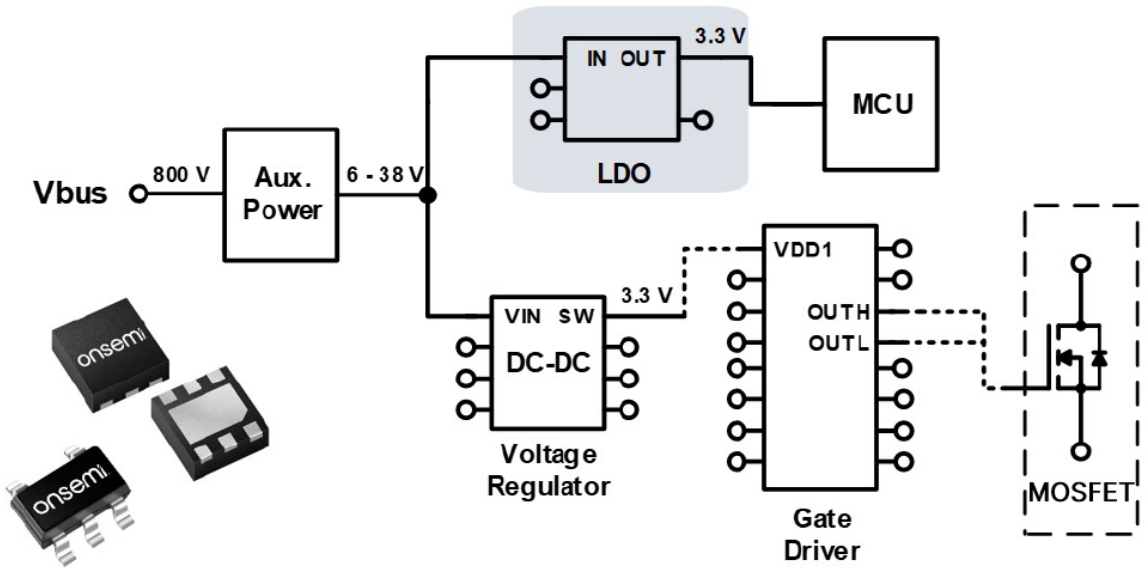
Industrial LDO Selector Guide

onsemi™

LDO is a type of linear regulator that has a lower dropout voltage. The dropout voltage is the minimum voltage required across the regulator for it to be able to maintain regulation. The desired output voltage plus the dropout voltage equals the minimum required input voltage. onsemi's wide portfolio of LDO products features high performance devices. They are suitable for battery-powered applications due to their wide input voltage ranges, high PSRR (power supply rejection rate), low quiescent current, high efficiency and fast transient response. Wide input (V_{IN}) and output (V_{OUT}) voltage ranges allow for higher flexibility in setting up the power tree. Quiescent current (Iq) is the current that flows into a system in standby mode. The lower quiescent current has a positive effect on the battery life. Fast load transient response limits excessive voltage dips and overshoots.

