

H80N10FB

N-Channel Power MOSFET

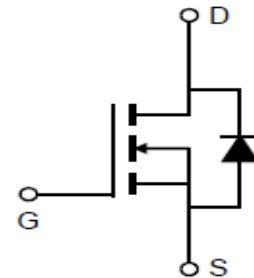
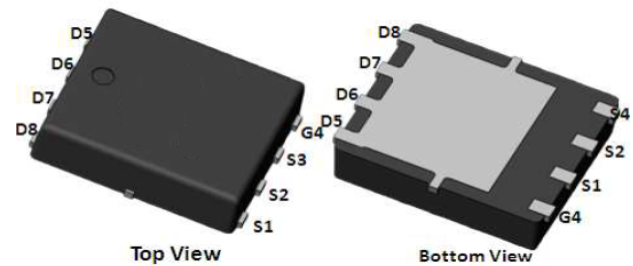
Features

- Extremely low on-resistance $R_{DS(on)}$
- Small package
- Qualified according to JEDEC criteria

Applications

- Synchronous Rectification for AC/DC Quick Charger
- Battery management
- UPS (Uninterruptible Power Supplies)

PDFN5*6-8L



Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Drain-source voltage	V_{DS}	100	V
Continuous drain current $T_C = 25^\circ\text{C}$ (Silicon limit) $T_C = 25^\circ\text{C}$ (Package limit) $T_C = 100^\circ\text{C}$ (Silicon limit))	I_D	126 80 80	A
Pulsed drain current ($T_C = 25^\circ\text{C}$, t_p limited by T_{jmax})	$I_{D \text{ pulse}}$	320	A
Avalanche energy, single pulse ($I_D=0.3\text{mA}$, $R_g=25\Omega$)	E_{AS}	95	mJ
Gate-Source voltage	V_{GS}	± 20	V
Power dissipation ($T_C = 25^\circ\text{C}$)	P_{tot}	132	W
Operating junction and storage temperature	T_j, T_{stg}	-55...+150	$^\circ\text{C}$
Soldering temperature, wave soldering only allowed at leads (1.6mm from case for 10s)	T_{sld}	260	$^\circ\text{C}$

Thermal Resistance

Parameter	Symbol	Value			Unit	Test Condition
		min.	typ.	max.		
Thermal resistance, junction – case.	RthJC	-	0.53	0.95	°C/W	-
Thermal resistance, junction - ambient(min. footprint)	RthJA	-	-	55	°C/W	-

Electrical Characteristic (at Tj = 25 °C, unless otherwise specified)

Parameter	Symbol	Value			Unit	Test Condition
		min.	typ.	max.		

Static Characteristic

Drain-source breakdown voltage	BV _{DSS}	100	-	-	V	V _{GS} =0V, I _D =250uA
Gate threshold voltage	V _{GS(th)}	2.0	3	4.0	V	V _{DS} =V _{GS} , I _D =250uA
Zero gate voltage drain current	I _{DSS}	-	-	1	μA	V _{DS} =100V, V _{GS} =0V T _j =25°C
		-	-	100		T _j =150°C
Gate-source leakage current	I _{GSS}		-	±100	nA	V _{GS} =±20V, V _{DS} =0V
Drain-source on-state resistance	R _{DS(on)}	-	3.0	3.6	mΩ	V _{GS} =10V, I _D =1A
Transconductance	g _{fs}	-	148.8	-	S	V _{DS} =5V, I _D =50A

