

Lock-in Thermography

[DOWNLOAD HERE](#)

1;Lock-inThermography;3 1.1;Preface;5 1.2;Preface of the 1st edition;7 1.3;Contents;9 1.4;1 Introduction;11 1.5;2 Physical and Technical Basics;17 1.5.1;2.1 IR Thermography Basics;17 1.5.2;2.2 The Lock-in Principle and its Digital Realization;24 1.5.3;2.3 Lock-in Thermography;32 1.5.4;2.4 Timing Strategies;36 1.5.5;2.5 Influence of Non-harmonic Heating;43 1.5.6;2.6 Noise Analysis;48 1.5.7;2.7 Calibration;52 1.5.8;2.8 Heat Dissipation and Transport Mechanisms in Solar Cells;54 1.5.9;2.9 Carrier Density Imaging;61 1.6;3 Experimental Technique;70 1.6.1;3.1 Different (Lock-in) Thermography Realizations;70 1.6.2;3.2 Commercial Lock-in Thermography Systems;81 1.6.3;3.3 Illumination Systems;89 1.6.4;3.4 Solid Immersion Lenses;94 1.6.5;3.5 Realization of CDI/ILM Systems;100 1.6.5.1;3.5.1 Absorption Mode;100 1.6.5.2;3.5.2 Emission Mode;103 1.6.5.3;3.5.3 Lifetime Calibration;103 1.7;4 Theory;109 1.7.1;4.1 Influence of the Heat Conduction to the Surrounding;109 1.7.2;4.2 Temperature Drift Compensation;115 1.7.3;4.3 Thermal Waves of Point Sources;122 1.7.4;4.4 Thermal Waves of Extended Sources;126 1.7.5;4.5 The Quantitative Interpretation of Lock-in Thermograms;133 1.7.5.1;4.5.1 The Image Integration/Proportionality Method;137 1.7.5.2;4.5.2 Deconvolution of Lock-in Thermograms;145 1.8;5 Measurement Strategies;156 1.8.1;5.1 Which Signal Should be Displayed?;156 1.8.2;5.2 Influence of the Lock-in Frequency;163 1.8.3;5.3 Influence of the IR Emissivity;166 1.8.4;5.4 Influence of the Peltier Effect;175 1.9;6 Typical Applications;183 1.9.1;6.1 Integrated Circuits;184 1.9.2;6.2 Solar Cells;192 1.9.2.1;6.2.1 Dark Lock-in Thermography (DLIT);194 1.9.2.1.1;6.2.1.1 Shunt Imaging;195 1.9.2.1.2;6.2.1.2 High-current DLIT;197 1.9.2.1.3;6.2.1.3 Series Resistance Imaging (RESI);199 1.9.2.1.4;6.2.1.4 Ideality Factor and Saturation Current Mapping;199 1.9.2.1.5;6.2.1.5 Local I-V curves measured Thermally (LIVT);202 1.9.2.1.6;6.2.1.6 Reverse-bias DLIT;204 1.9.2.1.7;6.2.1.7 Temperature Coefficient and Slope Imaging;205 1.9.2.2;6.2.2 Illuminated Lock-in Thermography (ILIT);207 1.9.2.2.1;6.2.2.1 Voc-ILIT;209 1.9.2.2.2;6.2.2.2 Jsc-ILIT;211 1.9.2.2.3;6.2.2.3 Rs-ILIT;213 1.9.2.2.4;6.2.2.4 Avalanche Multiplication Factor Imaging (MF-ILIT);216 1.9.2.3;6.2.3 Summary of Solar Cell Applications;218 1.9.3;6.3 Failure Analysis of Solar Modules;219 1.9.4;6.4 CDI/ILM on Solar Materials;225 1.9.4.1;6.4.1 Analysis of Material Evolution During

Processing;225 1.9.4.2;6.4.2 Temperature-dependent measurements;225 1.9.4.3;6.4.3 Trap density images from CDI/ILM;230 1.10;7 Summary and Outlook;235 1.11;References;240 1.12;A Thermal and IR Properties of Selected Materials;250 1.13;List of Symbols;251 1.14;Abbreviations;255 1.15;Index;257 EAN/ISBN : 9783642024177 Publisher(s): Springer, Berlin Discussed keywords: Elektrobauelemente, Thermographie Format: ePub/PDF Author(s): Breitenstein, Otwin - Warta, Wilhelm - Langenkamp, Martin

[DOWNLOAD HERE](#)

Similar manuals: