Ironwood
ELECTRONICS
www.ironwoodelectronics.com

GT – Silver Button Technology Socket for Semiconductor Test

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Application Need

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Prototype Test Applications demand high bandwidth followed by high compliance, low resistance and high temperature.

- *Elastomers have high bandwidth*
- *Elastomers have low resistance*
- ***Elastomers have low compliance***
  - *Due to small thickness and mechanical coupling*
- ***Elastomers have limited temperature range***
  - *Due to the inherent process of silicone rubber*

Solution - GT Contact

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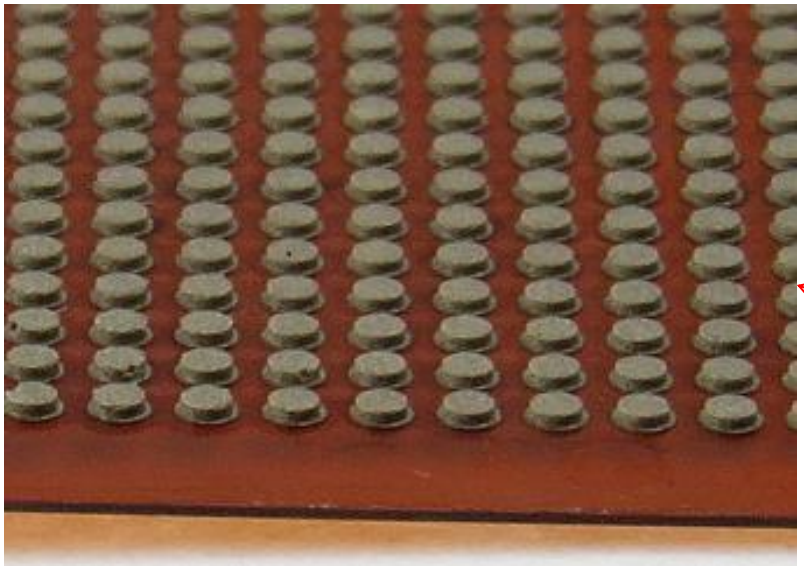
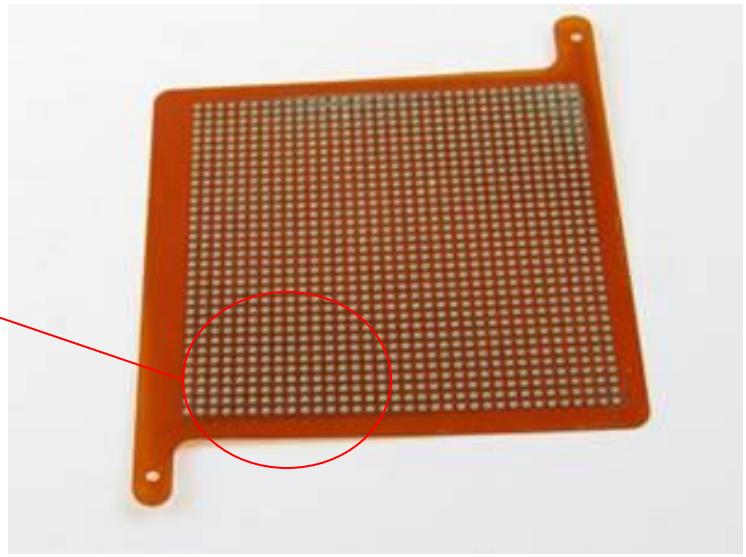
GT is a new elastomer technology that has silver particles held in a conductive column like buttons which are embedded in a non-conductive polymer substrate on a proper pitch that provides high compliance and extreme temperature ranges. GT is available for BGA, LGA, QFN, PoP and other packages from 0.3mm to 1.27mm pitch.





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GT Contact - Typical Characteristics

- Contact resistance <30 mOhms
- Bandwidth >94GHz @-1dB
- Current 5.4A @ 20C rise
- Force 20-70grams per contact
- Operating temperature -55 to +160° C
- Insertion/Extraction cycles >1000*
- Contact length (compressed): 0.08mm
- Compliance: 0.15mm

*Cycle life shown at room temperature. Reduced cycle life is expected when used at extreme temperatures, thermal cycling, improper force, cleaning and handling.

