Microsemi
POWER PRODUCTS GROUP

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.

ABSOLUTE MAXIMUM RATINGS

Power Dissipation

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

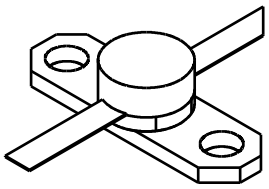
Voltage and Current

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

CASE OUTLINE
M220
(Common Base)



ELECTRICAL CHARACTERISTICS @ 25°C

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

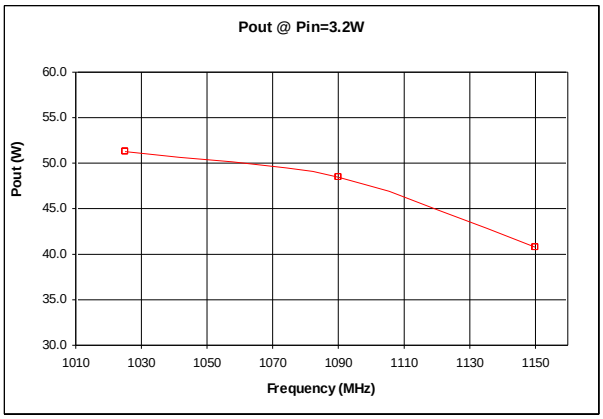
FUNCTIONAL CHARACTERISTICS @ 25°C, Vcc = 50V

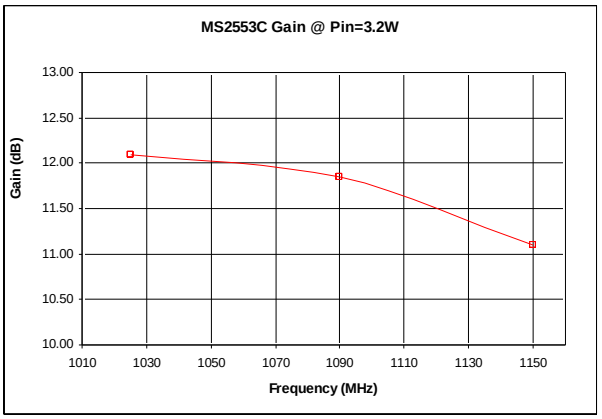
P_{OUT}	Power Out	F = 1025/1090/1150 MHz, PW = 10µsec, DF = 1%, P_{IN} = 3.2W	35			W
P_{IN}	Power Input				3.2	W
G_p	Power Gain		10.5			dB
η_C	Collector Efficiency		40			%
P_d	Pulse Droop				1	dB
?á	Load Mismatch				10:1	-

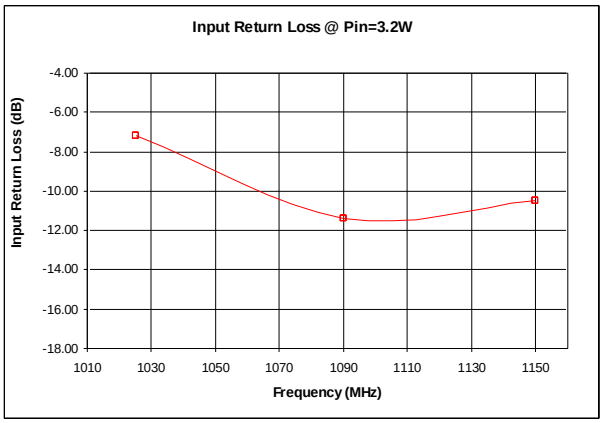
NOTES: 1. At rated output power and pulse conditions
2. Pulse Format: PW=10µs, DF=1%

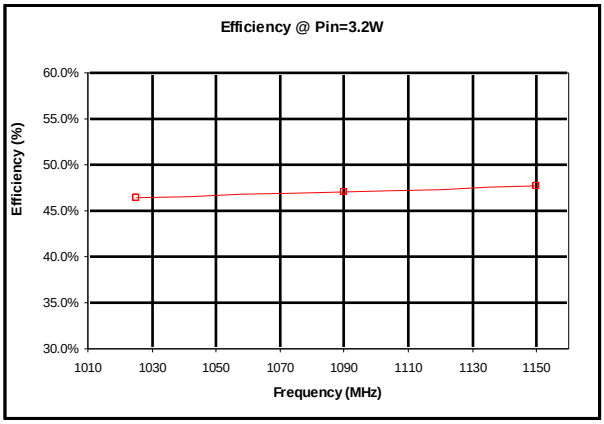
Rev. A – May. 2008

Typical Performance (1025MHz ~ 1150MHz)

