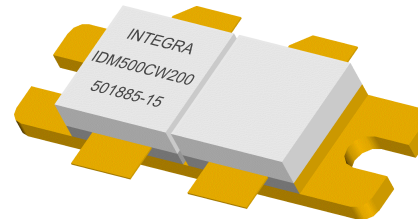


**UHF-Band RF Power MOSFET**

The high power transistor part number IDM500CW200 is designed for VHF/UHF-Band systems operating at 1-500 MHz. Operating at CW conditions, this dual MOSFET device supplies a minimum of 200 watts of power across the instantaneous operating bandwidth of 1-500 MHz. All devices are 100% screened for large signal RF parameters.



**Silicon MOSFET**

- High Power Gain
- Superior thermal stability

**Class AB Operation**

- Gate biased to  $I_{DQ}=2 \times 100\text{mA}$

**Configuration**

- Common Source

**Gold Metal**

- Maximum Reliability

**BeO Package**

- Unmatched Thermal Reliability

**Epoxy Sealed Lid**

- Gross Leak Qualified

**RF Test Fixture**

- Narrowband
- Matched to  $50\Omega$
- Long-term Correlation
- 100% Device RF Screening
- No External Tuning required

*TYPICAL DATA    TYPICAL DATA    TYPICAL DATA    TYPICAL DATA*

Device	Freq (MHz)	V <sub>DD</sub> (V)	P <sub>IN</sub> (W)	IRL (dB)	P <sub>OUT</sub> (W)	Gain (dB)	I <sub>D</sub> (A)	h <sub>d</sub> (%)
D5228-1	200	28	8.5	15	224	14.2	11.9	67.3
D5228-1	300	28	14.9	24	246	12.2	13.1	67
D5228-1	400	28	20	29	256	11.1	13.3	68.5
D5228-1	500	28	21	28	213	10.1	12.0	63.4

**MAXIMUM RATINGS**

Screen	Parameter	Symbol	Min	Max	Units	Test Conditions
BD	Drain-Source Voltage	$V_{DS}$	--	80	V	--
BD	Gate-Source Voltage	$V_{GS}$	--	20	V	--
BD	Storage Temperature Range	$T_{STG}$	-55	+125	°C	--
BD	Operating Junction Temperature Range	$T_J$	-55	+200	°C	--
Note	Screen 'BD' = parameter qualified By Design.					

**THERMAL CHARACTERISTICS**

Screen	Parameter	Symbol	Min	Max	Units	Test Conditions
BD	Thermal Resistance	$R_{TH(JC)}$	--	0.46	°C/W	$V_{DD}=28V, I_{DQ}=2x100mA, T_F=25\pm5^\circ C, P_{OUT}=200W$
Note	Screen 'BD' = parameter qualified By Design.					

**PROCESSING SPECIFICATIONS**

Screen	Parameter	Symbol	Min	Max	Units	Test Conditions
100%	DC Wafer Probe	--	--	--	--	Per Integra specification.
Q1	Wafer DC and RF Qualification	--	--	--	--	Per Integra specification.
LM	Wire Bond Strength	--	--	--	--	Line monitor per Integra specification.
100%	Pre-cap visual inspection	--	--	--	--	Per Integra specification
100%	Gross leak test	--	--	--	--	MIL-STD-750D, Method 1071, Test Condition C
Note	Screen 'Q1' = parameter is qualified by assembly and test of 3 pieces minimum per wafer.					
Note	Screen 'LM' = parameter is qualified by assembly line monitor.					

**DC ELECTRICAL CHARACTERISTICS**

Screen	Parameter	Symbol	Min	Max	Units	Test Conditions
100%	Drain-Source Breakdown Voltage	$BV_{DSS}$	70	100	V	$I_D = 40mA, V_{GS} = 0V, T_F = 25\pm5^\circ C$
100%	Drain Leakage Current (each side)	$I_{DSS}$	--	5	mA	$V_{DS} = 30V, V_{GS} = 0V, T_F = 25\pm5^\circ C$
100%	Gate Threshold Voltage 1 (each side)	$V_{GSTH1}$	1.0	--	V	$I_D = 30mA, V_{GS} = 5V, T_F = 25\pm5^\circ C$