Dynamic Characteristic

Input Capacitance	C _{iss}	2000	4211	6316.5	pF	V _{GS} =0V, V _{DS} =50V, f=1MHz
Output Capacitance	C _{oss}	400	848	1272		
Reverse Transfer Capacitance	C _{rss}	10	34	68		
Gate Total Charge	Q _G	-	67	100.5	nC	V _{GS} =10V, V _{DS} =50V, I _D =50A, f=1MHz
Gate-Source charge	Q _{gs}	-	23	34.5		
Gate-Drain charge	Q _{gd}	-	11.5	23		
Turn-on delay time	t _{d(on)}	-	21.8	-	ns	V _{GS} =10V, V _{DD} =50V, R _{G_ext} =2.7Ω
Rise time	t _r	-	92.0	-		
Turn-off delay time	t _{d(off)}	-	39.8	-		
Fall time	t _f	-	82.4	-		
Gate resistance	R _G	0.5	1.58	3.16	Ω	V _{GS} =0V, V _{DS} =0V, f=1MHz

Body Diode Characteristic

Parameter	Symbol	Value			Unit	Test Condition
		min.	typ.	max.		
Body Diode Forward Voltage	V_{SD}	-	0.82	1.4	V	$V_{GS}=0V, I_{SD}=50A$
Body Diode Continuous Forward Current	I_S	-	-	126	A	TC = 25°C
Body Diode Pulsed Current	I_S pulse	-	-	505.92	A	TC = 25°C
Body Diode Reverse Recovery Time	t_{rr}	-	64.5	129	ns	$I_F=50A,$ $dI/dt=100A/\mu s$
Body Diode Reverse Recovery Charge	Q_{rr}	-	120	240	nC	

Typical Performance Characteristics

Fig 1: Output Characteristics

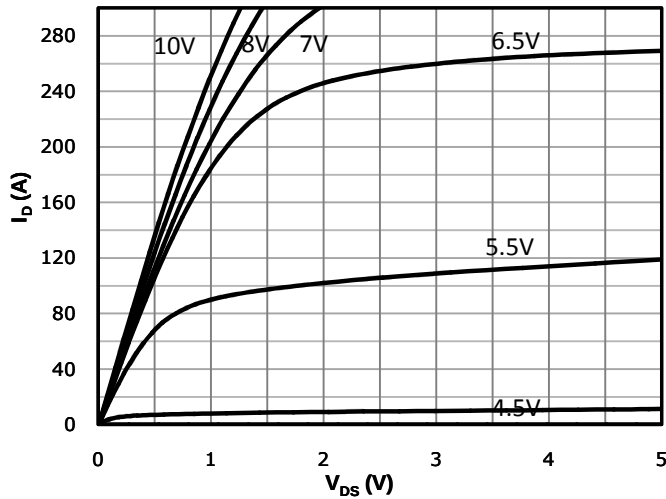
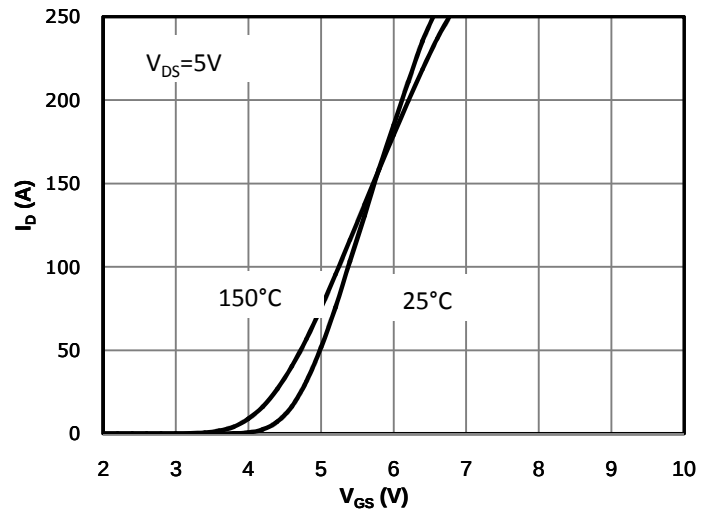


