

CoC Burn-In System

BI6201

Datasheet V2.0



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1. Product Description

The BI6201 serious burn-in system is a high-density, multi-functional testing system specifically designed for the verification of the burn-in lifespan of semiconductor laser chips.

The system adopts a modular framework and a large single-layer structure. Integrated multi-channel power supplies, temperature controllers, real-time data acquisition capabilities. Standardized drawers and flexible fixture are suitable for various size of CoC (Chip on Carrier). The fixtures can be easily replaced to accommodate different device types. Drawers could be replaced when new test functions are added, such as thermistor monitoring, power monitoring.

The driving circuit of BI6201 features excellent diode protection function. No current or voltage overshoot under any circumstance. It also allows setting thresholds for current and voltage, and the system will shut down abnormal channels once the output values exceed the threshold to protect chips under test. The channel-to-channel isolation and electrostatic discharge (ESD) are also under consideration in system design to fully assure the stability during the CoC burn-in process.

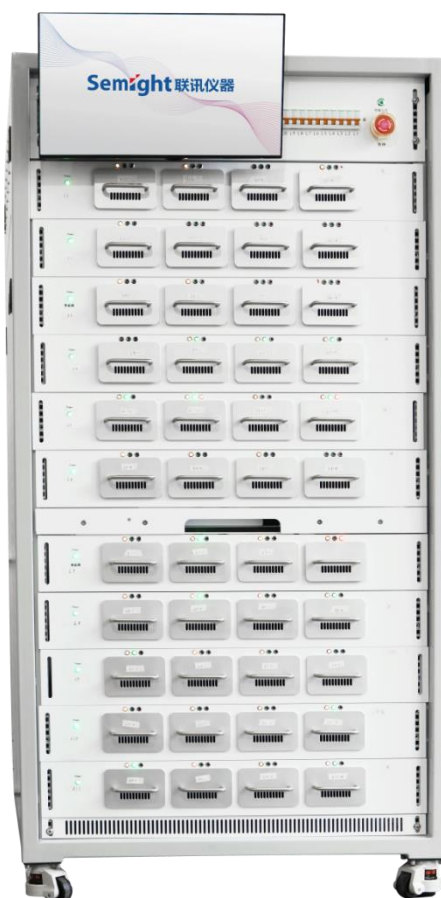


Fig.1 Burn-in system



2. Key features

Fixture

- Fishbone-type fixture which support wire bonding on it.

Temperature control

– Each fixture has independent heating, temperature control, monitoring, over temperature protection and heat dissipation units for energy saving.

– Heating plates with fans are used for temperature control according to DUT burn-in process.

– Compact temperature control structure has excellent thermal conductivity. Temperature deviation is less than $\pm 1^{\circ}\text{C}$ for the overall thermal sink (40~100°C)

Driving power supply:

- The system supports up to 4224 channels of 4-quadrant driving power supply.
- Auto Current Control Mode (ACC): The control circuit provides a stable current to each semiconductor laser, ensuring a constant supply current during the burn-in process even if the contact resistance of the device under test changes.

Safety and reliability

– Comprehensive protection mechanisms through hardware and software eliminate potential issues such as EOS (Electrical Overstress) that could harm the device under test.

Online power monitoring

– Optional configuration for online power monitoring, supporting complete LIV (Light-Current-Voltage) or EA (Electro-Absorption) scans, with the ability to analyze Ith. The test repeatability deviation is less than $\pm 1\%$, making BI6201 being the best choice for reliability test in R&D.

Large capacity:

– A single system can support up to 4224 CoC simultaneously burn-in, with production capacity flexibly configured based on customer requirements.

Software functions:

– Clear and user-friendly interface, providing clear status information of each device. All test results, test statuses, and abnormal conditions are recorded in the database which could be stored and traced efficiently. Burn-in data can be uploaded to the database. Monitoring function could be accessed quickly and easily from GUI to see all the equipment status.



