BR1776/D, Rev.2

- The industry's first true Mechatronic SmartConnector™ product
- Allows easy integration of new functionality and exchange of options
- Small and easy to mount
- Drastically simplifies your cable harness
- Motorola open standards provide flexibility in choice of components and protocols

Digital DNA™ from Motorola

As the number of electronics systems in automobiles continues to grow, so does the complexity, space, weight and cost of the circuitry.

SmartConnector Mechatronic products counter this trend by offering a very high level of integration, reliability, interchangeability, flexibility and cost effectiveness.

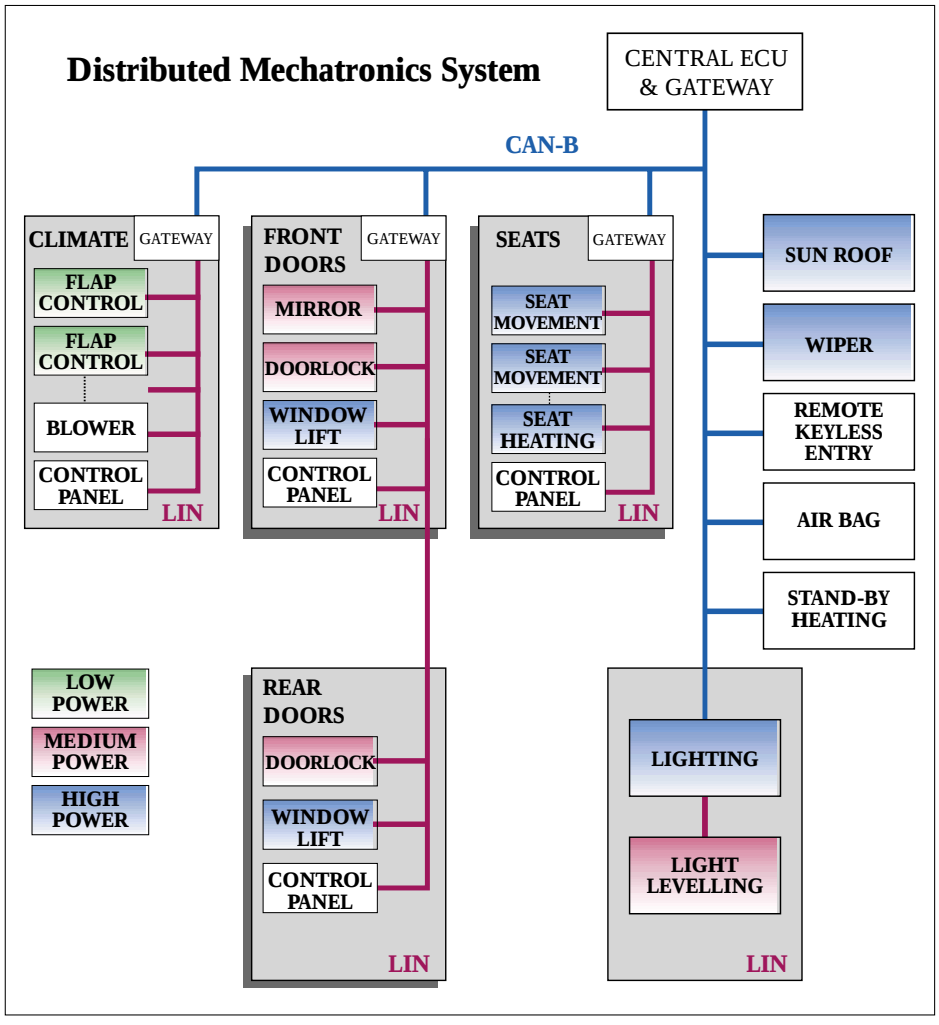
SmartConnector Mechatronics products enable a Plug&Play system configuration and last minute option changes in the assembly line.

SmartConnector Mechatronic systems integrate the electronics for control, monitoring and actuating inside the form factor of an automotive connector.

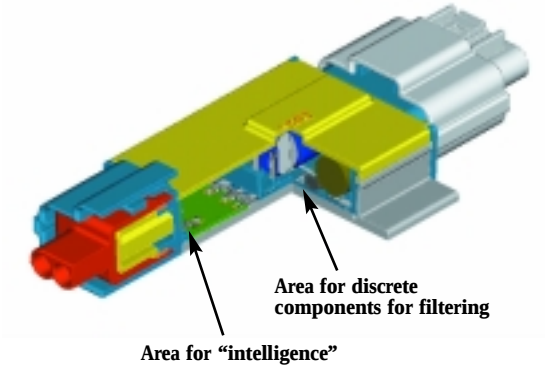
Distributed intelligence and data multiplexing

SmartConnector Mechatronics combines the concepts of distributed intelligence and data multiplexing to create an automotive system in a minimum amount of space.