Fig 2: Transfer Characteristics



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

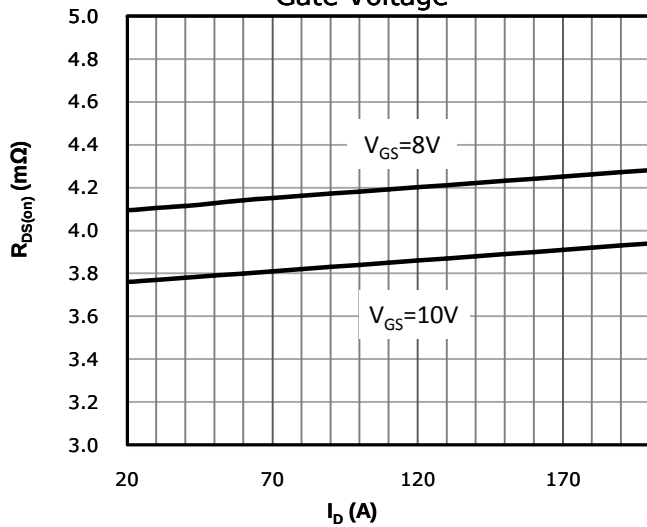


Fig 4: $R_{DS(on)}$ vs Gate Voltage

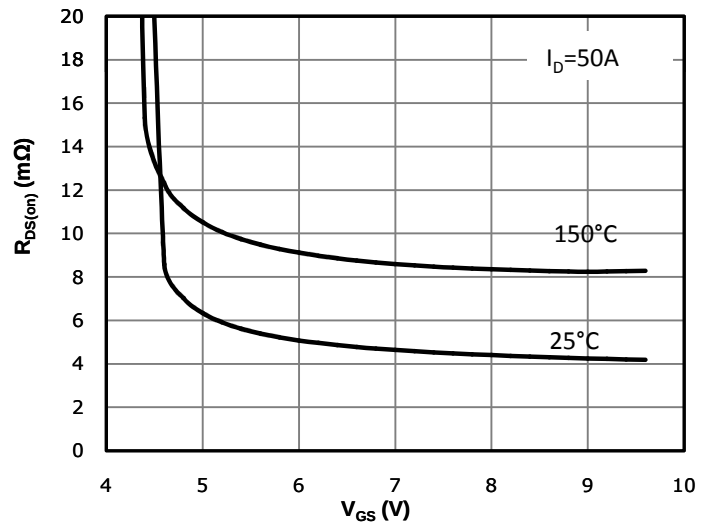


Fig 5: $R_{DS(on)}$ vs. Temperature

