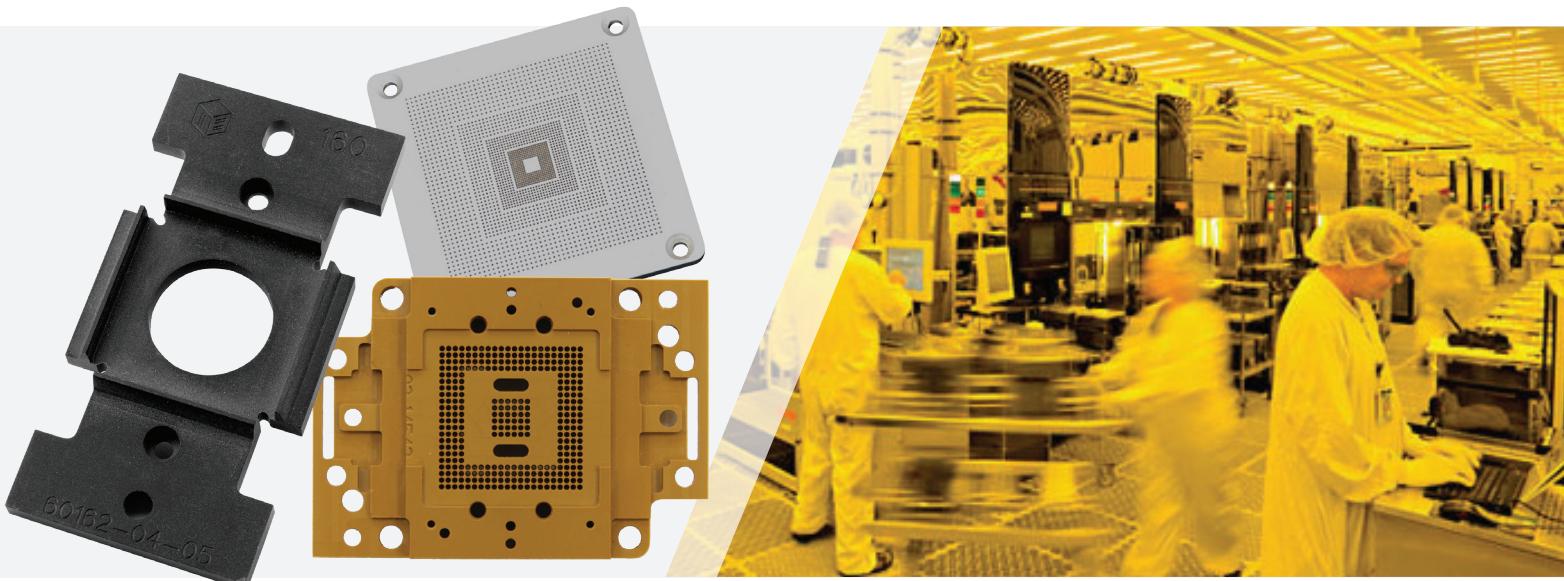




Back-End Test & Electronic Fixturing Solutions

Worlds' broadest portfolio of polymer solutions for use in IC Chip test & fixturing applications



