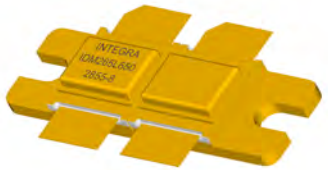
Part Number: IDM265L650

Integra
TECHNOLOGIES, INC.

VHF Band Pulsed Power Transistor

The high power pulsed transistor part number IDM265L650 is designed for VHF-Band systems operating at 190-265 MHz. Operating at a pulse width of 1ms with a duty factor of 20%, this dual MOSFET device supplies a minimum of 650 watts of peak pulse power at a fixed input power of 110 watts across the instantaneous operating bandwidth of 190-265 MHz. All devices are 100% screened for large signal RF parameters in the broadband RF test fixture across the entire specified operating bandwidth with no variable or external tuning.



Silicon Bipolar
- Ultra-high f_T

Class B Operation
- Gate biased to I_{DQ}=0mA

Configuration
- Dual In-phase operation
- Common Source

Gold Metal
- Maximum Reliability

Be0 Package
- Unmatched Thermal Reliability

Solder Sealed Lid
- Fine Leak Qualified

RF Test Fixture
- Broadband
- Matched to 50Ω
- Long-term Correlation
- 100% Device RF Screening
- No External Tuning Allowed

TYPICAL DATA TYPICAL DATA TYPICAL DATA TYPICAL DATA

Device	Freq (MHz)	V_{DD} (V)	P_{IN} (W)	IRL (dB)	P_{OUT} (W)	G_P (dB)	I_C (A)	η_C (%)	Droop (dB)	P_{OUT} @ P_{IN+1dB} (W)
1400-1	190	34	110	12	689	8.0	32.5	62	-0.39	713
	230	34	110	17	691	8.0	34.3	59	-0.42	727
	265	34	110	11	693	8.0	35.0	58	-0.41	760

Pulse Format = 10µs, 1%

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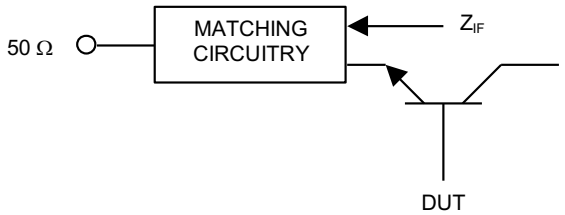
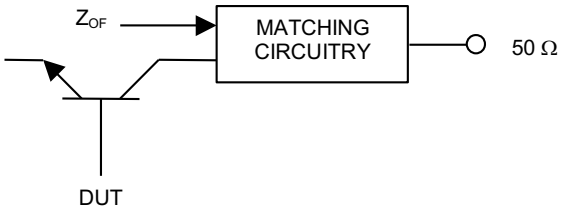
RF ELECTRICAL CHARACTERISTICS

