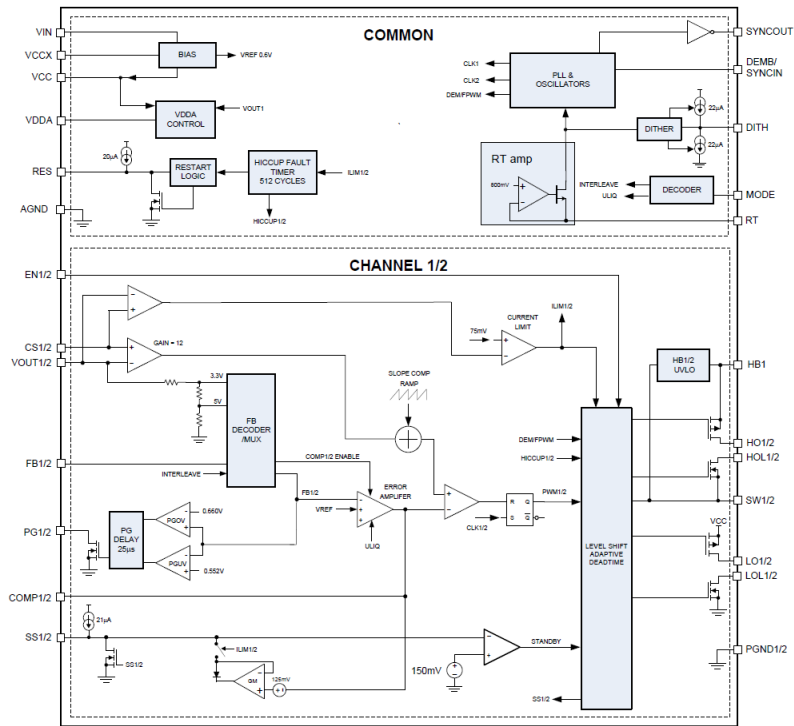


Functional Safety FIT Rate, Failure Mode Distribution LM5143-Q1

3.5-V to 65-V Low IQ, Dual Synchronous Buck DC/DC Controller

Functional Block Diagram



Failure Rate Mission Profile (1)

Per 10⁹ Hours (FIT)

Total FIT Rate

32

Die FIT Rate

7

Package FIT Rate

25

Failure Modes

Failure Mode Distribution (%)

SW1/2 no output

45%

SW1/2 output not in specification – voltage or timing

40%

SW1/2 power FET stuck on

5%

PG1/2 false trip or fails to trip

5%

Short circuit any two pins

5%

(1) Failure Rate, Mission Profile and Failure Modes Distribution

The failure rate and mission profile information comes from the Reliability data handbook IEC TR 62380 using the reliability modeling for Integrated circuits with automotive motor control mission profiles

Mission Profile: Motor Control from Table 11

Power dissipation 750mW

Climate type: World-wide Table 8

Package factor lambda 3 Table 17b

Substrate Material: FR4

EOS FIT rate assumed = 0

The failure mode distribution estimation comes from the combination of common failure modes listed in standards such as IEC 61508 and ISO 26262, the ratio of sub-circuit function size and complexity and from best engineering judgment. The failure rates listed reflect random failure events and do not include failures due to misuse or over stress.

The LM5143-Q1 is a catalog product and not compliant to ISO-26262 standards.

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