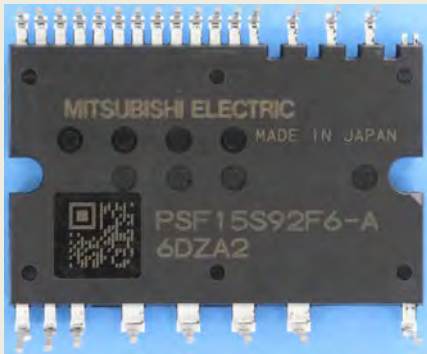


MITSUBISHI PSF15S92F6 SiC INTELLIGENT POWER MODULE ANALYSIS REPORT

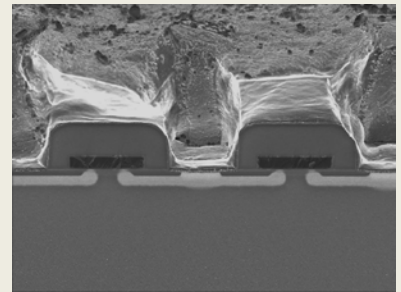
September 2017. LTEC Corporation released a detailed structure and process analysis report of the PSF15S92F6 Dual Inline Package Intelligent Power Module (DIPIPM). This device improves R_{ON} by 70% relative to a conventional Si power device.



Package (Module)



Die (SiC OSFET)



SiC MOSFET cross-section

Device features

- Max. operating voltage: 600V, rated DC Drain current I_D @25°C = 15A
- Very low specific On-resistance, $R_{ON} \times A = 500\text{m}\Omega \times \text{mm}^2$

The report has two individually purchasable sections: Structure Analysis and a Process Analysis sections. The 100-page Structure Analysis section reveals the physical construction of the device, including EDX materials analysis, and many other fine details. The 24-page Process Analysis section includes manufacturing process flow, the estimated number of photomasking steps, and the impurity concentration of the epitaxial layer.

Structure analysis report: \$5,000
Process analysis report: \$5,000

Contact LTEC Corporation
www.ltecusa.com

17G-0009-1

Table of Contents

Structure Analysis Report

	Page
Device summary, Table 1, Executive Summary	3
Analysis results	4
Table 2. Module structure overview	5
Table 3. Device structure: SiC MOSFET	6
Table 4. Device structure: Layer materials and thicknesses	7
Module overview	8
X-ray observation	9
Module structure overview	11
SiC MOSFET Analysis	16
Plain view, Optical Microscope images	17
Plain view, Scanning Electron Microscope (SEM) Images	30
Cross-sectional structure analysis (SEM)	35
Module detailed structural analysis	51
EDX material analysis	69

17G-0009-1



Table of Contents

Process Analysis Report

	Page
Analysis summary	3
Die	4
Die edge	4
Device structure SiC FET	5
Transistor schematic diagram	
SiC FET configuration	6
(a) Die schematic diagram	
(b) Layout pattern schematic diagram	
Transistor structure, process features (SEM)	9
Channel structure and Impurity analysis	11
Analysis summary of Si FET (PSF15S92F6)	16
SiC FET front-end wafer process flow (estimated)	18
SiC FET process sequence cross-sectional view	19
Appendix	23
Relevant references	
Relevant patents	
Others	

17G-0009-1