GT Contact

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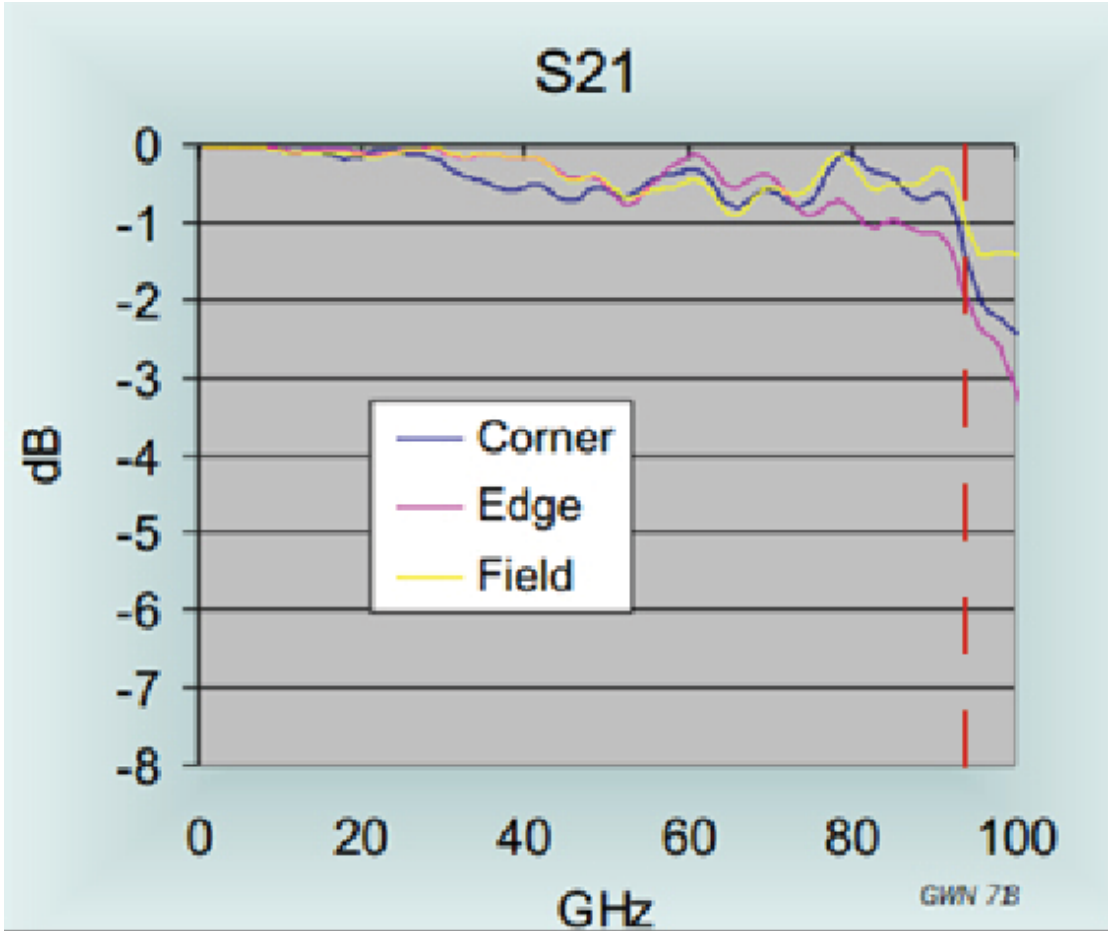
Bandwidth Data – 0.4mm Pitch



Insertion Loss -1dB @ 94GHz

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Bandwidth Data – 0.5mm Pitch

	Corner	Edge	Field	
Delay	2.4	2.4	2.4	ps
Risetime open	27	27	28.5	ps
Risetime short	28.5	28.5	28.5	ps
Risetime thru, 50Ω	30	30	30	ps
Insertion loss (1dB)	>40	>40	>40	GHz
Insertion loss (3dB)	>40	>40	>40	GHz
VSWR (2:1)	>40	>40	>40	GHz

