Functional Safety Information

TLC6C5716-Q1
Functional Safety FIT Rate

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1 Functional Safety FIT Rate

1.1 Overview

This document contains information for TLC6C5716-Q1 (HTSSOP package) to aid in a functional safety system design. Information provided are:

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- Functional Safety Failure In Time (FIT) rates of the semiconductor component estimated by the application of industry reliability standards

Figure 1-1 shows the device functional block diagram for reference.

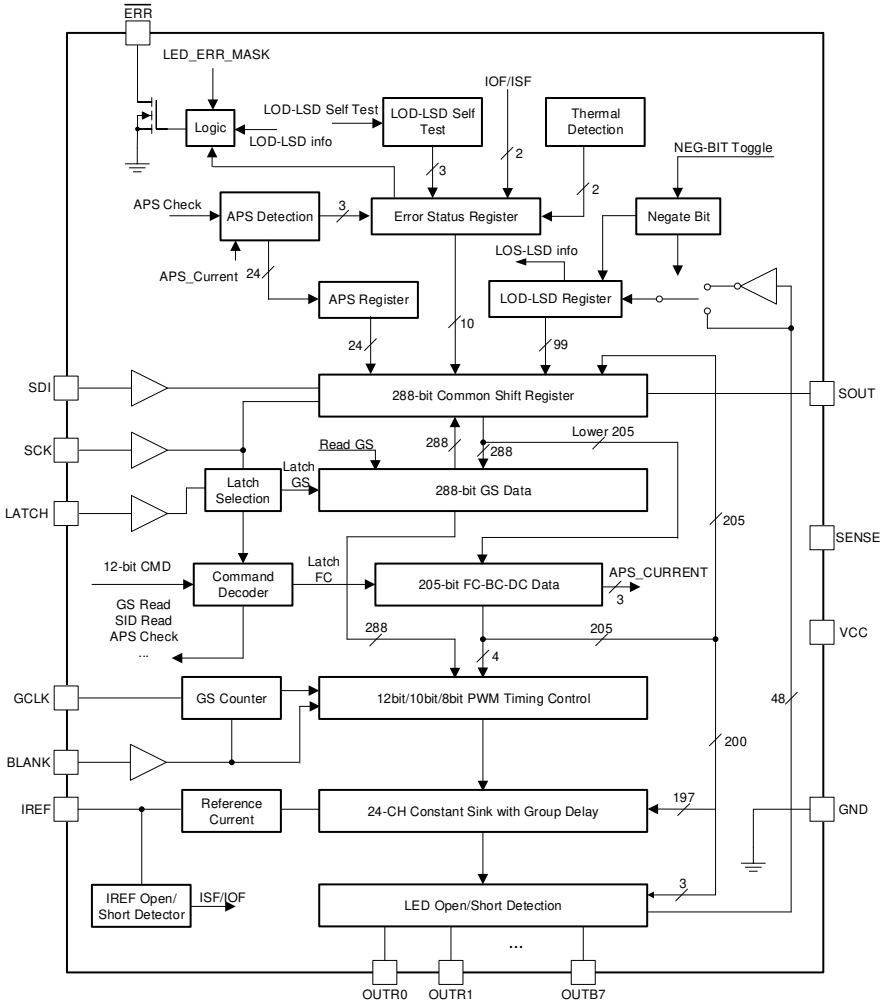

Figure 1-1. Functional Block Diagram

TLC6C5716-Q1 was developed using a quality-managed development process, but was not developed in accordance with the IEC 61508 or ISO 26262 standards.

1.2 Functional Safety Failure In Time (FIT) Rates

This section provides Functional Safety Failure In Time (FIT) rates for TLC6C5716-Q1 based on two different industry-wide used reliability standards:

- Table 1-1 provides FIT rates based on IEC TR 62380 / ISO 26262 part 11
- Table 1-2 provides FIT rates based on the Siemens Norm SN 29500-2

Table 1-1. Component Failure Rates per IEC TR 62380 / ISO 26262 Part 11

FIT IEC TR 62380 / ISO 26262	FIT (Failures Per 10^9 Hours)
Total Component FIT Rate	39
Die FIT Rate	5
Package FIT Rate	34

The failure rate and mission profile information in Table 1-1 comes from the Reliability data handbook IEC TR 62380 / ISO 26262 part 11:

- Mission Profile: Motor Control from Table 11
- Power dissipation: 1000 mW
- Climate type: World-wide Table 8
- Package factor (lambda 3): Table 17b
- Substrate Material: FR4
- EOS FIT rate assumed: 0 FIT

Table 1-2. Component Failure Rates per Siemens Norm SN 29500-2

Table	Category	Reference FIT Rate	Reference Virtual T_J
5	CMOS/BICMOS ASICs Analog & Mixed=<50V supply	60 FIT	70°C

The Reference FIT Rate and Reference Virtual T_J (junction temperature) in Table 1-2 come from the Siemens Norm SN 29500-2 tables 1 through 5. Failure rates under operating conditions are calculated from the reference failure rate and virtual junction temperature using conversion information in SN 29500-2 section 4.

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