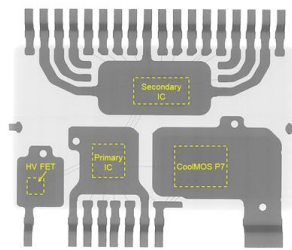


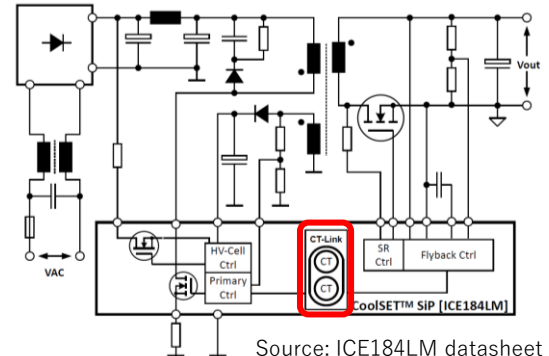
Flyback Converter: Infineon Flyback SiP “CoolSET” ICE184LM Structure Analysis Report



Flyback SiP



X-ray



Source: ICE184LM datasheet

Report Overview

Infineon announced a new flyback SiP in April 2025. The CoolSET™ System-in-Package (SiP) integrates an 800 V P7 CoolMOS™, a zero-voltage-switching (ZVS) primary-side controller, and a secondary-side synchronous-rectification (SR) controller with isolated communication via CT-Link technology, all in a compact SMD package supporting power delivery up to 60 W.

The CoolSET™ SiP solution is a direct competitor to the market-leading product from Power Integrations and employs **innovative coreless-transformer technology (CT-Link)** for secondary-to-primary signal transmission.

Note: Power Integrations uses high-voltage GaN transistors, whereas Infineon uses silicon superjunction MOSFETs.

Product Features

Product type: ICE184LM $V_{dss}=800V$, $R_{DS(ON)}=0.84\Omega$
Released data: Apr. 2025

Datasheet : <https://www.infineon.com/assets/row/public/documents/24/49/infineon-ice184lm-datasheet-en.pdf>

Package: PG-DSO-27-1

Applications: Home appliances, auxiliary power supplies for communications equipment/servers, switching power supplies

Analysis result summary

Structure Analysis Report (53 pages)

- CT-Link cross-section analysis and inductance estimation.
- Estimation of process generations for primary and secondary control ICs.
- CoolMOS™ P7 cell cross-section analysis and HV FET process generation estimation.
- Compared to Power Integrations SiP (SC1933C), this product has approximately 1.2 times the area that can be used to mount power devices, and it is considered that even larger Si MOSFETs and CoolGaN can be mounted than Si MOSFET (P7) mounted on this product.

Please contact us regarding the Power Integrations SC1933C structure analysis report (19G-0008-2).

Report price

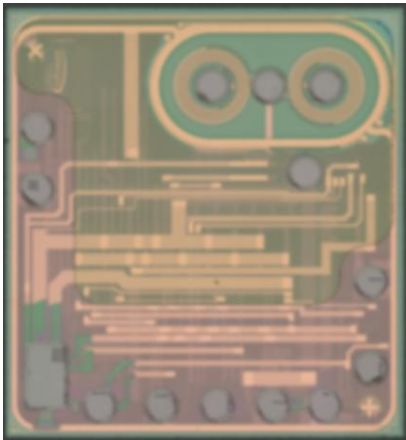
Delivered one week after order placement. Please contact us for report pricing.

Structure Analysis Report Table of Contents

	Page
1 Device Summary	
Table 1-1: Device Summary	3
1-1. Summary of Analysis Results	4
2 Package Analysis	
2-1. Appearance	6
2-2. X-ray	7
2-3. Block Schematic	8
2-4. Mounted Die Observation	9
3 Primary Side Control IC Analysis	
3-1. Plane Observation (OM)	13
3-2. Logic region Cross-section Observation	14
3-3. Process Generation Estimation	19
3-4. CT Link Cross-Section Observation	20
3-5. CT Link Transformer Analysis	30
3-6. Inductance Estimation	34
4 Secondary Control IC Analysis	
4-1. Plane Observation (OM)	37
4-2. Logic region Cross-section Observation	38
4-3. Seal Ring Cross-Section Observation	42
4-4. Process Generation Estimation	43
5 CoolMOS™ P7 Analysis	
5-1. Plane Observation (OM)	45
5-2. Cell array Cross-Section Structure Analysis	46
5-3. Comparison with HV FET	49
6 Comparison with Power Integrations' SC1993C	52

