

**DESCRIPTION**

The AM85N10PJ is available in PDFN8(5x6) Package.

V <sub>DS</sub>	R <sub>DS(ON)</sub>	I <sub>D</sub>
100V	6.5mΩ	85A

**APPLICATION**

- Synchronous Rectification for AC/DC Quick Charger
- Battery Management
- UPS

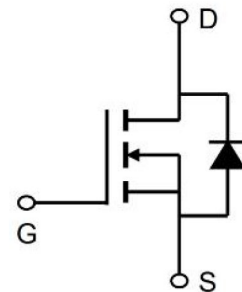
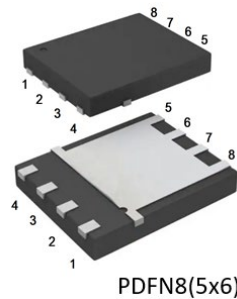
**ORDERING INFORMATION**

Part Number	Package	SPQ
AM85N10PJ	PDFN8 (5x6)	5000pcs/Reel

AiT provides all RoHS products

**FEATURE**

- Extremely low on-resistance R<sub>DS(on)</sub>
- Excellent Q<sub>g</sub>xR<sub>DS(on)</sub>
- Excellent Low Ciss
- Qualified according to JEDEC criteria

**PIN DESCRIPTION**

Pin#	Symbol	Function
1,2,3	S	Source
4	G	Gate
5,6,7,8	D	Drain

**ABSOLUTE MAXIMUM RATINGS**

T<sub>C</sub>=25°C, unless otherwise Noted

V <sub>DS</sub> , Drain-Source Voltage		100V
I <sub>D</sub> , Continue Drain Current	T <sub>C</sub> = 25°C (Silicon limit)	85A
	T <sub>C</sub> = 25°C (Package limit)	100A
	T <sub>C</sub> = 100°C (Silicon limit)	54A
	T <sub>A</sub> = 25°C	13A
I <sub>D pulse</sub> , Pulsed Drain Current (T <sub>C</sub> = 25°C, t <sub>p</sub> =100uS)		340A
E <sub>AS</sub> , Avalanche Energy, Single Pulse (L=0.5mh , V <sub>DS</sub> =50V)		64mJ
V <sub>GS</sub> , Gate-Source Voltage		±20V
P <sub>D</sub> , Power Dissipation	T <sub>C</sub> = 25°C	105W
	T <sub>A</sub> = 25°C	2.5W
T <sub>J</sub> , T <sub>STG</sub> Operating Junction And Storage Temperature		55°C~+150°C
T <sub>L</sub> , Soldering Temperature, Wave Soldering Only Allowed At Leads (1.6mm from case for 10s)		260°C

Stresses above may cause permanent damage to the device. These are stress ratings only and functional operation of the device at these or any other conditions beyond those indicated in the Electrical Characteristics are not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

\*Pulse test 300us pulse width, 2% duty cycle.