Screen	Parameter	Symbol	Min	Max	Units	Test Conditions
100%	Input Return Loss	IRL	10	--	dB	V_{DD}=V1, I_{DQ}=0mA, PW=PW1, DF=DF1, T_F=25±5°C, P_{IN}=P_{IN1}, F=F1, F2, F3.
100%	Output Power	P_O	650	--	W	V_{DD}=V1, I_{DQ}=0mA, PW=PW1, DF=DF1, T_F=25±5°C, P_{IN}=P_{IN1}, F=F1, F2, F3.
100%	Drain Efficiency ($P_O/I_D/V_{DD}$)	N_D	40	--	%	V_{DD}=V1, I_{DQ}=0mA, PW=PW1, DF=DF1, T_F=25±5°C, P_{IN}=P_{IN1}, F=F1, F2, F3.
100%	Pulse Amplitude Droop	D	--	1.0	dB	V_{DD}=V1, I_{DQ}=0mA, PW=PW1, DF=DF1, T_F=25±5°C, P_{IN}=P_{IN1}, F=F1, F2, F3. Measure between 100us and 900us time positions.
100%	Power Gain	G_P	7.7	--	dB	V_{DD}=V1, I_{DQ}=0mA, PW=PW1, DF=DF1, T_F=25±5°C, P_{IN}=P_{IN1}, F=F1, F2, F3.
100%	Gain Flatness versus Frequency	GF	--	1.2	dB	GF = MAX(G_P) – MIN(G_P).
100%	Stability into 2:1 VSWR	VSWR-S	S	--	--	V_{DD}=V1, I_{DQ}=0mA, PW=PW1, DF=DF1, T_F=25±5°C, P_{IN}=P_{IN1}, F=F1, F2, F3. Rotate 2:1 output VSWR through 360° phase. No oscillatory or pulse break-up characteristics allowed on detected output pulse.
100%	3:1 Load Mismatch Tolerance	LMT	P	--	--	V_{DD}=V1, I_{DQ}=0mA, PW=PW1, DF=DF1, T_F=25±5°C, P_{IN}=P_{IN1}, F=F1, F2, F3. Rotate 3:1 output VSWR through 360° phase. Post test P_O = Pre test P_O±10W.
100%	Overdrive Stability	OD-S	S	--	--	V_{DD}=V1, I_{DQ}=0mA, PW=PW1, DF=DF1, T_F=25±5°C, P_{IN}=P_{IN2}, F=F1, F2, F3. No oscillatory or pulse break-up characteristics allowed on detected output pulse.
Note	V1 = 34V; PW1 = 1ms; DF1 = 20%; P_{IN1} = 110W; P_{IN2} = 138W; F1 = 190MHz, F2 = 230MHz, F3 = 265MHz.					
Note	T_F = Device flange temperature.					

RF TEST FIXTURE IMPEDANCE CHARACTERISTICS

Frequency (MHz)	Z_{IF} (Ω)	Z_{OF} (Ω)
190	0.678 – j0.358	1.001 – j0.083
230	0.661 – j0.353	0.936 – j0.100
265	0.492 – j0.327	0.689 – j0.179
Impedance Definition		

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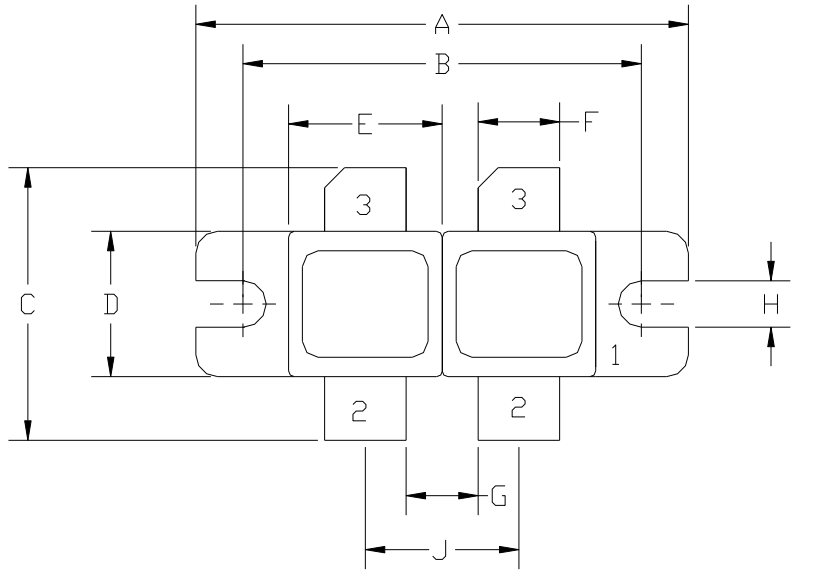
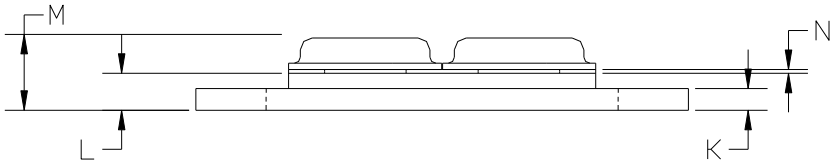
PACKAGE DIMENSIONAL OUTLINE DRAWING





