Metal injection molding (MIM) is a near net shape manufacturing technology that can produce highly complex and dimensionally stable parts for high end engineering applications. Despite the recent growth and industrial interest, micro metal molding is yet to be the field of extensive research especially when it is compared with micro molding of thermoplastics. The current paper presents a thorough investigation on the process of metal injection molding where it systematically characterizes the effects of important process conditions on the shrinkage and surface quality of molded parts with micro features. Effects of geometrical factors like feature dimensions and distance from the gate on the replication quality are studied. The influence of process conditions on the achievable roughness for the final metal parts is discussed based on the experimental findings. The test geometry is characterized by 2½D surface structures containing thin ribs of different aspect ratios and thicknesses in the sub-mm dimensional range. The test parts were molded from Catamold 316L with a conventional injection molding machine. Afterwards, the parts were de-bounded and sintered to produce the final test samples. Among the different process parameters studied, the melt temperature was the most influential parameters for better replication and dimensional stability of the final part. The results presented in the paper clearly show that the shrinkage in metal part is not uniform in the micro scale. It depends on the feature dimensions and also on the process conditions. A thin section of the part exhibits higher relative shrinkage compared with a thicker section. Based on these findings, it can be concluded that a micro part molded by MIM process will have higher relative shrinkage compared to a macro part made with the same process.