**ELECTRICAL CHARACTERISTICS**

T<sub>J</sub> = 25°C, unless otherwise Noted

Parameter	Symbol	Conditions	Min	Typ.	Max	Unit
Drain-Source Breakdown Voltage	V <sub>DS</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =250μA	100	-	-	V
Gate-Source Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250uA	2	-	4	V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> = 100V, V <sub>GS</sub> =0V T <sub>J</sub> =25°C T <sub>J</sub> =150°C	-	0.02	1 100	μA
Gate-Source Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =±20V, V <sub>DS</sub> =0V	-	±10-	±100	nA
Drain-Source On- State Resistance	R <sub>DS(ON)</sub>	V <sub>gs</sub> =10V, I <sub>d</sub> =40A		6.5	8.0	mΩ
Transconductance	g <sub>fs</sub>	V <sub>DS</sub> =5V, I <sub>D</sub> =40A		45		S
Input Capacitance	C <sub>iss</sub>	V <sub>GS</sub> =0V, V <sub>DS</sub> =50V, f=1MHz	-	2042	-	pF
Output Capacitance	C <sub>oss</sub>		-	1002	-	
Reverse Transfer Capacitance	C <sub>rss</sub>		-	75	-	
Gate Total Charge	Q <sub>g</sub>	V <sub>DS</sub> = 50V, I <sub>D</sub> =40A, V <sub>GS</sub> =10V	-	37	-	nC
Gate-Source charge	Q <sub>gs</sub>		-	13	-	
Gate-Drain charge	Q <sub>gd</sub>		-	3	-	
Turn-On Delay Time	t <sub>d(on)</sub>	V <sub>GS</sub> =10V, V <sub>DD</sub> =50V, R <sub>G_ext</sub> =10Ω, I <sub>D</sub> =13A	-	22	-	ns
Rise Time	t <sub>r</sub>		-	2	-	
Turn-Off Delay Time	t <sub>d(off)</sub>		-	44	-	
Fall Time	t <sub>f</sub>		-	5	-	
Gate Resistance	R <sub>G</sub>	V <sub>GS</sub> =0V, V <sub>DS</sub> =0V, f=1MHz		1.5		Ω
Body Diode Forward Voltage	V <sub>SD</sub>	V <sub>GS</sub> =0V, I <sub>SD</sub> =40A	-	0.9	1.2	V
Body Diode Continuous Forward Current	I <sub>S</sub>	TC = 25°C	-	-	85	A
Body Diode Pulsed Current	I <sub>S pulse</sub>	TC = 25°C			340	
Body Diode Reverse Recovery Time	t <sub>rr</sub>	I <sub>F</sub> =1A, dI/dt=100A/μs	-	62	-	ns
Body Diode Reverse Recovery Charge	Q <sub>rr</sub>		-	129	-	nC