DIM	INCHES MIN	INCHES MAX	MILLIMETERS MIN	MILLIMETERS MAX
A	1.355	1.365	34.42	34.67
B	1.095	1.105	27.81	28.07
C	0.640	0.660	16.26	16.76
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	0.058	0.062	1.47	1.57
L	0.092	0.112	2.34	2.84
M	0.193	0.225	4.90	5.72
N	0.003	0.006	0.08	0.15

PIN	SCHEDULE
1	SOURCE
2	GATE
3	DRAIN

DOCUMENT NUMBER: IDM265L650	REV:
SHEET NAME: 06-OUTLINE	REV: NC

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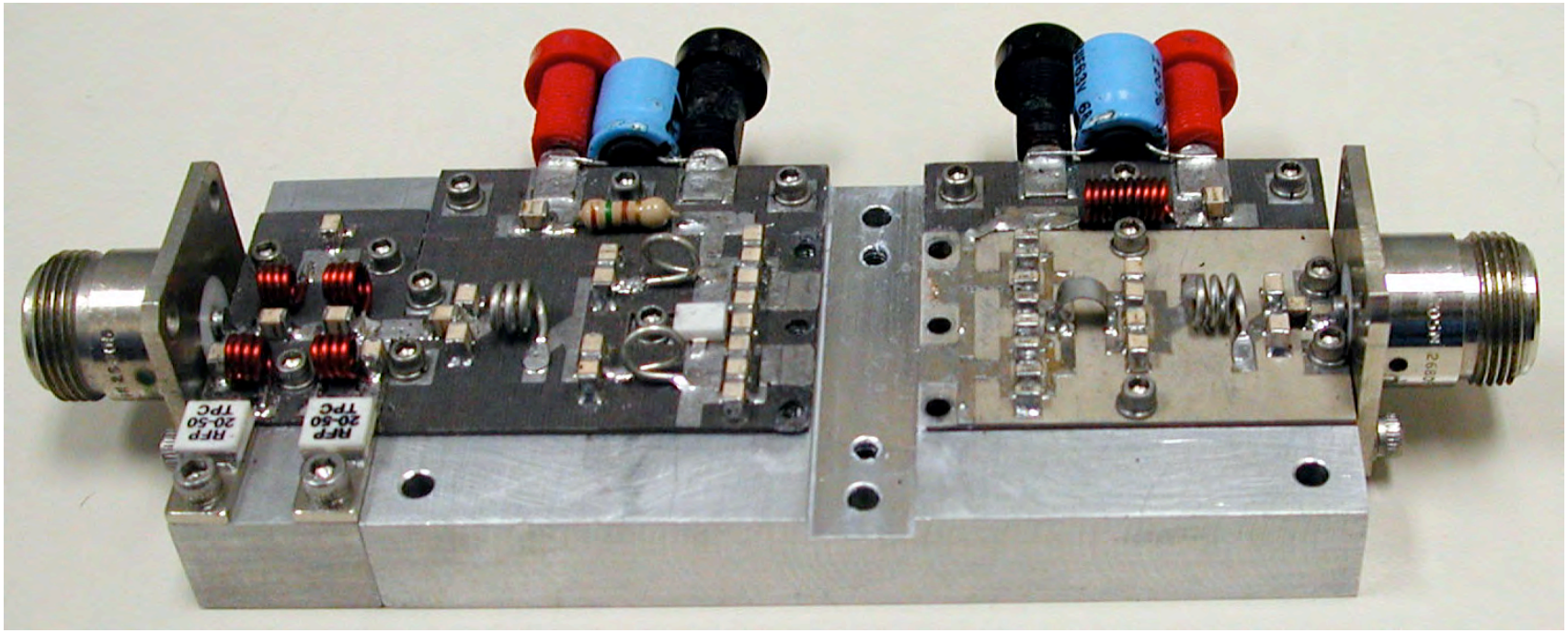

