

TABLE OF CONTENTS

Section 1. Executive Summary

Challenges Ahead

Section 2. Semiconductor Market Outlook

The Electronic System/Semiconductor Relationship

 Semiconductor Content

Macroeconomics

 Worldwide GDP Trends

 Worldwide Electronic System Production

The Global Semiconductor Market

 Semiconductor Market History and Forecast

Semiconductor Market Forecast Assumptions

 2009 IC Industry Forecast

 2010-2013 IC Industry Forecast

 2010-2013 Unit, Dollar, and ASP Analysis (ICs and O-S-D Devices)

 Semiconductor Unit Shipments

Market Forecast by Region

Top Suppliers of Opto, Sensor/Actuator, and Discrete Devices

Section 3. O-S-D Market Overview by Device Type

Growth Rate Comparisons

Section 4. Optoelectronics Market

Overview

Optoelectronics Forecast

 Laser Recovery Resets

TABLE OF CONTENTS

Optoelectronics Market by Region and End-Use	
Top Optoelectronics Suppliers	
Image Sensors	
CMOS Image Sensor Supplier Consolidation and Expansion	
CMOS Image Sensor Resolution and Price Trends	
High-Brightness LEDs	
Section 5. Sensors and Actuators Market	
Overview	
Sensor/Actuator Forecast.....	
Sensor/Actuator Applications and Regional Use	
Top Suppliers and Foundry Trends	
MEMS-based Product Growth	
Sensors Segment Outlook	
Pressure Sensors.....	
Acceleration & Yaw Sensors	
Magnetic-Field Sensors	
Temperature Sensors.....	
Application-Specific Sensor Trends.....	
MEMS-based Microphone Devices	
Fingerprint Sensor Growth.....	
Actuators	
Section 6. Discretes Market	
Overview	
Discretes Forecast.....	
Regional Discretes Markets	
Top Discretes Suppliers	
Power Transistor Outlook	
Automotive Applications	
RF/Microwave Devices	

Section 7. Optoelectronics Technology	
Overview	
Breakthroughs in Silicon Optoelectronics	
Optical Communications.....	
Laser Transmitter Trends	
Optical Storage	
Blu-ray Emerges as Winner	
Blue Laser Challenges.....	
Optocouplers and Optical Isolation.....	
CCD vs. CMOS Image Sensors.....	
How CCDs and CMOS Devices Work	
CMOS Imaging Challenges and New Solutions.....	
CCD Advancements	
Light-Emitting Diodes (LEDs)	
Solid-State Lighting Progress	
White LED Challenges.....	
Low-Power and High-Power LEDs	
White LED Challenges.....	
High-Power LEDs Drive R&D	
Leading Approaches to White LEDs.....	
Section 8. Sensors and Actuators Technology	
Overview	
Manufacturing Emphasis Turns to Lower Cost	
MEMS-based Sensors.....	
Inertial Sensors	
Inertial Sensors Invade Volume Applications.....	
Accelerometers vs. Gyroscopes	
Pressure Sensors	
Tire-Pressure Measurement Systems	
Magnetic, Temperature, and Proximity Sensors	
Electric-Field Sensing	
Fingerprint Sensors.....	

TABLE OF CONTENTS

MEMS-based Actuators	
Microfluidic Devices	
Micro-Mirrors and Spatial Light Modulation	
MEMS-based RF Filters and Silicon Oscillators	
Section 9. Discretes Technology	
Overview	
50 Years of Proliferation and Specialization	
Tiny Diodes with Big Surge Protection	
Transistor Improvements	
Power Transistor Evolution	
High- and Low-Voltage MOSFETs	
Power MOSFET Packages	
IGBTs	
Bipolar Power Transistors	
RF and Microwave Transistors	
Silicon RF vs. Compound Semiconductors	
Future Materials for RF and Power Discretes	