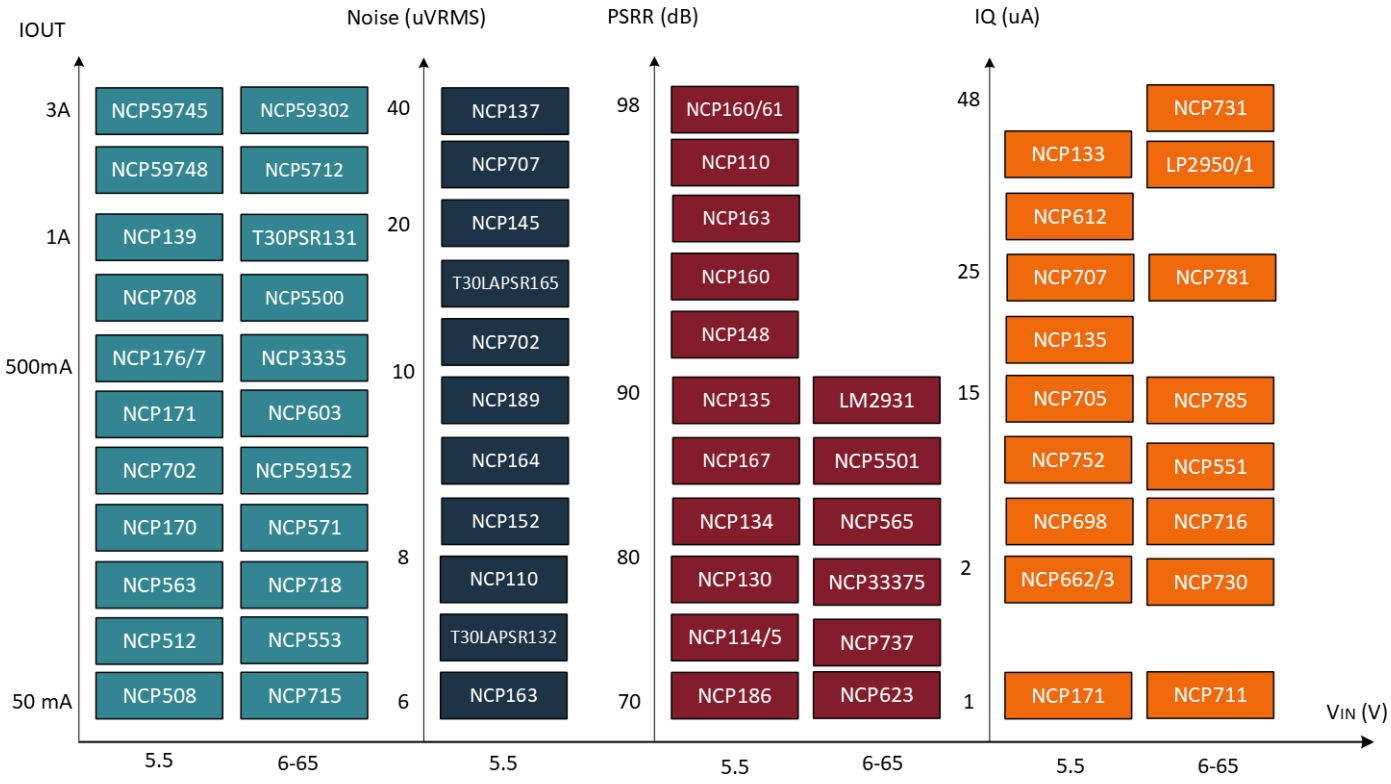


- **Dropout Voltage:** Minimum difference between input and output for proper regulation.
- **Quiescent Current IQ (µA):** Current consumed by the LDO itself when not supplying load.
- **Load Regulation:** Ability to maintain output voltage under varying load.
- **Line Regulation:** Ability to maintain output voltage under varying input.
- **PSRR–Power Supply Rejection Ratio (dB):** Ability to filter out input voltage ripple.
- **Output Noise:** Internal noise generated by the LDO.

Voltage Regulators (VRegs)

onsemi offers a comprehensive portfolio of linear voltage regulators that span both positive and negative output ranges, making them suitable for a wide variety of power management applications. For negative voltage regulation, the LM337 series provides adjustable outputs from −1.2 V to −37 V and can supply over 1.5 A of current. These regulators are designed with internal current limiting, thermal shutdown, and safe-area compensation, ensuring robust performance and protection against overloads. On the positive side, the LM317M series delivers adjustable output voltages ranging from +1.2 V to +37 V with a typical output current of up to 500 mA. Like their negative counterparts, these regulators feature simple configuration using just two external resistors and include built-in safety mechanisms such as thermal protection and current limiting. Together, onsemi voltage regulators cover a broad spectrum from −37 V to +37 V, offering flexible and reliable solutions for both single-rail and dual-rail power systems.

LDO Quick Reference



Click for a complete list of Industrial LDOs

DDR Sink/Source Voltage Regulators

Specialized power management devices designed to provide precise termination voltages for DDR memory systems, including DDR2, DDR3, DDR3L, and DDR4. These regulators feature fast transient response, remote sensing capabilities, and integrated protection mechanisms like under-voltage lockout (UVLO), over-current protection, and thermal shutdown. They are optimized for low input voltage and low-noise environments, making them ideal for compact systems such as notebooks, desktops, servers, and networking equipment. Additionally, they support dynamic voltage scaling and power state transitions (e.g., suspend-to-RAM or disk), which are critical for energy-efficient memory management in modern computing platforms.