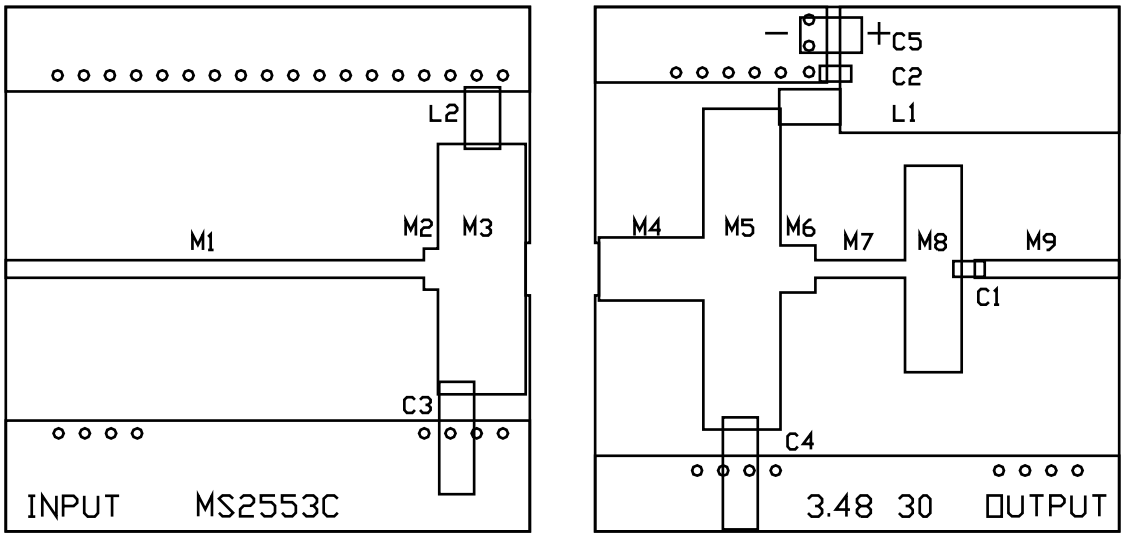








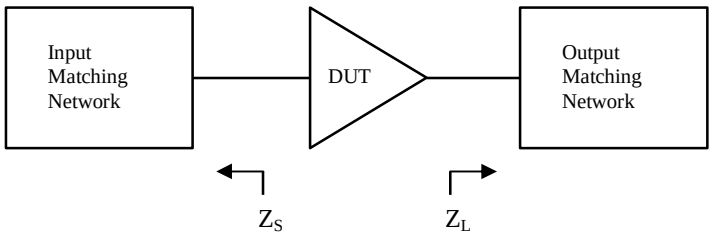
MS2553C Test Circuit Layout



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?î
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

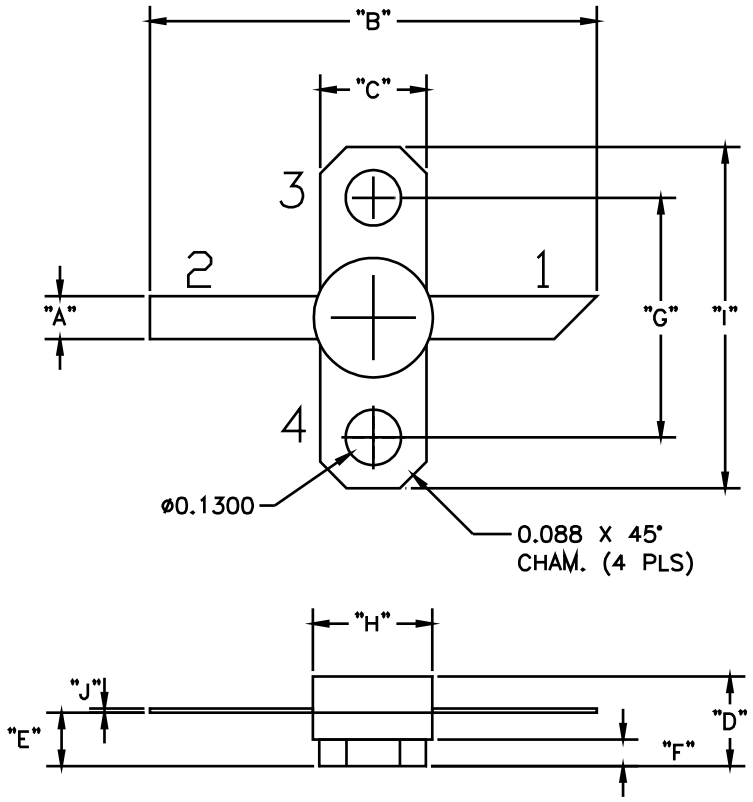


Frequency (MHz)	Z_S (?S)	Z_L (?S)
1025	**6.3 – j15.4**	**6.6 + j2.0**
1090	**5.6 – j14.5**	**7.6 + j2.6**
1150	**5.1 – j13.8**	**8.6 + j2.7**

* V_{CC} = 50V, P_{IN} = 3.2W
* Pulse Format: 10µs, 1% Long Term Duty Factor

Package Mechanical Data

< Package Style: M220 >



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	