

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
30V	7mΩ@10V	26A
	10.5mΩ@4.5V	

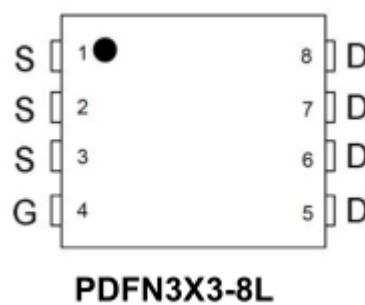
Feature

- High density cell design for ultra low Rdson
- Fully characterized avalanche voltage and current
- Good stability and uniformity with high E_{AS}
- Excellent package for good heat dissipation
- Special process technology for high ESD capability

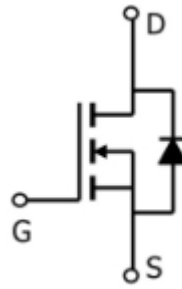
Application

- Power switching application
- Hard switched and high frequency circuits
- Uninterruptible power supply

Package



Circuit diagram



Marking



30N07 =Device Code
* =Month Code

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
Drain Current-Continuous	I _D	26	A
Drain Current-Continuous(TC=100°C)	I _D (100°C)	18	A
Pulsed Drain Current	I _{DM}	104	A
Single Pulse Avalanche Energy	E _{AS}	56	mJ
Maximum Power Dissipation	P _D	16.6	W
Thermal Resistance,Junction-to-Case ^(Note 1)	R _{θJC}	7.56	°C/W
Operating Junction and Storage Temperature Range	T _{STG} , T _J	-55~+175	°C

Electrical characteristics

(T_A=25°C, unless otherwise noted)

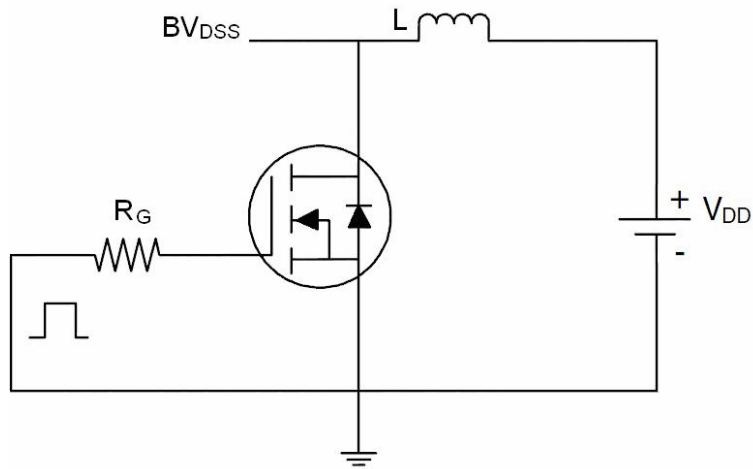
Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV (BR) _{DSS}	V _{GS} = 0V, I _D =250μA	30			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =30V, V _{GS} = 0V			1	uA
Gate-Source Leakage	I _{GSS}	V _{GS} = ±20V, V _{DS} =0V			±100	uA
On Characteristics ^(Note 2)						
Gate-Source Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	1.0	1.5	2.5	V
Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =10V, I _D =20A		7	9.5	mΩ
		V _{GS} =4.5V, I _D =15A		10.5	15	
Dynamic Characteristics ^(Note 3)						
Input Capacitance	C _{iss}	V _{DS} =15V, V _{GS} =0V, f=1.0MHz		1614		pF
Output Capacitance	C _{oss}			245		
Reverse Transfer Capacitance	C _{rss}			215		
Switching Characteristics ⁴						
Turn-on Delay Time	T _{d(on)}	V _{DD} =15V, I _D =30A, R _{GEN} =3Ω, V _{GS} =10V		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		
Total Gate Charge	Q _g	V _{DS} =15V, I _D =30A, V _{GS} =10V		33.7		pF
Gate-Source Charge	Q _{gs}			8.5		
Gate-Drain Charge	Q _{gd}			7.5		
Drain-Source Diode Characteristics						
Diode Forward Voltage ^(Note 2)	V _{SD}	V _{GS} =0V , I _S =30A			1.2	V

Notes:

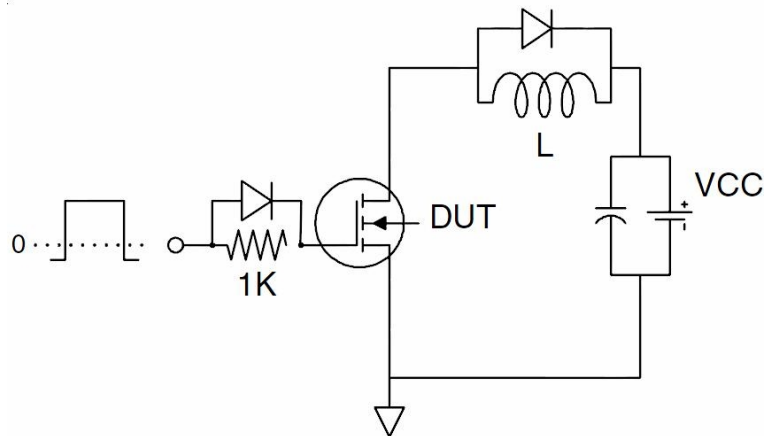
1. E_{AS} condition: T_J = 25°C, V_{DD} = 15V, V_G = 10V, R_G = 25Ω, L = 0.5mH, I_{AS} = 15A
2. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
3. Guaranteed by design, not subject to production