## TYPICAL PERFORMANCE CHARACTERISTICS

Fig 1. Output Characteristics

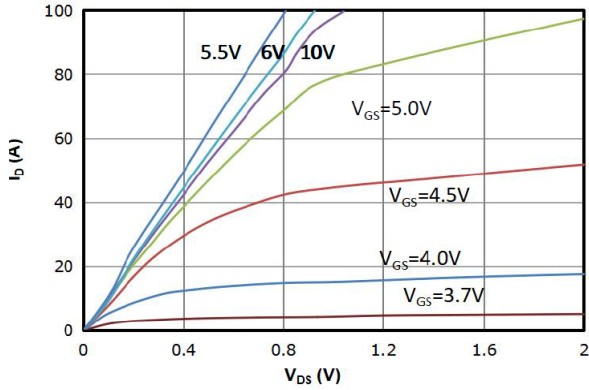


Fig 2. Transfer Characteristics

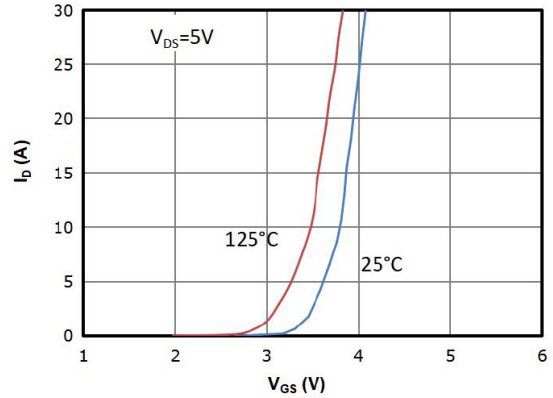


Fig 3.  $R_{DS(on)}$  vs Drain Current and Gate Voltage

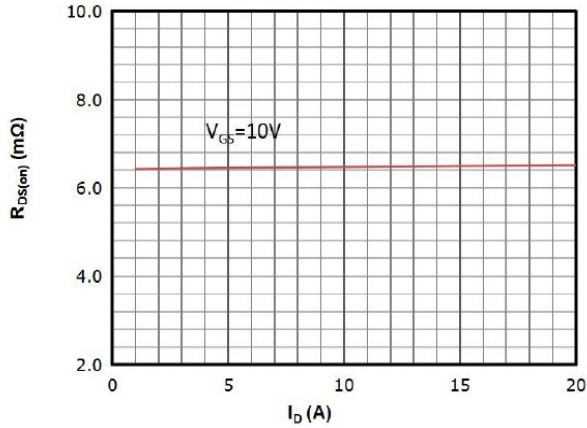


Fig 4.  $R_{DS(on)}$  vs Gate Voltage

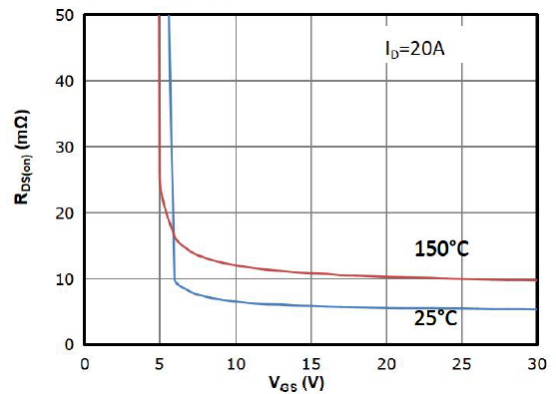


