

# SEMIDUALIZING MODULES AND THE DIVISOR CLASS GROUP

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Abstract: Two standard dualities over a commutative ring  $R$  are given by  $\text{Hom}_R(-, R)$  and  $\text{Hom}_R(-, D)$  where  $D$  is a dualizing module. Semidualizing modules arise naturally as common generalizations of the modules  $R$  and  $D$ , and have nontrivial applications to the understanding of ring homomorphisms of finite G-dimension. When  $R$  is a normal domain, the isomorphism classes  $[R]$  and  $[D]$  are elements of the divisor class group  $\text{Cl}(R)$ ; this extends to an inclusion  $\mathfrak{S}_0(R) \subseteq \text{Cl}(R)$  where  $\mathfrak{S}_0(R)$  is the set of isomorphism classes of semidualizing  $R$ -modules. We present recent advances toward an understanding of the structure of this set for certain classes of rings.