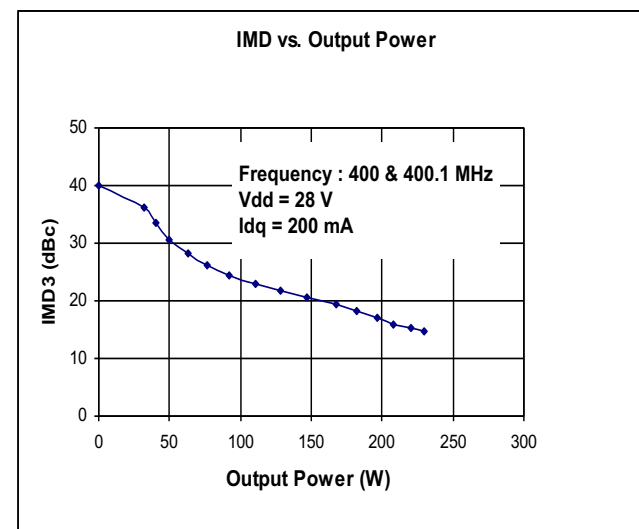
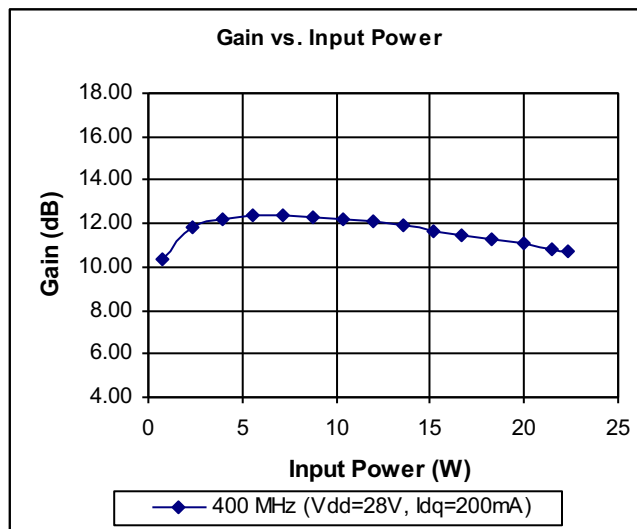
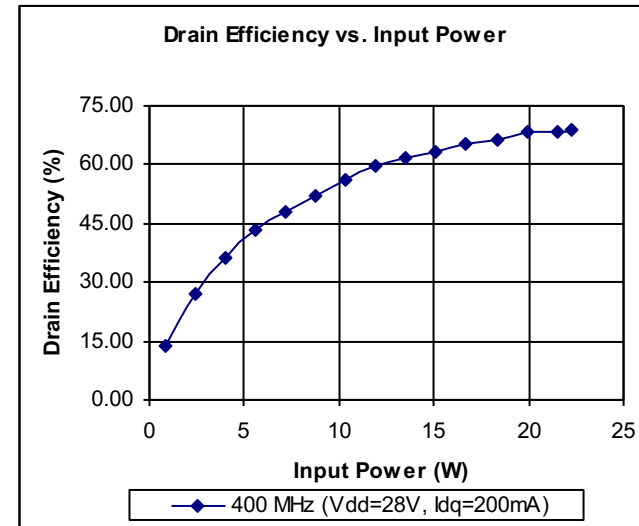
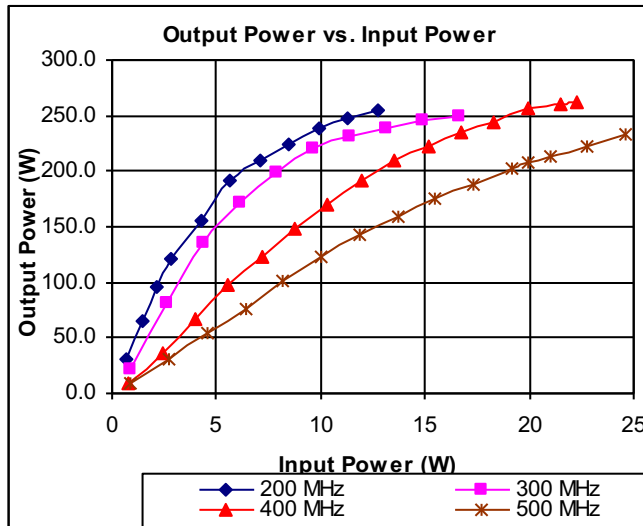
**RF ELECTRICAL CHARACTERISTICS**