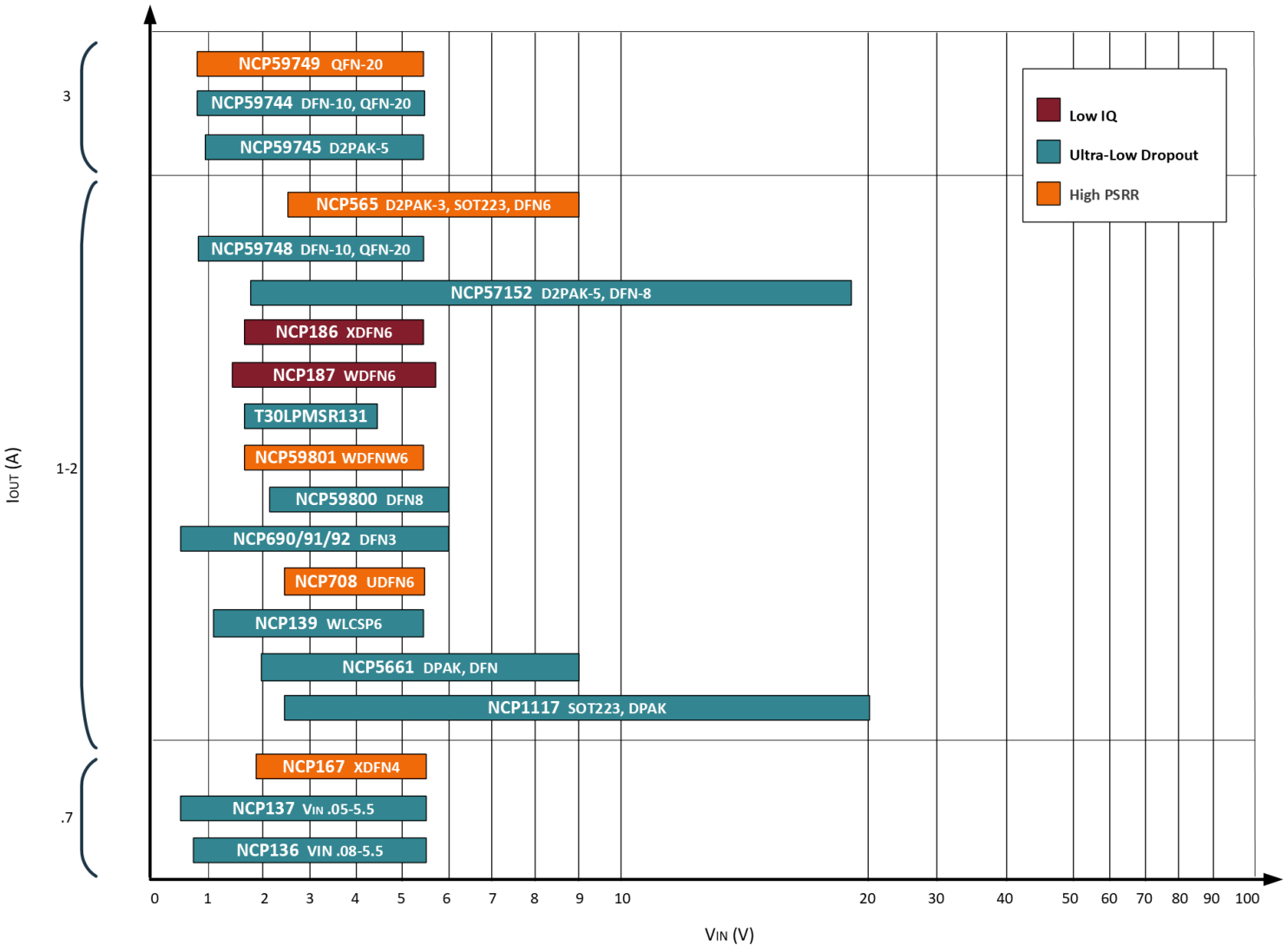
Applications include:

- VTT termination for DDR memory buses
- Graphics processor cores
- Low-power chipsets
- Enterprise servers and data centers
- Telecom and base station equipment