Test Circuit

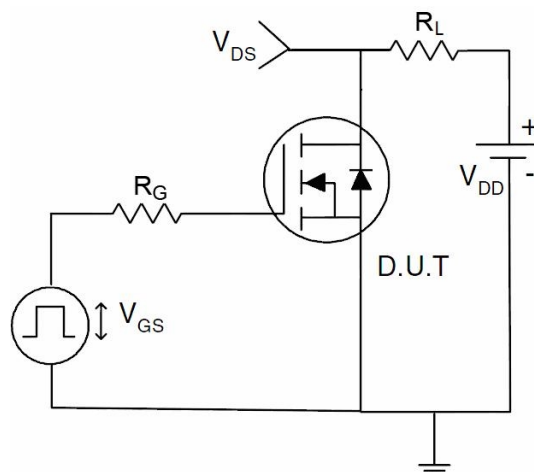
- EAS Test Circuits



- Gate Charge Test Circuit



- Switch Time Test Circuit



Typical Characteristics

Figure1: Output Characteristics

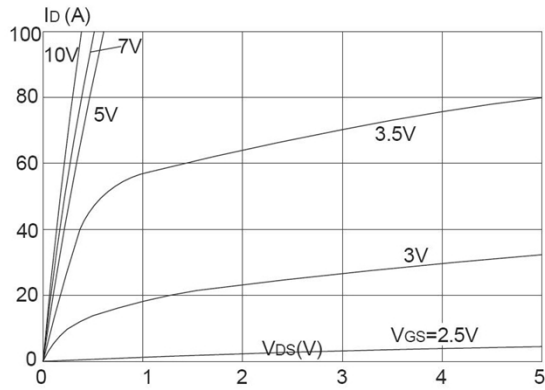


Figure 2: Typical Transfer Characteristics

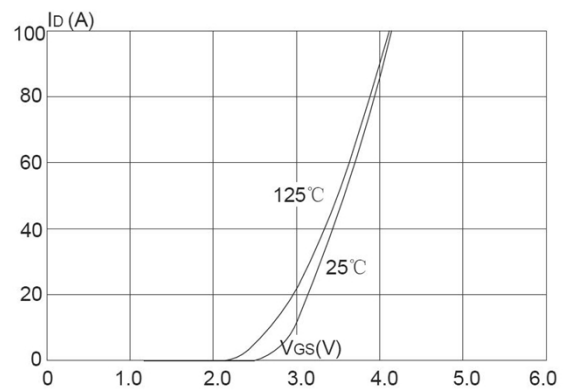


Figure 3: On-resistance vs. Drain Current

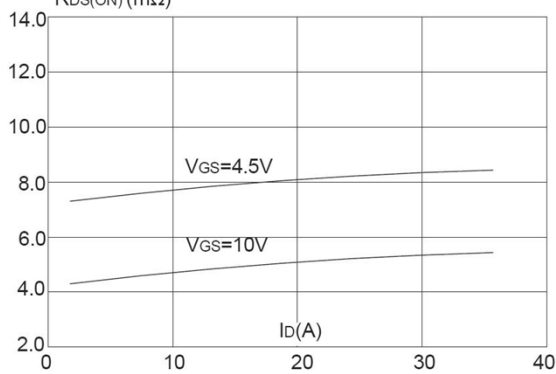


Figure 4: Body Diode Characteristics

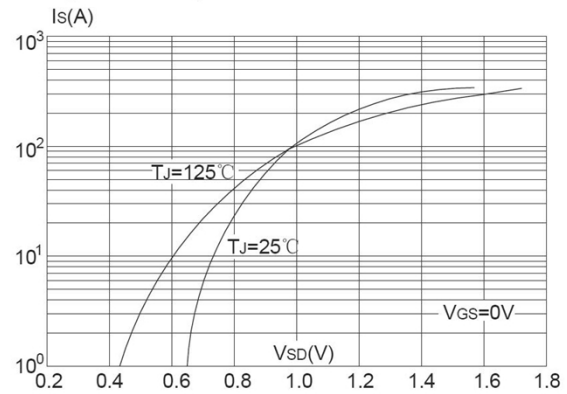


Figure 5: Gate Charge Characteristics

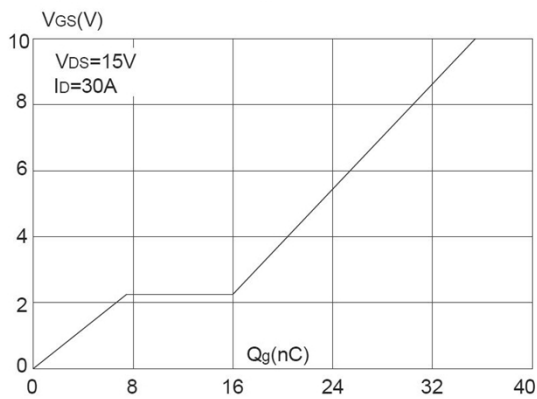


Figure 6: Capacitance Characteristics

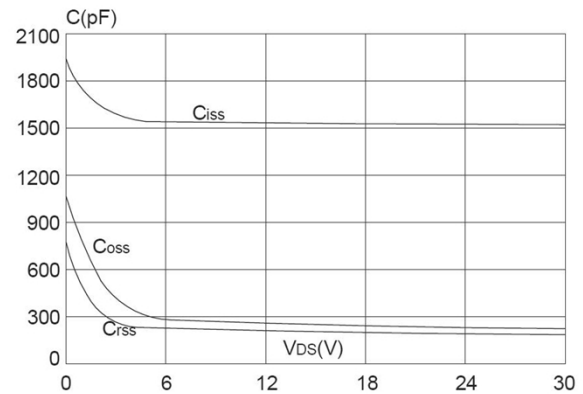


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