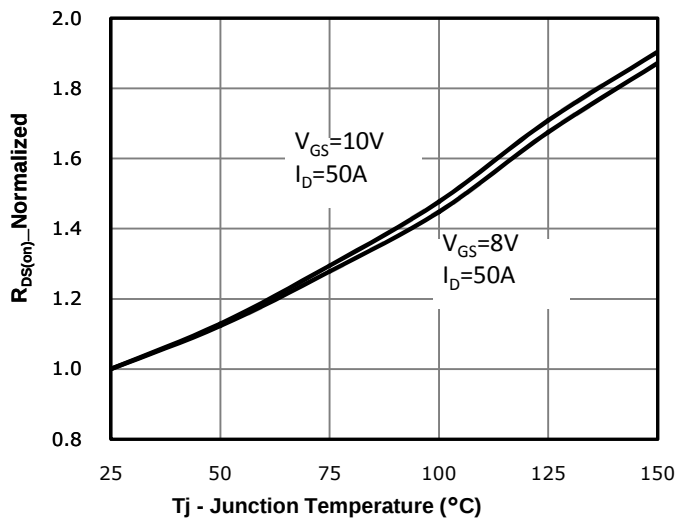


Fig 6: Capacitance Characteristics

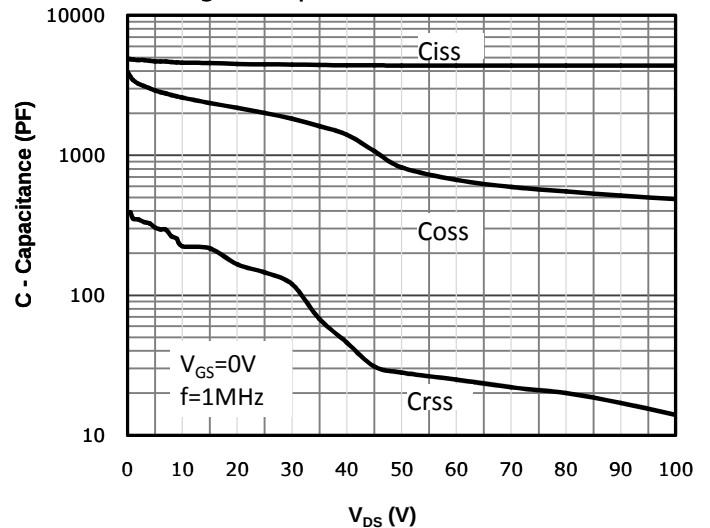


Fig 7: Gate Charge Characteristics

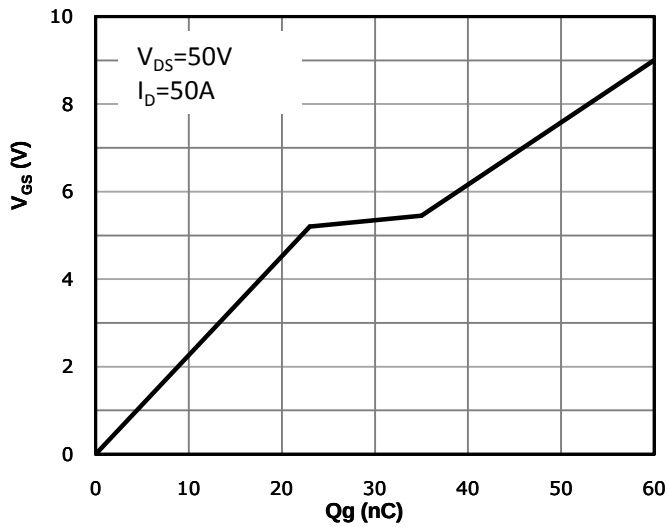


Fig 8: Body-diode Forward Characteristics

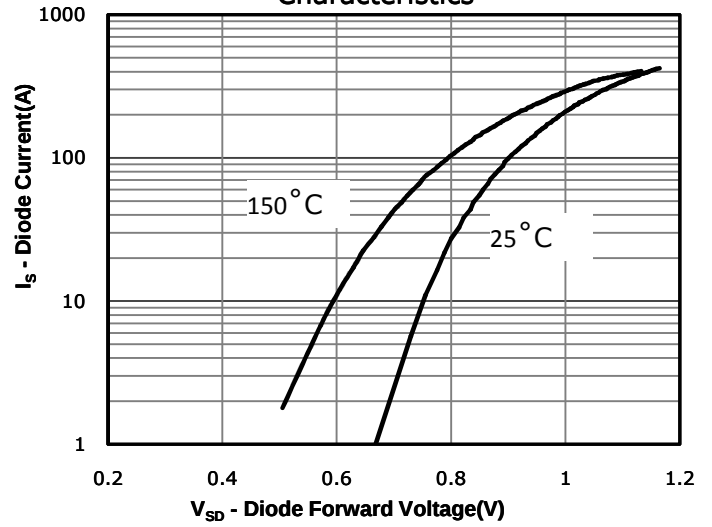


