



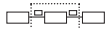
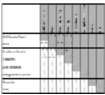
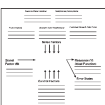
POTENTIAL FAILURE MODE AND EFFECTS ANALYSIS IN DESIGN (DESIGN FMEA)

____ System
____ Subsystem
____ Component

Model Year(s)/Program(s): /
Core Team:

Design Responsibility:
Key Date:

FMEA Number:
Page of
Prepared by:
FMEA Date (Orig.): (Rev.):

Item Function	Potential Failure Mode	Potential Effect(s) of Failure	S e v	C l a s s	Potential Cause(s) / Mechanism(s) of Failure	O c c u r	Current Design Controls		D e t e c	R. P. N.	Recommended Action(s)	Responsibility & Target Completion Date	Action Results																																					
							Prevention	Detection					Actions Taken	S e v	O c c	D e t	R. P. N.																																	
    What are the Functions, Features or Requirements?	What can go wrong? - No Function - Partial/ Over/ Degraded Function - Intermittent Function - Unintended Function	Step 1 What are the effect(s)? How bad is it?									What can be done? - Design Changes - Process Changes - Special Controls - Changes to Standards Procedure or Guides																																							
		Step 2 What are the Cause(s)? How often does it happen?																																																
		Step 3 How can this be prevented and detected? How good is this method at detecting?																																																
		Effects List: Design FMEA <table><thead><tr><th>Failure mode</th><th>Next component</th><th>Next higher assembly</th><th>System</th><th>Vehicle</th><th>Customer</th><th>Safety</th><th>Regulation</th></tr></thead><tbody><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr></tbody></table> Failure Mode	Failure mode	Next component	Next higher assembly	System	Vehicle	Customer	Safety	Regulation																																								
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DESIGN FMEA

Suggested DFMEA **Severity** Evaluation Criteria

Effect	Criteria: Severity of Effect	Ranking
Hazardous without warning	Very high severity ranking when a potential failure mode affects safe vehicle operation and/or involves noncompliance with government regulation without warning.	10
Hazardous with warning	Very high severity ranking when a potential failure mode affects safe vehicle operation and/or involves noncompliance with government regulation with warning.	9
Very High	Vehicle/item inoperable (loss of primary function).	8
High	Vehicle/item operable but at a reduced level of performance. Customer very dissatisfied.	7
Moderate	Vehicle/item operable but comfort/convenience item(s) inoperable. Customer dissatisfied.	6
Low	Vehicle/item operable but comfort/convenience item(s) operable at a reduced level of performance. Customer somewhat dissatisfied.	5
Very Low	Fit & finish/squeak & rattle item does not conform. Defect noticed by most customers (greater than 75%).	4
Minor	Fit & finish/squeak & rattle item does not conform. Defect noticed by 50% of customers.	3
Very Minor	Fit & finish/squeak & rattle item does not conform. Defect noticed by discriminating customers (less than 25%).	2
None	No discernible effect.	1

Suggested DFMEA **Occurrence** Evaluation Criteria

Probability of Failure	Likely Failure Rates Over Design Life	Ranking
Very High: Persistent failures	≥ 100 per thousand vehicles/items	10
	50 per thousand vehicles/items	9
High: Frequent failures	20 per thousand vehicles/items	8
	10 per thousand vehicles/items	7
Moderate: Occasional failures	5 per thousand vehicles/items	6
	2 per thousand vehicles/items	5
	1 per thousand vehicles/items	4
Low: Relatively few failures	0.5 per thousand vehicles/items	3
	0.1 per thousand vehicles/items	2
Remote: Failure is unlikely	≤ 0.01 per thousand vehicles/items	1

Suggested DFMEA **Detection** Evaluation Criteria

Detection	Criteria: Likelihood of Detection by Design Control	Ranking
Absolute Uncertainty	Design Control will not and/or can not detect a potential cause/mechanism and subsequent failure mode; or there is no Design Control.	10
Very Remote	Very remote chance the Design Control will detect a potential cause/mechanism and subsequent failure mode.	9
Remote	Remote chance the Design Control will detect a potential cause/mechanism and subsequent failure mode.	8
Very Low	Very low chance the Design Control will detect a potential cause/mechanism and subsequent failure mode.	7
Low	Low chance the Design Control will detect a potential cause/mechanism and subsequent failure mode.	6
Moderate	Moderate chance the Design Control will detect a potential cause/mechanism and subsequent failure mode.	5
Moderately High	Moderately high chance the Design Control will detect a potential cause/mechanism and subsequent failure mode.	4
High	High chance the Design Control will detect a potential cause/mechanism and subsequent failure mode.	3
Very High	Very high chance the Design Control will detect a potential cause/mechanism and subsequent failure mode.	2
Almost Certain	Design Control will almost certainly detect a potential cause/mechanism and subsequent failure mode.	1