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Let R be a subring of S . We introduce the notion of S -star operation for the ring extension $R \subseteq S$ and we define a Kronecker function ring of R with respect to S . The goal of this work is generalize the concept of Kronecker function rings from integral domains to commutative ring extensions. In particular, we focus on the case where the extension $R \subseteq S$ is a Prüfer or a Bézout. We show that most of the results obtained in the classical case can be generalized to rings extensions. We also study the relation between the pullback diagrams and Kronecker function rings. (Received July 22, 2014)