

# Automotive Clock and Timing

## Summary

Automotive evolution is accelerating at a blistering pace. Innovative features like autonomous driving, Advanced Driver Assistance Systems (ADAS) and in-vehicle Ethernet require highly reliable timing devices with robust performance and tight stability in harsh environments. There will soon be over 100 timing devices in every new vehicle. Microchip offers the industry's most reliable and robust clock and oscillator products by leveraging the industry leading MEMS technology, cutting-edge Phase-Locked Loop (PLL) design and semiconductor packaging.



## Key Features

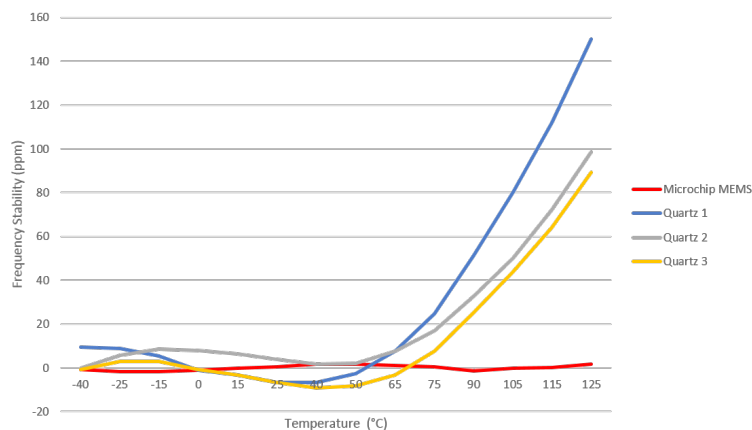
AEC-Q100 qualified, ten times lower DPPM than crystal oscillators

- Wide operation temperature range:  $-40^{\circ}\text{C}$  to  $125^{\circ}\text{C}$ , meeting Automotive Grade 1
- 500 times the shock tolerance and five times the vibration tolerance of crystal oscillators
- Smallest size:  $1.6 \times 1.2 \text{ mm}$ , saving 50% board space
- Multiple output replaces up to four crystals/oscillators

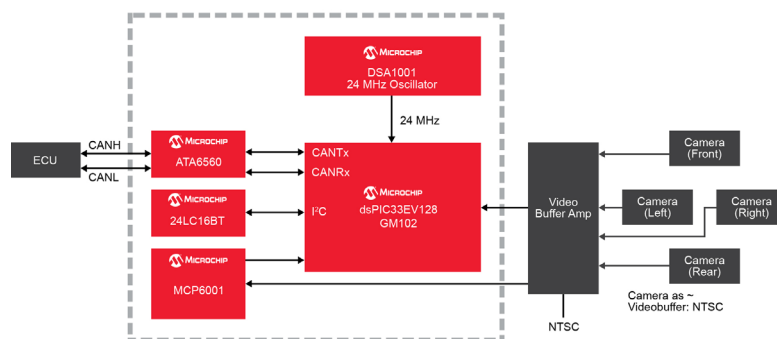
## Key Applications

- Advanced Driver Assistance Systems (ADAS)
- Light Detection and Ranging (LiDAR)
- Autonomous dDriving
- Infotainment systems
- In-vehicle Ethernet
- Engine control modules
- Instrument cluster

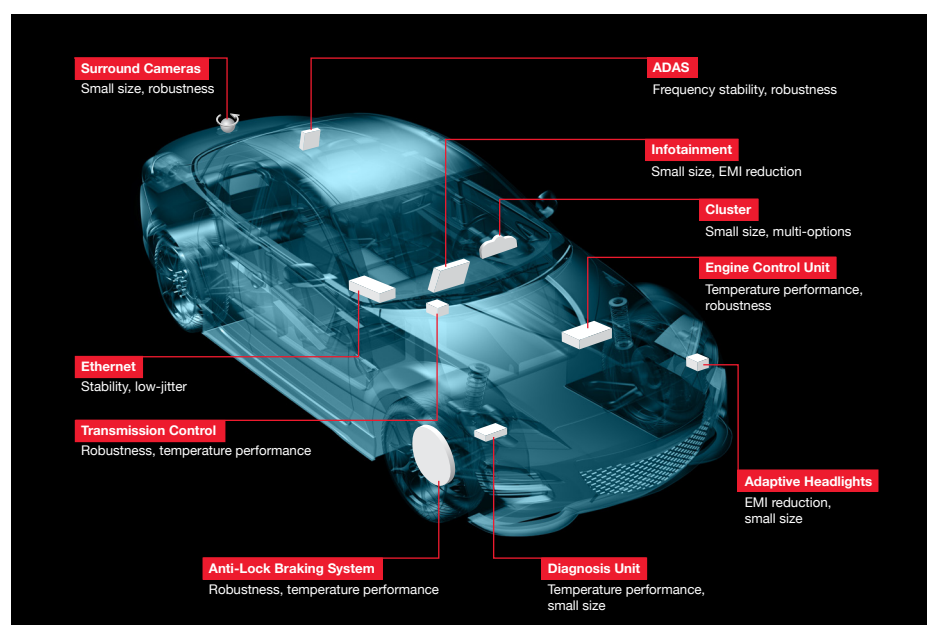
## Tight Frequency Stability Over Temperature



## Surround View Camera Block Diagram



## Automotive Timing Requirements



## Automotive Timing Products

Product	Output Frequency Min. (MHz)	Output Frequency Max (MHz)	Output	Frequency Stability (ppm)	Temperature Range (°C)	Supply Voltage (V)	Current (mA)	Period Jitter (pk-pk,ps RMS)	Control Pin Function	Output Drive Strength (pf)	Dimensions
DSA1001	1	150	LVC MOS	±20; ±25; ±50	−40 to 105	1.62–3.63	5	6	Standby	15	5.0 × 3.2 mm 3.2 × 2.5 mm 2.5 × 2.0 mm 4-pin
DSA1101	2.3	170	LVC MOS	±20; ±25; ±50	−40 to 125	2.25–3.63	21	3	Standby	15	5.0 × 3.2 mm 3.2 × 2.5 mm 2.5 × 2.0 mm 6-pin
DSA1121	2.3	170	LVC MOS	±20; ±25; ±50	−40 to 125	2.25–3.63	21	3	OE	15	
DSA1105	2.3	170	LVC MOS	±20; ±25; ±50	−40 to 125	2.25–3.63	20	3	Standby	5	
DSA1125	2.3	170	LVC MOS	±20; ±25; ±50	−40 to 125	2.25–3.63	20	3	OE	5	2.5 × 2.0 mm 6-pin
DSA2311	2.3	170	LVC MOS ×2	±20; ±25; ±50	−40 to 125	2.25–3.63	23	3	OE	15	

More package and output format options available upon request.

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