3. System configuration

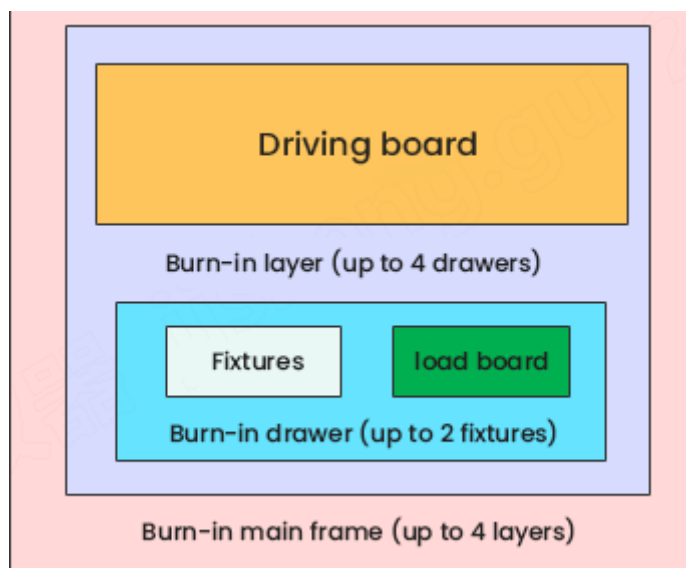


Fig.2 Burn-in system configuration

3.1 BI6201 system configuration

No.	Module	Part number	Description
1	CoC burn-in system cabinet (including computer)	P09000049	Main frame, computer, software (remark: up to 11 layers)
2	CoC burn-in system single layer (including driving board)	P02004297	<ul style="list-style-type: none"> - 48 channels four -quadrant driving board - Switch mode power supply - Temperature control module - 617 back panel - CDA N2 control system
3	Burn-in drawer	P02004341	<ul style="list-style-type: none"> - Front fan - Heating plate and air cooling temperature control, Temperature range 40~120℃ - G4 long fixture, fixture bottom plate thickness 1mm - Double fixtures in each drawer - DML CoC capacity up to 96pcs - EML CoC capacity up to 48pcs(EA=-2V)
		P02000459	<ul style="list-style-type: none"> - With front fan - Heating plate and air cooling temperature control, Temperature range



No.	Module	Part number	Description
			40~150℃ - G4 long fixture, fixture bottom plate thickness 1mm - Double fixtures in each drawer - DML CoC capacity up to 96pcs - EML CoC capacity up to 48pcs (EA=-2V)
		P0200330	- With front fan - Heating plate and air cooling temperature control, Temperature range 40~120℃ - G4 long and wide fixture, fixture bottom plate thickness 1mm - Double fixtures in each drawer - DML CoC capacity up to 96pcs - EML CoC capacity up to 48pcs (EA=-2V)
		P0200235	- No front fan - Heating plate and air cooling temperature control, Temperature range 40~120℃ - G4 short fixture, fixture bottom plate thickness 1mm - Double fixtures in each drawer - DML CoC capacity up to 64pcs - EML CoC capacity up to 64pcs (EA parallel power supply)
		FB020003	-32 channel fixture+ 6 kind of 2mm fixture drawer
		FB020231	- With front fan - Drawer temperature control range 40~150℃ - G4 long fixture, fixture bottom plate thickness 1mm, buckle structure - Drawer EA grounding
4	Burn-in fixture (including up and bottom fixtures)	C04000223	- Support 48 channel DML CoC 2mm & 1mm



No.	Module	Part number	Description
5	Load board		5Ω resistor board

4. Technical specification

4.1 General specification and software

Item	Specification
Working temperature	20°C~30°C
Working humidity	<80% (without coagulation)
EMC	Compliance with EU EMC standards
Safety	Compliance EU safety standards
Certificate	CE certificate
Software system	Windows
Programming language	C#
Software functions	Test plan editor, test condition and specification setting, MES interface, test data management and analysis, calibration & maintenance, fault diagnosis



4.2 Burn-in system cabinet

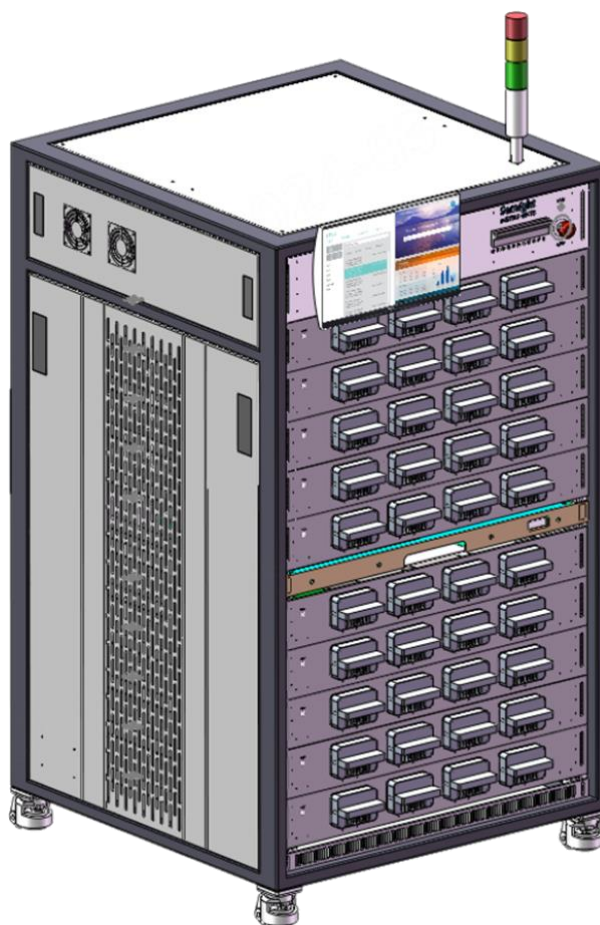


Fig.3 Burn-in system cabinet

4.2.1 BI6201 Cabinet

Item	Specification
Power supply	3P 380V, 50/60Hz, 32A
Full load power consumption	13KW
Gas requirement	CDA/N2, 0.4~0.6Mpa
Dimensions(mm)	984*1102*2030 (W*D*H)
Layers	11
Full load weight	1100kg
IPC	CPU i7/i5, 16G Memory, 1T Hard disk
System	WIN10/11 Chinese/English (No MS Office)
Data storage	Original test data, all measurement results, system log
Programming language	C#
Database	SQL



