

CoC Burn-In System

BI6203

Datasheet V2.0



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1. Product Description

The BI6203 series 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 BI6203 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.

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 or TEC solution are used for temperature control according to DUT burn-in process.
- Compact temperature control structure has excellent thermal conductivity. Temperature deviation is less than $\pm 1.0^{\circ}\text{C}$ for the overall thermal sink ($40\sim 100^{\circ}\text{C}$)

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 BI6203 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

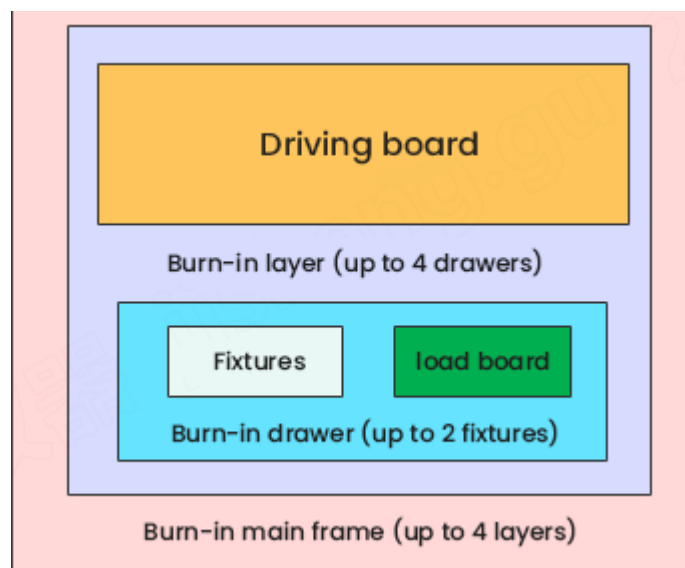


Fig.1 Burn-in system configuration



3.3 BI6203 System configuration

No.	Module	Part number	Description
1	CoC burn-in system cabinet (including computer)	P09000037	Main frame, computer, software (remark: up to 11 layers)
2	CoC burn-in system single layer (including driving board)	M01001427	<ul style="list-style-type: none"> - 96 channels standard driving board - Switch mode power supply - Temperature control module - back panel - CDA N2 control system
3	Burn-in drawer	P02004255	<ul style="list-style-type: none"> - Double fixtures with 96 channel PD - Drawer temperature range 40~120°C - G4 long fixture, fixture bottom plate thickness 2mm & 1mm
		FB020313	<ul style="list-style-type: none"> - Drawer temperature range 40~120°C - G4 long fixture, fixture bottom plate thickness 1mm
4	Burn-in fixture (including up and bottom fixtures)	C04000223	- support 48 channel DML CoC
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 with 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