Fig 9: Power Dissipation

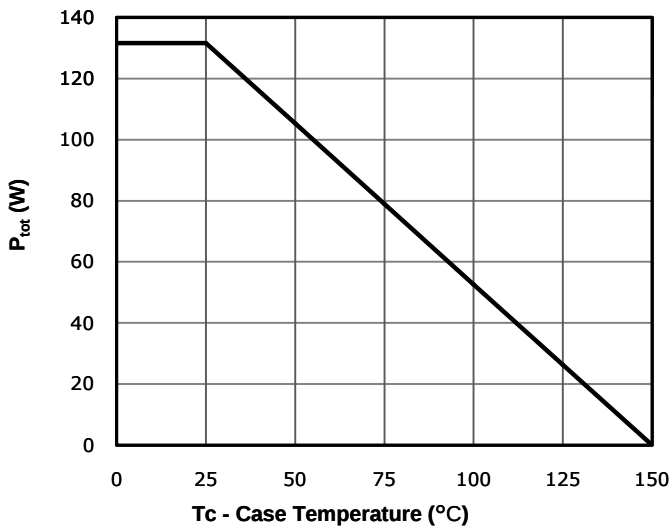


Fig 10: Drain Current Derating

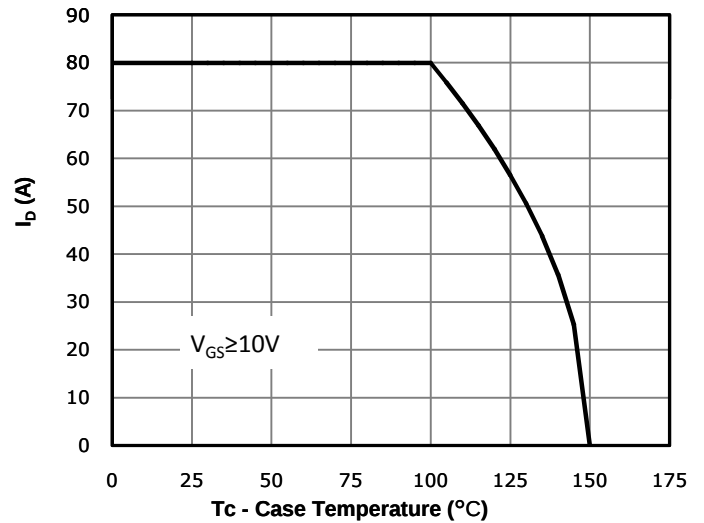


Fig 11: Safe Operating Area

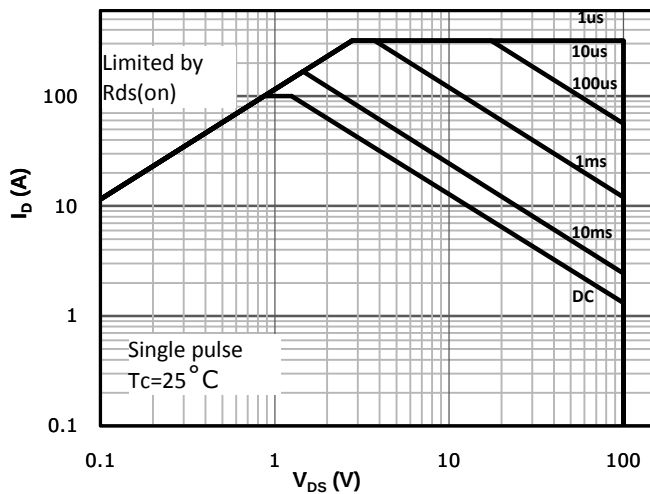
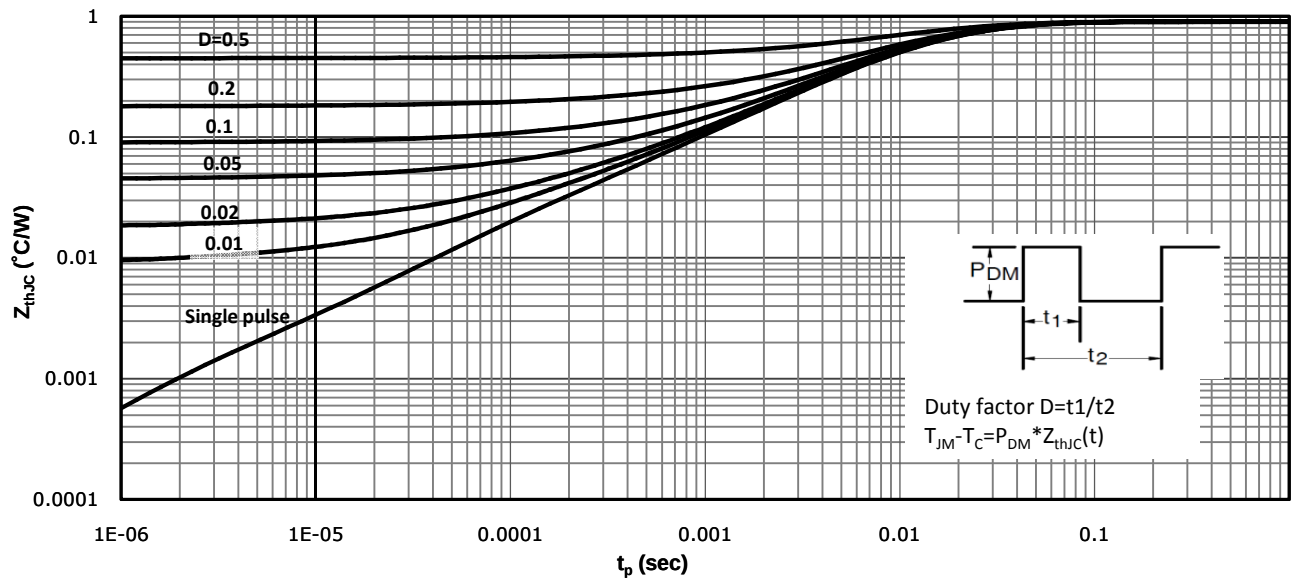
