	4 Turns, 20 AWG, IDIA 0.092?i
M1	67 x 1596 mils (W x L)	M2	156 x 54 mils (W x L)
M3	955 x 335 mils (W x L)	M4	240 x 398 mils (W x L)
M5	1224 x 294 mils (W x L)	M6	180 x 134 mils (W x L)
M7	67 x 342 mils (W x L)	M8	788 x 216 mils (W x L)
M9	67 x 551 mils (W x L)	PCB	Rogers RO4350, e _r '=3.48, 30mils, 1oz

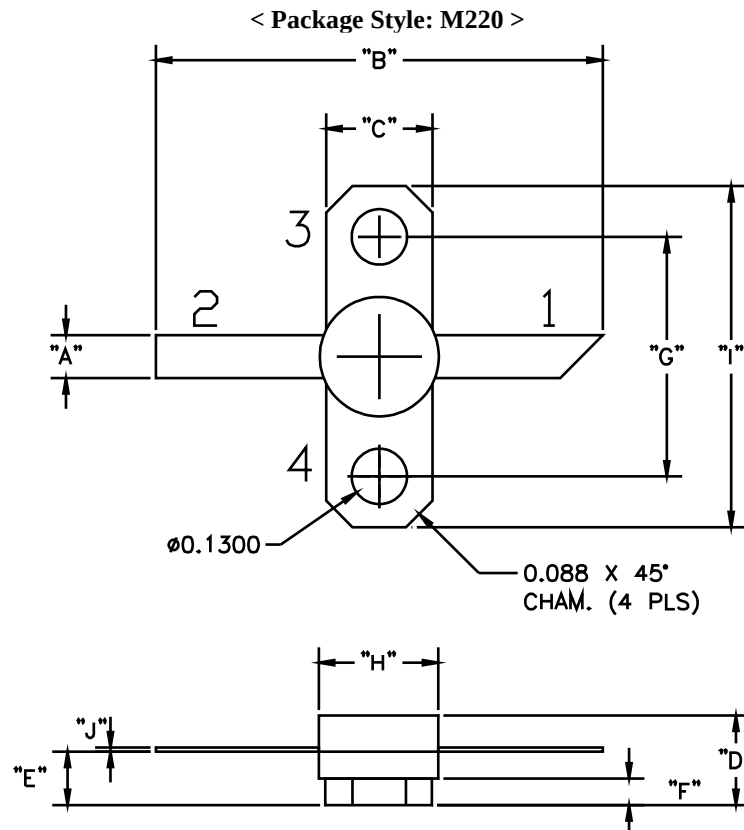
Typical Impedance Values



Frequency (MHz)	Z_S (Ω)	Z_L (Ω)
1025	$6.3 - j15.4$	$6.6 + j2.0$
1090	$5.6 - j14.5$	$7.6 + j2.6$
1150	$5.1 - j13.8$	$8.6 + j2.7$

* $V_{CC} = 50V$, $P_{IN} = 3.2W$

* Pulse Format: 10μs, 1% Long Term Duty Factor

Package Mechanical Data


DIMENSION					
	MINIMUM INCHES/MM	MAXIMUM INCHES/MM		MINIMUM INCHES/MM	MAXIMUM INCHES/MM
A	.100 / 2.54		B	1.050 / 26.67	-
C	.250 / 6.35		D	-	.210 / 5.33
E	.120 / 3.05	.130 / 3.30	F	.062 / 1.58	
G	.562 / 14.28		H	-	.285 / 7.24
I	.800 / 20.32		J	.003 / 0.08	.006 / 0.15
PIN CONNECTION					
1	COLLECTOR		2	EMITTER	
3	BASE		4	BASE	

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