



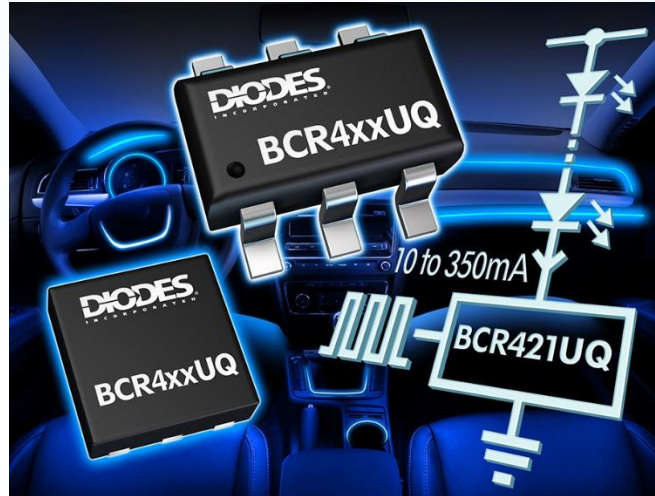
Simple Automotive LED Current Regulators

The BCR4xxUQ series constant current regulators provide a simple means of driving low current LED strings in a variety of automotive applications.

With no need for external components to run at pre-set currents the BCR4xxUQ series offers simplicity of application. However, for greater design flexibility they can be adjusted up to 100mA (BCR40xUQ), 200mA (BCR420UQ) or 350mA (BCR421UQ) using an external resistor, offering a wide range of applications from a single part family.

For dimming and fade-in/out effects, the devices can be PWM dimmed up to 25kHz.

Available in a low-profile DFN2020 (BCR42xUFDQ) package for low package height and maximum design flexibility.



The Diodes Advantage

The BCR4xxUQ series are 10 to 350mA constant current regulators in low-profile DFN2020 or industry-standard SOT26 package for automotive LED lighting

- **10 to 350mA settable current**
Simplify LED driving as current is preset to 10mA with $\pm 10\%$ regulation and the flexibility to adjust up to 200mA (BCR420UQ) and 350mA (BCR421UQ).
- **1.4 to 40V Supply Voltage**
Increased light output efficiency as only 1.4V supply required, allowing more LEDs in the string. 40V gives sufficient headroom for voltage spikes and LED short failures, whilst preserving the LED brightness and longevity.
- **Negative Temperature Coefficient**
Reduces the current with rising temp. which helps to increase the LED lifespan. Also, enables current sharing for parallel operation for $> 100\text{mA}$ LED current.
- **PWM $< 1\%$ duty cycle at 25kHz**
LED brightness can be accurately PWM controlled allowing low light dimming.
- **DFN2020 package option (BCR42xUFDQ) with $< 0.6\text{mm}$ height**
Low-profile height for thinner applications such as side emitting LED strips.

Applications

Ideal for automotive LED applications, including:

- Instrument Cluster Illumination
- Ambient Lighting
- Interior Lighting
- Turn Signals
- Rear Cluster Lighting
- Puddle & Sill Lights

New Product Announcement

BCR4xxUQ Series



BCR4xxUQ Series

| Part Number & Q-part | Configuration | Input Voltage | Fixed Current | Adjustable Current | PWM from MCU* | Package |
|----------------------|---------------|---------------|---------------|--------------------|---------------|--------------|
| BCR401UW6Q | PNP High-side | 1.4 to 40V | 10mA | 10 to 100mA | No* | SOT26 (SC74) |
| BCR402UW6Q | PNP High-side | 1.4 to 40V | 20mA | 20 to 100mA | No* | SOT26 (SC74) |
| BCR405UW6Q | PNP High-side | 1.4 to 40V | 50mA | 50 to 100mA | No* | SOT26 (SC74) |
| BCR420UW6Q | NPN Low-side | 1.4 to 40V | 10mA | 10 to 200mA | No* | SOT26 (SC74) |
| BCR421UW6Q | NPN Low-side | 1.4 to 40V | 10mA | 10 to 350mA | Yes* | SOT26 (SC74) |
| BCR420UFDQ | NPN Low-side | 1.4 to 40V | 10mA | 10 to 200mA | No* | U-DFN2020-6 |
| BCR421UFDQ | NPN Low-side | 1.4 to 40V | 10mA | 10 to 350mA | Yes* | U-DFN2020-6 |

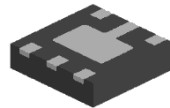
*All BCR4xxUQ can be PWM dimmed. BCR421UQ can be directly PWM switched by an MCU via the enable pin. All BCR4xxUQ are AEC-Q101 qualified, automotive compliant and available with PPAP.

SOT26 (SC-74)



Industry standard pinout and footprint.

U-DFN2020-6



Thinner package of 0.6mm height for low-profile edge lighting (side emitting).

Cross Reference

Pin-to-pin compatible in the SOT26 equivalent to Infineon SC74 and Nexperia TSOP6 (SOT457)

| Part | Diodes Inc. Orderable (OPN) | Infineon Orderable (OPN) | Nexperia (NXP) Orderable (OPN) |
|---------|-----------------------------|--------------------------|--------------------------------|
| Package | SOT26 (SC74) | SC74 | TSOP6 (SOT457) |
| BCR401U | BCR401UW6Q-7 | BCR401UE6327HTSA1 | NCR401UX |
| BCR402U | BCR402UW6Q-7 | BCR402UE6327HTSA1 | NCR402UX / NCR402UH |
| BCR405U | BCR405UW6Q-7 | BCR405UE6327HTSA1 | NCR405UX |
| BCR420U | BCR420UW6Q-7 | BCR420UE6327HTSA1 | None |
| BCR421U | BCR421UW6Q-7 | BCR421UE6327HTSA1 | None |