TI's proximity sensing technology

		Ultrasonic	Optical ToF	mmWave
				
Detection range		0.1 to 10 m	0.01 to 20 m	0.04 to 100+ m
Resolution		Few mm (transducer dependent)	Few mm (optics dependent)	Few mm (range dependent)
Field of view	Narrow to wide	5° to 120°	.15° to 120°	5° to 160°
TI IC current consumption	Active	72 mW to 336 mW	100 µW to 200 mW	0.5 W to 1.5 W
	Standby/sleep	2-9 mW	~80 µW	N/A
Solution/module size		Medium	Small	Large
Aesthetics		Exposure to medium for longer range	Hidden behind dark glass	Penetrates most materials (not metal)
Measuring Medium Speed		Sound	Light	Light
Single sensor system cost (US$)		$1.00 - $3.00	$1.50 - $4.00	$18.00 - $26.00
Reliable environments	Sunny	★★★★★	★★★★★	★★★★★
	Smoke/gas	★★★★☆	★☆☆☆☆	★★★★★
	Pressure	★★★★☆	★★★★★	★★★★★
	High temperature	★★★★☆	★★★★★	★★★★★
Target characteristics	Transparent surface	★★★★★	☆☆☆☆☆	★★★★★
	Liquid/fluid	★★★★☆	★★★☆☆	★★★★★
	Irregular shape	★★★★★	★★★★★	★★★★☆
	Light	★★★★★	★★★★★	★★★★★
	Dark	★★★★★	★★★☆☆	★★★★★
	Soft	★☆☆☆☆	★★★★★	★★★☆☆
Key differentiation		• Lowest cost proximity and obstruction detection solution • Effectively detect solid and transparent glass surfaces • Able to detect objects in a smoke/gas-filled environment	• Target localization (up to 3 zones of detection) • Precise long-range distance measurements • External optics enable a highly customizable solution	• Provides range, velocity and angle data • Can penetrate non-metal materials • Intelligent object differentiation • Not effected by environmental conditions

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