Fig 5.  $R_{DS(on)}$  vs. Temperature

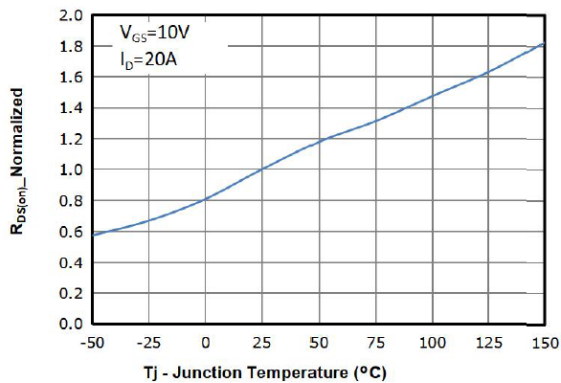


Fig 6.  $V_{GS(th)}$  vs. Temperature

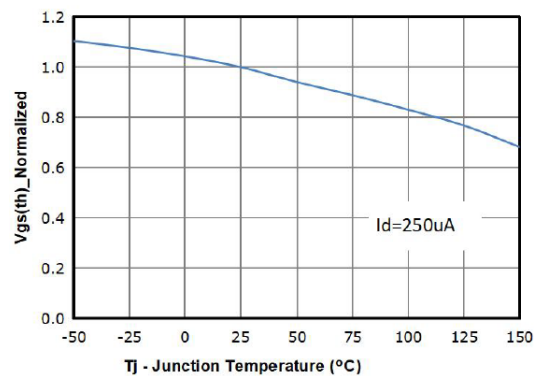




Fig 7:  $V_{DS}$  vs. Temperature

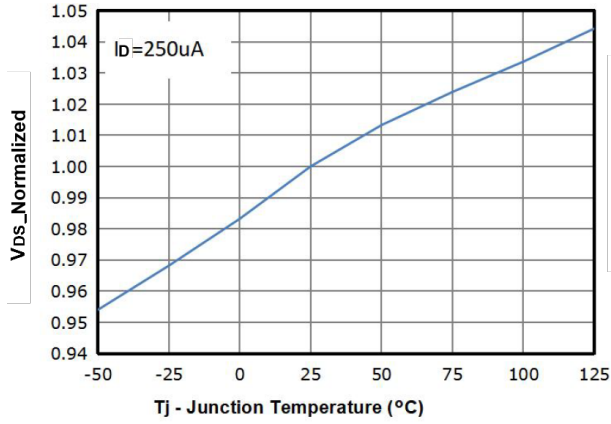


Fig 8. Capacitance Characteristics

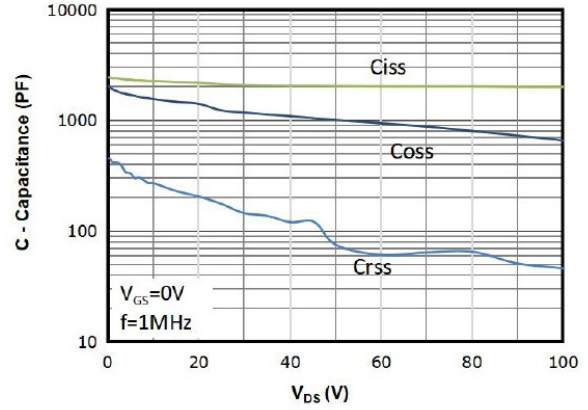


Fig 9. Gate Charge Characteristics