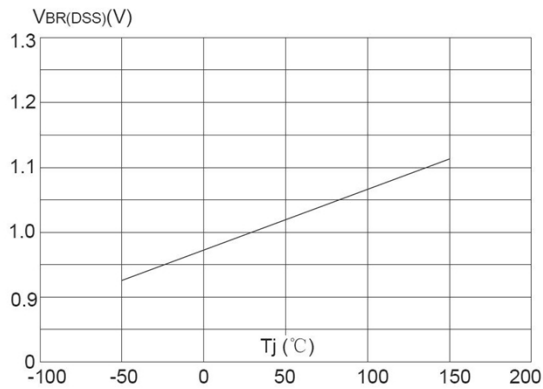


Figure 8: Normalized on Resistance vs. Junction Temperature

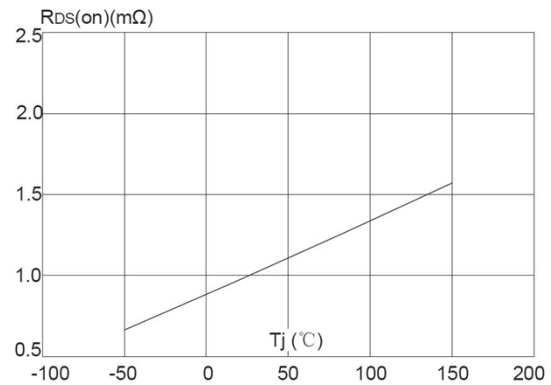


Figure 9: Maximum Safe Operating Area

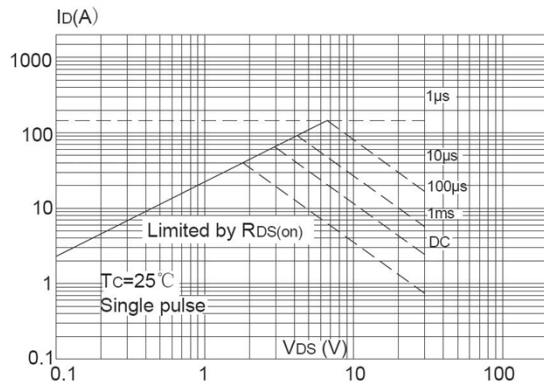


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

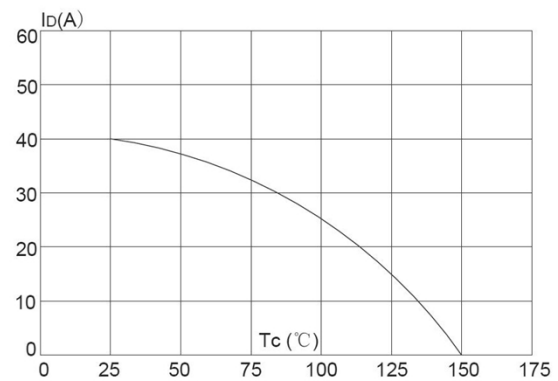
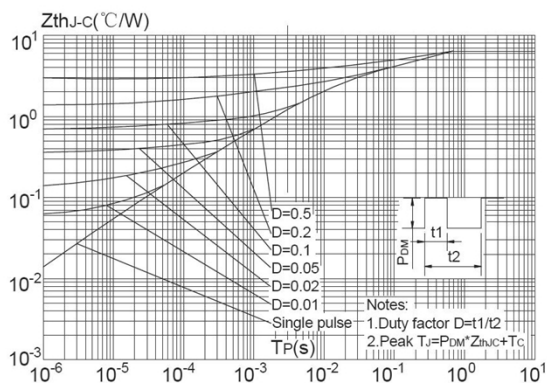
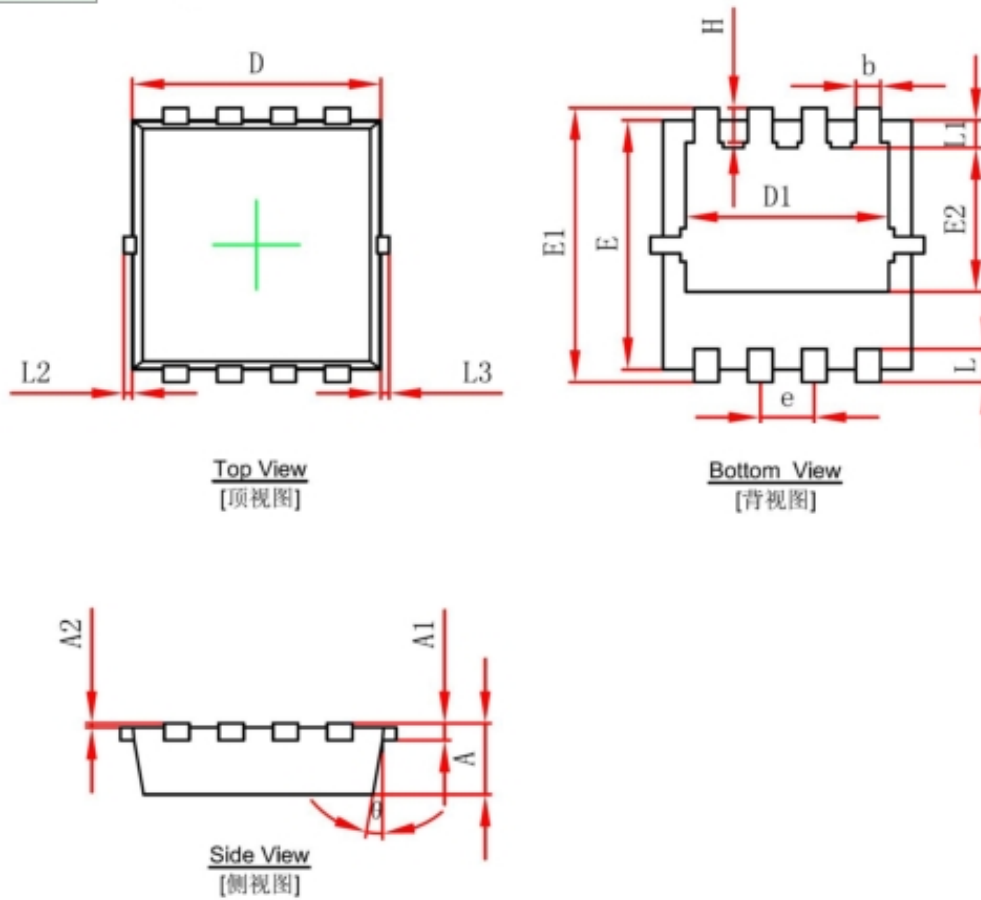


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case



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	0~0.05		0~0.002	
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	0~0.100		0~0.004	
L3	0~0.100		0~0.004	
H	0.315	0.515	0.012	0.020
θ	9°	13°	9°	13°