Radiation Hardened level translating I²C, SMBUS, SPI I/O expander

As you are identified as a lead customer that has expressed interest in the APIO16 radiation hardened I/O expander, we are providing an evaluation kit to facilitate early evaluation/adoption of the device in your systems. The parts sampled are internal engineering samples as indicated by the 'X' at the end of the part # marking (see Figure 1). These devices have known specification deficiencies and have not been subject to the entire production and qualification process.

Figure 1. Internal Engineering Device Marking

The known deficiencies listed below will be corrected in the production ICs.

1) Extremely sensitive to HBM ESD. An ESD design error causes devices to fail human body model (HBM) ESD strikes at very low levels. CDM ESD passes to 500V. Please use ESD precautions when handling.
   The production fix for ESD may cause a slight reduction in pin output drive strength. The expected drive strength will be reflected in the latest datasheet (revision A04 or later)

2) Read back from port pin should reflect the voltage on the pin, regardless of whether the pin is programmed to be output enabled or not. Instead, it always reads back as 0 if the port pin is programmed to be output enabled. Example pseudocode given below:

```
set P0 polarity port to default value
write(0x05, 0x00)  #set P0 polarity port to default value
write(0x06,0x00)  # set P0 configuration register to all outputs enabled.
write(0x01,0x55)  # set P0 to output pattern 0x55
read(0x00) # read P0 input register.  Expect 0x55, Actual 0x00.
```

Production release of engineering E-grade: **April-2025**
Production release of flight A-grade: **September-2025**

If production released samples are needed before these dates, please contact us directly. Please contact Christian Yots (cyots@apogeesemi.com) with any questions or feedback you have with the evaluation boards or the device.

For documentation, please go to:
https://apogeesemi.com/products/apio16/
Or use the QRcode below: