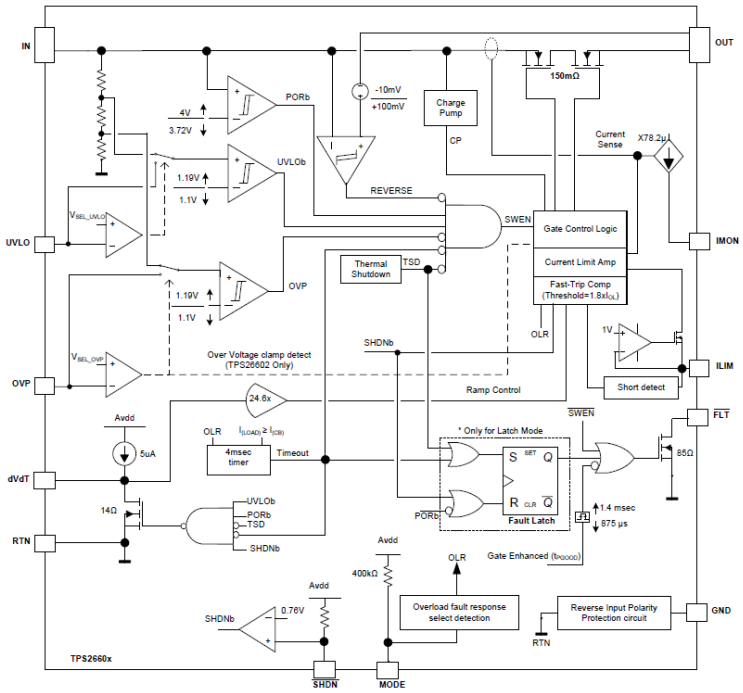
Functional Safety FIT Rate, Failure Mode Distribution TPS2660x

60-V, 2-A Industrial eFuse With Integrated Reverse Input Polarity Protection

Functional Block Diagram



Failure Rate Mission Profile (1)	Per 10^9 Hours (FIT)	
Package Type	TSSOP-16	QFN-24
Total FIT Rate	17	13
Die FIT Rate	7	6
Package FIT Rate	10	7

FIT Siemens Norm SN29500 (2)			
Table	Category	Ref FIT λ_{ref}	Ref Virtual Tj $\theta_{vj,1}$
Table 5	Digital, Analog, Mixed	25 FIT	55 C

Failure Modes	Failure Mode Distribution (%)
OUT HIZ no output	35%
OUT not in specification – voltage or timing	45%
IMON not in specification – current or timing	5%
FLT fails to trip or false trip	5%
OUT stuck on	5%
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 in Reliability data handbook IEC TR 62380 and 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 for user mission profile is calculated using the reference failure rate and virtual junction temperature and following the calculation 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.

2660x is a catalog product and not compliant to ISO-26262 standards.

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