

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
30V	7.5mΩ@10V	55A
	10mΩ@4.5V	

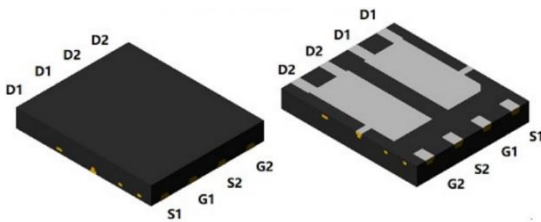
Feature

- High density cell design for ultra low Rdson
- Fully characterized avalanche voltage and current
- Low gate to drain charge to reduce switching losses

Application

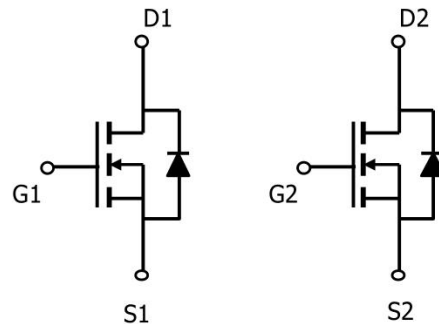
- Power switching application
- Hard switched and high frequency circuits
- Load switch

Package

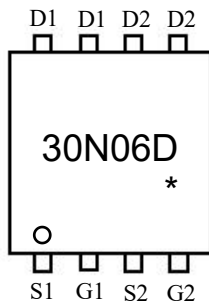


PDFN5*6-8L

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	55	A
Pulsed Drain Current	I _{DM}	220	A
Power Dissipation	P _D	46	W
Thermal Resistance, Junction-to-Case ¹⁾	R _{θJC}	57.8	°C/W
Single pulse avalanche energy	E _{AS}	56	mJ
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	mΩ
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, L=0.5mH, R_g=25Ω.
- 2) Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
- 3) Guaranteed by design, not subject to production.

