Supplementary Fig. 3  Variability in V1 population responses, as measured by VSD imaging, can be described as an additive (stimulus independent) Gaussian noise with widespread spatial correlations. (a) Response variability (over trials) as a function of target contrast at the maximal $d'$ site in the example experiment. Blue curve represents linear regression line. (b) Same as (a), combined over all 8 experiments. Response variability is not significantly affected by stimulus contrast. The slope of the regression line was not significantly different from zero ($t$-test, $N = 8$). (c) Distribution of z-score values combined across all trials and all sites in an area of 8 x 8 mm in the example experiment. Residual responses at each site were first Z-transformed and then combined across sites. Red symbols – target-present trials; Green symbols – target-absent trials; Blue curve – Standard normal distribution. (d) Same as c. but combined across all 8 experiments. The variability in the VSD responses is approximately Gaussian and stimulus independent. (e), Average spatial correlations between pairs of sites as a function of their distance (as in Fig. 2f) averaged over all 8 experiments. Red – target-present trials; Green – target-absent trials. There is a small tendency for target present-
trials to have a slightly lower spatial correlation at long distances but the overall shape of the spatial correlation curves are very similar in target-present and target-absent trials.