Supporting Information

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Measurement of the Charge Carrier Mobility Distribution in Bulk Heterojunction Solar Cells

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Figure S1. Illustration of the TPC linear regime. TPC traces for all four solar cells highlighting the linear regimes that were used in the short timescale approximations. In (a), (b), (c), and (d), the high internal field (fastest) transients are shown, where the rise times validate our estimation of the RC limitations of the experiment as better than 5 ns, since they are the fastest, highest frequency feature of the TPC traces. Examples of low internal field conditions near the maximum power point are shown in (e), (f), (g), and (h), respectively.
Figure S2. Photogenerated carrier mobility as a function of time. $\mu(t)$ for each of the solar cells in this study, as determined by Equation (3). This information is used in the reconstruction of the mobility distributions found in Figure 5.
Figure S3. Dimensions of the solar cell shadowmask that was used to produce the electrode geometry of the BHJ solar cells in this manuscript. Note that the arrows from the bottom left corner show the distance to the center of the feature. This mask design was conceived specifically for TPC measurements, and offers several critical advantages as such. The small area of each individual cell minimizes the capacitance, and the wraparound anode (cathode in the inverted configuration) ensures a similarly low series resistance geometry for each of the pixels, with the cathode and anode for any given cell in close proximity.

Absorption Spectra

Absorption spectra for each of the materials involved in this study can be located in the following references:

PTB7-Th: Reference 36

p-DTS(FBTTh)2: Reference 17

PPDT2FBT: Reference 37