Distributed intelligence refers to the use of intelligent nodes, which are networked and communicate through a serial data bus while performing and controlling independent local functions. In a distributed system, diagnostics for the local components are also handled locally by the distributed control module, and the results are reported to a central unit via the data bus.



High Power Products:
Current ranges 5…..45 A

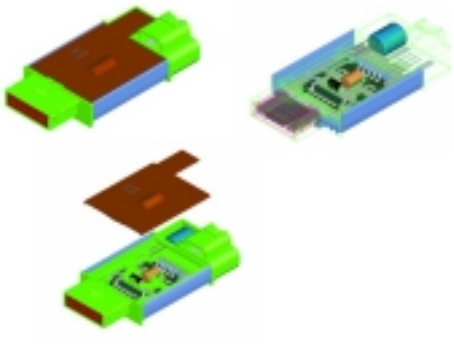


Example dimensions: (l x w x h)
80 x 40 x 20 mm

Applications:
- window lift
- seat
- wiper
- pump
- ...

MAIN FEATURES
- Dual Push-Pull Output
- Multiple Hall Sensor Inputs
- Programmable Current Limitation (20kHz PWM)
- Operating Supply Voltage 9V to 18V
- Over-temperature Protection
- Over/Under-voltage Protection
- Over-current Protection
- Current Recopy Function
- HC05/08 Core
- LIN Compliant Single Wire Bus-Interface (ISO 9141)
- 16K (EEP) ROM Memory
- 448 Bytes RAM
- 256 Bytes Data EEPROM
- 16-Bit 2-channel Timer
- Trimmable on-chip RC Oscillator

Medium Power Products:
Current ranges 0.5……5 A



Example dimensions: (l x w x h)
50 x 30 x 15 mm

Applications:
- light leveller
- mirror
- seat
- door lock
- heating
- pump
- ...

MAIN FEATURES
- Multiple Push-Pull Outputs
- Multiple High Side Switches
- Multiple Hall Sensor Inputs
- Multiple Analog Inputs
- Programmable Current Limitation (“PWM”)
- Operating Supply Voltage 9V to 18V
- Over-temperature Protection
- Over/Under-voltage Protection
- Over-current Protection
- Current Recopy Function
- HC08 Core
- LIN Compliant Single Wire Bus-Interface (ISO 9141)
- Back EMF Detection
- 4K ROM Memory
- 448 Bytes RAM
- 256 Bytes Data EEPROM
- 16-Bit 2-channel Timer
- Trimmable on-chip RC Oscillator

Low Power Products:
Current ranges < 0.5 A

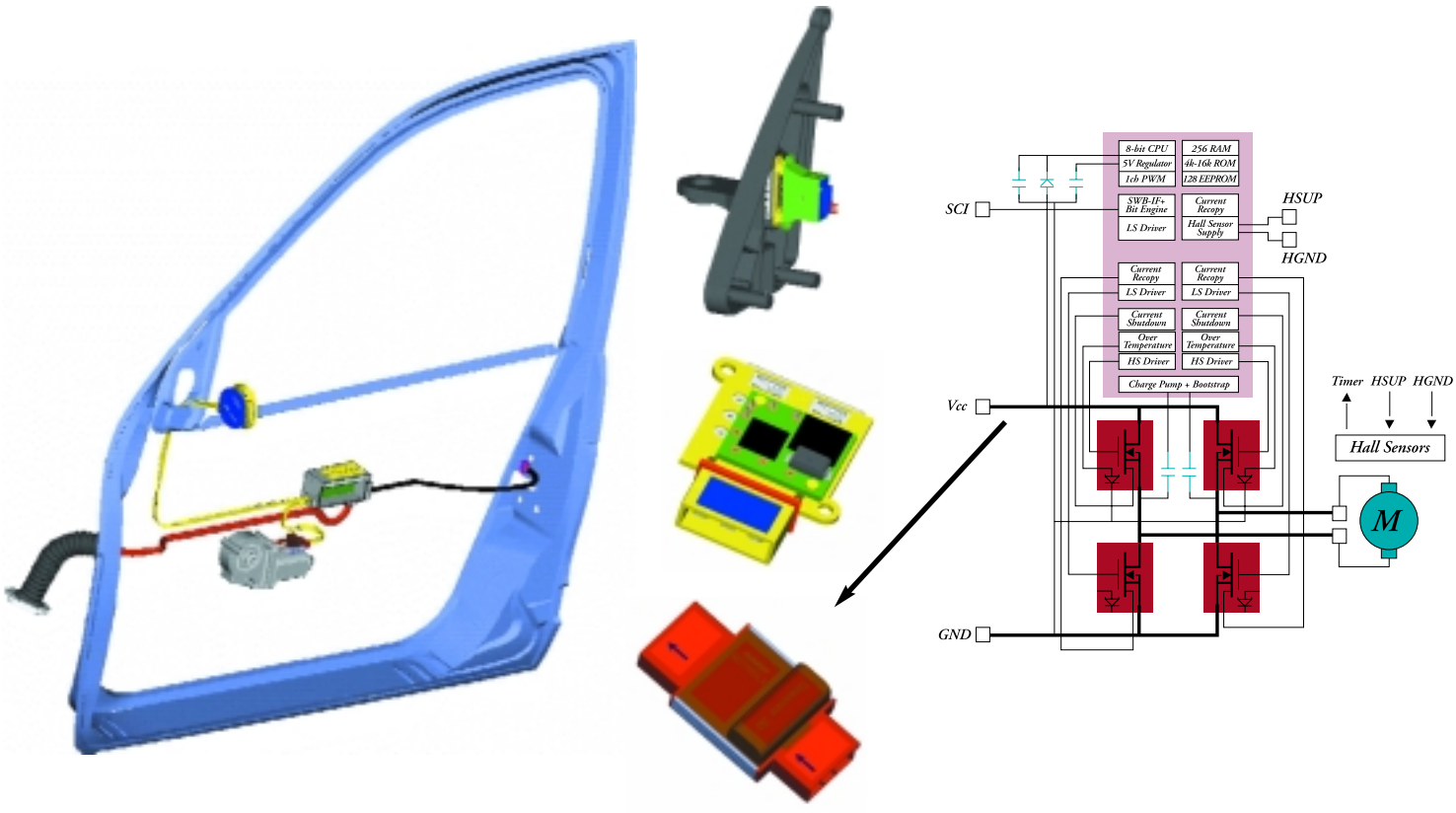
Example dimensions: (l x w x h)
18 x 16 x 6 mm

