

VIpower® M0-7 Enhanced



Protected High-Side Drivers with advanced diagnostics



Enhanced High-Side Drivers featuring extremely high current sensing precision and low battery voltage operation

ST's M0-7 "Enhanced" (M0-7E) High-Side Drivers enrich the existing M0-7 family with a line of devices featuring extremely high current sensing precision and ultra-low voltage capability during the car cold cranking phase. The M0-7E series of protected VIpower® devices have a $R_{DS(ON)}$ ranging from 10 to 100 m Ω , one to four channels, and are housed in the tiny PowerSSO-16 package with full pin-to-pin compatibility.

KEY FEATURES

- Optimized current sensing accuracy
- Compatibility with LV124 for cold cranking
- Pin-to-pin compatibility with standard M0-7 devices
- Best-in-class protection and diagnostics
- Optimized switching losses
- Improved EMI (CISPR25)

KEY APPLICATIONS

- Protected supplies for ADAS systems
- Automotive lamps
- Automotive resistive, inductive and capacitive loads

KEY BENEFITS

- Improved Current Sense Accuracy (7% at nominal current)
- Ultra-low battery voltage operation (cold cranking supply 2.85 V)
- Small power package (29 mm² PowerSSO-16)
- Power limitation with programmable latch-off – ST exclusive
- Symmetrical turn-on/off
- Very low standby current

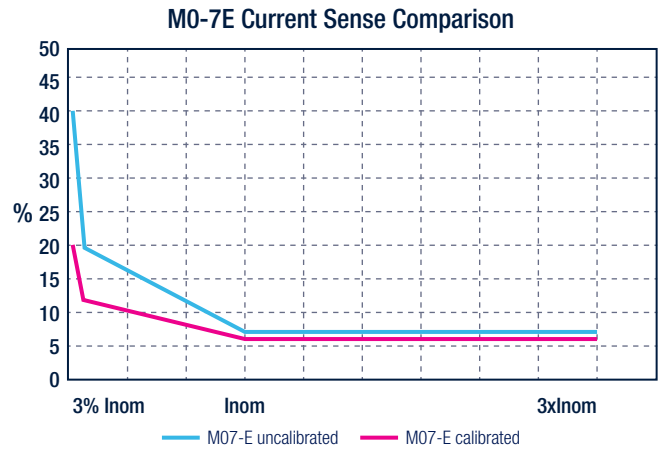
Current sensing precision

Current Sense Precision without Calibration:

- 40% at 3% of nominal current
- 7% at nominal current

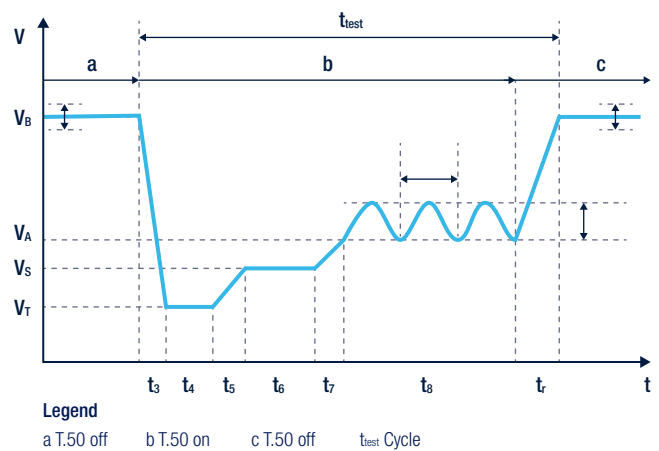
Current Sense Precision with Calibration:

- 20% at 3% of nominal current
- 6% at nominal current



Cold cranking profile

All M0-7E devices are compatible with cold cranking ‘severe test pulse’ conditions in start & stop systems. The high-side drivers are designed to be operative and protected under the cold cranking profile.



M0-7E Product family

Part number	Package	Operating range V_{cc} (V)	Max supply voltage V_{cc} max (V)	On-state resistance $R_{DS(on)}$ typ (mΩ)	Current limitation I_{lim} typ (A)	Configurable auto-restart or latch-OFF	Multisense	Reverse battery	Enhanced current sense
Single-channel devices									
VN7E010AJ	PowerSS0-16	4 - 28*	38	10.5	88	•	Current sense	External components	•
Double-channel devices									
VND7E025AJ	PowerSS0-16	4 - 28*	38	27	61	•	Current sense	External components	•
VND7E040AJ	PowerSS0-16	4 - 28*	38	38	38	•	Current sense	External components	•
VND7E050AJ	PowerSS0-16	4 - 28*	38	50	40	•	Current sense	External components	•
Quad-channel devices									
VNQ7E100AJ	PowerSS0-16	4 - 28*	38	100	15	•	Current sense	External components	•

Note: * Extended operating range down to 2.85 V for deep cold cranking applications (compliant with LV124, revision 2013)