Applications: Burn-In, Test Sockets & Electronic Fixturing

Standard Materials

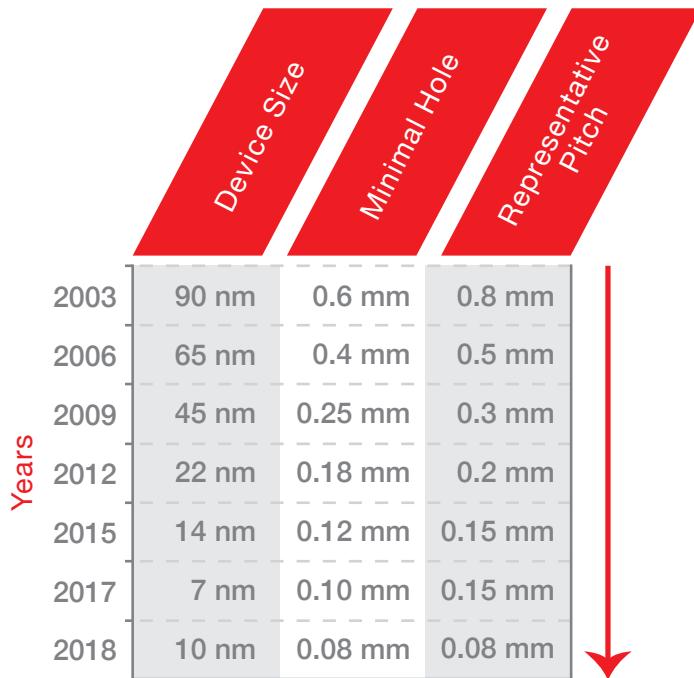
- Semitron® MDS 100
- Semitron® MP 370
- Duratron® T4203 PAI
- Duratron® T5030 PAI
- Ketron® 1000 PEEK
- Duratron® U1000 PEI
- Kyron® EPM-2204
- Kyron® GC-100

Electrostatic Dissipative Materials

- Semitron® ESd 520HR PAI (A)
- Semitron® ESd 490HR PEEK (A)
- Semitron® ESd HPV PEEK (D)
- Semitron® ESd 480 PEEK (D)
- Semitron® ESd 420V PEI (D)
- Semitron® ESd 420 PEI (D)
- Semitron® ESd 410C PEI (C)
- Semitron® ESd 300 PET (D)

- Semitron® ESd 225 POM (D)
- Semitron® ESd POM CNT (D)

A = Anti-Static
D = Static Dissipative
C = Conductive



Typical Decreasing Features Over Time

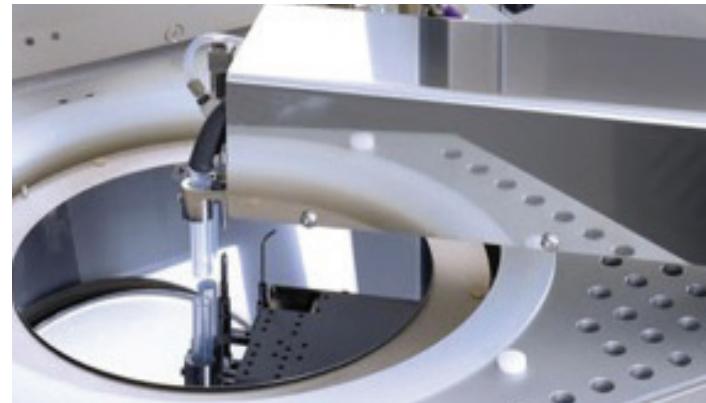
Mitsubishi Chemical Advanced Materials' proprietary material technologies are opening the doors to new design advancements.

General Trends

Driven by the miniaturization of IC devices, the Back-End Test industry is pushing material science to the brink of polymeric capability. The smaller IC device requires thinner cross sections, thinner cross sections then require stiffer materials to withstand the testing parameters. The challenge is to offer increased stiffness while maintaining the machinability of the decreasing features such as hole size and pitch.

Test Socket Trends

- Increased I/O Count
- Reduction in Hole & Pitch Size
- Thinner Cross Sections



Critical Properties

In order to deliver a functional test socket under the changing conditions described, the engineer must pay particular attention to the most critical properties that effect the machinability and the stability of the test socket.

Flexural Modulus

Critical for managing the robustness of the finished socket under test conditions

Tensile Elongation

Critical for controlling the accuracy of holes during machining

CLTE

Critical for providing dimensional stability over a varied temperature range during usage

Polymer Melting Point

Critical for clean thru holes during drilling

Moisture Absorption

Critical for maintaining dimensional stability

Featured Products/Materials

Kyron® GC-100

- Non fiber filled ultra-stiff polymer delivering exceptional dimensional stability
- Developed to complement Semitron® MDS-100 with thicker cross sections (6mm, 9mm, & 12mm)
- Low CTE provides stability over a wide range of test conditions
- Injection molded plate provides a low-cost alternative to expensive polyimides
- Low tensile elongation allows for increased accuracy in hole placement