Screen	Parameter	Symbol	Min	Max	Units	Test Conditions
100%	Input Return Loss	IRL	10	--	dB	$V_{DD}=28V, I_{DQ}=2x100mA, T_F=25\pm5^\circ C, P_{IN}=20W, F=400MHz$
100%	Output Power	$P_o$	200	--	W	$V_{DD}=28V, I_{DQ}=2x100mA, T_F=25\pm5^\circ C, P_{IN}=20W, F=400MHz$
100%	Drain Efficiency ( $P_o/I_D/V_{DD}$ )	$N_D$	50	--	%	$V_{DD}=28V, I_{DQ}=2x100mA, T_F=25\pm5^\circ C, P_{IN}=20W, F=400MHz$
100%	Power Gain	G	10	--	dB	$V_{DD}=28V, I_{DQ}=2x100mA, T_F=25\pm5^\circ C, P_{IN}=20W, F=400MHz$
BD	Input Capacitance	$C_{ISS}$	--	240	pF	$V_{DD}=28V, V_{GS}=0V, F=1MHz$
BD	Output Capacitance	$C_{OSS}$	--	120	pF	$V_{DD}=28V, V_{GS}=0V, F=1MHz$
BD	Reverse Transfer Capacitance	$C_{RSS}$	--	15	pF	$V_{DD}=28V, V_{GS}=0V, F=1MHz$
Note 2	$T_F$ = Device flange temperature.					

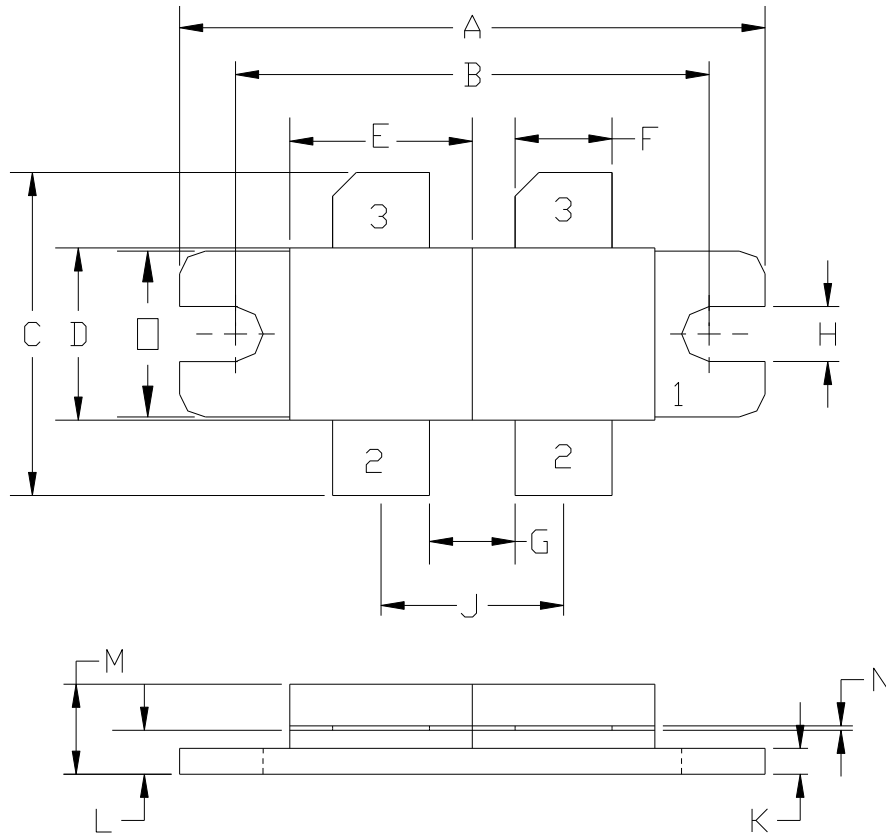
**RF TEST FIXTURE IMPEDANCE CHARACTERISTICS**

Frequency (MHz)	$Z_{IF} (\Omega)$	$Z_{OF} (\Omega)$
200	9.56+j8.82	7.20-j5.98
300	2.02+j0.46	7.92-j5.60
400	1.10-j1.44	3.64-j1.82
500	0.72-j1.48	1.76-j2.28
Impedance Definition		

Note : Input and output impedances are measured from gate to gate and drain to drain respectively.



