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Microsemi
POWER PRODUCTS GROUP

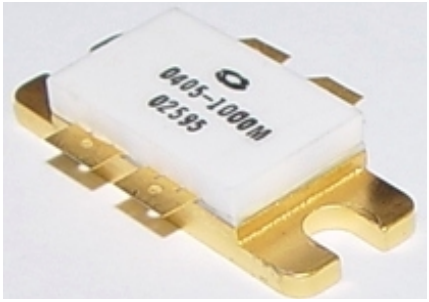
0405-1000M

1000 Watts - 40 Volts, 300µs, 10%
UHF Pulsed Radar 400 - 450 MHz

GENERAL DESCRIPTION

The 0405-1000M is an internally matched, COMMON EMITTER transistor capable of providing 1000 Watts of pulsed RF output power in a push-pull configuration at three hundreds microsecond pulse width ten percent duty factor across the frequency band 400-450 MHz. This hermetically sealed transistor is specifically designed for medium pulse radar applications. It utilizes gold metallization and diffused emitter ballasting to provide high reliability and supreme ruggedness.

CASE OUTLINE
55SL, STYLE 2



ABSOLUTE MAXIMUM RATINGS

Maximum Power Dissipation @ 25°C[1] 1400 Watts

Maximum Voltage and Current

BVces	Collector to Emitter Voltage	85 Volts
BVebo	Emitter to Base Voltage	3.5 Volts
Ic	Collector Current	70 Amps

Maximum Temperatures

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

ELECTRICAL CHARACTERISTICS @ 25 °C

SYMBOL	CHARACTERISTICS	TEST CONDITIONS	MIN	TYP	MAX	UNITS
Pout	Power Out (Note 2) Pulsed	F = 400, 425,450 MHz	1000			Watts
Pin	Power Input, Pulsed	Vcc = 40 Volts,			112	Watts
Pg	Power Gain	Pulse Width = 300 µs	9.5	10		dB
ηc	Collector Efficiency	Duty = 10 %	45			%
Pd	Pulse Amplitude Droop	As above			0.7	dB
VSWR[1]	Load Mismatch Tolerance	F = 425MHz, Po =1000W			2:1	

FUNCTIONAL CHARACTERISTICS @ 25 °C

Bvces	Collector to Emitter Breakdown	Ic = 50 mA	75			Volts
Ices	Collector to Emitter Leakage	Vce = 50 Volts			30	mA
Iebo	Emitter to Base Leakage Current	Veb = 3.0 Volts			25	mA
Hfe	DC Current Gain	Vce = 5 V, Ic = 1000mA	10			
θjc[1]	Thermal Resistance	Rated Pulse Condition			0.08	°C/W

Issue Nov. 2006

Note 1: Pulse width = 300 us, duty = 10%

Note 2: Power Input = 112 Watts max Peak Pulsed

Note 3: This part is tested at fixed Pout=1000W.

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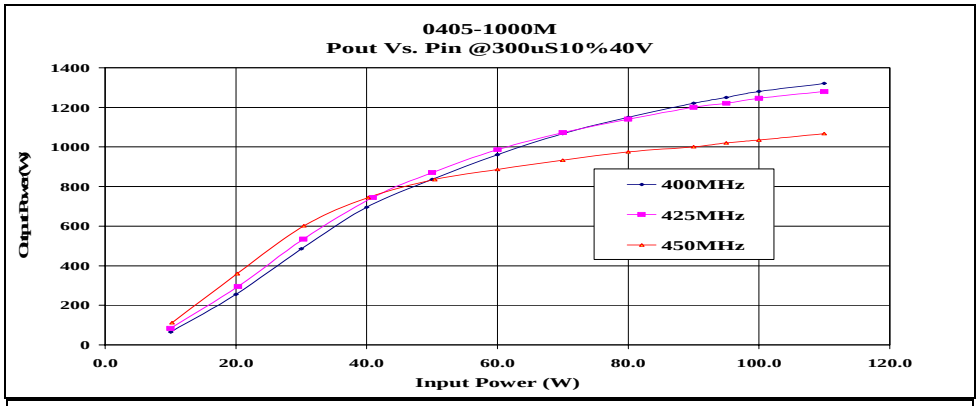
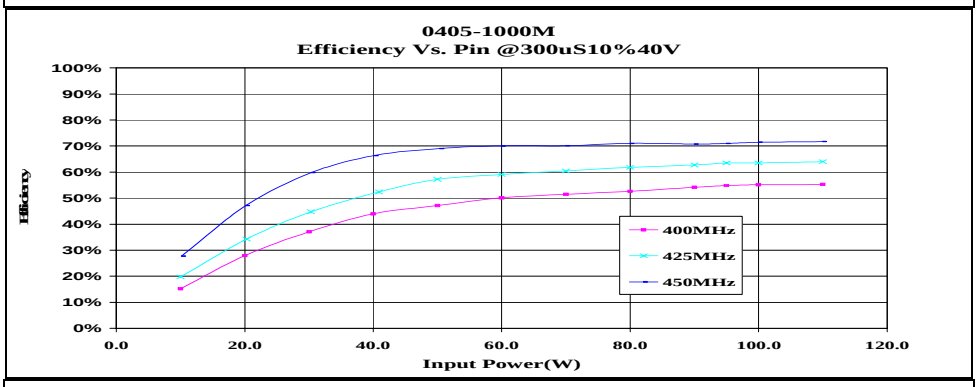
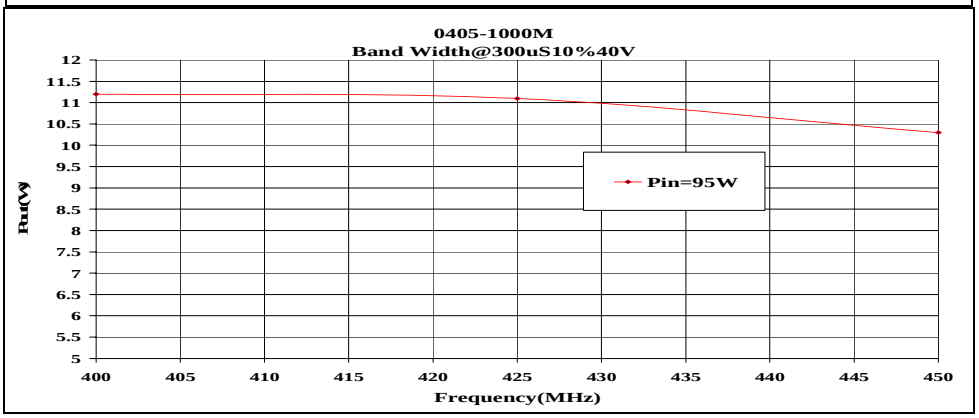
Performance Curves

