Tiny CMOS Camera Drives Vehicle Vision Applications

Requiring an ambient light of just 1.8 lux, Sharp’s new CMOS camera module for automotive applications reaches the high light sensitivity that is usually only found with CCD modules. With a housing volume of just 7 cc, the Sharp CMOS camera is one of the smallest modules suitable for automotive use currently available on the market worldwide. Due to its reduced dimensions, the camera module can be fit in the outer skin of vehicles, for example as a reversing camera into the frame of the rear window or into the side mirror, in order to eradicate blind spots. Not only does this feature increase the safety of cars but also of trucks and buses.

An additional advantage of the CMOS technology lies in its high recording speed, which is important, above all, for active driver assistance systems. Even at a speed of 140 km/h a vehicle moves almost 40 metres per second - a distance in which a lot can happen. The electronic shutter of the RJ642A10000Q module reaches electronic shutter speeds of up to 1/100,000 of a second. The VGA CMOS sensor captures images in the 1/3.7 format with a resolution of 656 x 492 pixels and a viewing angle of 134° horizontally and 104° vertically. The image data is emitted by the CMOS module in form of an analogue NTSC video signal, which can then be used directly by all common applications inside the vehicle (traffic sign recognition, vision aids for blind spots, lane assistant, parking aids and brake assist systems, etc.). In spite of its high efficiency, the energy requirement of the camera is extremely modest, with a consumption of less than 100 mA.

The Sharp RJ642A10000Q camera module has a robust design making it suitable for use in cars, buses and trucks. The operating temperature of the camera lies

between -40º to 85°C allowing it to work reliably in all climate zones and weather conditions. Impact tests at acceleration speeds of up to 1000 m/s² and vibration tests in the range of 10 – 55 Hz give proof of its mechanical resistance. Lastly, the housing meets the IP 67 standard and reliably protects the inside of the module from dust, dirt and humidity.

Thanks to the robustness and high protection class, the CMOS module is also very suitable for certain applications in the field of inspection and safety technology. Noteworthy examples include systems for controlling and monitoring of cavities which are difficult to access, such as water and sewer pipes or underground tanks.

Availability:

Samples of the new RJ642A10000Q CMOS camera module are now available through the sales offices of Sharp Microelectronics and distribution partners in Europe. Mass production is scheduled to begin in November 2010.

Specifications

	RJ642A10000Q
Sensor	1/3.7 CMOS
Minimal ambient light	1.8 lx
Shutter speed (electronic)	1/30 sec. – 1/100,000 sec.
Output signal	NTSC
Resolution	VGA (656 x 492 Pixel)
Supply voltage	5 – 6.5 V DC
Dimensions (h x w x d) without connection cable	19.0 x 19.0 x 19.5 mm
Temperature range	-40 to +85°C
Protection class	IP 67

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