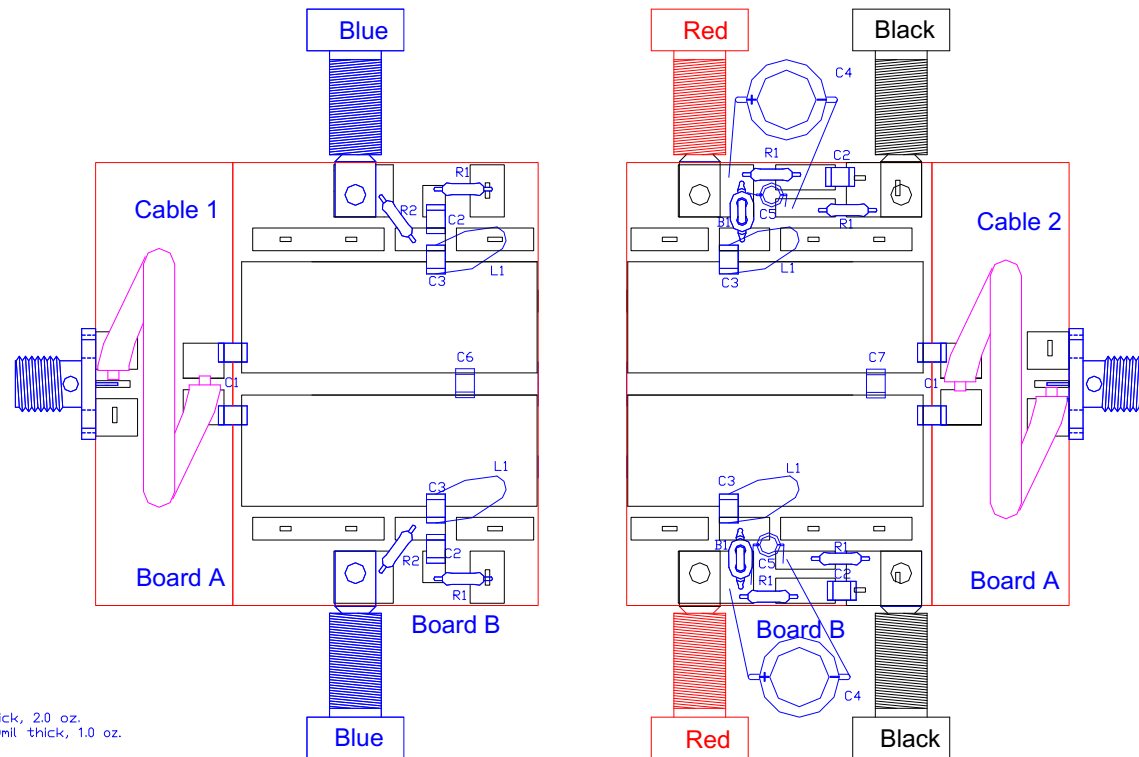
**PACKAGE DIMENSIONAL OUTLINE DRAWING**



DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	1.330	1.350	33.80	34.30
B	1.095	1.105	27.81	28.07
C	0.740	0.760	18.80	19.30
D	0.395	0.405	10.03	10.29
E	0.419	0.429	10.64	10.90
F	0.220	0.230	5.59	5.84
G	0.194	0.204	4.93	5.18
H	0.123	0.133	3.12	3.38
J	0.419	0.429	10.64	10.90
K	0.062	0.072	1.58	1.83
L	0.097	0.117	2.47	2.97
M	0.193	0.225	4.90	5.72
N	0.003	0.006	0.08	0.15
□	0.380	0.390	9.65	9.90