TEST FIXTURE PHOTOGRAPH

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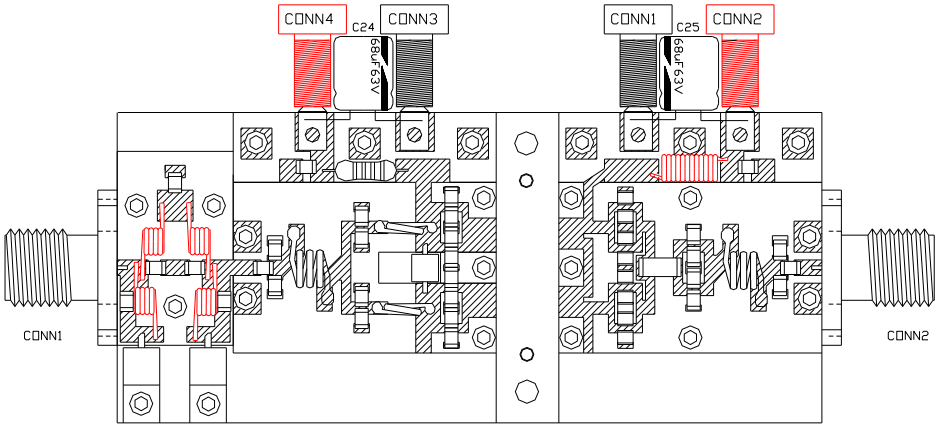
RF TEST FIXTURE



COMPONENT	DESCRIPTION
DUT	TRANSISTOR # IDM408, MOUNT HARD TO THE RIGHT
PC BOARD	OAK 601, TH=0.031", DK=2.54
C1	12pF
C2, C5	10pF
C3, C4	5.6pF
C6, C7	390pF
C8	2x 10pF
C9	27 & 33pF
C10	27 & 33pF
C11, C14	100 & 82pF
C12, C13	2x 82pF
C15, C16, C17, C18	56 & 68pF
C19	30 & 27pF
C20	2x 27pF
C21	8.2 & 6.8pF
C22	390pF
C23	561K
C24, 25	ELECTROLYTIC 68uF 63V
L1, L2, L3, L4	4 TURNS #20 116 DIA I.D
L31, L5	BARE #18 WIRE 3 TURNS AROUND 0.128" DIA ROD
L6, L7, L10 - L17	SEE uSTRIP DIMENSIONS
L8, L9	BARE #18 WIRE 1 TURN AROUND 0.152" DIA ROD
L18 - L25, L27 - L30	SEE uSTRIP DIMENSIONS
L26	0.010" X 0.120" X 0.600" n SHAPE ON 0.185" ROD
L32	10 TURNS #20 WIRE, 0.110 ID
R1, R2	RFP 20-50 TPC
R3	INTEGRA
R4	146 OHM
DC CONN 1, 3	BANANA JACK, BLACK
DC CONN 2, 4	BANANA JACK, RED
TRANSISTOR CLAMP	--
CONN1, CONN2	N-TYPE CONNECTORS
NOTE	FIXTURE HARDWARE DRAWINGS AVAILABLE ON REQUEST

ASSEMBLY AND PARTS LIST

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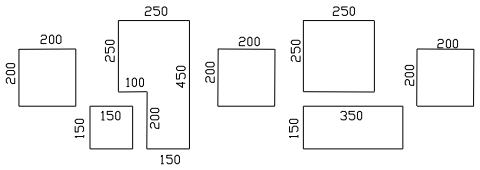