Excerpt from Structure Analysis Report

Primary side control IC



Die image (Top Metal layer)

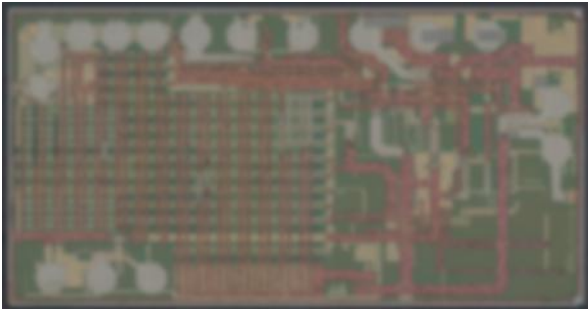
Calculation results of inductance and each variable

	Metal	Coil turns N	Outer diameter d _o [μm]	Inner diameter d _i [μm]	d _{avg} [μm]	p	coil distance d [μm]	Metal w/A [μm]	self inductance L _{self} [nH]	coupling coefficient k _{av}	mutual inductance M ₁₂ [nH]	inductance L [nH]
Secondary coil	M6	8										
Primary coil	M5	8										
Primary-secondary coupling	-	-										

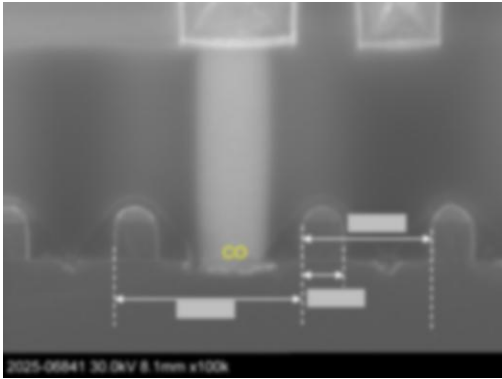


CT Link cross-section OM image

Secondary-side control IC

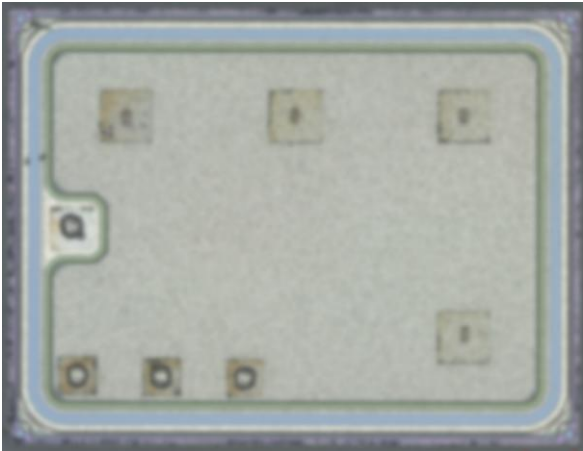


Die image (Top Metal layer)

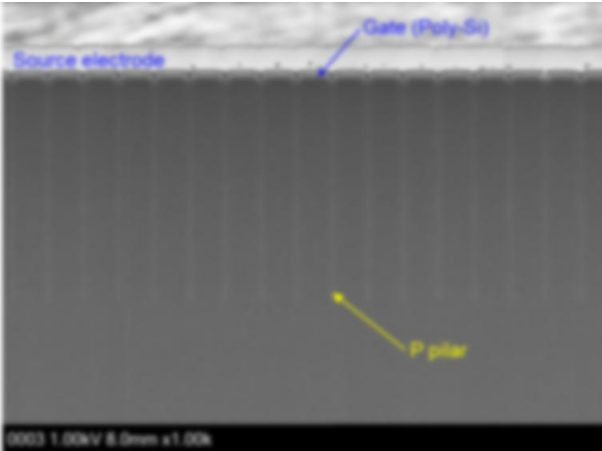


Logic cross-section SEM image

CoolMOS™ P7



Die image (Top Metal layer)



Cell array cross-section SEM image