GT Contact 1mm Pitch - Current Capability

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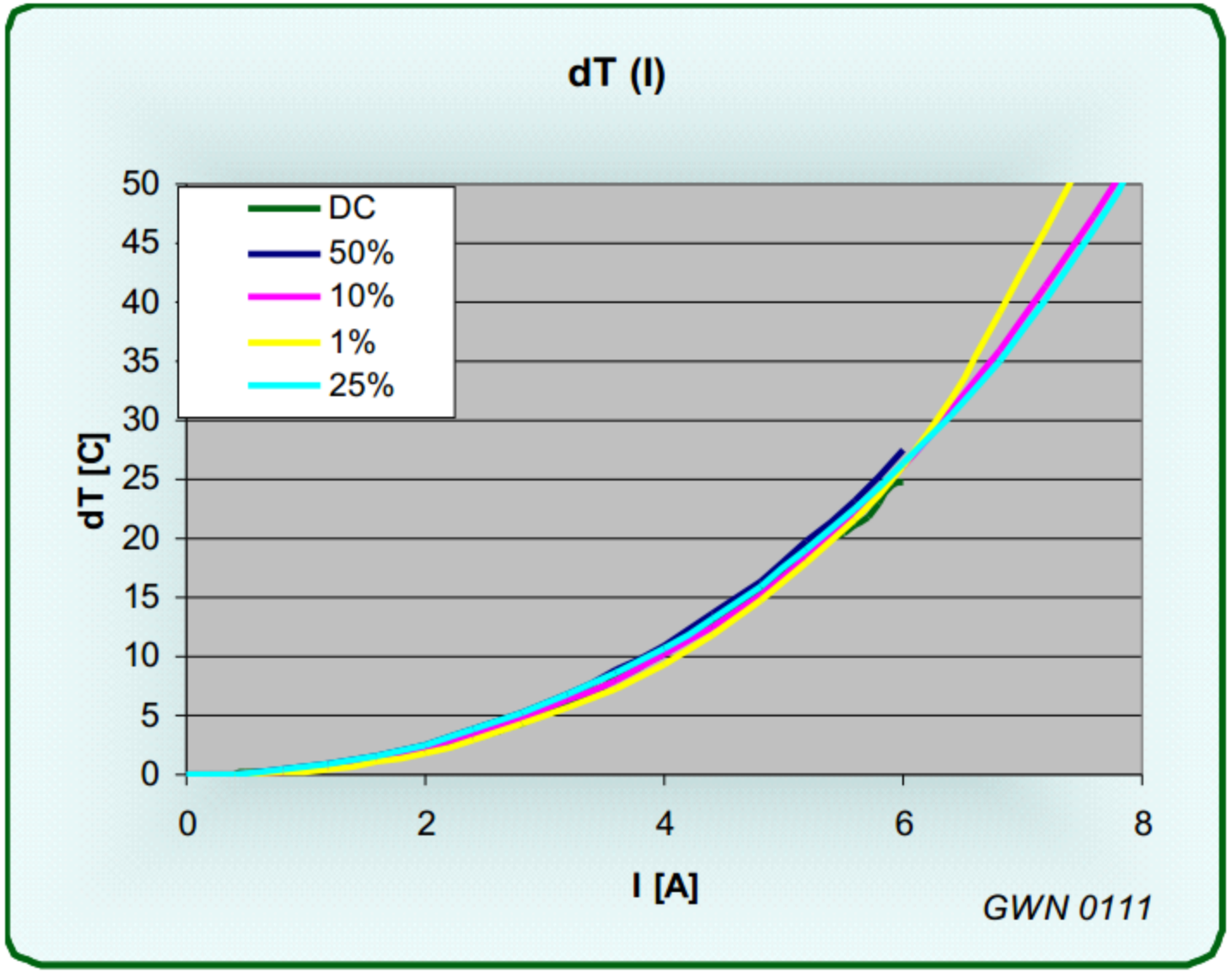