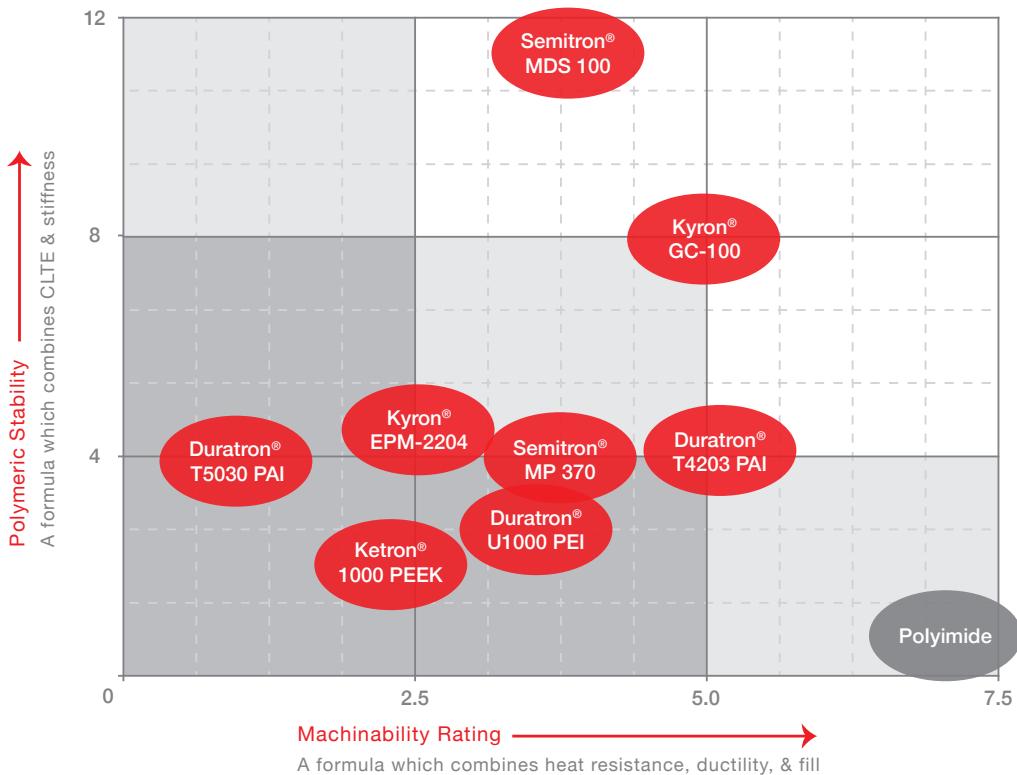
Semitron® MDS 100

- Highest flexural modulus non fiber filled product
- Extremely low CLTE translates to excellent dimensional stability
- Available in thin cross sections ranging from 1mm to 6mm thick
- Very low moisture absorption allowing for excellent dimensional stability
- Excellent machinability for fine features

