

	Contactless Estimation of a Solar Cell Voltage in a Module Using Modulated Light and a Phase Detector
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	<p>As a solar cell connected in series in a solar module fails, the operating module current decreases, however the operating voltage of each cell is not measurable if the cells are sealed tightly in the module. This research proposes a method to estimate an operating cell voltage in a module by irradiating modulated light to the cell and detecting the modulated signal from a load resistance of the module by a phase detector. And experiments for a small scale module to confirm the method have showed that the modulated signal detected by the phase detector increases as an operating cell voltage decreases, as expected according to the proposed theory. Therefore, it is confirmed in principle that the proposed method can estimate an operating cell voltage in a module.</p>
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