20C rise at 5.4A

GT Contact 0.8mm Pitch

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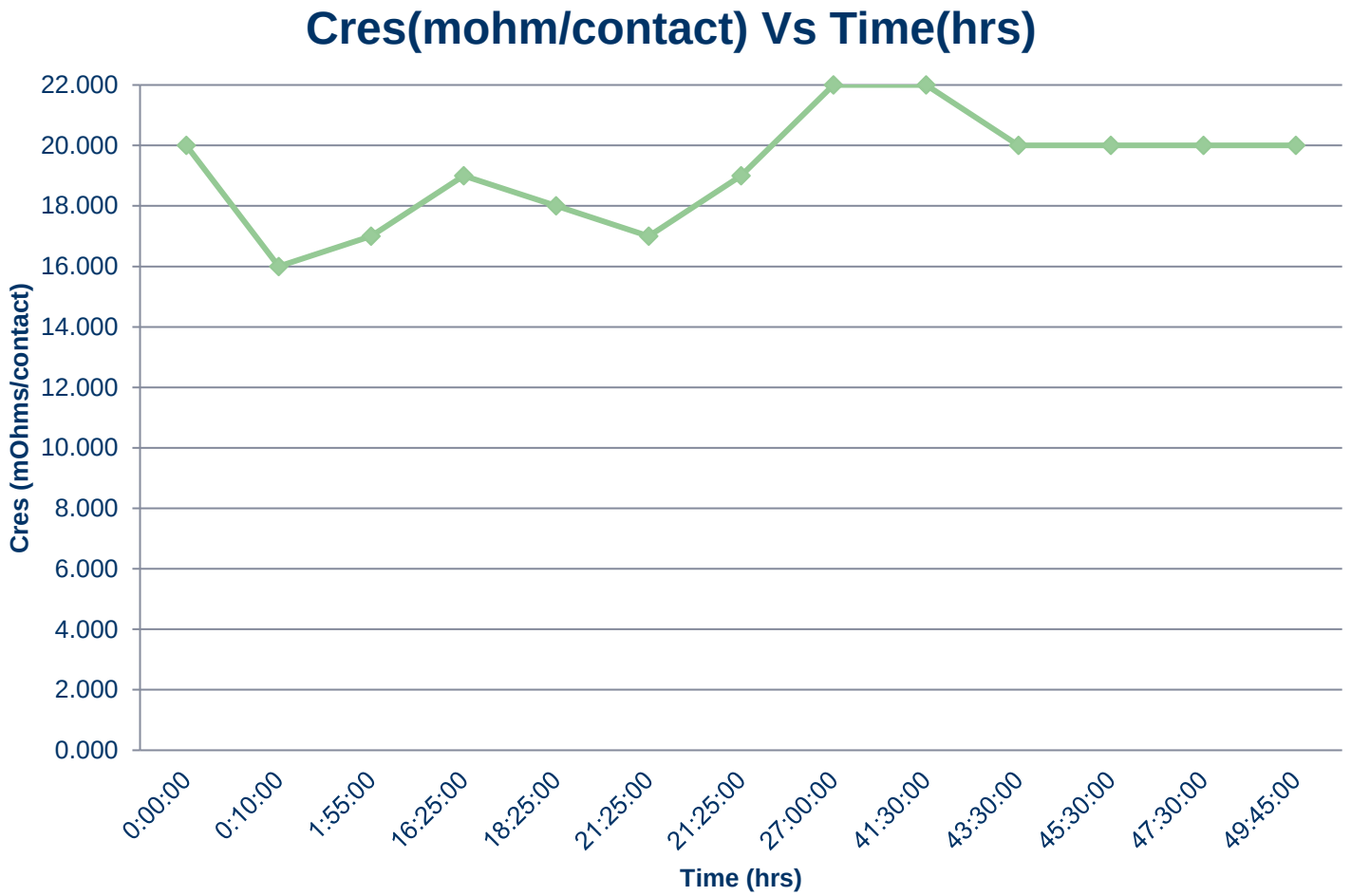
-55C Temperature Data



