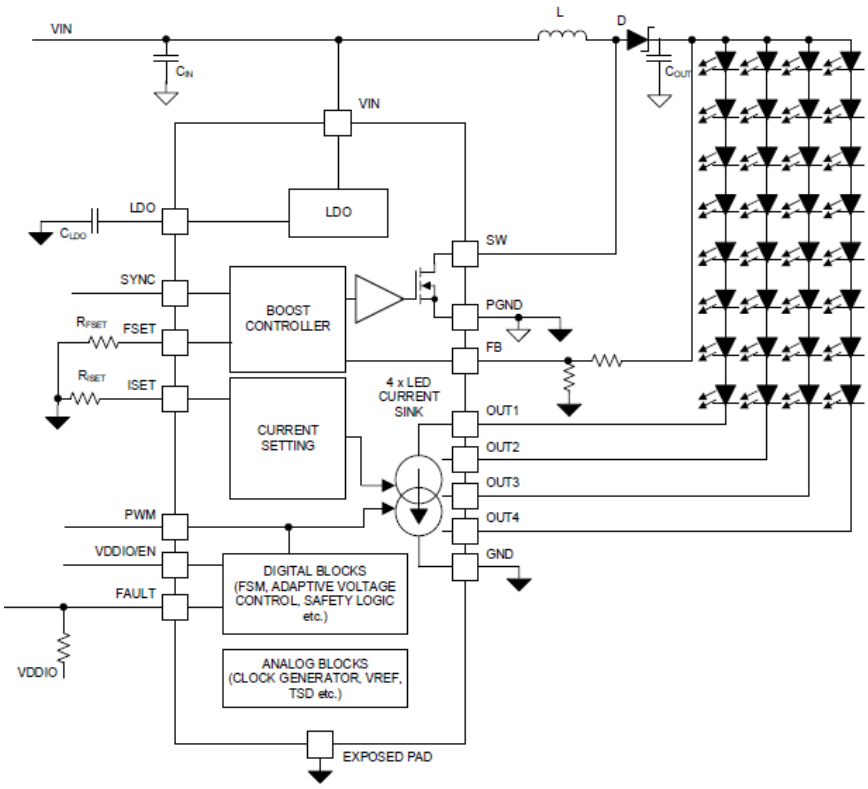
Functional Safety FIT Rate, Failure Mode Distribution LP8867C-Q1 LP8869C-Q1

Low EMI Automotive LED Driver with 4-, 3- Channels

Functional Block Diagram



FIT IEC TR 62380 / ISO 26262 (1)	Per 10^9 Hours (FIT)
Total FIT Rate	**20**
Die FIT Rate	**7**
Package FIT Rate	**13**

FIT Siemens Norm SN29500 (2)			
Table	**Category**	**Ref FIT λ_{ref}**	**Ref Virtual Tj $\theta_{vj,1}$**
5	**Digital, Analog, Mixed**	**60 FIT**	**70 C**

Failure Modes	Failure Mode Distribution (%)
OUTn output out of specification, current or timing	30%
OUTn stuck off	40%
OUTn stuck on	15%
FAULT fails to trip or false trip	10%
Short circuit any two pins	5%

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

The failure rate and mission profile information come from reliability modeling for Integrated circuits from Reliability data handbook IEC TR 62380 / ISO 26262 Part 11
Mission Profile: Motor Control from Table 11
Power dissipation 750 mW
Climate type: World-wide Table 8
Package factor lambda 3 Table 17b
Substrate Material: FR4
EOS FIT rate assumed = 0

(2) Reference failure rate, Virtual (equivalent) junction temperature

The reference failure rate and virtual junction temperature come from Siemens Norm SN29500-2 tables 1-5. Failure rate under operating conditions are calculated from the reference failure rate and virtual junction temperature using conversion information in SN29500-2 section 4.

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.

LP8867C-Q1 LP8869C-Q1 are a catalog product and not compliant to ISO-26262 standards.

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