

## Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	$I_D$
-30V	25mΩ@-10V	-12A
	36mΩ@-4.5V	

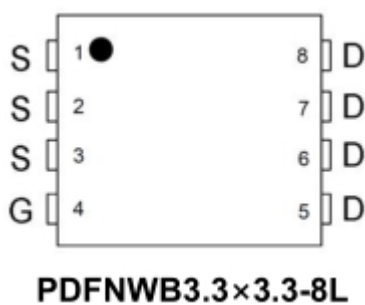
## Feature

- Low On-Resistance
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage

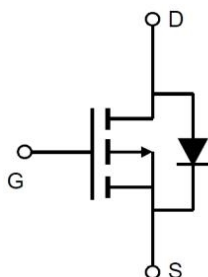
## Application

- PWM application
- Load switch
- Battery charge in cellular handset

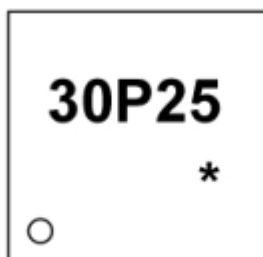
## Package



## Circuit diagram



## Marking



**30P25 =Device Code**  
**\* =Month Code**

## Absolute maximum ratings

(T<sub>a</sub>=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-source Voltage	V <sub>DS</sub>	-30	V
Gate-source Voltage	V <sub>GS</sub>	±20	V
Drain Current	I <sub>D</sub>	-12	A
Pulsed Drain Current	I <sub>DM</sub>	-36	A
Total Power Dissipation @ T <sub>C</sub> =25°C	P <sub>D</sub>	30	W
Thermal Resistance Junction-to-Case @ Steady State	R <sub>θJC</sub>	4.2	°C
Junction and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55~ +150	°C

## Electrical characteristics

( $T_A=25^{\circ}\text{C}$ , unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV (BR)DSS	V <sub>GS</sub> = 0V, I <sub>D</sub> = -250μA	-30			V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> = -30V, V <sub>GS</sub> = 0V			-1.0	μA
Gate-Source Leakage	I <sub>GSS</sub>	V <sub>GS</sub> = ±20V, V <sub>DS</sub> =0V			±100	μA
Gate-Source Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> = -250μA	-1.0	-1.5	-2.5	V
Drain-Source On-Resistance <sup>1</sup>	R <sub>DS(on)</sub>	V <sub>GS</sub> = -10V, I <sub>D</sub> = -4A		25	32	mΩ
		V <sub>GS</sub> = -4.5V, I <sub>D</sub> = -2A		36	45	
Dynamic Characteristics						
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> = -15V, V <sub>GS</sub> =0V, f=1MHz		870		pF
Output Capacitance	C <sub>OSS</sub>			130		
Reverse Transfer Capacitance	C <sub>rSS</sub>			93		
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> = -15V , I <sub>D</sub> = -5A, V <sub>GS</sub> = -4.5V,		7.8		nC
Gate-Source Charge	Q <sub>gs</sub>			2.7		
Gate-Drain Charge	Q <sub>gd</sub>			2.8		
Switching Characteristics						
Turn-on Rise Time	T <sub>d(on)</sub>	V <sub>DS</sub> = -15V, I <sub>D</sub> = -1A, V <sub>GS</sub> = -10V, R <sub>G</sub> =6Ω		6.5		nS
Turn-off Delay Time	T <sub>r</sub>			8.8		
Turn-off Fall Time	T <sub>d(off)</sub>			73		
Turn-On Delay Time	T <sub>f</sub>			44		
Drain-Source Diode Characteristics						
Diode Forward Voltage	V <sub>SD</sub>	I <sub>SD</sub> = -1A,V <sub>GS</sub> =0V		0.75	-1	V