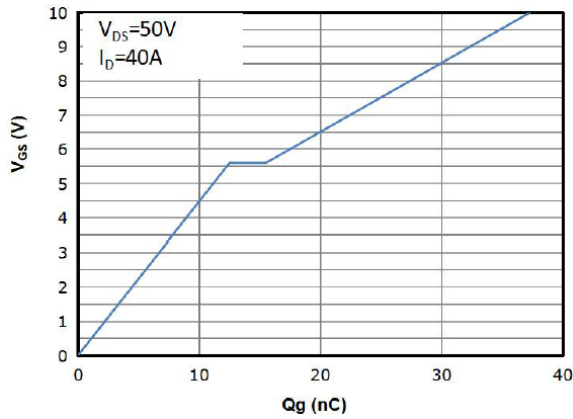


Fig 10. Body-diode Forward Characteristics

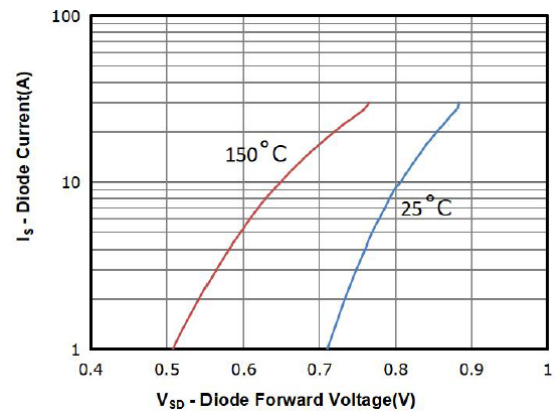


Fig 11. Power Dissipation

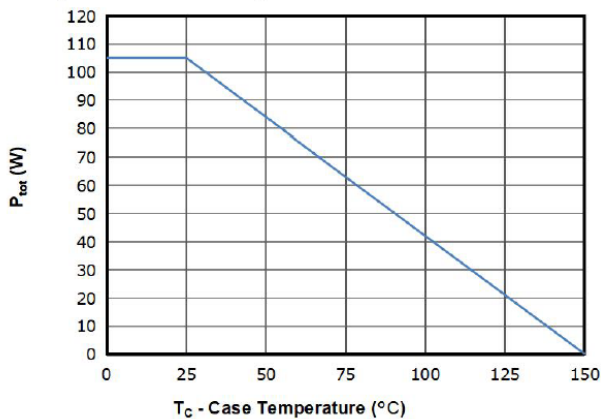


Fig 12. Drain Current Derating

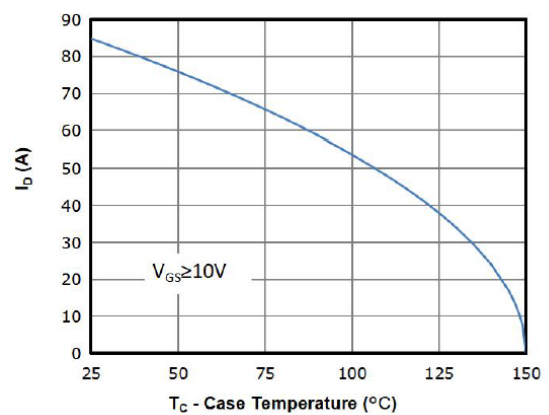




Fig 13. Safe Operating Area

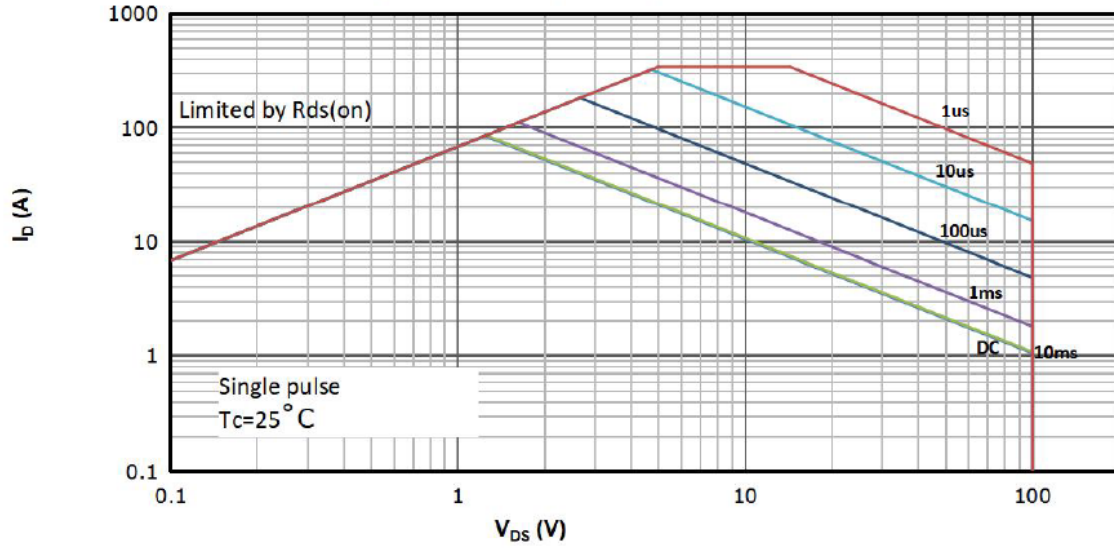
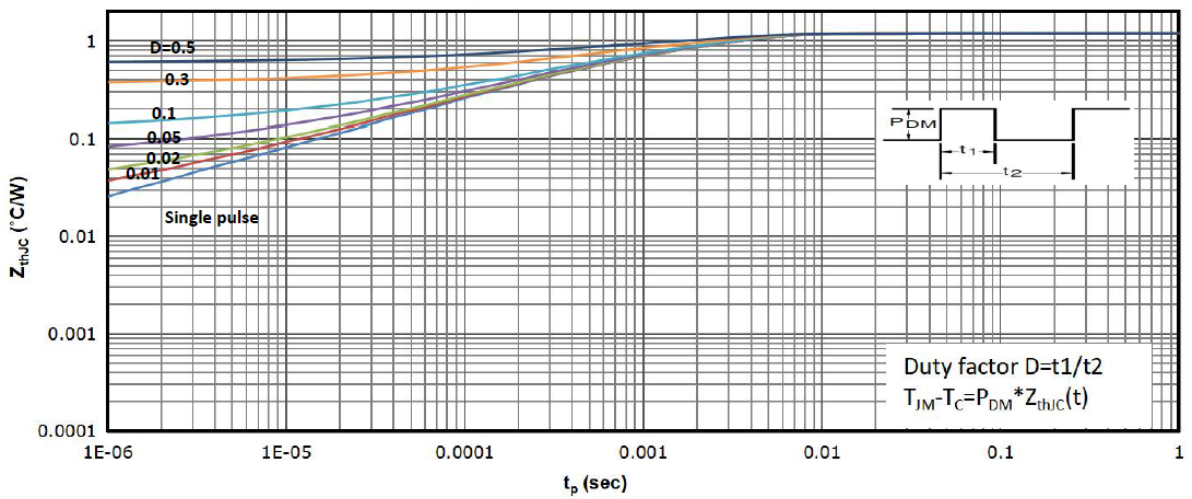


