Power Supply Unit (PSU)

Super Junction MOSFETs:
Optimal Efficiency and Reliability for High-Power Systems

Power Supply Units (PSU) are power conversion systems widely used in commercial and industrial applications, including AC-DC and DC-DC converters. PANJIT's Super Junction (SJ) MOSFETs offer an exceptional option for PSU systems, various DC-DC converter topologies, and Power Factor Correction (PFC) circuits due to their features that facilitate easy and efficient design solutions. Additionally, a key feature of PANJIT SJ MOSFETs is their excellent di/dt ruggedness of the body diode and optimized switching performance, which together enhance EMI performance. Beyond their outstanding performance, PANJIT SJ MOSFETs provide engineers and R&D developers with benefits such as extended lifespan and simplified design.

Features

- Robustness of body diode
- Good EMI performance
- High efficiency
- High quality
- Low FOM

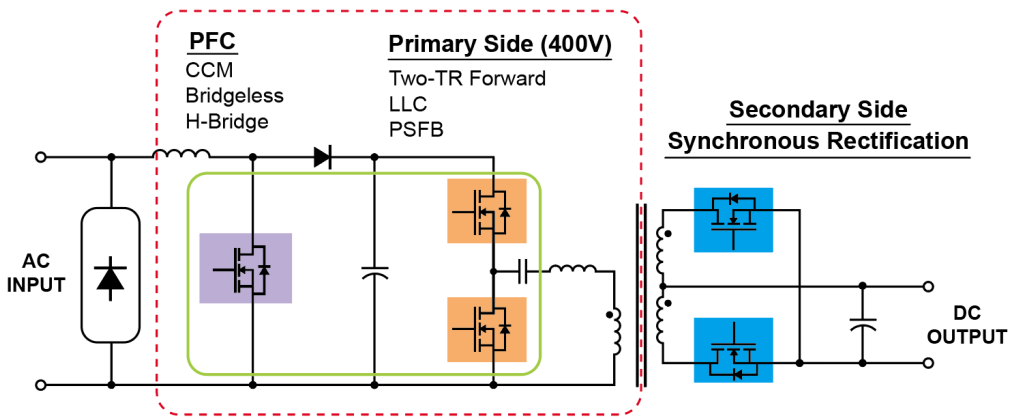
Applications

- Telecommunications
- Server data centers
- PC power supplies
- Home appliances
- Gaming adapters
- PD chargers

Super Junction MOSFETs for PSU Block Circuit

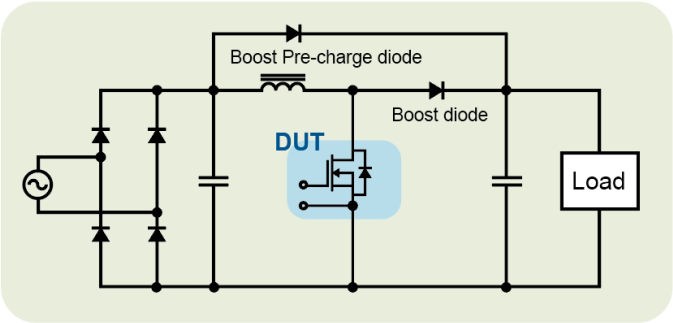
- PFC circuit for AC/DC converter
- Primary side switching for DC/DC converter

PSU Block Diagram

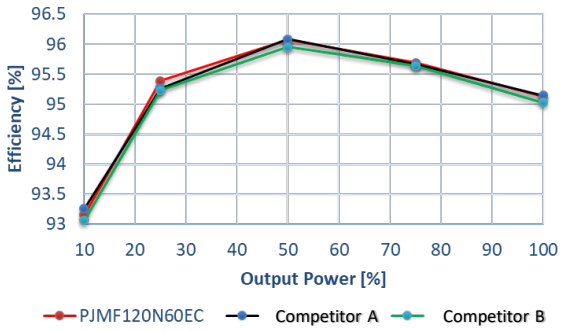


System Evaluation

(600 W CCM PFC, V_{IN} = 110 Vac/60 Hz, V_{OUT} = 400 V, F_{SW} = 65 kHz with voltage spike < (BV*80%)



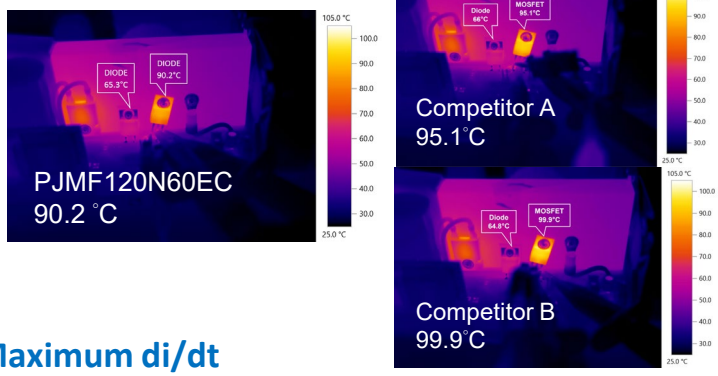
Efficiency @ Output Power



Test Parameters

Parameters	Specification
Input Voltage	110 VAC / 60 Hz
Output Voltage	400 VDC
Max. Power	750 W
Switching Frequency	65 kHz
Heatsink Temperature	45˚C (Cooling & Heating)
Ambient Temperature	25˚C

Junction Temperature @ Full Load Operation



Robustness Capability of Body Diode Maximum di/dt

Body diode di/dt test @ I_F = 10 A

Part Numbers	500 A/us	600 A/us	700 A/us	800 A/us	900 A/us	1000 A/us
PJMF120N60EC	PASS	PASS	PASS	PASS	PASS	PASS
Competitor A	PASS	Fail	-	-	-	-
Competitor B	PASS	PASS	PASS	PASS	PASS	PASS

Products

* Under Development

Series	BV (V)	$R_{DS(on)}$ (mΩ)	TO-247AD-3LD	ITO-220AB-F	TO-220AB-L	TO-252AA	TO-263 / AB	TOLLK
SJ MOSFET 600V	600	42	PJMH042N60FRC					
		74	PJMH074N60FRCH					
		99	PJMH099N60EC	PJMF099N60EC	PJMP099N60EC			
		105	PJMH105N60FRC	PJMF105N60FRC	PJMP105N60FRC		PJMB105N60FRC	
		120	PJMH120N60EC	PJMF120N60EC	PJMP120N60EC			
		125	PJMH125N60FRC	PJMF125N60FRC	PJMP125N60FRC		PJMB125N60FRC	
SJ MOSFET 650V	650	60	PJMH060N65FR2	PJMF060N65FR2	PJMP060N65FR2		PJMB060N65FR2*	PJMN060N65FR2
		75	PJMH080N65FR2	PJMF080N65FR2	PJMP080N65FR2		PJMB080N65FR2*	PJMN080N65FR2
		130		PJMF130N65EC	PJMP130N65EC		PJMB130N65EC	
		180	PJMH190N65FR2	PJMF190N65FR2	PJMP190N65FR2	PJMD190N65FR2	PJMB190N65FR2*	PJMN190N65FR2*
		210		PJMF210N65EC	PJMP210N65EC		PJMB210N65EC	
		390		PJMF390N65EC	PJMP390N65EC	PJMD390N65EC	PJMB390N65EC	
		990		PJMF990N65EC	PJMP990N65EC	PJMD990N65EC		

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