Thin films of La0.6Sr0.4FeO3-delta of different thicknesses have been deposited on single crystal MgO substrate by pulsed laser deposition (PLD). The deposited films are characterized by XRD before and after annealing, by scanning electron microscopy (SEM) for morphological characterization and by the Van der Pauw (VDP) technique for determination of the conductivity. The temperature dependence of the conductivity in air for samples of different thickness has been investigated. The electrical conductivity of the films increases with increasing film thickness but the conductivity of all films is less than the value of the bulk material. The apparent conductivity versus temperature shows a maximum at a certain temperature (T-max). This characteristic temperature (T-max) decreases as the film thickness increases and reaches the value for bulk for thicker films. All of the samples show the same activation energy of the conductivity in the low temperature limit. (C) 2007 Elsevier B.V. All rights reserved.