

Contributing to smaller, lighter devices through ultra-miniature components



## ROHM's Ultra-Compact Ultra-Thin Product Lineup

### The world's smallest components - only from ROHM

**World's Smallest\***  
**R** Chip Resistors  
SMR002/SMR003 Series  
0.25×0.125 (mm) 0.3×0.15 (mm)  
RASMID

**World's Smallest\***  
**IC** CMOS LD0s BUxxJA2WGXZ Series  
XCSP30L1 0.65×0.65 (mm)

**World's Smallest\***  
**Tc** Conductive Polymer Capacitors  
TCT0 Series (U Case)  
1.0×0.5 (mm)

**World's Smallest\***  
**Tc** Tantalum Capacitors  
TCT Series (U Case)  
1.0×0.5 (mm)

**World's Smallest\***  
**R** Ultra-Low Ohmic Chip Resistors  
PMR006 0.6×0.3 (mm)

**World's Smallest\***  
**Tc** Tantalum Capacitors  
TCT Series (ML Case)  
1.6×0.85, t=0.65 Max. (mm)

**World's Smallest\***  
**Di** Diodes  
SMD0402/SMD0603 Series  
0.4×0.2 (mm) 0.6×0.3 (mm)  
RASMID

**World's Smallest Class\***  
**LED** PICOLED™ Chip LEDs  
SML-P1 Series 1.0×0.6 (mm)

**World's Smallest\***  
**ICP** IC Protector  
for Semiconductors  
and Printed Circuits  
SMF1005 1.0×0.5 (mm)  
RASMID

**World's Smallest\***  
**Tr** Transistors  
VML0604 Package  
0.6×0.4 (mm)

\*ROHM November 2014 Survey



<b>Ultra-Compact</b> <b>World's Smallest*</b>	<b>0.3x0.15 (mm)</b>	<b>0.25x0.125 (mm)</b>	<b>Ultra-Compact</b> <b>World's Smallest*</b>	<b>0.4x0.2 (mm)</b>	<b>Ultra-Compact</b> <b>World's Smallest*</b>	<b>1.0x0.5 (mm)</b>
<b>Chip Resistors</b> Original Process Technology MCR004 (0.4x0.2mm, t=0.13mm) → <b>44% smaller area</b> → SMR003 (0.3x0.15mm, t=0.1mm) → <b>31% smaller area</b> → SMR002 (0.25x0.125mm, t=0.08mm) Under Development			<b>Diodes</b> Original Process Technology GMD2 (0.6x0.3mm, t=0.3mm) → <b>55% smaller area</b> → SMD0402 (0.4x0.2mm, t=0.12mm) Under Development		<b>Overcurrent Protection</b> Original Process Technology SMF1005 (1.0x0.5mm, t=0.3mm) Under Development	

	Part No.	Package (mm)	Features / Specifications
<b>IC</b> CMOS LDOs World's Smallest* UCSP30L (0.8x0.8) → <b>34% smaller area</b> → XCSP30L1 (Pin Pitch: 0.35mm)	☆BUxxJA2WGxz	XCSP30L1 0.65x0.65 t=0.35 Max.	• 5.5V input, 200mA
<b>Tr</b> Transistors World's Smallest* 0604 Size VML0806 (0.8x0.6) → <b>50% smaller area</b> → VML0604	☆RV3L003GN ☆RV3J001YN ☆RV3G006GN ☆RV3E007AJ ☆RV3C002UN ☆RV3E005AT ☆RV3C006BC ☆RV3C001ZP	VML0604 (0604) 0.6x0.4, t=0.36	• Maintains the basic performance of small-signal transistors in the industry's smallest* form factor • New element processes ensure the lowest ON resistances on the market • Wide breakdown voltage range
<b>Di</b> RASPID Diodes World's Smallest* 0402/0603 Size CSP (Chip Scale Package)	Zener Diodes New FDZ Series New SDZ Series Schottky Barrier Diodes New RB521FS-30 New RB521ES-30 New RB531ES-30 TVS New VS5V0BA1ES New VS5V0BB1ES New VS5V0BC1ES	SMD0402 (0402) 0.4x0.2, t=0.12 SMD0603 (0603) 0.6x0.3, t=0.280	• Class-leading small size reduces mounting area by 55% • Chip dimensional precision increased from $\pm 20\mu\text{m}$ to $\pm 10\mu\text{m}$ , improving mounting stability in existing automated mounters • Gold electrodes utilized for greater solderability and reliability
<b>LED</b> Thin Ultra-Compact LEDs World's Smallest Class* 1006 Size PICOLED™ Series Molded Type (1.6x0.8) → <b>53% smaller area</b> → PICOLED™ (SML-P1)	SML-P11xx(R) SML-P12xx(R) SMLP13EC8T SMLP13BC8T SCMP13WBC8W	PICOLED™-eco 1.0x0.6, t=0.2 PICOLED™ 1.0x0.6, t=0.2	• Provides twice the brightness at low currents (i.e. 1mA) [vs. 4-element LEDs] • The world's smallest class* of monochrome LEDs • Square light-emitting block ensures clear, crisp display • Optimized design prevents solder intrusion to the LED block
<b>R</b> RASPID Chip Resistors World's Smallest* 0201/03015 Size CSP (Chip Scale Package)	☆SMR002 Series New SMR003 Series	SMR002 0.250x0.125, t=0.08 SMR003 0.3x0.15, t=0.1	• Class-leading small size reduces mounting area by 44% • Original process technology ensures superior accuracy • Dimensional precision increased from $\pm 10\mu\text{m}$ to $\pm 5\mu\text{m}$ (SMR003 L and W products only) • Gold electrodes improve solderability and reliability
Ultra-Low Ohmic Chip Resistors World's Smallest* 0603 Size PMR01 (1.0x0.5) → <b>64% smaller area</b> → PMR006	☆PMR006	PMR006 0.6x0.3, t=0.23	• Special resistive alloy provides superior TCR and enables low resistances from 10mΩ • Proprietary chip structure ensures high reliability even during extreme temperature fluctuations
<b>Tc</b> Tantalum Capacitors World's Smallest* 1005 Size World's Thinnest* 1608 Size TCT (M Case) (1.6x0.85, t=0.8) → <b>62% smaller area</b> → TCT (U Case) TCT (M Case) → <b>18% thinner</b> → TCT (ML Case)	Bottom Electrode Type (Large Capacitance) TCT Series New ML Case	U Case 1.0x0.5, t=0.55 max. ML Case 1.6x0.85, t=0.65 max.	• 0.33μF to 15μF, 20V to 2.5V • 0.65mm thickness* achieved in the 1608 size • Ideal for portable devices with space restrictions • 1.0μF to 22μF, 4V to 25V
Conductive Polymer Capacitors World's Smallest* 1005 Size TCT (M Case) (1.6x0.85, t=0.8) → <b>62% smaller area</b> → TCTO (U Case)	Conductive Polymer Bottom Electrode Type (Large Capacitance) ☆TCTO Series	U Case 1.0x0.5, t=0.55 max.	• 0.47μF to 4.7μF, 2.5V to 10V
<b>ICP</b> RASPID Overcurrent Protection Element World's Smallest* 1005 Size CSP (Chip Scale Package)	☆ICP-R Series	SMF1005 1.0x0.5, t=0.3	• Class-leading compact size (1.0x0.5mm) * achieved using proprietary process technology • Corrosion-resistant gold electrodes adopted for improved solderability and reliability • High-speed interrupt performance

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The contents specified in this document are correct as of November 1, 2014.