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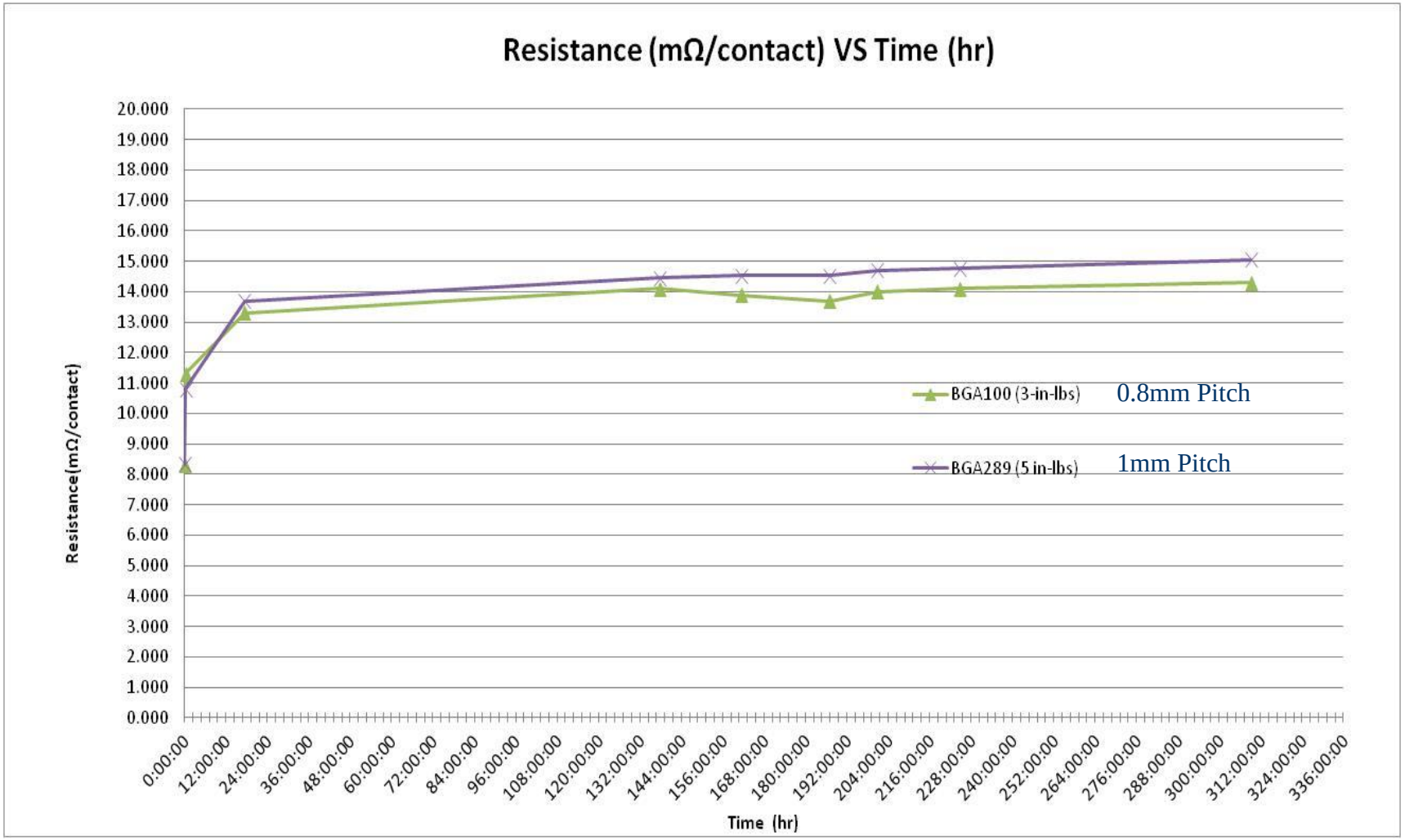
+160C Temperature Data



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GT Contact Thermal Cycling Data