## Typical Characteristics

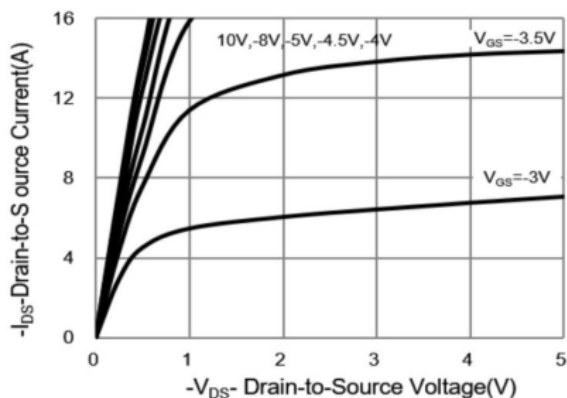


Fig.1 On-Region Characteristics

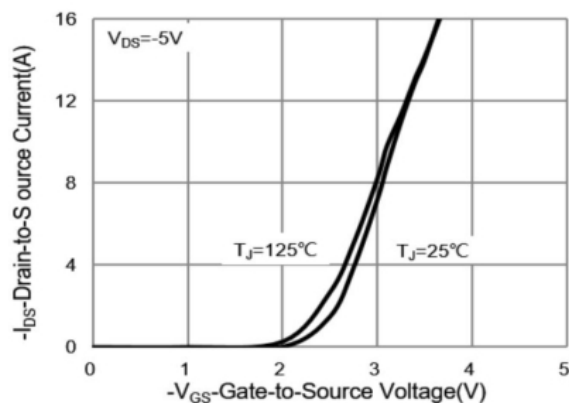


Fig.2 Transfer Characteristics

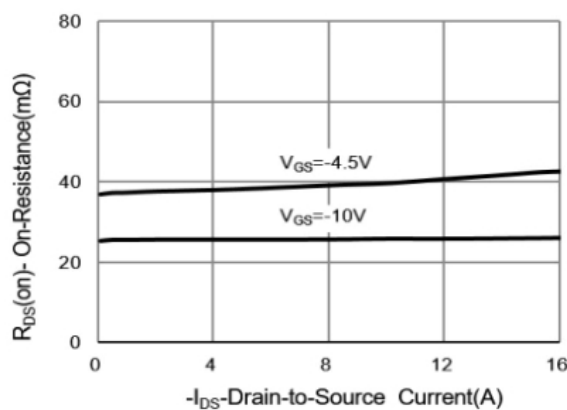


Fig.3 On-Resistance vs. Drain Current

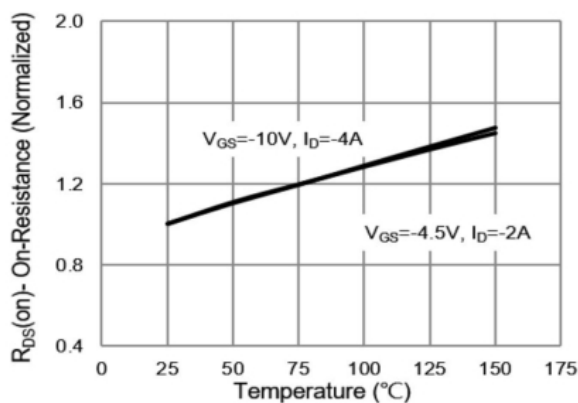


Fig.4 On-Resistance vs. Junction temperature

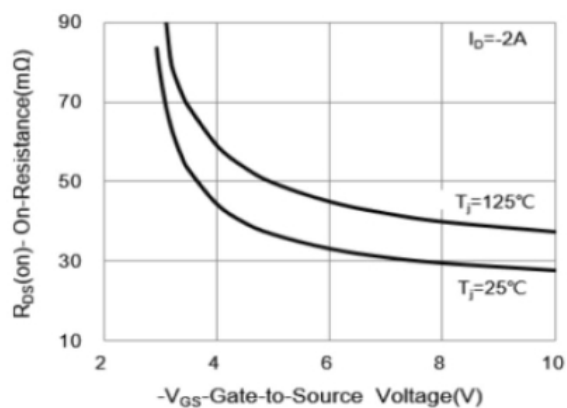


Fig.5 On-Resistance Variation with V\_GS.

