

Power semiconductor test systems

ABB Switzerland Ltd., Semiconductors, designs and manufactures test systems for high power semiconductors.

With more than 30 years of experience, ABB designs and manufactures CE compliant customized test systems, covering the entire range of high power semiconductors. Presently, over 70 test systems are in operation for routine and reliability measurements of power semiconductors. Some test systems have been in operation for more than 15 years.

Thanks to our close proximity to semiconductor development, application and production, we are in an ideal position to provide test systems to meet customers' needs. Automation, efficient handling and safety are among the designed-in features of the test equipment.

Power semiconductor test systems

ABB offers static and dynamic test systems for diodes, phase control thyristors (PCTs), bi-directionally controlled thyristors (BCTs), switching and reverse conducting thyristors, gate turn-off thyristors (GTOs), integrated gate-commutated thyristors (IGCTs), as well as insulated gate bipolar transistor (IGBT) dies, substrates, submodules and modules.

Our test systems cover the range of up to 14 kilovolts and 10 kiloamperes and use state of the art configurable stray inductances down to 60 nanohenry. During testing, the clamped device can be precisely heated up to 200 °C for production systems or cooled down to -40 °C in an environmental chamber for engineering systems. The clamping units can handle devices up to 240 millimeter in diameter and can apply a clamping force of up to 240 kilonewton.



Dynamic IGBT, GTO and diode test system

ABB recently installed the next generation of IGCT test system in production, able to test devices with the highest current and voltage ratings on the market.



Automated IGBT and diode dies test system



Baseplate flatness tester. Mechanical measurement under pressure (resolution up to 0.1 micrometer)

Features:

- Available for various application environments (production, laboratory, failure analysis, research and development)
- Highest quality assurance during engineering and manufacturing
- Safe operator handling
- Remote and on-site service
- Automated handling
- European standard compliance

Test systems

ABB offers the following specialized solutions:

	Blocking voltage AC or DC	Gate characteristics	On-state, forward voltage	Reverse recovery charge	Critical dV/dt	Circuit-commutated turn-off time	$V_{ceat} / V_{pinch-off}$	Turn-on / turn-off
Bipolar test systems								
Thyristor and diode static / dynamic	X	X	X	X	X	X		
Gate turn-off thyristor and diode static	X	X	X					X
Gate turn-off thyristor and diode dynamic	X			X				X
IGBT test systems								
IGBT and diode dies static	X	X					X	
IGBT and diode substrates static / dynamic	X	X		X			X	X
IGBT and diode modules static	X	X					X	
IGBT and diode modules dynamic				X				X
Baseplates flatness								

Reliability test systems

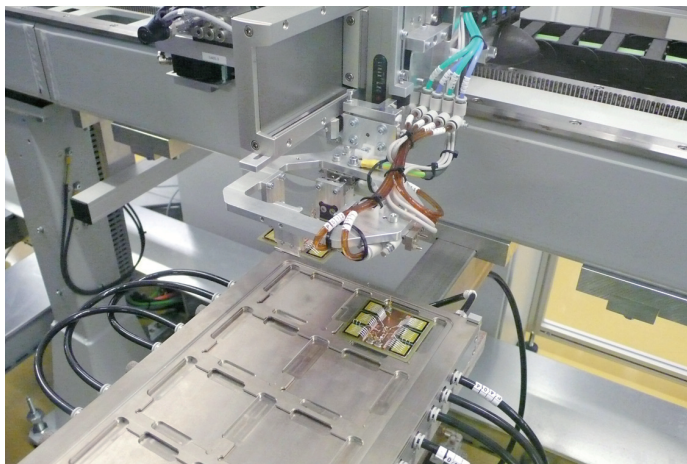
- High temperature reverse bias
- Intermittent operating life
- Surge current

Auxiliary unit

- Clamping unit
- Capacitor discharge unit
- Preheating unit
- Programmable IGBT and thyristor gate units
- Data acquisition and parameter extraction units

Automation

Our test systems are designed for easy integration into automated handling equipment. Its software is compatible to commercial control systems as manufacturing execution systems (MES) and computer-aided quality assurance (CAQ).



Substrate handling



Die handling

ABB Switzerland Ltd.

Semiconductors

Fabrikstrasse 3

CH-5600 Lenzburg

Switzerland

Tel: +41 58 586 14 19

Fax: +41 58 586 13 06

abbsem@ch.abb.com

www.abb.com/semiconductors

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