Microchip MCP4725 :: Digital-to-Analog (DAC) Converter

The Microchip MCP4725 is a single-channel buffered 12-bit DAC with voltage output and non-volatile memory (EEPROM). It can drive loads up to 1000 pF in parallel with 5 kΩ load resistance and can be configured to normal or low power mode by setting the configuration register bits. The device uses a two-wire I2C-compatible serial interface and operates with a single power supply of 2.7 V to 5.5 V.

User can store bits of the configuration register (2 bits) and DAC input data (12 bits) in the non-volatile EEPROM memory (14 bits). When the device is switched on for the first time, it loads the DAC code from the EEPROM and outputs the analog output according to the programmed settings. The user can reprogram the EEPROM or the DAC register at any time.

The software is architected with long-term maintainability, portability across MCU platforms, and adherence to high software quality standards as core design principles.

✅ Layered architecture with clear HAL abstraction
✅ Conforms to ISO C99 standard
✅ Portable across multiple MCU platforms
✅ Supports both RTOS and bare-metal environments
✅ CMake build system for scalable integration
✅ Seamless integration with GCC toolchain
✅ Statically analyzed for MISRA, CERT, and CWE compliance
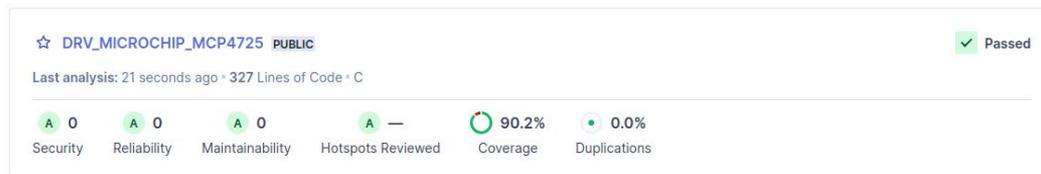
Initialization Interface

```
mcp4725_result_t mcp4725_init( mcp4725_handle_t*, ... )
```

Configuration Interface

```
mcp4725_result_t mcp4725_set_power_mode( mcp4725_handle_t*, ... )
```

Data Retrieval Interface

```
mcp4725_result_t mcp4725_read( mcp4725_handle_t*, ... )
mcp4725_result_t mcp4725_read_volt( mcp4725_handle_t*, ... )
```

Write Interface

```
mcp4725_result_t mcp4725_write( mcp4725_handle_t*, ... )
mcp4725_result_t mcp4725_write_volt( mcp4725_handle_t*, ... )
```

☆ DRV_MICROCHIP_MCP4725 **PUBLIC**   ✓ Passed

Last analysis: 21 seconds ago • **327** Lines of Code • C

| A 0 | A 0 | A 0 | A — | ◯ 90.2% | • 0.0% |
| Security | Reliability | Maintainability | Hotspots Reviewed | Coverage | Duplications |

Communication Interface:
I²C