

Burn-in, HTOL and ELFR test service

For the qualification of IC's, High Temperature Operating Life (HTOL) tests are executed to accelerate tests and to confirm and determine the product lifetime. Early Life Failure Rate (ELFR) tests are HTOL tests executed within 168 hrs to determine the ELFR failure rate (first part of the bath tub curve). Burn-in tests are performed on production of automotive devices, where all devices get a burn-in of 48hrs or less to confirm that no early failures are shipped to customer.

The hardware for HTOL, ELFR and BI are the same.



BURN-IN SYSTEMS

- High airflow speed for uniform heat distribution
- Temperatures up to 175°C
- Build-in rack system with backplane for signal feed through with capacity for 480 boards
- Specification: JEDEC/AEC-Q100/MIL
- Central Monitoring System (CMS)



BURN-IN BOARDS

- In-house design capability and know-how
- Project management of board manufacturing and assembly
- Standardized board size of 127 x 520 mm
- Use of High Tg FR-4 epoxy for $T \leq 150^\circ$
- Use of high quality polyimide multi-layer boards for extended lifetime



BURN-IN SYSTEM SETUP

- 16 racks \times 10 BIBs/rack = 160 BIBs/chamber
- Each BIB has its own 44-pin edge-connector to cold zone
- 1 backplane per rack for max 10 BIBs and max 5 drivers
- Driver: BIB ratio 1:10
- Driver: BIB ratio 1:1 (max 5 BIB per rack)

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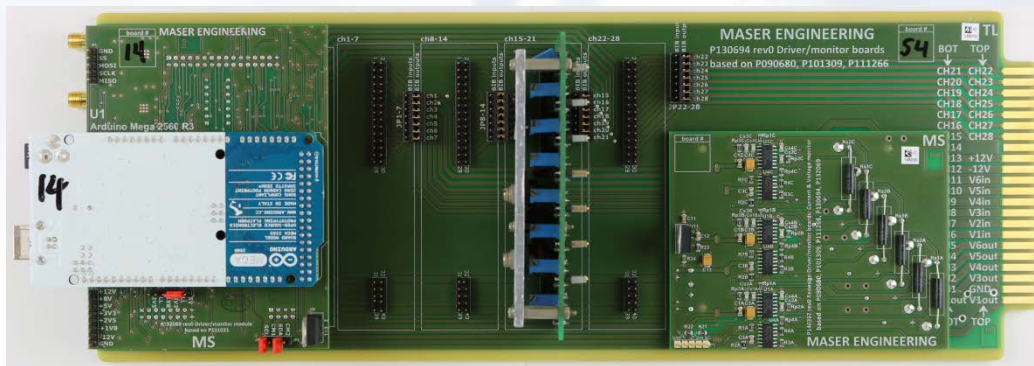


BASIC DRIVER CAPABILITIES

- Standard driver 28 channels, 64k vector depth, 4 MHz continuously
- Spectrum driver 28 channels, 150M vector depth, 15MHz
- Sophisticated in-house developed pattern conversion software
- Logic analyser for signal verification

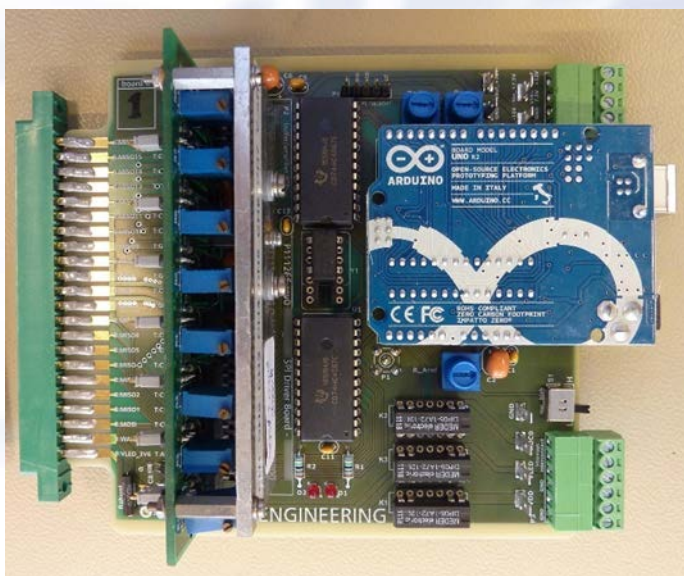
ARDUINO DRIVER – MONITORING

- 3 independent UART channels, each multiplexed $\times 4$
- 2 crystal oscillators, fed through a differential buffer
- SPI communication with independent MISO and SS, both multiplexed $\times 13$
- I2C communication with shared SCL (clock) and SDA (data)
- 8 \times GPIO or 8 \times PWM
- 2 \times analog input, both multiplexed $\times 4$
- Logic level translation, Arduino 5V voltage 5.0V, 3.3V, 2.5V or 1.8V



FREQUENCY RANGE

- Frequency ≤ 10 MHz
 - External arbitrary wave generator can be distributed to each socket position, which is the easiest solution
- Frequency ≤ 500 MHz
 - Local on-board (i.e. high temperature) crystal per socket position, OR:
 - On-board (i.e. high temperature) differential fan-out buffers per lifestest board and external wave generator
 - Successful projects at 500 MHz (LVDS)
- Frequency > 500 MHz
 - On chip burn-in mode
 - To be designed during chip development



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