

1mm Data Sheet

Spec-Contents:

1. Design-Description
2. Electrical-Spec
3. Assembly-and Handling Conditions
4. Delivery-Form
5. Endurance-Test

1. Design-Description

Materials

Terminals:	Material: Brass Alloy Plating : 10 μ " Gold over 100 μ " Nickel (min.)
Receptacles:	Shell Material: Brass Alloy 360 1/2 Hard Plating: 10 μ " Gold over 100 μ " Nickel (min.) Contacts Material: Beryllium Copper Alloy 172, HT Plating : Gold 0,1 μ m (min.) over Nickel 1,27 μ m (min.)
Solder Ball:	Eutectic 63Sn/37Pb, 183°C
Coplanarity:	$\leq 100\mu$ m
Insulator:	FR4/G10 T _g – 130C

Mechanical Data

Drawing:	See Ironwood Electronics for specific array.
Insertion Force:	$\leq 0,12$ N Initial insertion force (0,2mm diameter pin) $\leq 0,2$ N Initial insertion force (0,254mm diameter pin) $\leq 0,18$ N Normal insertion force (0,2mm diameter pin) $\leq 0,3$ N Normal insertion force (0,254mm diameter pin)

Withdrawal Force: $\leq 0,12\text{N}$ Withdrawal force (0,2mm diameter pin)
 $\leq 0,2\text{N}$ Withdrawal force (0,254mm diameter pin)

Contact-durability: > 100 cycles

Operating Temperature: $-40^{\circ}\text{C} - 125^{\circ}\text{C}$

Socket-Mass: 388 position Female Receptacle – 4.25g
 388 position Male Land Socket – 3.5g

2. Electrical-Detail-Spec

mating-condition for reliability-tests

388 position Land Socket and Receptacle
 (terminal with $\varnothing 0,254\text{mm}$ diameter pin)

	Min	Max	Remarks					
Current per contact		1A@85°C						
Contact-Resistance		$\leq 15\text{m}\Omega$	After reliability-tests Test method LLCR (Low Level Circuit Resistance): - Test current 10mA - Test voltage 20mV					
Isolation-Resistance between contacts	10×10^9 Ω		U max= 500V					
Frequency-Characteristics Specification for BGA male and female pins, 1mm pitch Frequency of Simulation: 1 GHz These results include the socket pin and terminal pin inserted together as they would be used in many applications Avg Contact Resistance: 8,65 m Ω								
Self Inductance (nH)			Mutual Inductance (nH)	Capacitance (fF) (10^{-15}F)				
Avg	Min	Max	Avg	Min	Max	Avg	Min	Max
2,456	2,453	2,459	0,463	0,234	0,639	67,1	54,5	112

3. Assembly / Handling

Soldering conditions:

Reflow Soldering: reflow-cycles 2x, max. 3x

Solder paste: 63Sn/37Pb

Rework: with Hot-Air or Infrared

Preconditioning before soldering according to Jedec-Level 3

4. Delivery Form

Tape and Reel in Dry Pack available.

Marking: Per Customer specifications

5. Endurance-Tests

Test-No	Test	Conditions
		BGA Receptacle soldered on circuit board with Land Socket and test PCB inserted. Mass of Land socket and test PCB 8.0g.
1	High-Temp.-Storage	48h ; 125°C <i>Norm: IEC 68-2-2 Ba</i>
2	Temp.-Cycling	100 cycles ; -40°C ... 125°C <i>Norm: IEC 68-2-14 Na</i> <i>Transfertime ≤ 10s; Soak-Time 30 min</i>
3	Vibration	Random RMS acceleration value 43 m/s ² ----- Spectrum random 5 Hz 2,0 (m/s ²) ² /Hz 10 Hz 20,0 (m/s ²) ² /Hz 50 Hz 20,0 (m/s ²) ² /Hz 50 Hz 10,0 (m/s ²) ² /Hz 100 Hz 10,0 (m/s ²) ² /Hz 165 Hz 1,4 (m/s ²) ² /Hz 250 Hz 1,0 (m/s ²) ² /Hz 560 Hz 0,18 (m/s ²) ² /Hz 720 Hz 0,14 (m/s ²) ² /Hz 2000 Hz 0,14 (m/s ²) ² /Hz Temperature -40°C ... +125°C ----- Testduration 3*48h 48h for each device under test plane <i>Norm: IEC 68-2-64</i>
4	Vibration-Shock	Form: half-sinusoidal Acceleration: 500m/s ² Puls-Duration : 6ms No of Shocks: 10 shocks for each room axis <i>Norm: IEC 68-2-27</i>