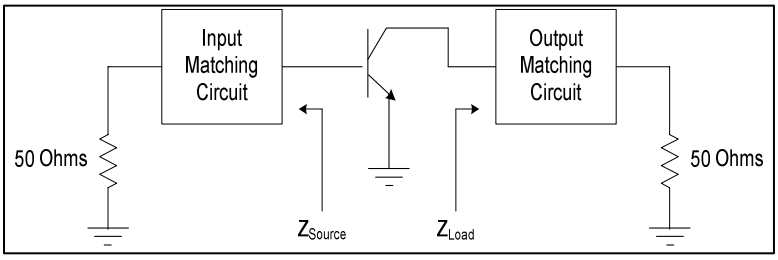






Single-Ended Impedance Information

Single-Ended Impedance		
Freq	Zs	Zl
400	1.39-j2.9	0.79-j2.41
425	1.94-j2.93	0.86-j2.55
450	2.21-j3.07	0.91-j2.95



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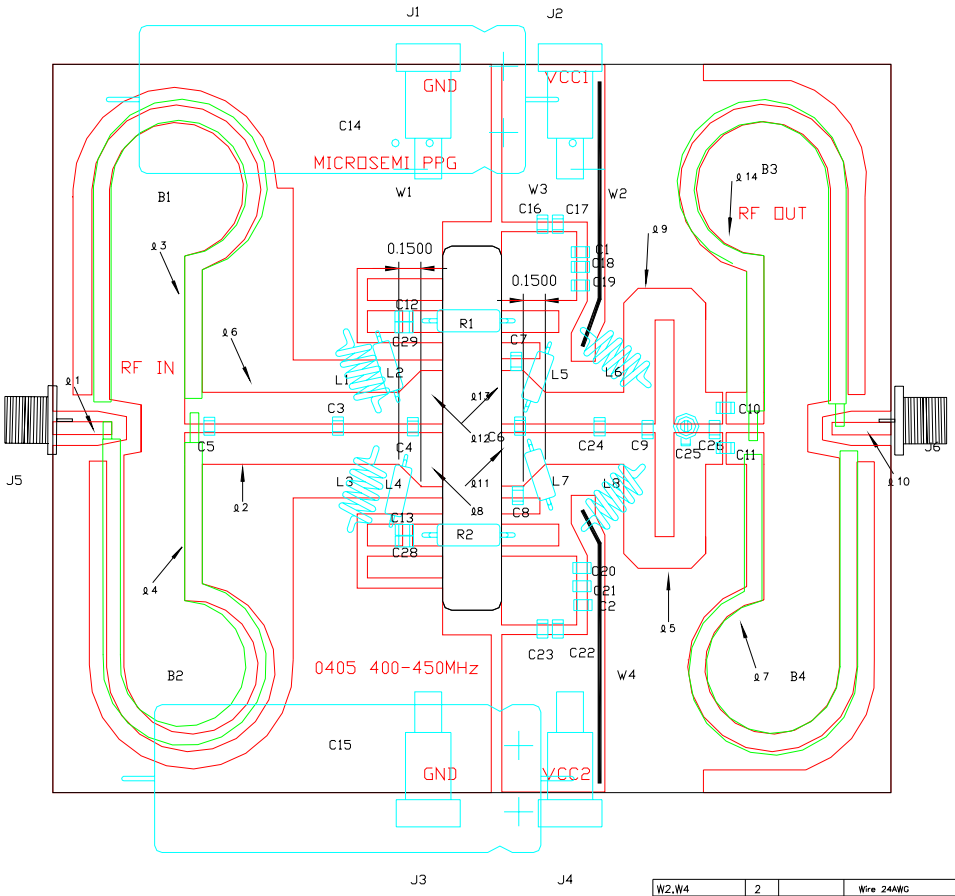
Broadband Test Fixture

REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED
	1	Engineering Rev. 4	11/29/06	T.Shi



5,9	2.22	0.216	5
8,11,12,13	0.140	0.366	4
3,4,7,14	0.49	0.120	4
2,6	1.433	0.216	2
1,10	0.318	0.088	2
# NO.	L(inch)	W(inch)	QTY.