Item	Specification
Burn-in resume	Resume burn-in process after abnormal stop
Communication disconnection protection	Stop Burn-in process automatically in 15 min after lost connection

4.3 Burn-in system single layer

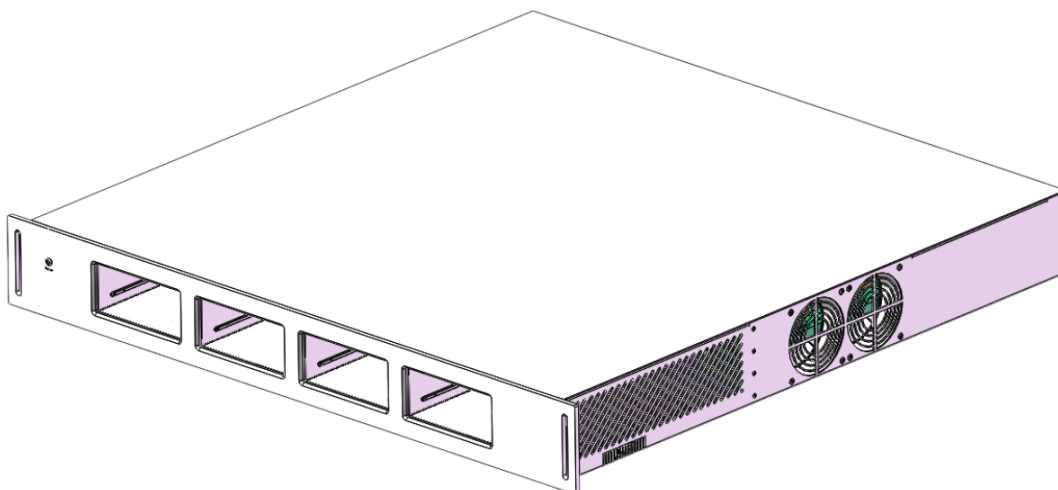


Fig.4 Single layer

4.3.1 BI6201 system single layer

Item	Specification
DUT capacity*1	384pcs DML CoC or 192pcs EML CoC
Heating method	Heating plate+ fan cooling
Thermal sink temperature range*2	40°C~120°C (150°C optional)
Thermal sink heating speed	>6°C/min
Thermal sink cooling speed	>5°C/min
Thermal sink temperature accuracy	0.1°C
Thermal sink temperature resolution	0.1°C
Thermal sink temperature uniformity	±1°C for 40°C~100°C ±1.5°C for 100°C~120°C
Thermal sink temperature stability (no-load)	±0.5°C
CoC temperature uniformity	±3°C (300mA@85°C)
CoC temperature stability@24H	±0.5°C
Thermal sink temperature overheating detector	supported



Item	Specification
Overheating protection	Hardware over heating protection temperature >150°C
Driving source type	Four-quadrant
Driving current range	±500mA
Driving current accuracy* ³	0.3% F. S. ±0.07mA
Driving current stability* ³	0.1% F. S. ±0.07mA
Current measurement resolution	0.07mA
Current output ripple	<3%
Driving voltage range	±7.5V
Driving voltage accuracy* ³	0.3%F. S. ±1.25mV
Driving voltage stability* ³	0.15%F. S. ±1.25mV
Voltage measurement resolution	1.25mV
Voltage measure accuracy	±50mV
PD driving voltage	0-2.5V
PD measurement range	0-6mA
PD measurement accuracy	±50 μ A
PD measurement resolution	0.4 μ A
PD measure stability	±5 μ A
Maximum forward power	120W (48A)
Maximum reverse power	120W (30A)
EOS	Under working condition, no EOS
Driving current and voltage clamp	Configurable

Note *1 Single layer capacity related to burn-in temperature and current.

Note *2 The precondition to set the temperature at 40°C is the thermal load of burn-in fixture less than 20W.

Note *3 F.S. stands for Full Scale, for example, when the accuracy or error is described as "0.3% F.S.", it means that the measurement error is no worse than 0.3% of the maximum range during the whole measurement process.



Contact us

Semight Instruments Co., Ltd.

Email

sales@semight.com

Address

No. 1508, Xiangjiang Road, Suzhou New District (SND), Jiangsu, China

Website

Visit www.semight.com for more information

*The specifications and descriptions are subject to change without notice.