



Microsensors, MEMS and Smart Devices

By Julian W. Gardner, Vijay K. Varadan, Osama O. Awadelkarim

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Microsensors and MEMS (micro-electro-mechanical systems) are revolutionising the semiconductor industry. A microsystem or the so-called "system-on-a-chip" combines microelectronic circuitry with microsensors and microactuators. This emergent field has seen the development of applications ranging from the electronic nose and intelligent ear to micro-tweezers and the modern ink-jet nozzle.

Providing a complete overview of microsensor technologies, this unique reference addresses vital integration issues for the successful application of microsensors, MEMS and smart devices.

Features include:

- * Review of traditional and emerging fabrication processes including bulk and silicon micromachining, microstereolithography and polymer processing methods.
- * Focus on the use of IDT (interdigital transducer) microsensors in the development of low energy budget, wireless MEMS or micromachines.
- * Coverage of the latest applications in smart devices including the electronic nose, tongue and finger, along with smart sensors and structures such as smart skin.
- * An overview of the development of intelligent sensing devices through the use of sensor arrays, parametric compensation of sensor signals and ASIC technology.
- * Comprehensive appendices outlining vital MEMS material properties, relevant web sites and a guide to key institutions active in the field.

Microsensors, MEMS and Smart Devices presents readers with the means to understand and evaluate microsystems. Advanced students and researchers in microelectronics, engineers and developers of microsensor systems will find this comprehensive treatment essential reading. Detailed coverage of material properties makes this an important reference work for mechanical engineers, physicists and material scientists working in the field.

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Editorial Review

From the Back Cover

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