DDR Sink/Source Voltage Regulators

Device	I_{OUT} (A)	PV_{CC} Range (V)	Package Type	Applications
NCP51200	±3A	1.1 to 3.5	DFN10, Wettable Flank DFN	DDR, DDR-2, DDR-3, LPDDR-3, DDR-4, LPDDR-4
NCP51400	±3A	1.1 to 3.5	DFN10, Wettable Flank DFN	DDR, DDR-2, DDR-3, LPDDR-3, DDR-4, LPDDR-4
NCP51401	±3A	1.1 to 3.5	DFN10	DDR, DDR-2, DDR-3, LPDDR-3, DDR-4, LPDDR-4
NCP51402	±3A	1.1 to 3.5	DFN10	DDR, DDR-2, DDR-3, LPDDR-3, DDR-4, LPDDR-4
NCP51403	±3A	1.1 to 3.5	DFN10	DDR, DDR-2, DDR-3, LPDDR-3, DDR-4, LPDDR-4
NCP51510	±3A	1.1 to 3.6	DFN10, Wettable Flank DFN	DDR, DDR-2, DDR-3, LPDDR-3, DDR-4, LPDDR-4

Industrial Low Dropout Regulators



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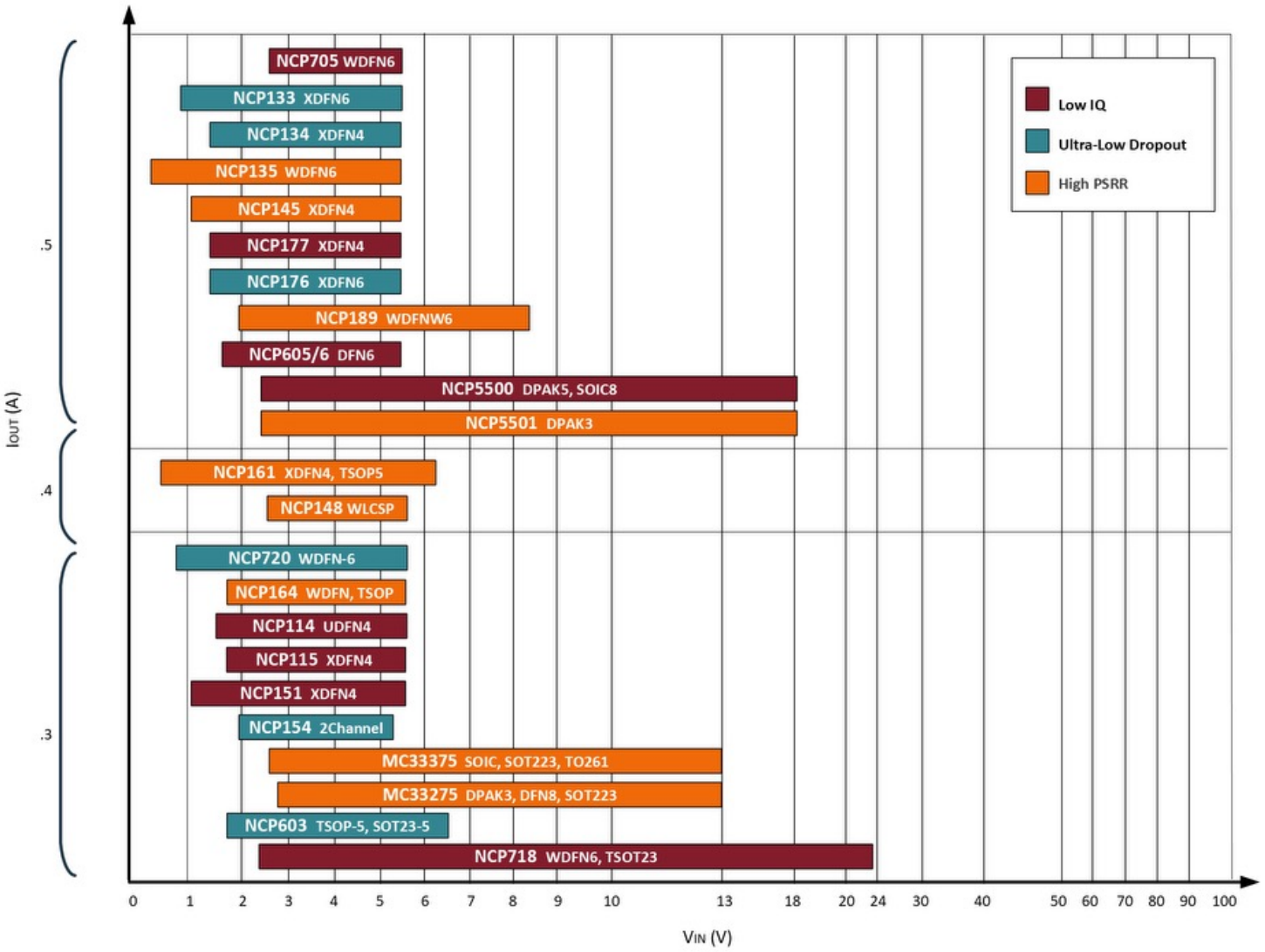
Industrial Low Dropout Regulators (continued)



