

6 Silicon Hall-Effect Sensors

6.1 Introduction

Electrical Tests and Application Circuit

- The sockets or integrated circuits must not be conducting any voltage when individual devices or assembled circuit boards are inserted or withdrawn, unless works' specifications state otherwise. Ensure that the test devices and power supplies do not produce any voltage spikes, either when being turned on and off in normal operation or if the power fuse blows or other fuses respond.
- When supplying bipolar integrated circuits with current, the negative voltage ($-V_s$ or GND) has first to be connected. In general, an interruption of this potential during operations is not permissible.
- Signal voltages may only be applied to the inputs of ICs when or better after the supply voltage is turned on. They must be disconnected when or better before the supply voltage is turned off.
- Power supplies of integrated circuits are to be blocked as near as possible at the supply terminals of the IC. With bipolar ICs it is recommended to use a low-inductance electrolytic capacitor or at least a paralleled ceramic capacitor of 100 nF to 470 nF for example. Using ICs with high output currents, the necessary value of the electrolytic capacitor must be adapted to the test or application circuit. Transient behaviour and dynamic output resistance of the power supplies, line inductances in the supply and load circuit and in particular inductive loads or motors have to be considered. When switching off line inductances of inductive loads, the stored power has to be consumed externally, unless otherwise specified (e.g. by an electrolytic capacitor, diodes, Z-diodes or the power supply). Also a switching off of the supply voltage prior to the load rejection should be taken into account.
- ICs with low-pass characteristic of the output stages (e.g. PNP drivers or PNP/NPN end stages), normally need an additional external compensation at the output. This applies particularly to complex loads. The output of AF power amplifiers is compensated by the Boucherot element. In individual cases, bridge circuits only need a capacitance for bypassing the load. Depending on the application it is, however, also recommended to connect one capacitor from each output to ground.
- Observe any notes and instructions in the respective data sheets.

Data Classification**Maximum Ratings**

Maximum ratings are absolute ratings; exceeding any one of these values may cause irreversible damage to the integrated circuit.

Characteristics

The listed characteristics are ensured over the operating range of the integrated circuit. Typical characteristics specify mean values expected over the production spread. If not otherwise specified, typical characteristics apply $T_A = 25\text{ °C}$ and the given supply voltage.

Operating Range

In the operating range the functions given in the circuit description are fulfilled.

Quality Assurance System

The high quality and reliability of integrated circuits from Siemens is the result of a carefully arranged production which is systematically checked and controlled at each production stage.

The procedures are subject to a quality assurance system; full details are given in the brochure 'Siemens Quality Assurance – Integrated Circuits'.