Applications:
- light leveller
- climate control
- stepper motor
- ...

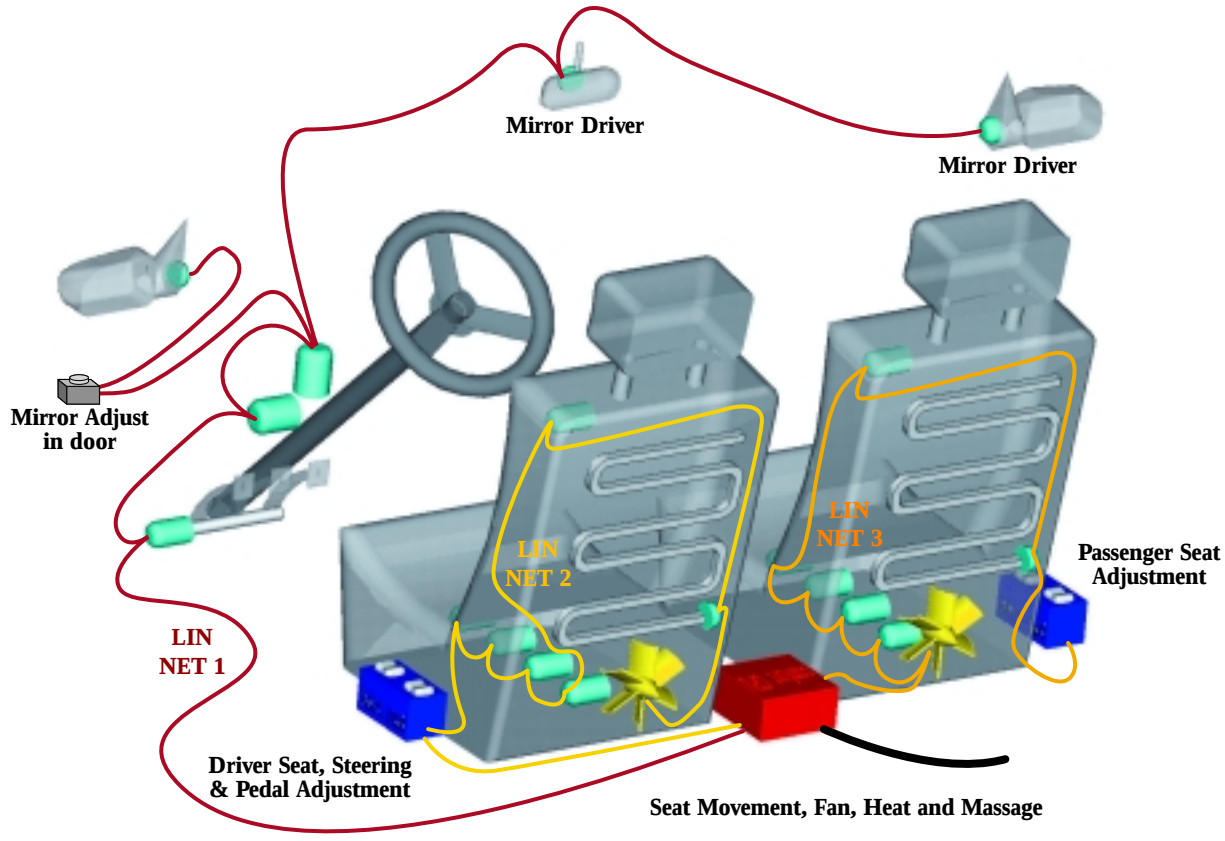
MAIN FEATURES
- Quadruple Push-Pull outputs
- 1K ROM or EEPROM
- Low Voltage Reset
- Single Wire Bus-Interface (ISO 9141)
- Constant Current Feature (“PWM”)
- Stall Detection Support
- 16-bit Timer
- Over-temperature Protection
- Over/Under-voltage Protection
- HC05 Core
- Trimmable on-chip RC Oscillator
- Back EMF Detection