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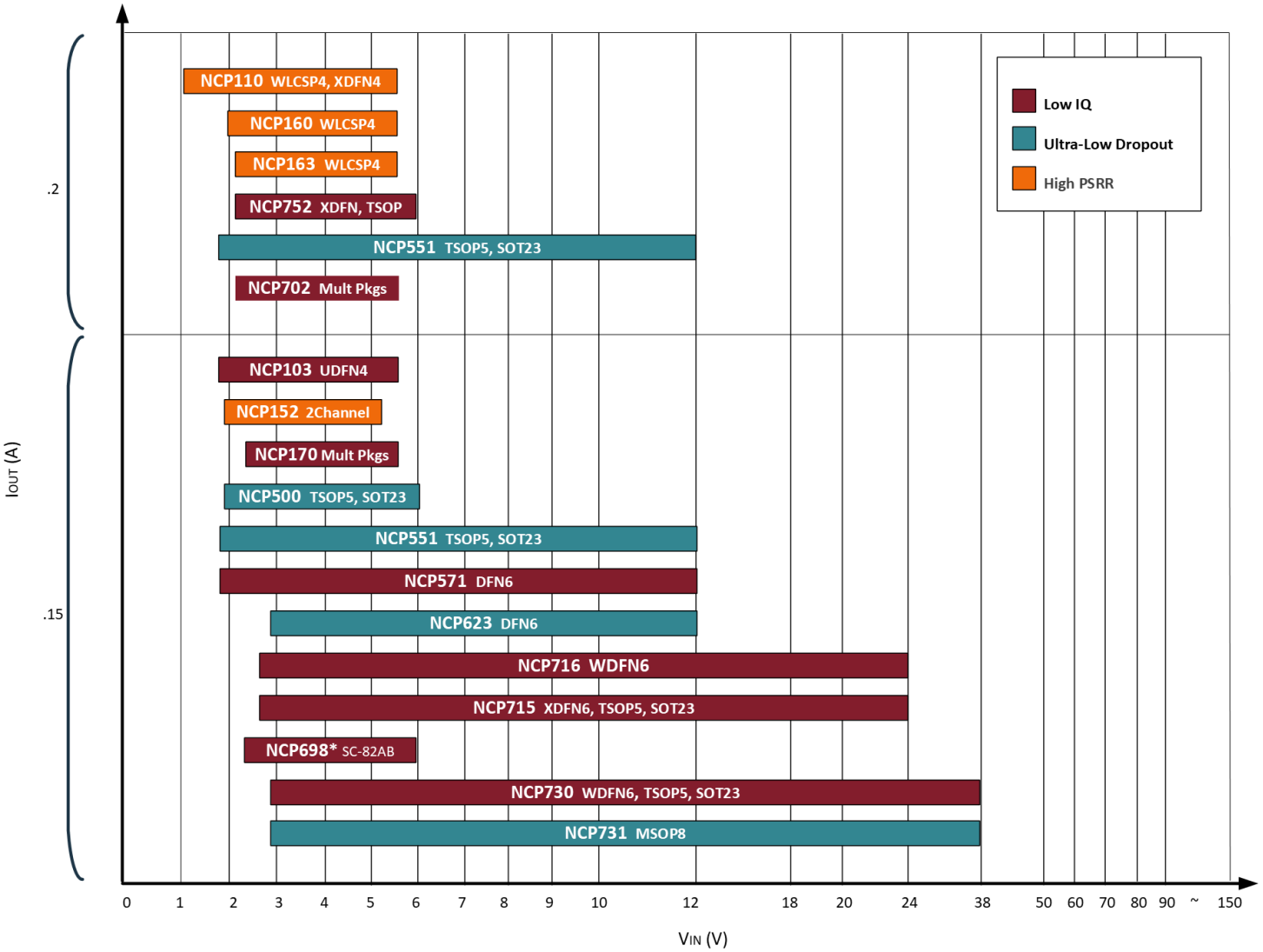
Industrial Low Dropout Regulators (continued)