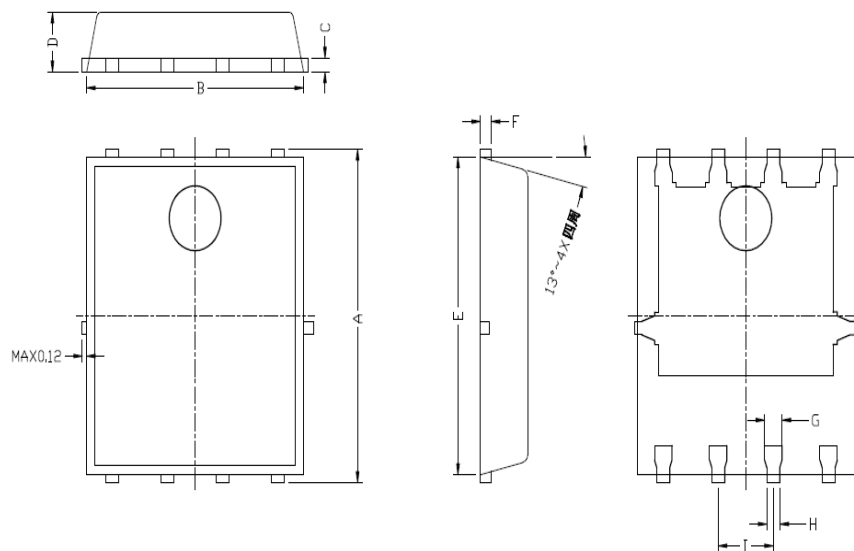


Fig 12: Max. Transient Thermal Impedance



Mechanical Dimensions



PDFN5*6-8L

Symbol	unit(mm)	
	MIN	MAX
A	6.05	6.25
B	4.975	5.025
C	0.246	0.262
D	1.075	1.125
E	5.835	5.885
F	0.246	0.262
G	0.3	0.5
H	0.2	0.4
I	1.26	1.28