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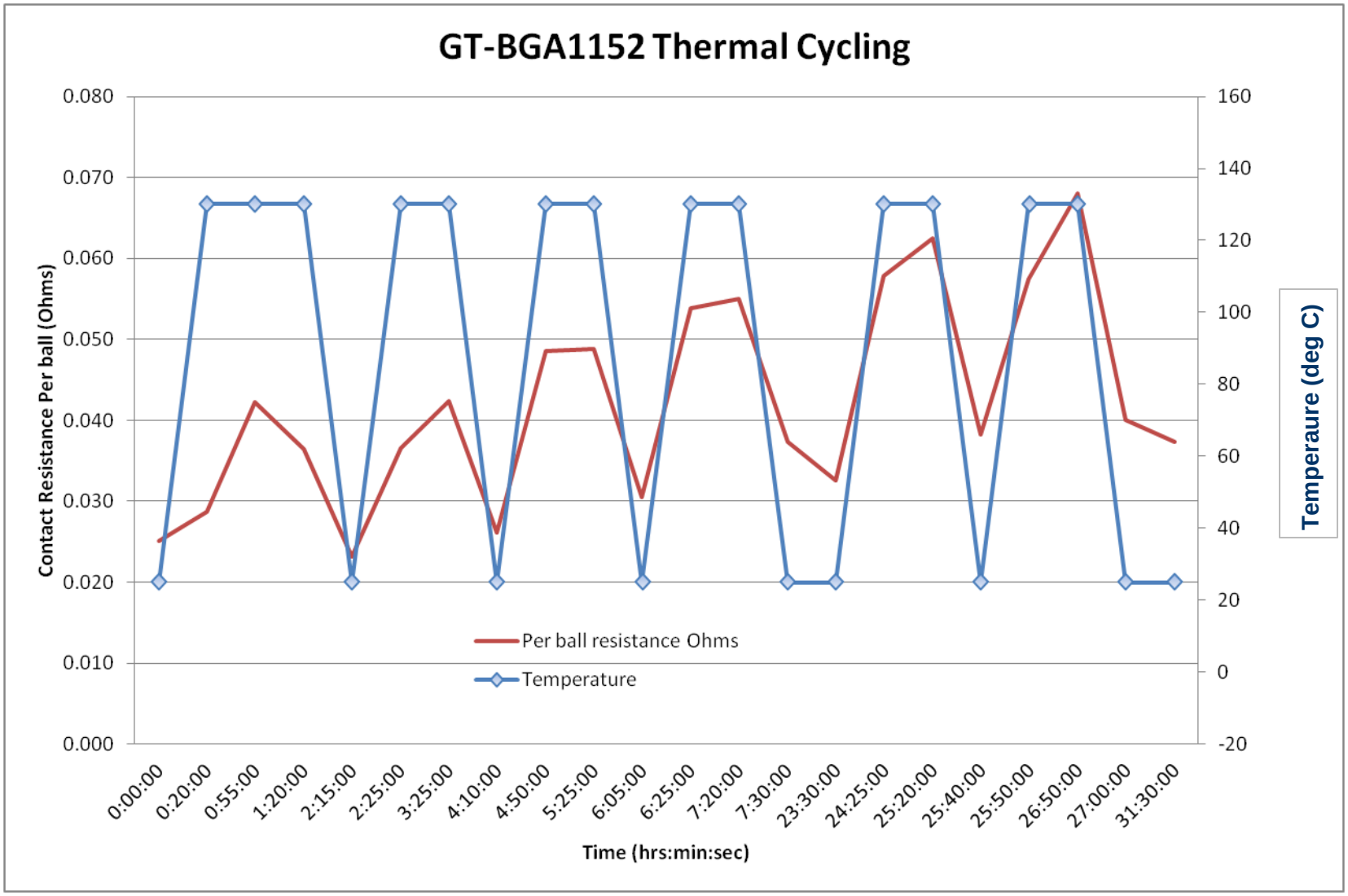