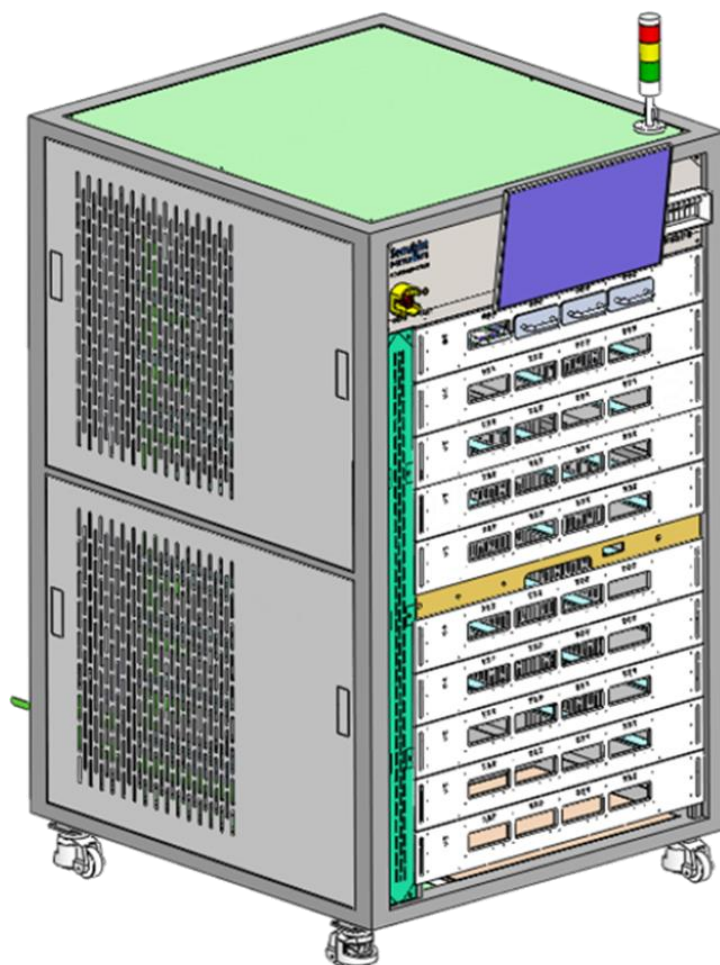


Fig.2 Burn-in system cabinet

4.2.1 BI6203 Cabinet

Item	Specification
Power supply	3P 380V, 50/60Hz, 47A
Full load power consumption	18KW
Gas requirement	CDA/N2, 0.4~0.6Mpa
Water pressure requirement	0.3~0.5Mpa
Inlet water temperature	21℃~25℃
Dimensions(mm)	1183*1200*2030 (W*D*H)
Layers	11
Full load weight	1300kg
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



Item	Specification
Programming language	C#
Data base	SQL
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

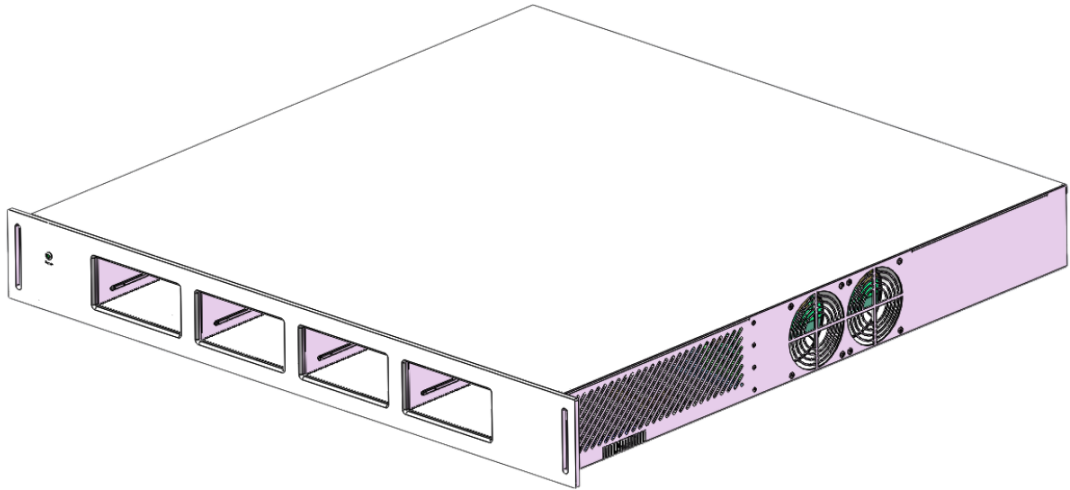


Fig.3 Single layer

4.3.1 BI6203 Single layer

Item	Specification
DUT capacity ^{*1}	384 pcs of DML or 192 pcs of EML
Heating method	TEC + Water cooling
Thermal sink temperature range ^{*2}	40℃~120℃ (150℃ Optional)
Thermal sink heating speed	>20℃/min
Thermal sink cooling speed	>20℃/min
Thermal sink temperature accuracy	0.1℃
Thermal sink temperature resolution	0.01℃
Thermal sink temperature stability (no-load)	±0.5℃
Thermal sink temperature uniformity (no load)	±1℃ for 40℃~100℃ ±1.5℃ for 100℃~120℃
Overheating protection	Hardware over heating protection Temperature >150℃
Driving source type	Four-quadrant



Item	Specification
Driving current range	-1000~1000mA
Driving current accuracy*3	0.3% F.S.
Driving current stability*3	0.1% F.S.
Current measurement resolution	0.07mA
Driving voltage range	-7.5~7.5V
Driving voltage accuracy	0.3% F.S.
Driving voltage stability	0.15% F.S.
Voltage measurement resolution	1.25mV
Voltage measure accuracy	±50mV
PD driving voltage	0-2.5V
PD measurement range	0-100mW (>13mW need attenuator)
PD measurement accuracy	±50 μA
PD measurement resolution	0.4 μA
PD measurement stability	±5 μA
Maximum forward power	240W (96A)
Maximum reverse power	240W (60A)
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℃ 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.