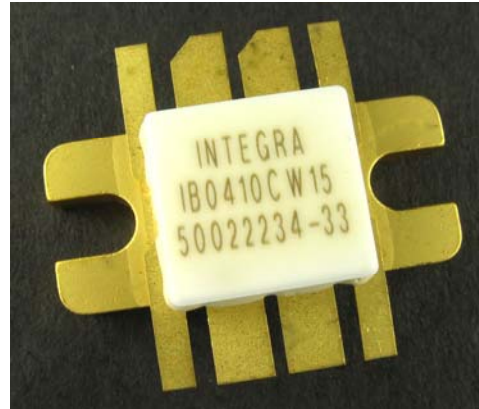


## Part Number: IB0410CW15

### Wideband Medium Power CW Transistor

The medium power CW wideband transistor part number IB0410CW15 is designed for broadband applications. It utilizes a low loss internal input impedance matching structure to yield maximum device gain and to ease the implementation of external matching circuitry. The bipolar transistor geometry utilizes a gold metallization system to achieve maximum reliability. Emitter ballast resistance is incorporated on the active cell for optimum thermal distribution and maximum reliability.



# Integra

TECHNOLOGIES, INC.

#### Silicon Bipolar

- Ultra-high  $f_T$

#### Class A Operation

- High Efficiency

#### Common Emitter Configuration

- Single Power Supply

#### Gold Metal

- Maximum Reliability

#### Emitter Ballasting

- Optimum Thermal Distribution

#### Internal Impedance Matching

- Ease of Use
- Ultra-low Loss Design

#### BeO Package

- Unmatched Thermal Reliability

**MAXIMUM RATINGS**

Screen	Parameter	Symbol	Min	Max	Units	Test Conditions
BD	Collector-Emitter Voltage	$V_{CES}$	--	45	V	--
BD	Emitter-Base Voltage	$V_{EBO}$	--	2	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	$R_{TH(JC)}$	--	1.86	°C/W	$V_{CC}=20V$ , CW, $T_F=25\pm 5^\circ C$ , $P_{IN}=3.2W$
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.					

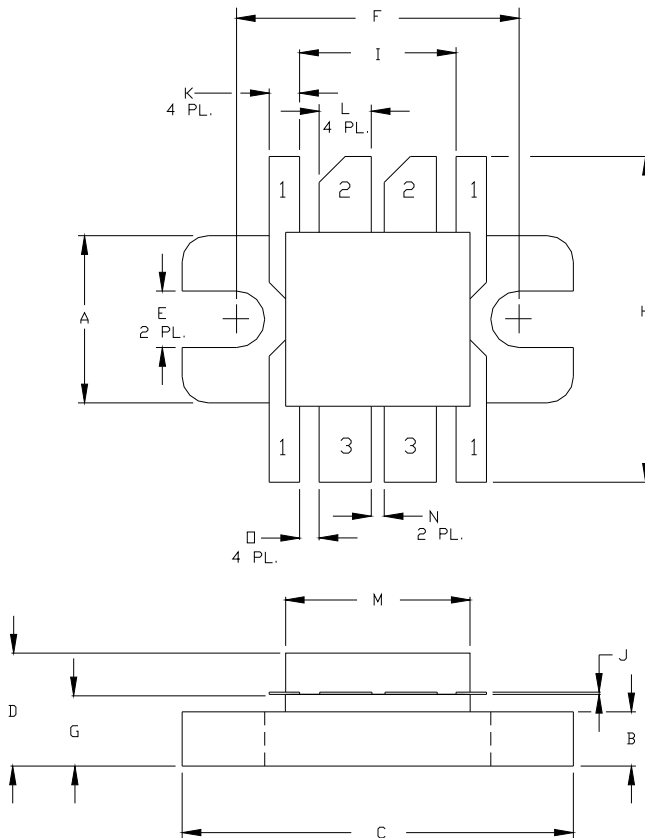
**DC ELECTRICAL CHARACTERISTICS**

Screen	Parameter	Symbol	Min	Max	Units	Test Conditions
100%	Collector-Emitter Breakdown Voltage	$BV_{CES}$	45	--	V	Per side, $I_C = 25\text{mA}$ , $T_F = 25 \pm 5^\circ\text{C}$ .
100%	Collector Leakage Current	$I_{CES}$	--	2.0	mA	Per side, $V_{CE} = 26\text{V}$ , $T_F = 25 \pm 5^\circ\text{C}$ .
100%	DC Current Gain	$H_{FE}$	20	--	--	Per side, $V_{CE} = 5\text{V}$ , $I_C = 1\text{A}$ , $T_F = 25 \pm 5^\circ\text{C}$ .
100%	Collector-Emitter Breakdown Voltage, Base Open	$BV_{CEO}$	22	--	V	Per side, $I_C = 25\text{mA}$ , $T_F = 25 \pm 5^\circ\text{C}$ .
100%	Emitter-Base Breakdown Voltage	$I_{EBO}$	--	1	mA	Per side, $I_E = 2\text{V}$ , $T_F = 25 \pm 5^\circ\text{C}$ .
BD	Output Capacitance	$C_{OB}$	--	25	pF	Per side, $V_{CB} = 28\text{V}$ .

**RF ELECTRICAL CHARACTERISTICS**

Screen	Parameter	Symbol	Min	Max	Units	Test Conditions
100%	Small Signal Power Gain	$G_{P1}$	10		dB	$V_{CC} = 20\text{V}$ , $I_{CQ} = 3\text{A}$ , $P_{IN} = 1\text{mW}$ , $T_F = 25 \pm 5^\circ\text{C}$ , $F = 400\text{MHz}$
100%	Small Signal Power Gain	$G_{P2}$	7.5		dB	$V_{CC} = 20\text{V}$ , $I_{CQ} = 3\text{A}$ , $P_{IN} = 1\text{mW}$ , $T_F = 25 \pm 5^\circ\text{C}$ , $F = 1000\text{MHz}$
100%	Large Signal Power Output	$P_o$	14		W	$V_{CC} = 20\text{V}$ , $I_{CQ} = 3\text{A}$ , $P_{IN} = 3.2\text{W}$ , $T_F = 25 \pm 5^\circ\text{C}$ , $F = 1000\text{MHz}$
Note 1	$T_F$ = Device flange temperature.					
Note 2	Screen 'BD' = parameter qualified By Design.					

**PACKAGE DIMENSIONAL OUTLINE DRAWING**



DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.380	0.390	9.65	9.91
B	0.120	0.130	3.05	3.30
C	0.895	0.905	22.73	22.99
D	0.255	0.265	6.48	6.73
E	0.125	0.135	3.18	3.43
F	0.645	0.655	16.38	16.64
G	0.160	0.170	4.06	4.32
H	0.740	0.760	18.80	19.30
J	0.003	0.006	0.07	0.15
K	0.065	0.075	1.65	1.90
L	0.115	0.125	2.92	3.17
M	0.419	0.429	10.64	10.90
N	0.025	0.035	0.063	0.089
O	0.040	0.050	1.02	1.27

PIN SCHEDULE	
1	EMITTER
2	COLLECTOR
3	BASE

**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 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**

<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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