GT Contact - Endurance Data

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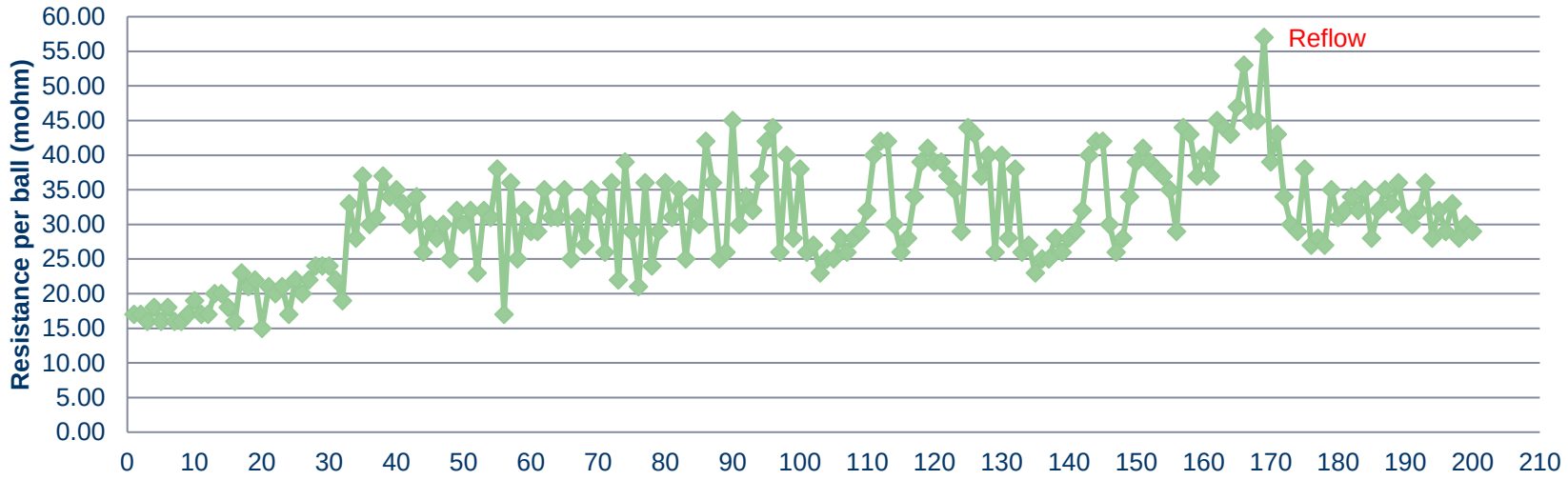
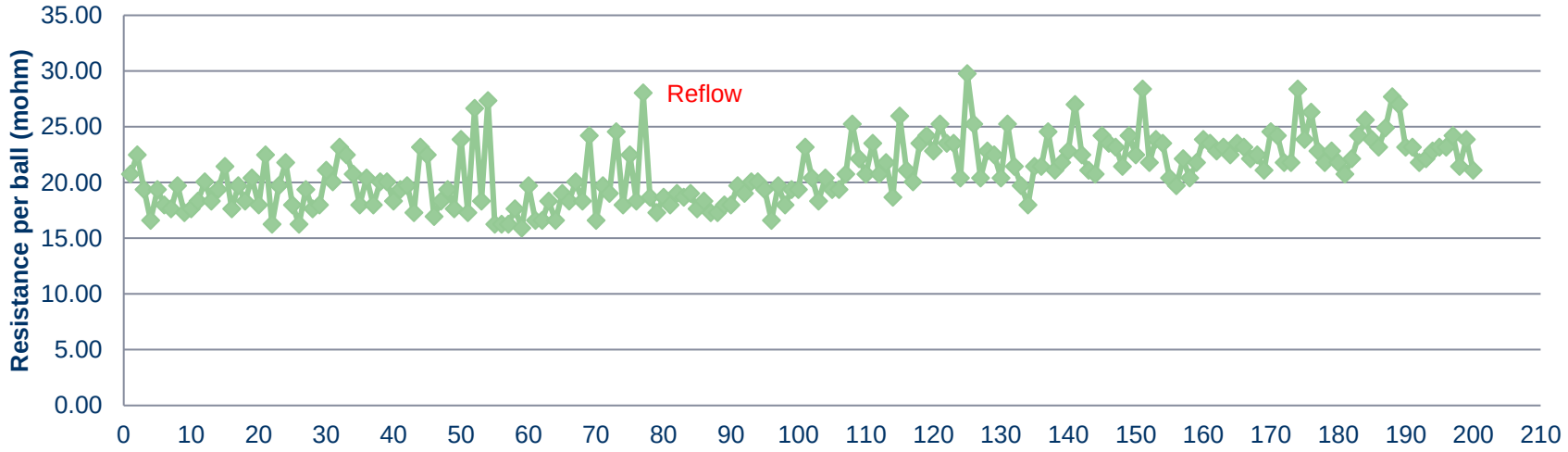
BGA100 (0.8mm Pitch)



BGA289 (1mm Pitch)



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GT Contact – FDR (BGA100, 0.8mm Pitch)

