sev10

EXAMPLE PACKAGE · REV A · 2026-09-28

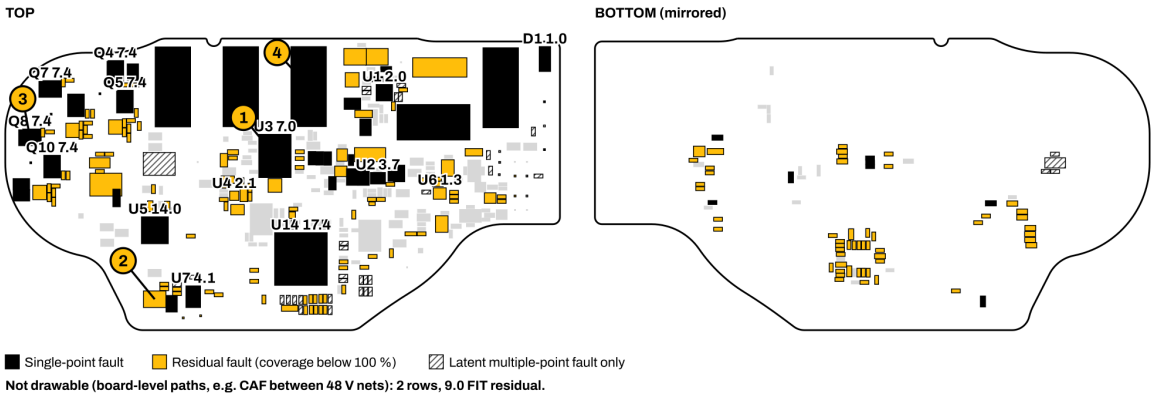
Brake-by-wire corner ECU

27 single-point faults, mapped to the part.

ISO 26262 hardware safety analysis of TI's TIDA-020106 electro-mechanical brake reference design (PCB VerB): HARA, DFMEA, FMEDA and a findings report, for an illustrative client, Quillon Motors.

Reference design ti.com/tool/TIDA-020106 · Design guide ti.com/lit/pdf/tidufi0

Provisional. ISO 26262:2018 · safety element out of context · 7 assumed safety goals (ASIL A–D) · failure rates from TI FIT/FMD data and SN 29500-order values; IC data pending from TI, so the metrics will move. TIDA-020106 is a lab reference design, not a safety-qualified item: findings are gaps against the assumed goals, not defects in TI's intent.



Not drawable (board-level paths, e.g. CAF between 48 V nets): 2 rows, 9.0 FIT residual.

27 → 11
single-point faults, as published → with the recommended actions

7
hardware changes recommended, ranked by effect on the metrics

23
DFMEA chains still at High action priority after the actions, of 783

WHAT THE ANALYSIS FOUND

1. **No MCU-independent motor shutdown path.** The PMIC safe-state output (U3 SAFE_OUT1) is unconnected on VerB, so both motor drivers are disabled only by MCU command.
2. **EPB cut-off FET cannot turn off as populated.** A 0 Ω link (R58) ties the Q11 gate to the 48 V bus.
3. **A shorted inverter FET brakes the caliper motor after shutdown.** Largest SG-01 single-point fault (24 FIT): the caliper may not release within the FTTI.
4. **Resistive 48 V capacitor shorts heat below the breaker's trip level.** The dominant SG-07 fault: the U1 breaker sees only hard shorts.

With the actions, SPFM meets target for SG-05 only; SG-03 is 0.35 pt short pending TI data; SG-01, SG-02, SG-04, SG-07 need further mechanisms. LFM is met for every goal.

SINGLE-POINT FAULT METRIC BY GOAL

	SPFM, as published → with actions	vs target	PMHF*
SG-01 Unintended braking [D]	87.5 → **97.4**	**1.6 pt short**	9.9
SG-02 Loss of braking [C]	80.8 → **90.4**	**6.6 pt short**	31.2
SG-03 EPB applied moving [D]	96.7 → **98.7**	**0.35 pt short**	1.6
SG-04 Loss of parking hold [C]	94.0 → **95.6**	**1.4 pt short**	4.6
SG-05 Wrong wheel speed [B]	92.8 → **92.8**	**meets**	4.4
SG-07 ECU thermal event [B]	60.3 → **76.0**	**14.0 pt short**	13.9
SG-06 Secondary braking [A]	No hardware metric targets at ASIL A		

Scale 50–100 %. Red tick: target derived from ISO 26262-5 (ASIL B values are recommendations). *PMHF with actions, FIT, one corner; the item budget per corner is not yet allocated. Board map: each part coloured by its worst failure mode across all goals, labelled with its residual FIT (from 1 FIT).

WHAT IS INSIDE

01_Report/	`S10-QLN-HWA-001_RevA_Hardware-safety-analysis.pdf`	Findings, board fault maps, per-goal results, actions	59 pages
02_HARA/	`S10-QLN-HARA-001_RevB_Hazard-analysis.pdf`	Item definition, hazardous events, assumed safety goals	16 pages
03_DFMEA/	`S10-QLN-DFMEA-001_RevA_DFMEA.xlsx`	Every failure chain with rating, action and source	23 tabs
04_FMEDA/	`S10-QLN-FMEDA-001_RevA_FMEDA.xlsx` `S10-QLN-FMEDA-001_RevA_FMEDA.pdf`	Live SPFM, LFM, PMHF; sensitivity; assumptions	16 tabs 60 pages

WHO

sev10 is an AI-native safety engineering consultancy for automotive hardware. We deliver DFMEAs, FMEDAs and HARAs faster and for less than a traditional consultancy, or build the same AI analysis engine into your engineering stack.

HOW IT IS MADE

AI drafts the analysis; an engineer reviews every line before it reaches you. This package: about 10 hours of engineer time over 3 days.

Send us the subsystem: scope and fixed price by return.
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