Typical Characteristics

Figure 1: Output Characteristics

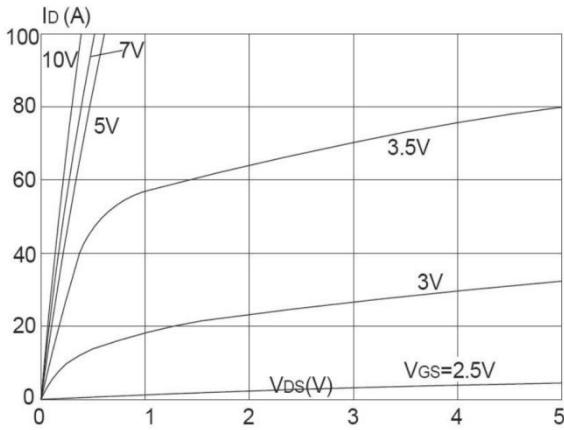


Figure 2: Typical Transfer Characteristics

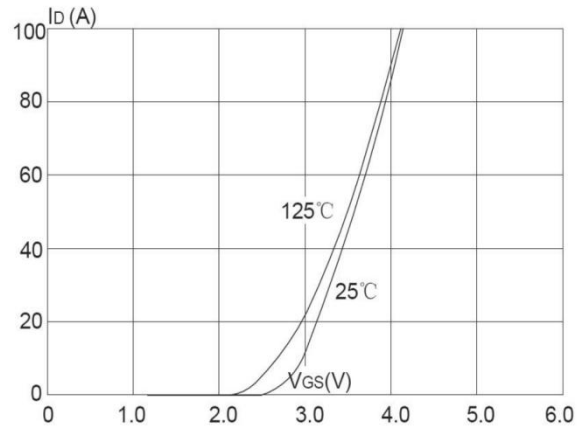


Figure 3: On-resistance vs. Drain Current

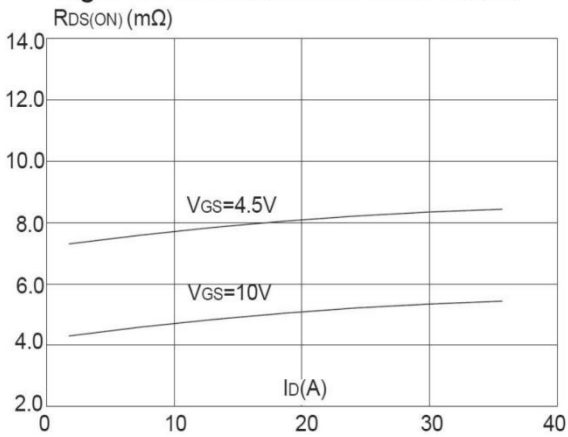


Figure 4: Body Diode Characteristics

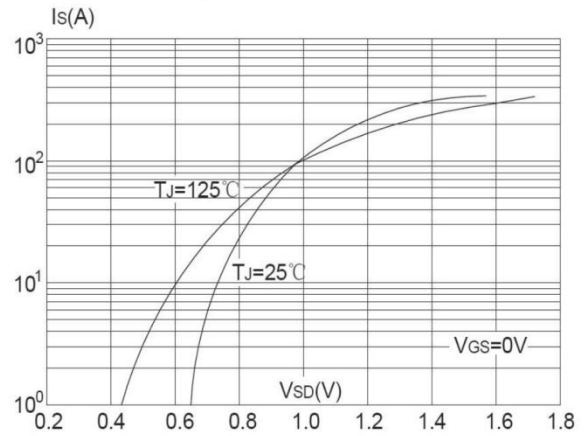


Figure 5: Gate Charge Characteristics

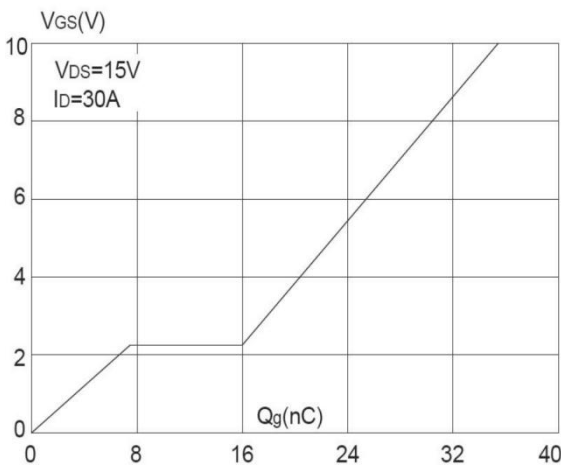
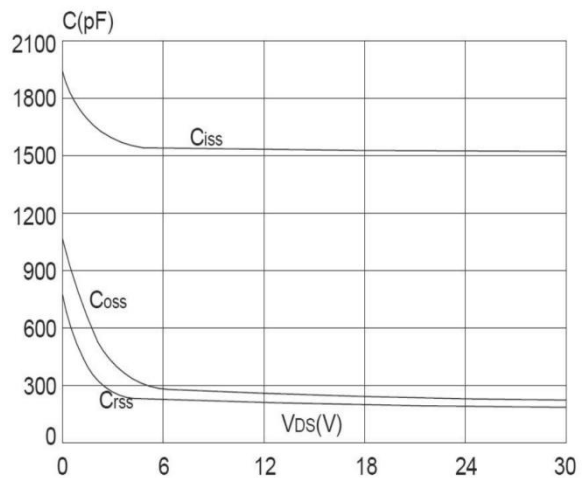


