Part Number: IDM175CW150 (Preliminary)

Integra
TECHNOLOGIES, INC.

VHF-Band RF Power MOSFET

The high power silicon transistor part number IDM175CW150 is designed for VHF-Band systems operating at 1-200 MHz. Operating at CW conditions, this dual MOSFET device supplies a minimum of 150 watts of power across the instantaneous operating bandwidth of 1-200 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}=250mA

Configuration
- Common Source

Gold Metal
- Maximum Reliability

Be0 Package
- Unmatched Thermal Reliability

Epoxy Sealed Lid
- Gross Leak Qualified

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

PRELIMINARY DATA *PRELIMINARY DATA* *PRELIMINARY DATA*

TBD

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MAXIMUM RATINGS

Screen	Parameter	Symbol	Min	Max	Units	Test Conditions
BD	Drain-Source Voltage	V_{DS}	--	120	V	--
BD	Gate-Source Voltage	V_{GS}	--	20	V	--
BD	Storage Temperature Range	T_{STG}	-55	+150	°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	$R_{TH(JC)}$	--	TBD	°C/W	V_{DD}=50V, I_{DQ}=250mA, T_F=25±5°C, Pin=4.3W, F=175MHz, CW
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}	120	200	V	I_D = 100mA, V_{GS} = 0V, T_F = 25±5°C
100%	Drain Leakage Current	I_{DSS}	--	5	mA	V_{DS} = 50V, V_{GS} = 0V, T_F = 25±5°C
100%	Gate Threshold Voltage	V_{GSTH}	1	--	V	I_D = 100mA, V_{GS} = 10V, T_F = 25±5°C

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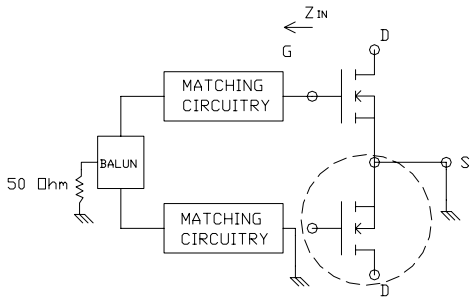
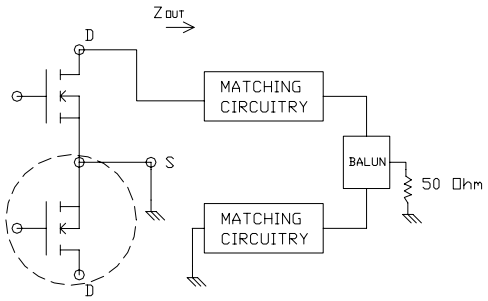
RF ELECTRICAL CHARACTERISTICS

Screen	Parameter	Symbol	Min	Max	Units	Test Conditions
100%	Input Return Loss	IRL	10	-	dB	V_{DD}=V1, I_{DQ}=250mA, CW, T_F=25±5°C, P_{IN}=P_{IN1}, F=F1.
100%	Output Power	P_O	150	-	W	V_{DD}=V1, I_{DQ}=250mA, CW, T_F=25±5°C, P_{IN}=P_{IN1}, F=F1.
100%	Drain Efficiency ($P_O/I_D/V_{DD}$)	N_D	50	-	%	V_{DD}=V1, I_{DQ}=250mA, CW, T_F=25±5°C, P_{IN}=P_{IN1}, F=F1.
100%	Power Gain	G	15.43	-	-	-
BD	Output Capacitance (TBDpF typical)	C_{OSS}	-	-	pF	V_{DD}=V1, V_{GS}=0V, F=1MHz
BD	Reverse Transfer Capacitance (TBDpF typical)	C_{RSS}	-	-	pF	V_{DD}=V1, V_{GS}=0V, F=1MHz
Note 1	V1 = 50V, P_{IN1} = 4.3W, F1 = 175MHz					

RF TEST FIXTURE IMPEDANCE CHARACTERISTICS

Frequency (MHz)	Z_{IF} (Ω)	Z_{OF} (Ω)
175	TBD	TBD
200	TBD	TBD
Impedance Definition		

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

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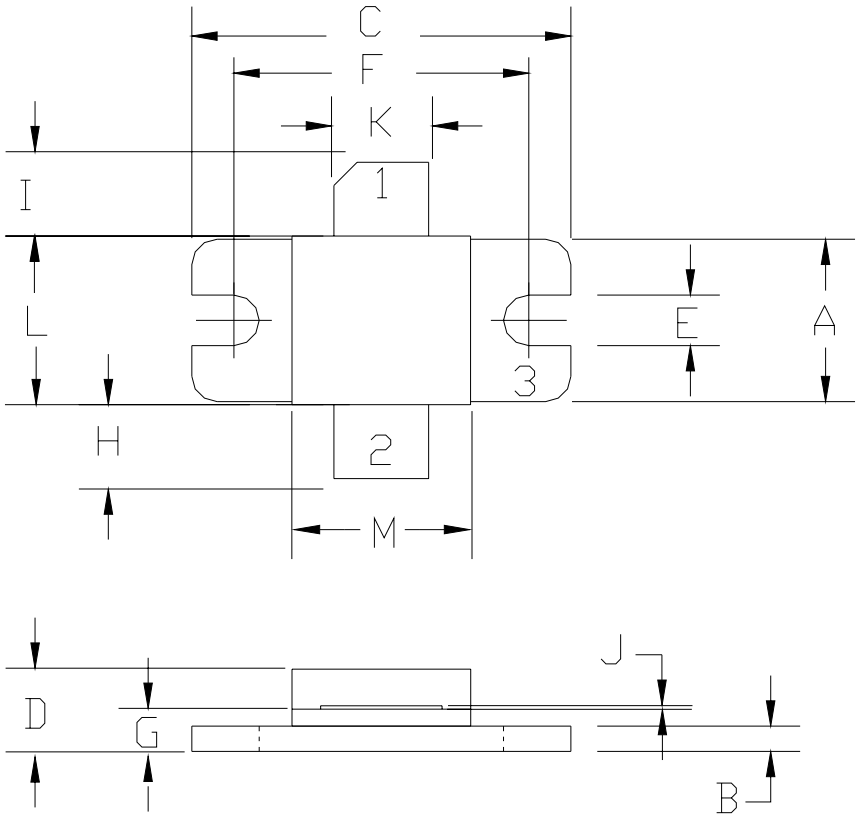
PACKAGE DIMENSIONAL OUTLINE DRAWING



DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.380	0.390	9.65	9.91
B	0.055	0.065	1.39	1.65
C	0.895	0.905	22.73	22.99
D	0.205	0.215	5.20	5.46
E	0.125	0.135	3.18	3.43
F	0.695	0.705	17.65	17.91
G	0.095	0.105	2.41	2.66
H	0.195	0.205	4.87	5.13
I	0.195	0.205	4.87	5.13
J	0.004	0.006	0.10	0.15
K	0.220	0.230	5.58	5.84
L	0.395	0.405	10.03	10.29
M	0.419	0.429	10.64	10.89

PIN	SCHEDULE
1	COLLECTOR
2	EMITTER
3	BASE

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RF TEST FIXTURE

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ELECTRICAL SCHMATIC OF RF TEST FIXTURE

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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. 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.

DISCLAIMER

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