PIN SCHEDULE	
1	SOURCE
2	GATE
3	DRAIN

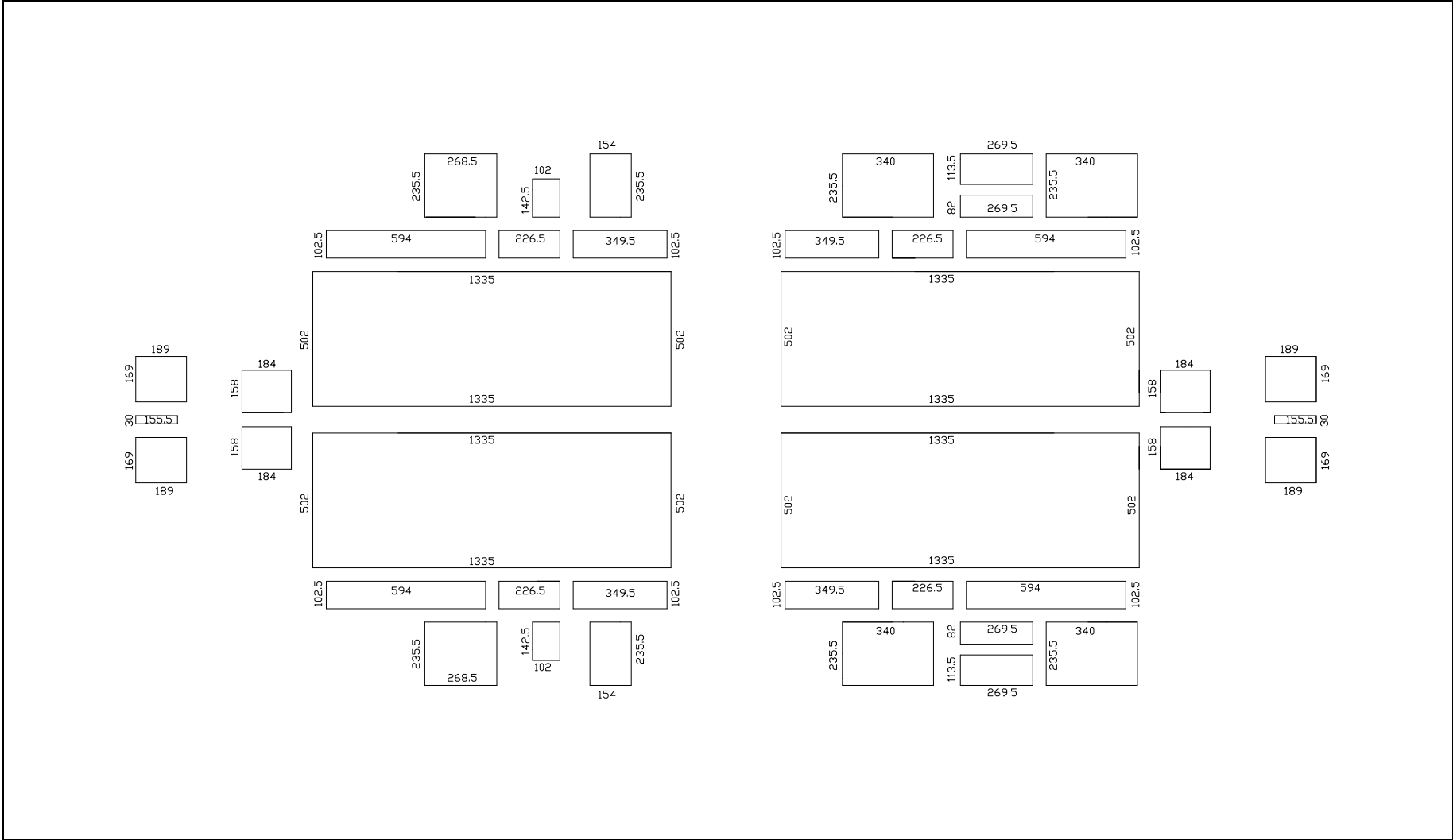
**RF TEST FIXTURE (400 MHz)**



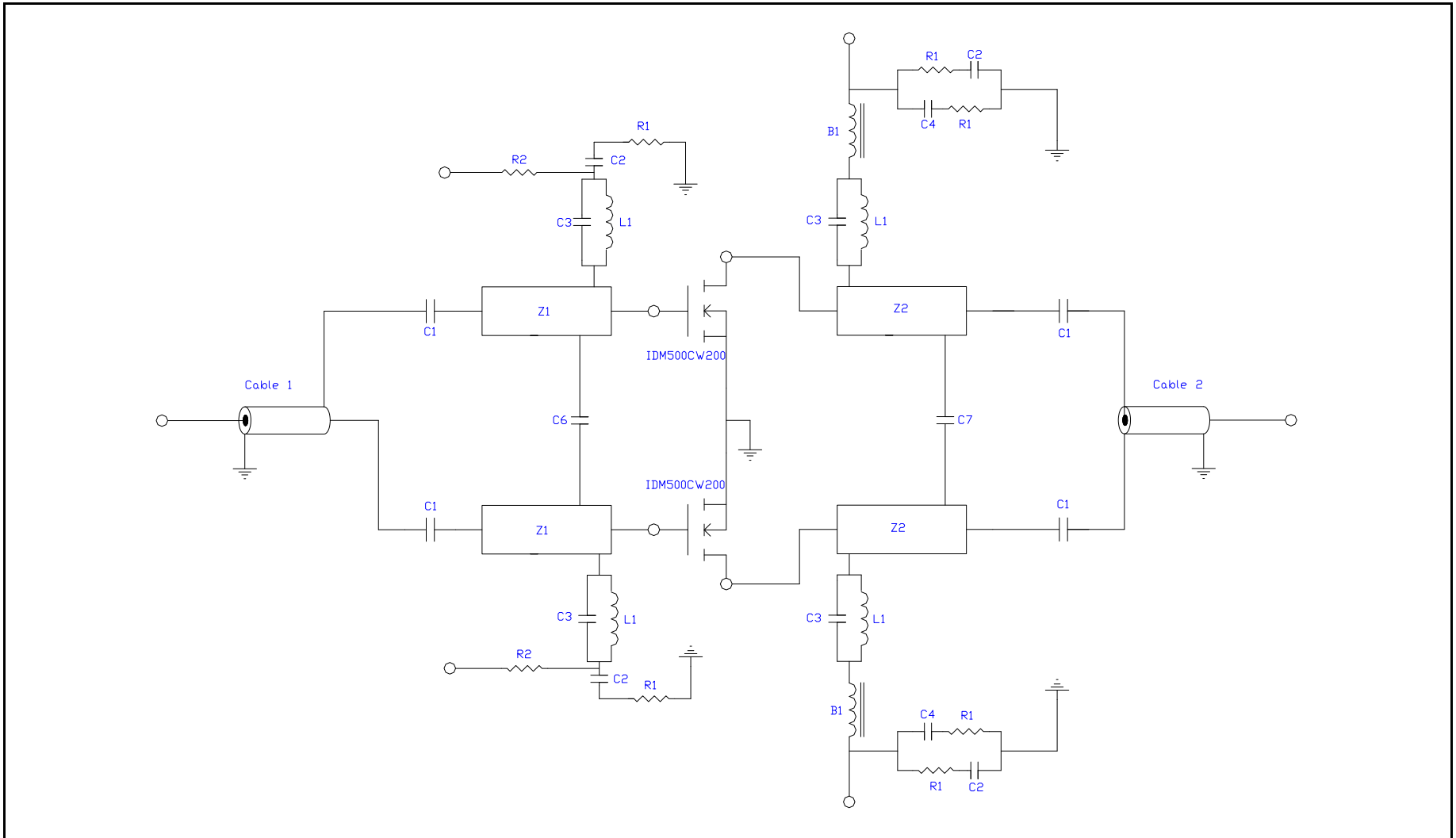
**PARTS LIST**

- PC Board Type:  
 Board A : ROGERS RT5880, 10mil thick, 2.0 oz.  
 Board B : ROGERS RT6010.2LMNS, 10mil thick, 1.0 oz.  
 Input PC Board Carrier (2")  
 output PC Board Carrier (2")  
 RF Connector: DS #2052-5636-02  
 Banana Jack Black - 2 place  
 Banana Jack Red - 2 place  
 Banana Jack Blue - 2 place  
 C1 : 300pF ATC 100B chip capacitor  
 C2 : 4700 pF ATC 700B chip capacitor  
 C3 : 10pF ATC 100B chip capacitor  
 C4 : 68uF 63V  
 C5 : 2.2uF 50V  
 C6 : 39pF ATC 100B chip capacitor  
 C7 : 27pF ATC 100B chip capacitor  
 R1 : 10 Ohm resistor  
 B1 : Ferronics Inc, Ferrite Bead 12-340-J  
 L1 : Wire 18 TC, 1.4 inch  
 Cable 1 : Micro-coax UT-141C-15, 2.8 inch  
 Cable 2 : Micro-coax UT-141C-15, 4.1 inch

**CIRCUIT DIMENSIONS (UNIT: MILS)**



**ELECTRICAL SCHEMATIC**





**DEFINITIONS**

<b>Data Sheet Status</b>	
Proposed Specification	This data sheet contains proposed specifications.
Preliminary Specification	This data sheet contains specifications based on preliminary measurements and data.
Product Specification	This data sheet contains final product specifications.

<b>Maximum Ratings</b>
Stress above one or more of the maximum ratings may cause permanent damage to the device. These are maximum ratings only. Operation of the device at these or at any other conditions above those given in the characteristics sections of the specification is not implied. Exposure to maximum values for extended periods of time may affect device reliability.

**WARNING**

<b>Product and environmental safety - toxic materials</b>
This product contains beryllium oxide. The product is entirely safe provided that the BeO base is not damaged. All persons who handle, use or dispose of this product should be aware of its nature and of the necessary safety precautions. After use, dispose of as chemical or special waste according to the regulations applying at the location of the user. It must never be thrown out with general or domestic waste.

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