Product Overview

Automotive Qualified Isolated Wake for Digital Audio Bus Controllers

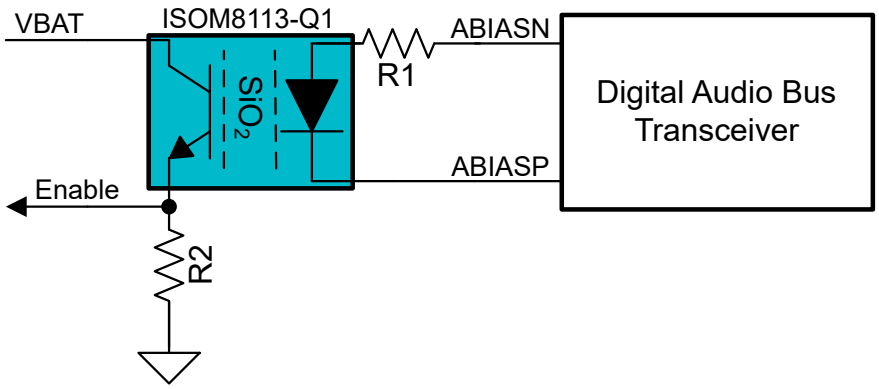

Figure 1. Isolated Wake Circuit for Automotive Digital Audio Bus Using ISOM8113-Q1

Design Considerations

- [FAQ] What is an Opto-emulator? | [FAQ] Opto-Emulator FAQ's | [FAQ] What are the benefits?
- Allows for low-cost, isolated, relay weld detection OBC systems
- Performance upgrade from traditional optocouplers; allows tight CTR performance with no LED aging.
- Introduction to Opto-Emulators
- Opto-emulators explained: Why you should upgrade your optocoupler technology
- Upgrade photoMOS, SSR and Push-Pull, Totem-Pole, or Transistor Output Optocouplers With Opto-emulators

Need additional assistance? Ask our engineers a question on the *TI E2E™ Isolation Support Forum*.

Recommended Parts

Analog Output Opto-Emulators

Catalog Part Number	Automotive Part Number	Input Type	Output Type	V_F (MAX)	CTR
ISOM8110	ISOM8110-Q1	DC Input	Open-collector / transistor output	1.4V	100% to 155%
ISOM8111	ISOM8111-Q1			1.4V	150% to 230%
ISOM8112	ISOM8112-Q1			1.4V	255% to 380%
ISOM8113	ISOM8113-Q1			1.4V	375% to 560%

To find a pin-to-pin alternative to the optocouplers in your design, search TI's *cross reference tool*.
For more opto-emulators, browse through the *online parametric tool*.

Resistor selection

R1 limits the amount of current flowing into the opto-emulator input and outputs a wake-up signal when the Digital Audio Bias Negative and Positive lines have an active signal (ABIASN and ABIASP). $I_{F\ min}$ is 0.7mA, therefore the input current can be 1mA to allow for input sufficient margin. Therefore, R1 needs to satisfy:

$$R_1 < ((V_{ABIASP}\text{-}V_{ABIASN}) - V_F) \div I_{F\ min} \quad (1)$$

R2 limits the maximum output current $I_{C\ max}$ and is set according to the current and voltage needed at enable. For more information, please see [FAQ] ISOM8110: How do I design ISOM8110 to have the best timing performance for switching applications?

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Last updated 10/2025