Distributed Mechatronics Application Examples

Door System



Seat System



The Benefits of Mechatronics:

System Cost Reduction:
Systems now can be built using fewer components and connected with less and simpler wiring. This decreases complexity, weight and space and allows for faster assembly. The cost of adding options decreases due to the flexibility with which they can be added in the latest stages of the assembly line.

Increased Reliability:
The small packages have no wirebonds and only few solder connections. The total amount of interconnections is kept to a minimum and are fully integrated with the connector. The high level of integration of the silicon and the proven flip-chip technology allow for using only a minimum amount of components in a minimum amount of assembly steps. Together this brings the reliability far beyond anything achievable with relays or circuit boards.

Increased Environmental Compatibility
In "sleep" mode, the modules have an extremely low current consumption and in "active" mode the modules can be easily controlled for flexible smart power management. As all switching, including PWM, can be done directly near the load, the amount of EMC can be minimized, improving compatibility with other devices.

Increased Functionality:
Voltage, current and temperature are being measured locally by the silicon, which also can process data from a number of local sensors. The local microcontroller uses this data, possibly in combination with data provided by the network bus, to optimize control and diagnostics. This allows features like soft start/stop, obstruction detection, dimming or blinking lights at various frequencies, ripple-counting for movement detection, open/short circuit detection, degradation detection, etc .....

Increased Flexibility:
The modules are Plug&Play, adaptable to multiple standard devices and can be used in the autoconfiguration of the total body system. The modularity allows differentiation across vehicle platforms and allows options to be added in the very last minutes of assembly.

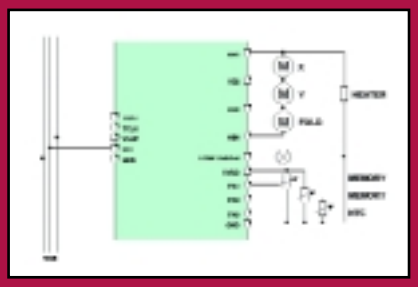
Discover the future on-line

To learn more about SmartConnector Mechatronics solutions using DigitalDNA™ from Motorola, visit the Motorola Transportation Systems Group at www.mot-sps.com/automotive; or call 1-800-441-2447 to speak with a Motorola representative.

EXAMPLE APPLICATION DIAGRAMS

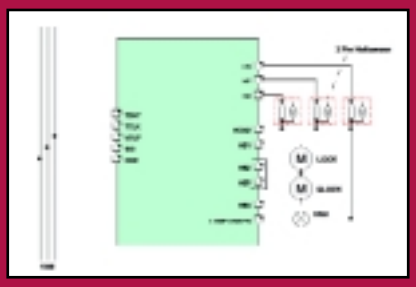
Medium Power Products

MIRROR



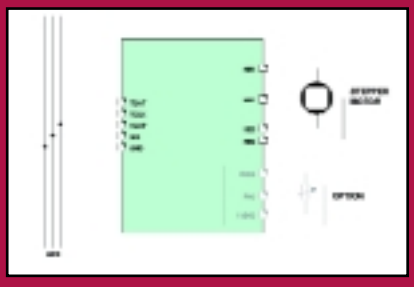
X / Y MOVEMENT
FOLD
MIRROR HEATING
TEMPERATURE MEASUREMENT
MEMORY FUNCTION
LAMP DRIVER

DOORLOCK



LOCK / SUPERLOCK
HALLSENSOR INPUTS
LAMP DRIVER

LIGHT LEVELLER / CLIMATE CONTROL



STEPPERMOTOR DRIVER
POSITION SENSE

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