

Table of Contents	Description
<p>1) Overview</p> <ul style="list-style-type: none"> • Table of Contents • List of Figures and Tables • Introduction • Major Findings 	<p>Device summary provides an overview of the analysis.</p> <ul style="list-style-type: none"> • Includes a table of the key measurements recorded, depending on the type of device. Using this table, you can quickly compare the features against other devices Chipworks has reported on. • Evidence-based analysis proves all conclusions with images.
<p>2) Device Overview</p> <ul style="list-style-type: none"> • Package and Die • Annotated Die Features • Bond Pads • Die Corners 	<p>Reports are written from an “outside-in” approach. This section looks at the device features.</p> <ul style="list-style-type: none"> • Annotated die features include color filter arrangement, bond pads, SRAM blocks, ADC blocks, etc. • An image of a partially delayered die necessary to show key features and layout.
<p>3) Process Analysis</p> <ul style="list-style-type: none"> • SEM Images (plus selected relevant TEM images of pixel) • General Device Structure • Die Seal • Bond Pads • Dielectrics • Metallization • Vias and Contacts • Transistors and Poly (Pixel and Periphery) • Isolation • Wells and Substrate 	<p>The Process Analysis section provides the critical information about the design</p> <ul style="list-style-type: none"> • Use SEM images to show each feature. Images required of all dielectric levels, metal levels, transistors, poly and isolation. • SRP and/or SIMS dopant depth profile of wells • SCM images of well structure, and pixel diffusion.
<p>4) Pixel Array Analysis</p> <ul style="list-style-type: none"> • SEM, TEM, and SCM images • Cell Analysis - Schematic • Cell Plan View Analysis • Cell Cross-Sectional Analysis Parallel to Rows • Cell Cross-Sectional Analysis Parallel to Columns • Cross Sectional Analysis of Color Filters and Lenses 	<p>Key feature of the IPR report designed specifically for the Image Sensor market</p> <ul style="list-style-type: none"> • Cell SEM and SCM plan view images to show pixel layout from lenses into silicon substrate. • Cross sections include SCM and SEM imaging with TEM section in one direction through pixel. • Available analysis of metals and dielectric materials in pixel with TEM-EDS (data available on request). • SEM cross-sectional analysis of filters and lenses.

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<p>5) Minimum Sized Memory Cell Analysis</p> <ul style="list-style-type: none"> • Cell Analysis - Schematic • Cell Plan-View Analysis for Minimum Sized SRAM • Cell Cross-Sectional Analysis 	<p>Focused on SRAM for image sensors.</p> <ul style="list-style-type: none"> • For minimum sized SRAM memory on device. • Plan view images of low metals and poly as required.
<p>6) Layout and Topology Analysis</p> <ul style="list-style-type: none"> • Annotated Poly Die Photograph/Die Utilization Table(s) • Standard Logic at Poly • Memory Blocks Analysis 	<p>Detailed SEM and optical plan view images, at low and high magnification, as required. Allows you to understand the die utilization and is often used to help estimate the cost.</p> <ul style="list-style-type: none"> • Shows the functional blocks with percent utilization. • Up to three memory blocks will typically be analyzed with high and low magnification.
<p>7) Critical Dimensions</p> <ul style="list-style-type: none"> • Horizontal Dimensions (metals, vias, transistors, poly, isolation, bond pads, pixel cells) • Vertical Dimensions (dielectrics, metals, poly, diffusions, wells and die) 	<p>Full tabulation of all measurements taken in the analysis allows a detailed comparison of the device in the report and other devices that Chipworks has reported on.</p>
<p>Optional (Extra Cost) for IPR</p> <ul style="list-style-type: none"> • Additional TEM sections • SEM-EDS Analysis of materials • SIMS Analysis of Dielectrics • FIB-TEM of lenses and color filters • Atom Probe Microscope profiles in pixel 	

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