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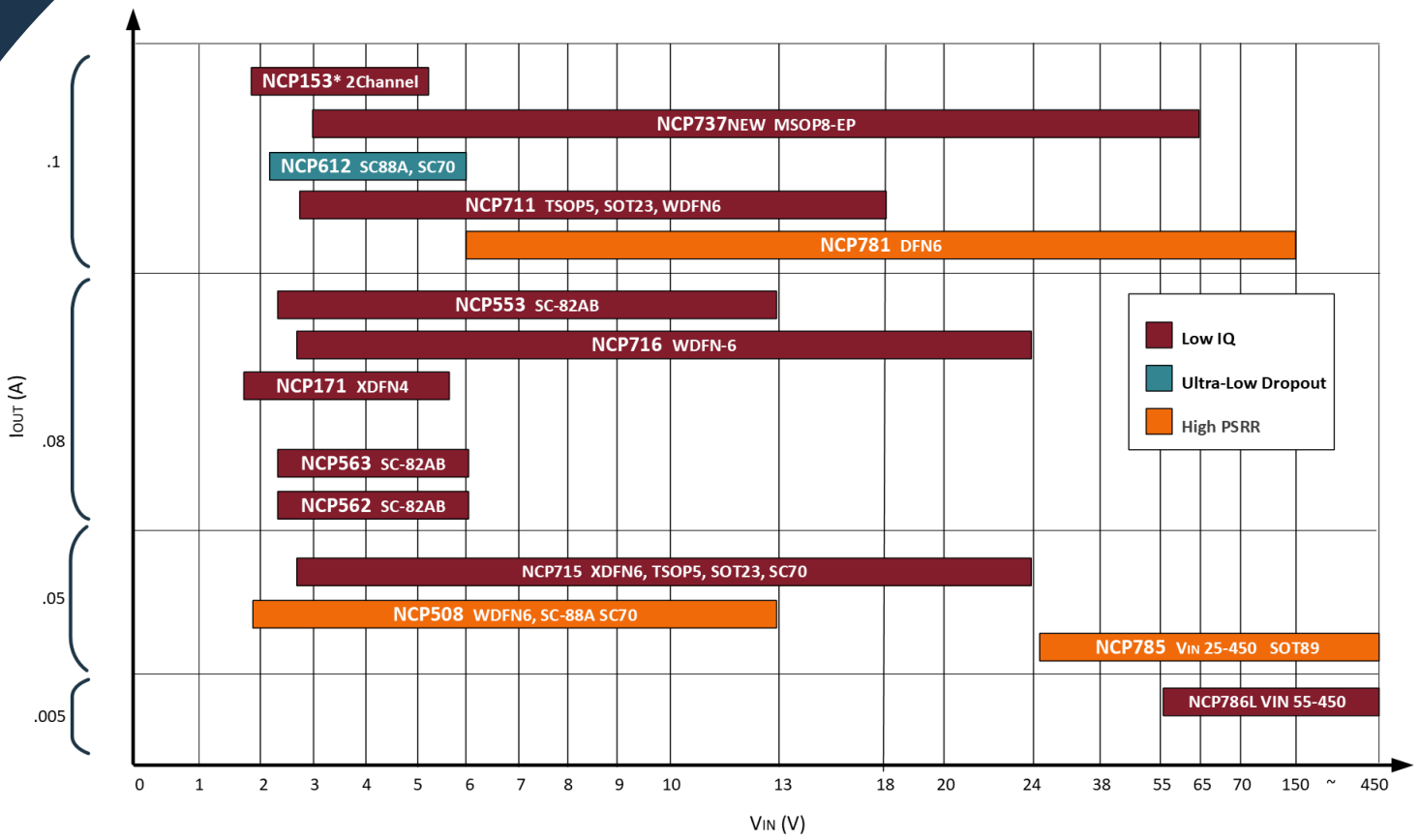
Industrial Low Dropout Regulators (continued)



Click for a complete list of Industrial LDOs

Popular Package Types

DFN-3 

DFNW-8 

DFN-10 

D2PAK-3 

D2PAK-5 

DPAK-3 

MSOP-8 

QFN-20 

SC-70 

SC88-A 

SOIC-8 

SOT-23 

SOT-223 (TO-261) 

TSOP-5 

TSOT-23 

WDFNW-6 

UDFN-6 

WDFN-6 

XDFN-4 

Additional Resources

- Image Sensor Power Tree
- FPGA Power Tree
- WebDesigner+

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