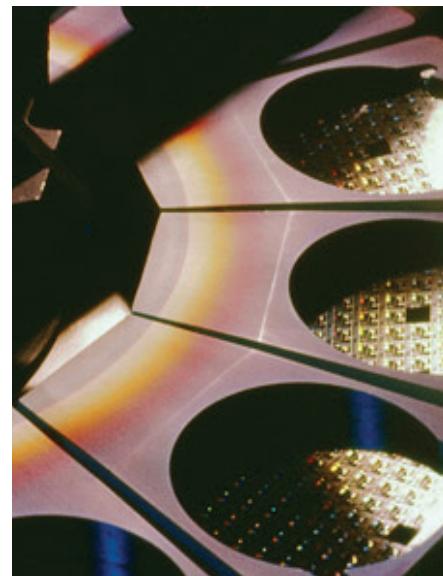
Test Socket Material Selection Grid

Polymeric Stability vs. Machinability of Fine Features

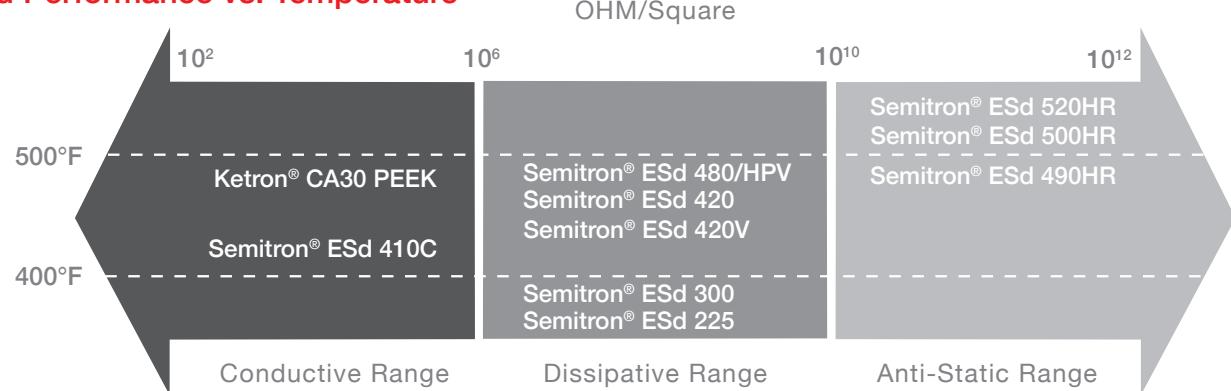
Socket Type	Basic	Challenging	Demanding
Hole Size	>0.4 mm	0.2-0.35 mm	<0.18 mm
Pitch Size	>0.6 mm	0.25-0.5 mm	<0.25 mm



The key components in next generation socket design



ESd Performance vs. Temperature



Material Comparison Guide

		Semitron® MP370	Semitron® MDS 100	Kyron® EPM-2204	Kyron® GC-100	Duratron® T4203 PAI	Duratron® T5030 PAI
Mechanical Properties	Color	-	grey	white	grey	tan	mustard
	Tensile Modulus (psi)	D638	640,000	1,500,000	720,000	1,100,000	600,000
	Flexural Modulus (psi)	D790	625,000	1,420,000	750,000	1,100,000	600,000
	Tensile Elongation (%)	D638	3.0	1.5	21.0	3.0	10.0
	CLTE (in./in./°F X 10 ⁻⁵)	E-831 (TMA)	2.5	2.5	2.0	1.9	1.7
	Moisture Absorption 24hrs @73°F (%)	D570 ⁽¹⁾	0.11	0.10	0.37	0.10	0.40
Thermal Prop.	Tg Glass Transition (°F)	D3418	320	-	289	-	527
	Heat Deflection Temperature @264psi (°F)	D648	300	410	410	445	532
Electrical Properties	Dielectric Constant, 10 ⁶ Hz	D150	4.13	3.37	3.50	3.39	4.20
	Dissipation Factor, 10 ⁶ Hz	D150	0.004	0.007	0.005	0.005	0.026
	Surface Resistivity Ω/sq.	ANSI/ESd STM 11.11	>10 ¹³	>10 ¹³	>10 ¹⁴	>10 ¹³	>10 ¹³
	Dielectric Strength	D149	376	-	400	347	580

(1) Specimens: 1/8" thick x 2" diameter or square.

mcam.com |    @MCAMconnect | contact@mcam.com

Distributed by:

Distributed by:

 **Piedmont Plastics®**
where solutions take shape

For more information visit
www.piedmontplastics.com

All statements, technical information and recommendations contained in this publication are presented in good faith and are, as a rule, based upon tests and such tests are believed to be reliable and practical field experience. The reader, however, is cautioned, that Mitsubishi Chemical Advanced Materials does not guarantee the accuracy or completeness of this information and it is the customer's responsibility to determine the suitability of Mitsubishi Chemical Advanced Materials' products in any given application. Duratron, Ketron, Semitron, and Kyron are a registered trademark of the Mitsubishi Chemical Advanced Materials group of companies.

Design and content created by Mitsubishi Chemical Advanced Materials and are protected by copyright law. Copyright © Mitsubishi Chemical Advanced Materials. All rights reserved. MCM NA 6I | 6.12.19