



New Product Announcement

AP74701Q

Ideal Diode Controller with V_{DS} Clamp Removes the Need for External TVS in Automotive RVP Circuits

The automotive-compliant* AP74701Q provides a simple, cost effective, and fast response solution for automotive reverse-voltage protection (RVP) circuits without the need for an external TVS diode.

With its wide 3.2V to 65V operating voltage range, coupled with a -33V reverse voltage clamp, the device provides a small footprint solution to both 12V and 24V battery systems—including enhanced cold crank conditions.

The AP74701Q ideal diode controller actively drives an external N-channel MOSFET to achieve a 20mV voltage drop, thereby providing a highly efficient reverse-voltage-protection solution for automotive systems.

Its optimized regulation scheme ensures immediate reverse current blocking ($<0.75\mu s$), meeting stringent output voltage holdup requirements during transient events like ISO 7637 pulse testing.

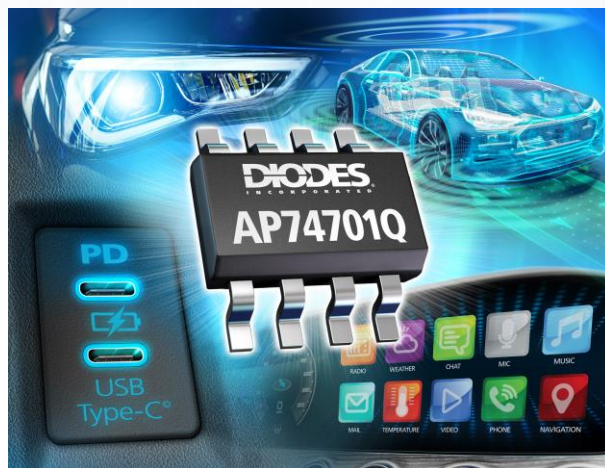
The AP74701Q has a low 1 μA shutdown current, operates across the -40°C to +125°C ambient temperature range, and is available in the SOT28 package.

*Automotive-compliant - AEC qualified, manufactured in facilities certified to IATF 16949, supporting PPAP documents.

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The DIODES Advantage

The AP74701Q's V_{DS} clamp reduces BOM cost in automotive RVP circuits by meeting ISO 7637 without additional TVS.

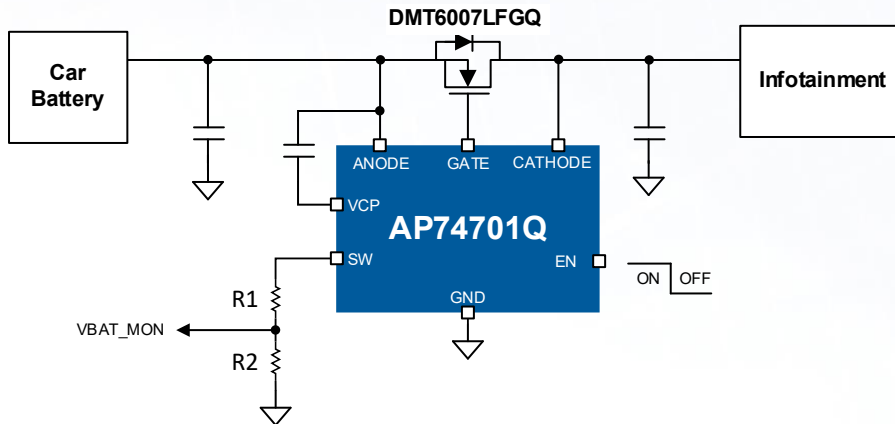
- **Wide 3.2V to 65V Input Voltage Range with a -33V Reverse Voltage Withstand**
Operates across both the 12V and 24V battery range including load dumps and cold cranking
- **Drives External N-MOSFET**
Provides cost-performance optimization based on load current/temperature range with improved reverse voltage protection performance
- **20mV ANODE to CATHODE Forward Voltage Drop Control**
Reduces power loss and temperature rise in RVP circuits
- **Low Leakage SW Pin**
Enables a simple battery voltage monitoring solution
- **AEC-Q100 Grade 1 Qualified with 150°C Maximum Junction Temperature**
Supports -40°C to +125°C ambient temperature range

Applications

Automotive reverse voltage protection in:

- Infotainment systems
- ADAS systems
- Exterior lighting
- USB charging
- Active ORing for redundant power supplies

Typical Application



Ideal Diode Controller Portfolio

Part Number	Input Voltage Range	Maximum Reverse Voltage	Typical Forward Voltage	Quiescent Current	Reverse Response Time	Operating Temperature Range	FET	Key Feature	Package
	V	V	mV	μA	μs	°C			
AP74701Q	3.2 to 65	-33	20	80	0.75	-40 to +125	External N-MOSFET	VDS Clamp	SOT28
AP74700Q	3.9 to 60	-60	20	80	0.45	-40 to +125	External N-MOSFET	±60V Operation	SO26
AP74700AQ	3.9 to 65	-60	20	80	0.45	-40 to +125	External N-MOSFET	48V Specs	SOT26, SOT28, SO-8

Ordering Information

Orderable Part Number	Compliance (Only Automotive Supports PPAP)	Package	Moisture Sensitivity	Packing	
				Quantity	Carrier
AP74701QTA8-7	Automotive	SOT28	MSL-1	3,000	7" Tape & Reel