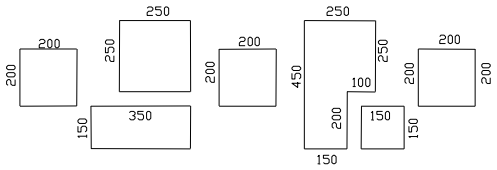

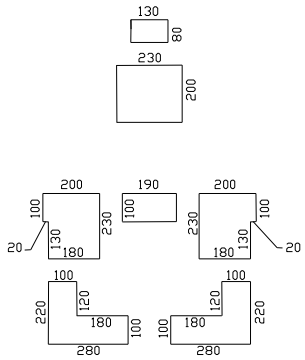

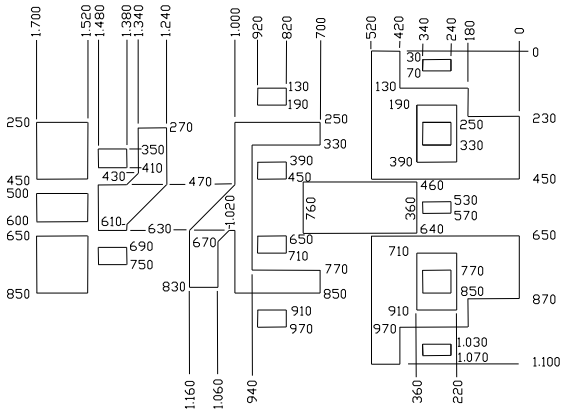

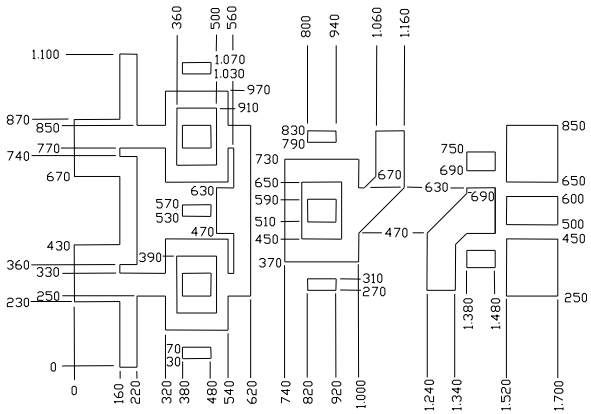

CIRCUIT DIMENSIONS (mils)

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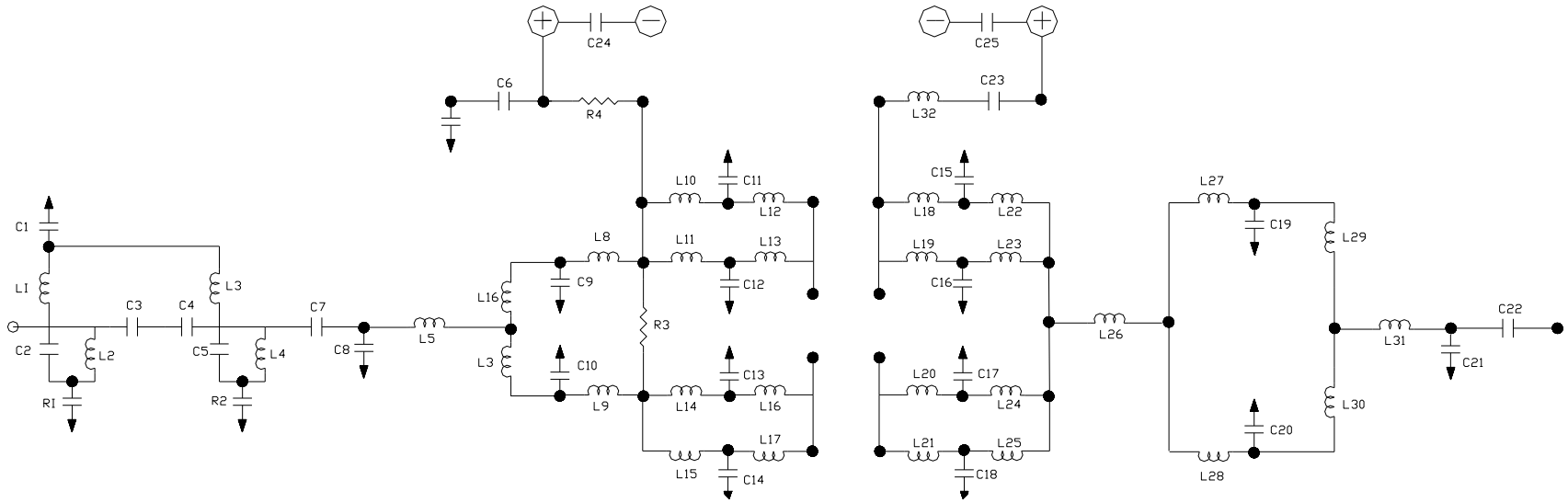
RF TEST FIXTURE



ELECTRICAL SCHEMATIC

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DEFINITIONS

Data Sheet Status	
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.

Maximum Ratings

Stress above one or more of the maximum ratings may cause permanent damage to the device. These are maximum ratings only and 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

Product and environmental safety - toxic materials

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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