Figure 6: Capacitance Characteristics



Typical Characteristics

Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

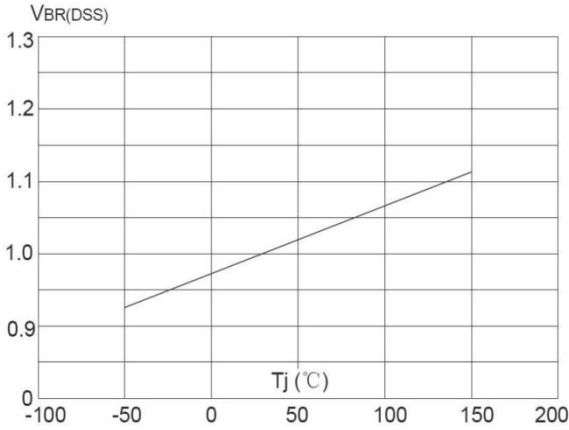


Figure 8: Normalized on Resistance vs. Junction Temperature

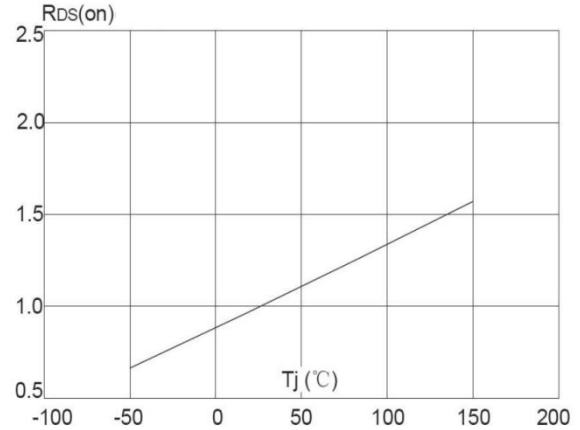


Figure 9: Maximum Safe Operating Area

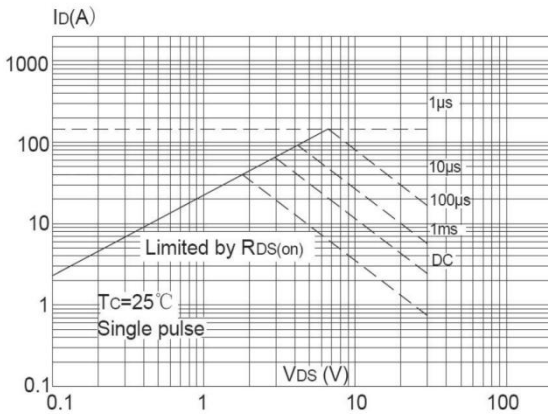


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

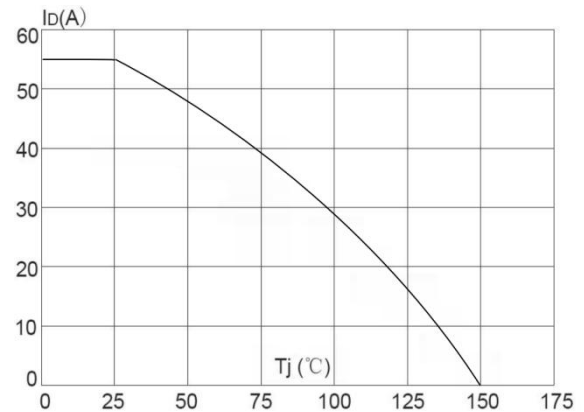
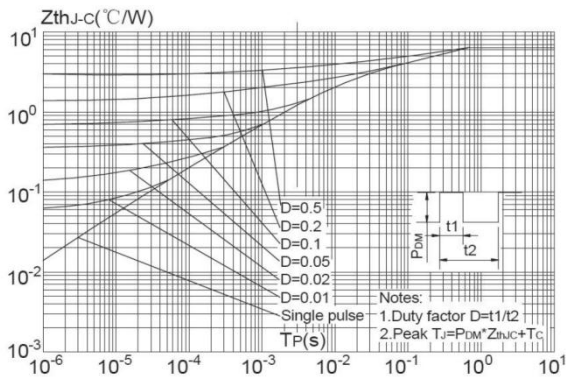
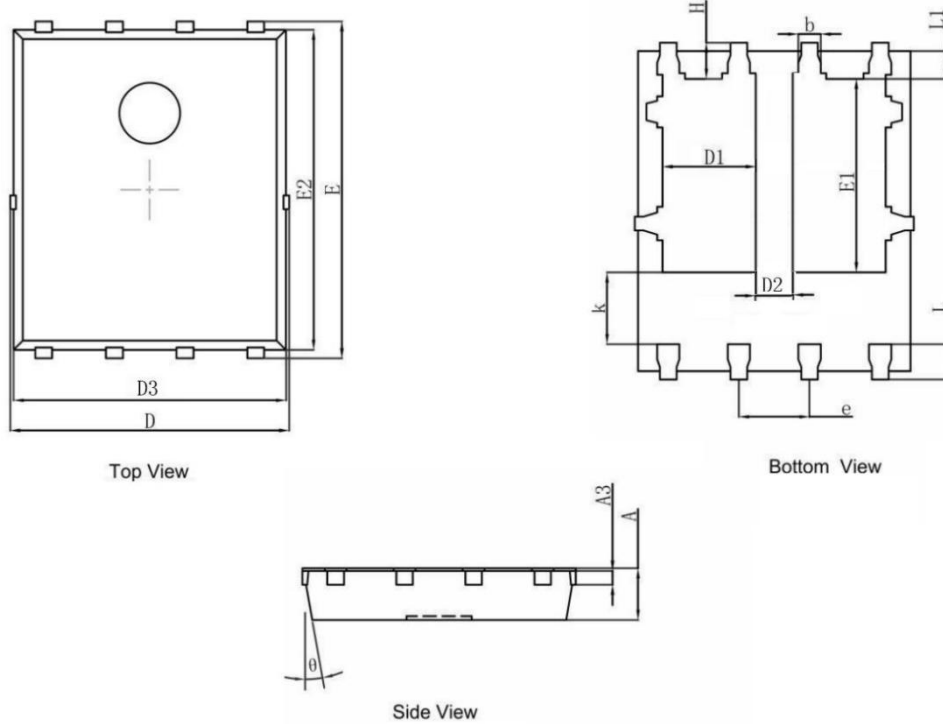


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case



PDFN5*6-8L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.000	0.035	0.039
A3	0.254REF.		0.010REF.	
D	4.944	5.096	0.195	0.201
E	5.974	6.126	0.235	0.241
D1	1.470	1.870	0.058	0.074
D2	0.470	0.870	0.019	0.034
E1	3.375	3.575	0.133	0.141
D3	4.824	4.976	0.190	0.196
E2	5.674	5.826	0.223	0.229
k	1.190	1.390	0.047	0.055
b	0.350	0.450	0.014	0.018
e	1.270TYP.		0.050TYP.	
L	0.559	0.711	0.022	0.028
L1	0.424	0.576	0.017	0.023
H	0.574	0.726	0.023	0.029
θ	10°	12°	10°	12°