

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
30V	7.5mΩ@10V	45A
	10mΩ@4.5V	

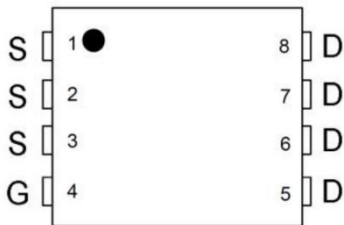
Feature

- High density cell design for ultra low Rdson
- Fully characterized avalanche voltage and current
- Good stability and uniformity with high EAS
- Excellent package for good heat dissipation

Application

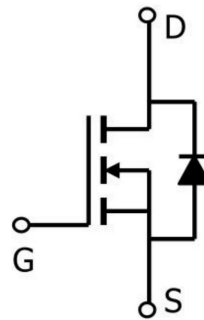
- High current load applications
- Load switching
- Hard switched and high frequency circuits
- Uninterruptible power supply

Package

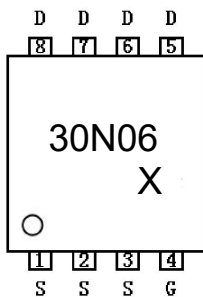


PDFN3X3-8L

Circuit diagram



Marking



Absolute maximum ratings (T_a=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V _{DS}	30	V
Gate-Source Voltage	V _{GS}	±20	V
Continuous Drain Current	I _D	45	A
Continuous Drain Current(T _C =100°C)	I _D (100 °C)	30	A
Pulsed Drain Current	I _{DM}	180	A
Power Dissipation	P _D	16.6	W
Single pulse avalanche energy ¹⁾	E _{AS}	56	mJ
Thermal Resistance,Junction-to-Case	R _{θJC}	7.56	°C/W
Junction Temperature	T _J	150	°C
Storage Temperature	T _{STG}	-55 ~ +150	°C

Electrical characteristics (T_a=25°C unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D =250μA	30			V
Zero gate voltage drain current	I _{DSS}	V _{DS} =30V,V _{GS} = 0V			1	μA
Gate-body leakage current	I _{GSS}	V _{GS} =±20V, V _{DS} = 0V			±100	nA
Gate threshold voltage ²⁾	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	1.0	1.5	2.5	V
Drain-source on-resistance ²⁾	R _{DS(on)}	V _{GS} =10V, I _D =20A		6	7.5	mΩ
		V _{GS} =4.5V, I _D =15A		7.5	10	
Dynamic characteristics³⁾						
Input Capacitance	C _{iss}	V _{DS} =15V,V _{GS} =0V,f =1MHz		1614		pF
Output Capacitance	C _{oss}			245		
Reverse Transfer Capacitance	C _{rss}			215		
Total Gate Charge	Q _g	V _{DS} =15V,V _{GS} =10V, I _D =30A		33.7		nC
Gate-Source Charge	Q _{gs}			8.5		
Gate-Drain Charge	Q _{gd}			7.5		
Turn-on delay time	t _{d(on)}	V _{DS} =15V,V _{GS} =10V, I _D =30A,R _{GEN} =3Ω		7.5		nS
Turn-on rise time	t _r			14.5		
Turn-off delay time	t _{d(off)}			35.2		
Turn-off fall time	t _f			9.6		
Source-Drain Diode characteristics						
Diode Forward voltage ²⁾	V _{SD}	V _{GS} =0V, I _S =30A			1.2	V

Notes:

- 1) EAS condition: T_J=25°C, V_{DD}=15V, V_G=10V, R_G=25Ω, L=0.5mH, I_{AS}=15A
- 2) Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
- 3) Guaranteed by design, not subject to production.

