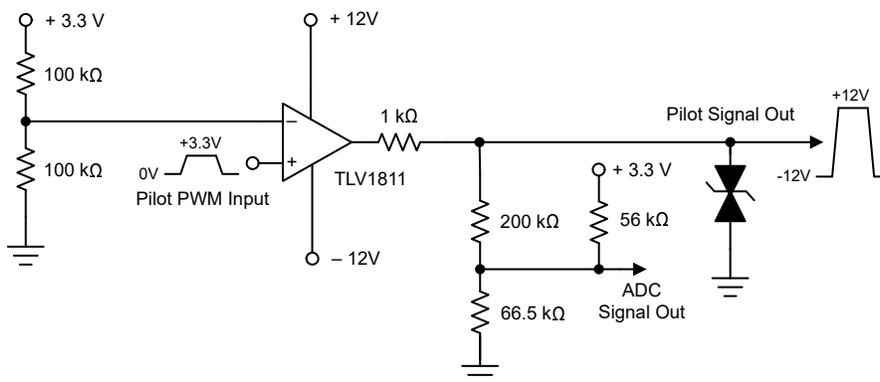


Implementing SAE J1772 Pilot Wire System in EV Charging Station With Comparators



Concept Circuit for Pilot Signal Generator

See more about this use case in the Reference Design [TIDA-010239 AC Level 2 Charger Platform](#).

Design Challenges

- Split supply needed to accommodate $\pm 12V$ output signal to meet SAE J1772 standard
 - 0 to +3.3V input logic to bipolar $\pm 12V$ output level translation
- Minimum of $\pm 12mA$ sinking and sourcing current
- Rise time and fall time $< 2\mu s$ per SAE J1772 Specifications

How High-Voltage Comparators benefit the system

- Wide operating voltage of up to 40V ($\pm 20V$) and rail-to-rail input
- Rise and Fall times ($< 20ns$) well exceed required specification
- Output current exceeds $\pm 12mA$ sinking and sourcing current
- Push-Pull output eliminates need for pull-up resistor for simplicity and to maintain equal rise and fall times
- Propagation Delay well below minimum requirements to maintain PWM accuracy
- Small single-channel packages minimize pilot circuit footprint
- Automotive qualified AEC-Q100 (Q1) variants available if required

Part Number	Voltage Range	Output Type	Rise and Fall Time	Supply Current	Propagation Delay	Package
TLV1811	2.4V to 40V (± 1.2 to $\pm 20V$)	Push-Pull	15ns	8 μA	450ns	SOT-23-5, SC-70-5
TLV1805	3.3V to 40V ($\pm 1.65V$ to $\pm 20V$)	Push-Pull w/ Shutdown	18ns	135 μA	250ns	SOT-23-6

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