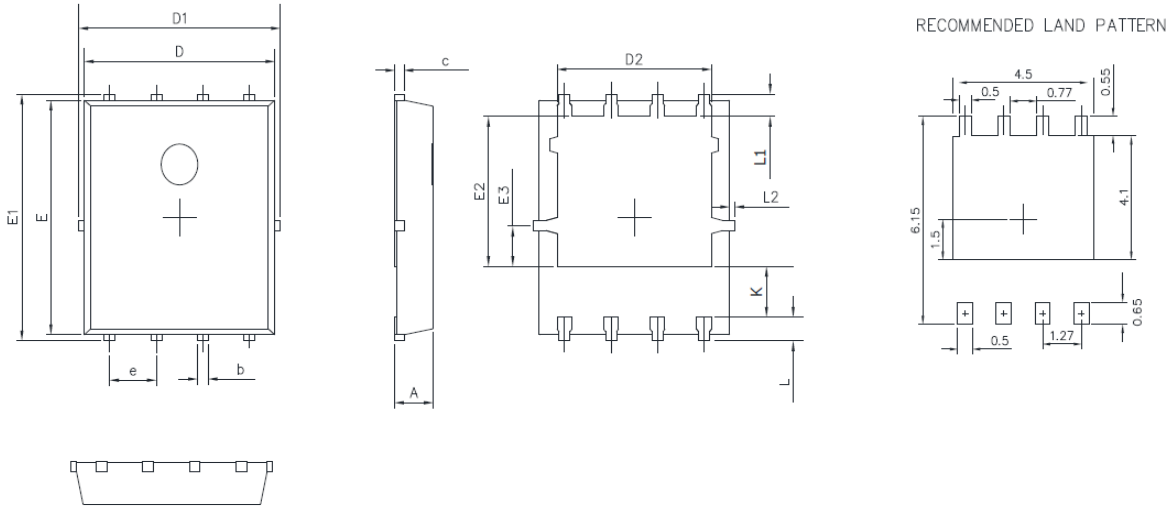
Fig 14. Max Transient Thermal Impedance





**PACKAGE INFORMATION**

Dimension in PDFN8 (5x6) (Unit: mm)



Symbol	Millimeters	
	Min.	Max.
A	0.900	1.100
b	0.250	0.500
c	0.100	0.300
D	4.800	5.300
D1	4.900	5.500
D2	3.920	4.200
E	5.650	5.850
E1	5.900	6.200
E2	3.330	3.780
E3	0.800	1.000
e	1.270	
L	0.400	0.700
L1	0.650	
L2	0.000	0.150
K	1.000	1.500



## IMPORTANT NOTICE

AiT Semiconductor Inc. (AiT) reserves the right to make changes to any its product, specifications, to discontinue any integrated circuit product or service without notice, and advises its customers to obtain the latest version of relevant information to verify, before placing orders, that the information being relied on is current.

AiT Semiconductor Inc. integrated circuit products are not designed, intended, authorized, or warranted to be suitable for use in life support applications, devices or systems or other critical applications. Use of AiT products in such applications is understood to be fully at the risk of the customer. As used herein may involve potential risks of death, personal injury, or server property, or environmental damage. In order to minimize risks associated with the customer's applications, the customer should provide adequate design and operating safeguards.

AiT Semiconductor Inc. assumes to no liability to customer product design or application support. AiT warrants the performance of its products of the specifications applicable at the time of sale.