Typical Characteristics

Figure 1: Output Characteristics

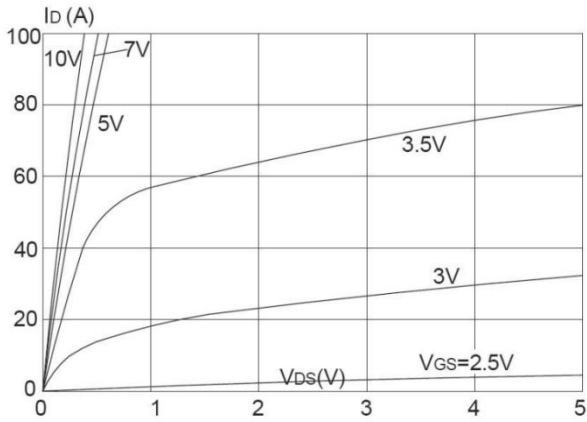


Figure 2: Typical Transfer Characteristics

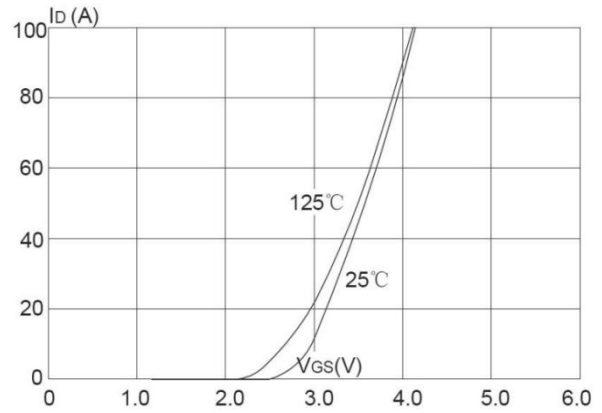


Figure 3: On-resistance vs. Drain Current

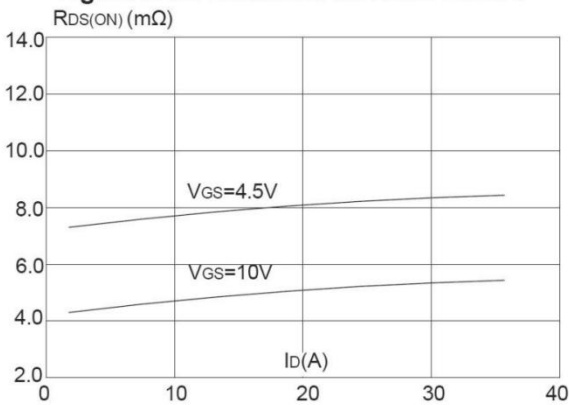


Figure 4: Body Diode Characteristics

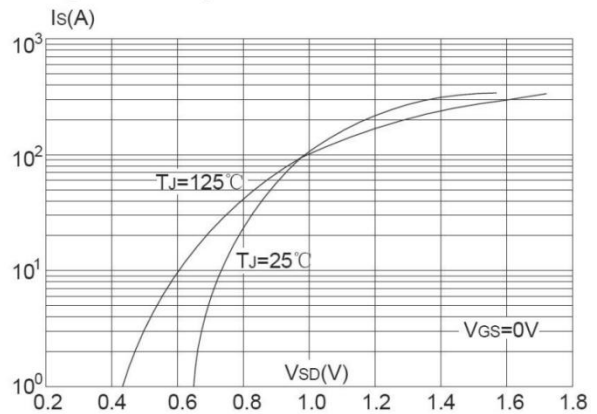


Figure 5: Gate Charge Characteristics

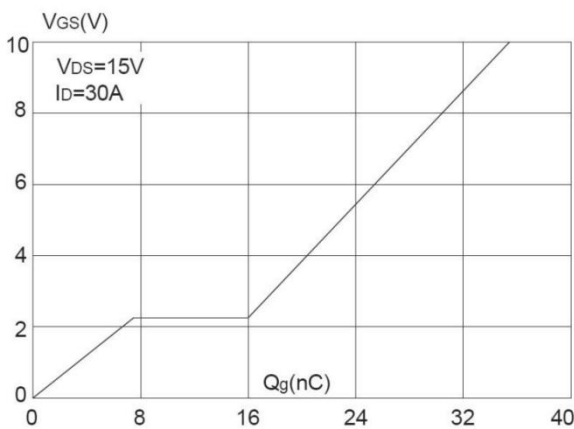
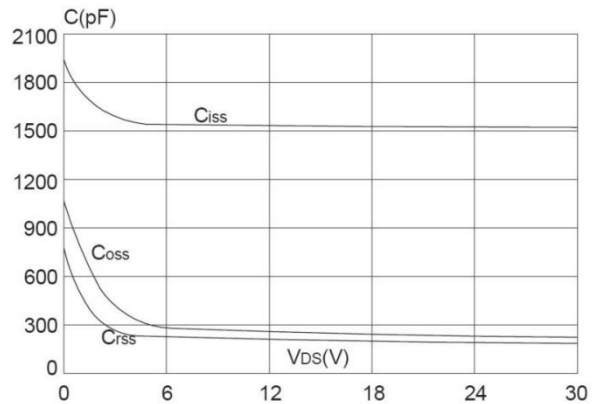