Board Material ARLON 2.55 31 Mil
TRL Measurement

W2,W4	2		Wire 24AWG
R1,R2	2	6Ω	Res. Coaxial, 1w, 5%
J5,J6	2		N-Type Connector
J1,J2,J3,J4	4		Banana Plug
L2,L4	2	0.12uH	Coil unshielded , DIGI-KEY DN2596-ND
L5,L7	2	0.33uH	Coil unshielded , DIGI-KEY DN2598-ND
L1,L3,L6,L8	4		Ind. 18AWG, Dia. 0.115" 5Turns
C25	1	0.6-4.5pF	Trimmer Cap. Johanson, ATC 27273
C9	1	3.3pF	Cap. Chip, ATC 100B
C3	1	10pF	Cap. Chip, ATC 100B
C26	1	0.7pF	Cap. Chip, ATC 100B
C24	1	22pF	Cap. Chip, ATC 100B
C6	1	20pF	Cap. Chip, ATC 100B
C14,C15	2	4000uF	Cap. electrolytic 63v
C4	1	33pF	Cap. Chip, ATC 100B
C5	1	12pF	Cap. Chip, ATC 100B
C8, C7	2	39pF	Cap. Chip, ATC 100B
C28, C29	2	1000pF	Cap. Chip, ATC 100B
C12,C13,C18,C21	4	5100pF	Cap.Chip ATC 100B
C16,C17,C22,C23	4	0.1uF	Cap.Chip Tantalum 50V
C11,C19,C20	6	100pF	Cap. Chip, ATC 100B
C1,C2,C10			
B1,B2,B3,B4	4	λ/4	Balun Coaxial, Microcoax UT-141-50, 4.8"
PCB Board	1	Er=2.55	ARLON 31mil 1OZ
Item	Qty.	Value	Description

CAGE	DWG NO.	REV
0PJR2	0405-1000M(40V)	4
	SCALE 1/1	SHEET

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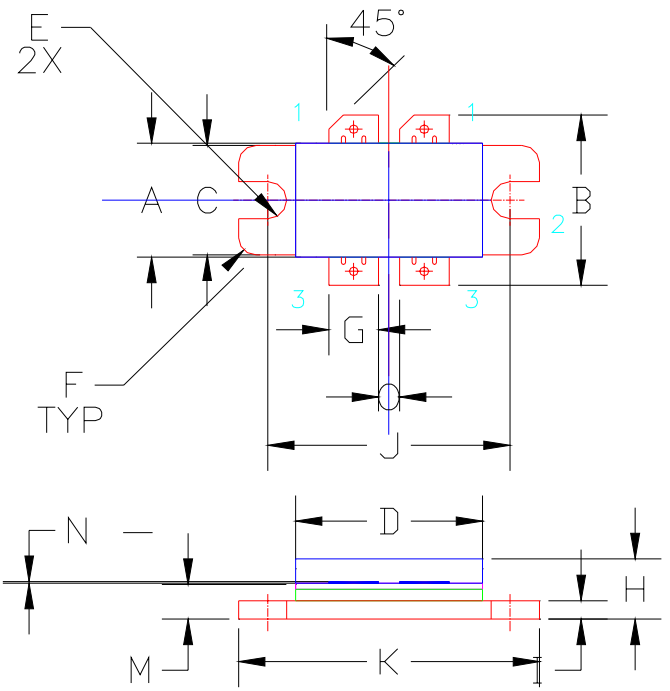
Case Outline

REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED



DIM	MILLIMETER	± TOL	INCHES	±TOL
A	10.16	0.25	.400	0.01
B	15.2	0.5	.60	.02
C	9.78	.13	.385	.005
D	16.25	.18	.64	.007
E	1.65R	0.25	.065R	.01
F	1.52R	0.25	.060R	.01
G	4.32	.025	.170	.001
H	5.38	MAX	.22	MAX
I	1.65	.025	0.065	.001
J	21.1	0.25	0.83	0.01
K	26.2	0.25	1.03	0.01
M	3.22	0.2	.127	.008
N	0.1	+ .05 − .02	.004	+ .002 − .001
O	1.83	+ .08 0.02	.072	+ .003 − .001

STYLE 1:
PIN1 = COLLECTOR
2 = BASE
3 = EMITTER

STYLE 2:
PIN1 = COLLECTOR
2 = EMITTER
3 = BASE

CAGE	DWG NO.	REV
0PJR2	55SL	A
	SCALE 2/1	SHEET

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