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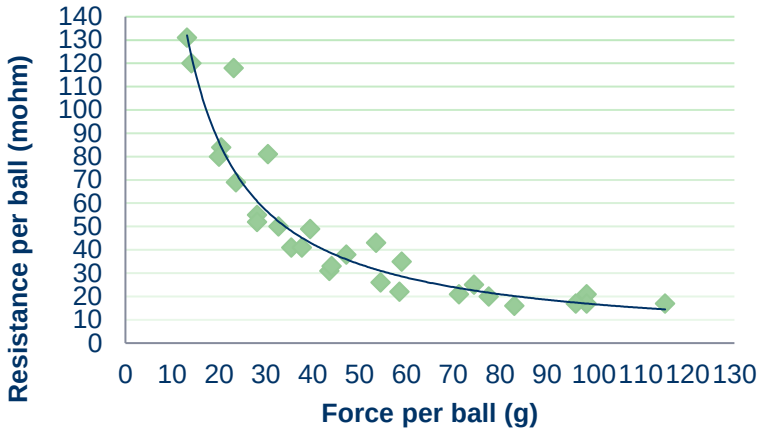
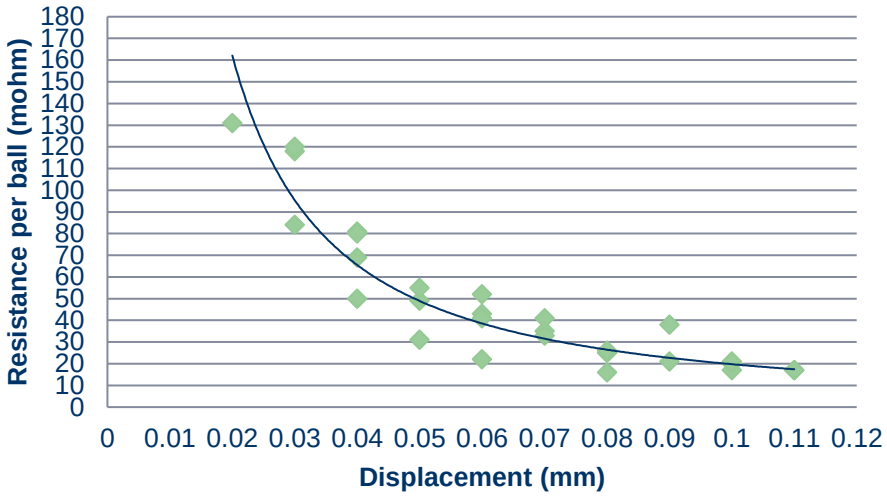
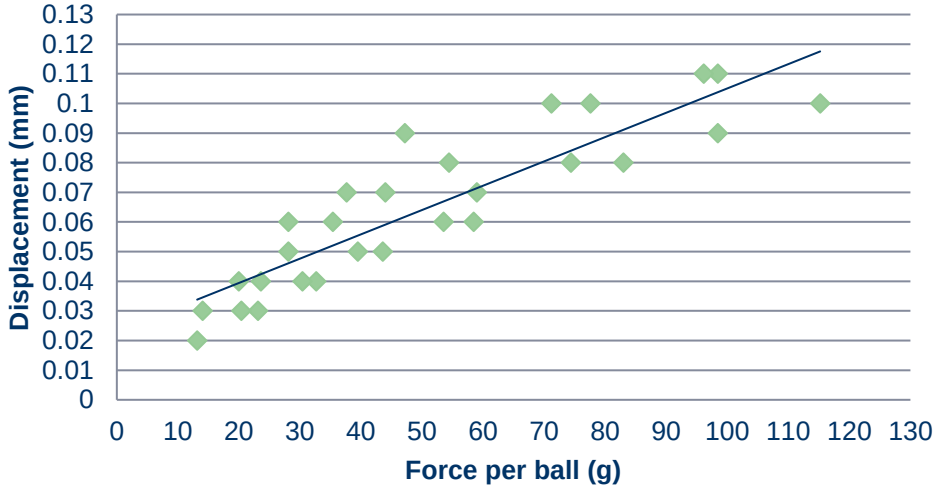
Resistance per ball VS force per ball



Resistance per ball VS displacement



Force VS Displacement



BGA100
0.8mm pitch
10x10 array

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GT Value Proposition

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- Low cost elastomer solution for 0.3mm to 1.27mm pitch devices
- Extreme temperature solutions (-55 to +160C)
- High speed digital and RF applications (excellent bandwidth >94GHz)
- Reliable testing due to stable contact resistance throughout life cycle
- Accommodates large packages with warpages
- Mixed pitch and non-conventional array solutions for densely populated devices at low cost
- GT contact provides superior solution in all lab and evaluation applications due to individual button technology at affordable cost
- GT sockets with wide temperature range are available in same footprint as other Ironwood sockets
- Custom test socket can be produced using GT contact in less than 3 weeks when standard socket is not available
- GT sockets are robust and can be used in demonstration products for multiple handling process without contact degradation