Figure 6: Capacitance Characteristics



Typical Characteristics

Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

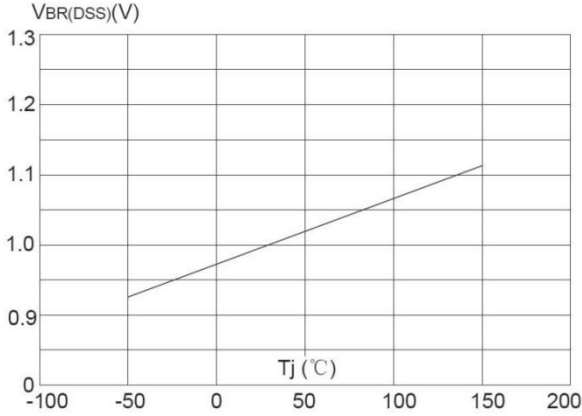


Figure 8: Normalized on Resistance vs. Junction Temperature

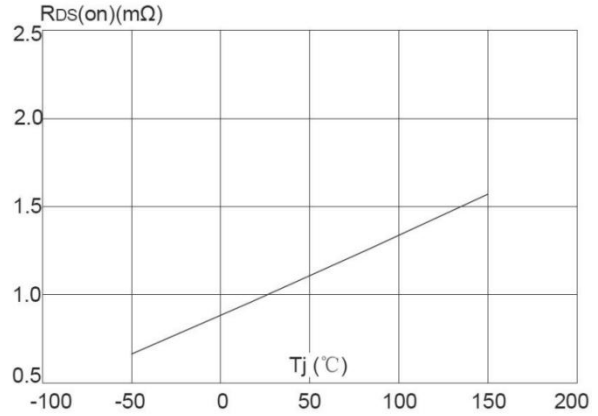


Figure 9: Maximum Safe Operating Area

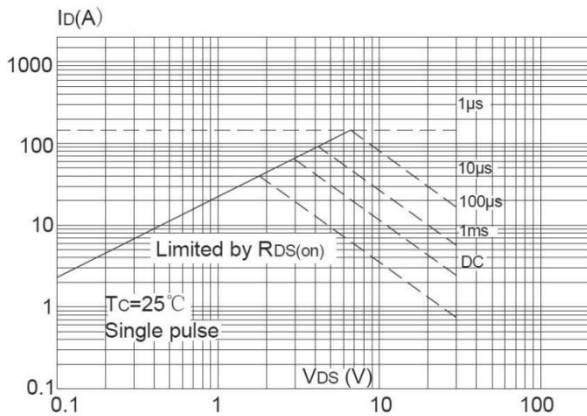


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

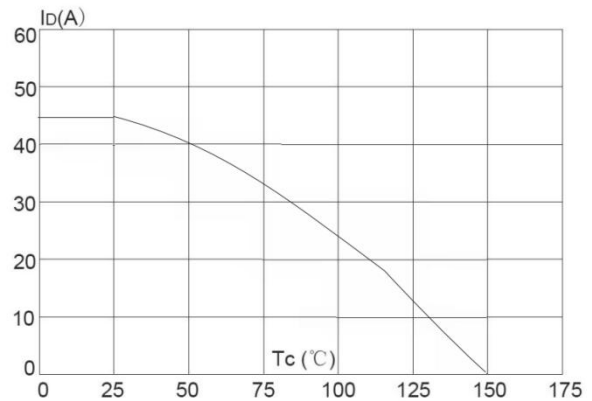
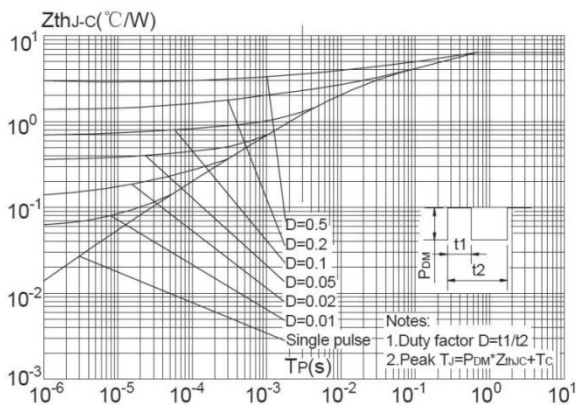
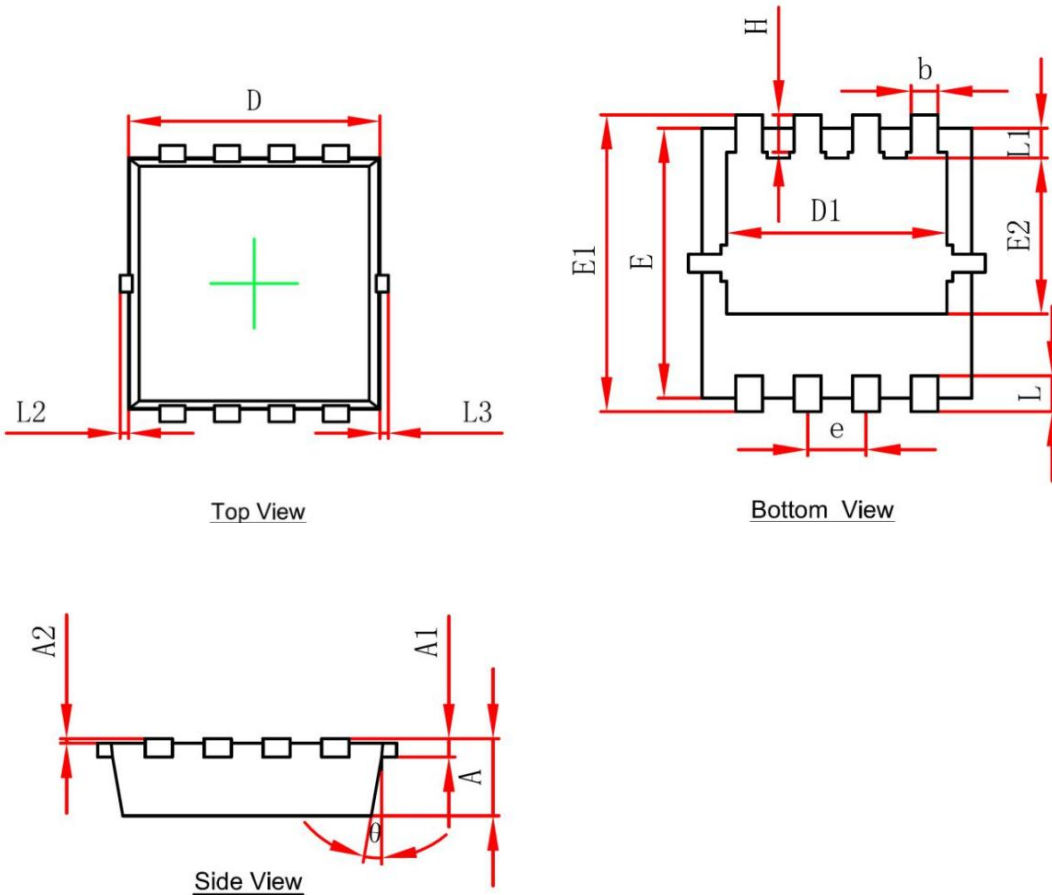


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case



PDFN3X3-8L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.650	0.850	0.026	0.033
A1	0.152 REF.		0.006 REF.	
A2	-	0.050	-	0.002
D	2.900	3.100	0.114	0.122
D1	2.300	2.600	0.091	0.102
E	2.900	3.100	0.114	0.122
E1	3.150	3.450	0.124	0.136
E2	1.535	1.935	0.060	0.076
b	0.200	0.400	0.008	0.016
e	0.550	0.750	0.022	0.030
L	0.300	0.500	0.012	0.020
L1	0.180	0.480	0.007	0.019
L2	-	0.100	-	0.004
L3	-	0.100	-	0.004
H	0.315	0.515	0.012	0.020
θ	9°	13°	9°	13°