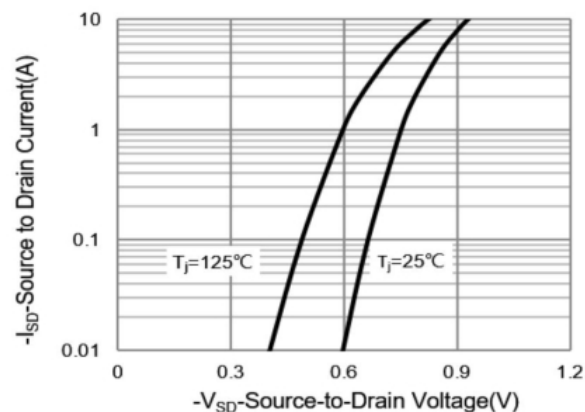


Fig.6 Body Diode Characteristics

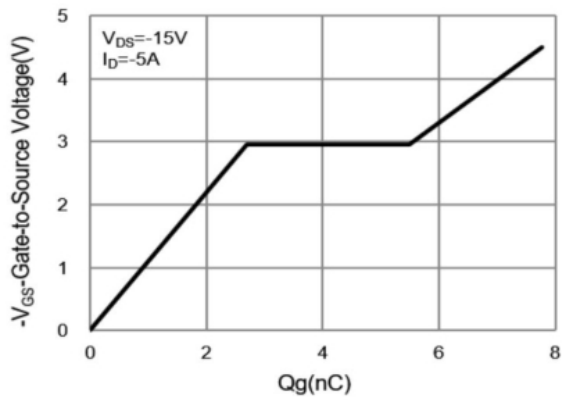


Fig.7 Gate-Charge Characteristics

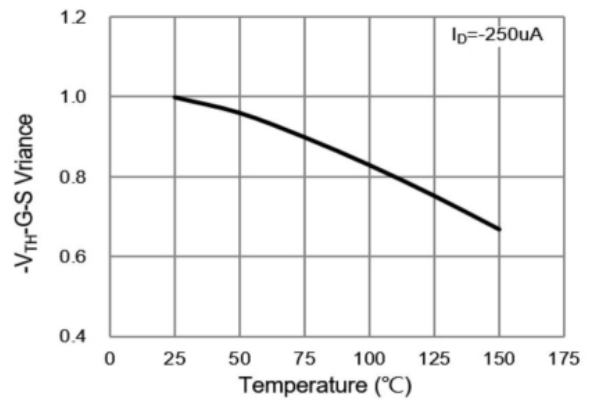


Fig.8 Threshold Voltage Variation with Temperature.

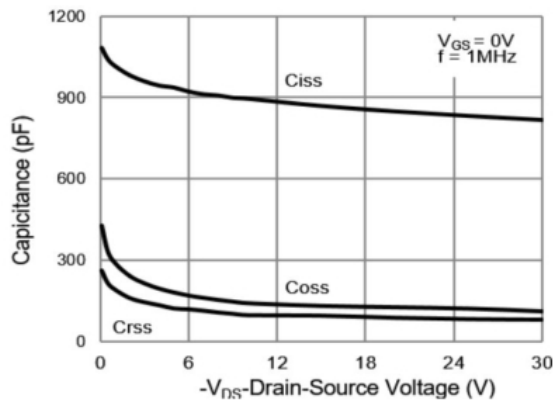
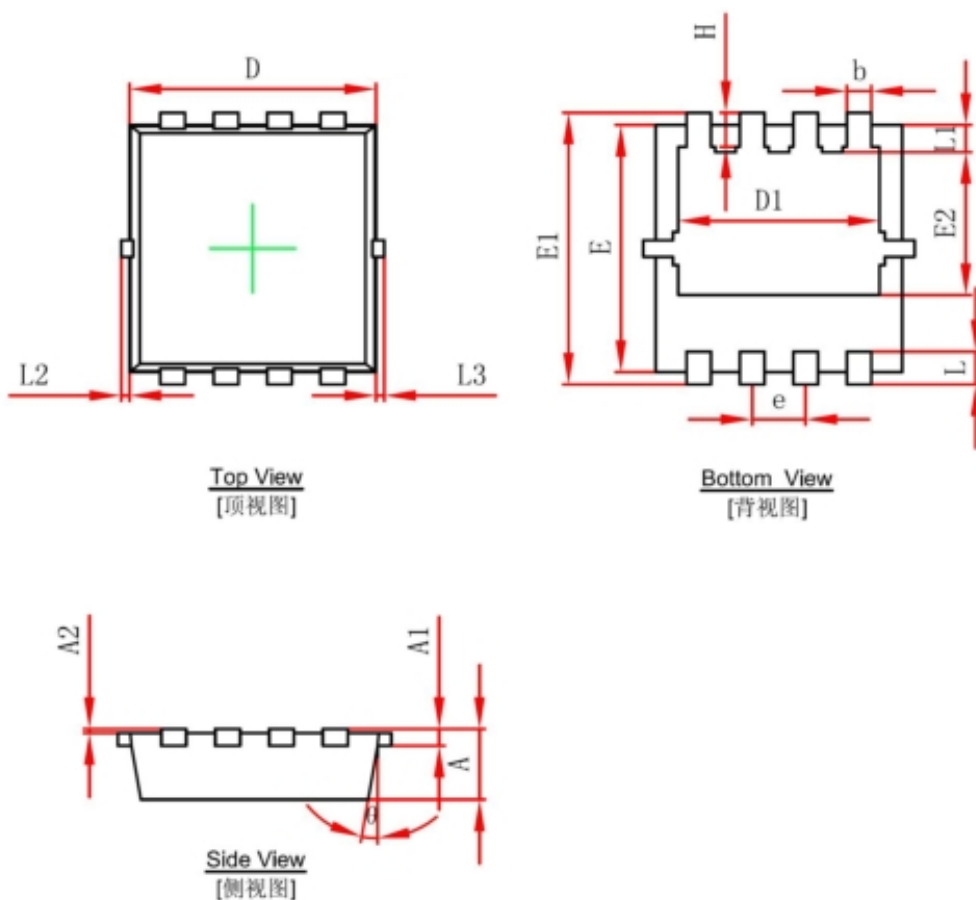


Fig.9 Capacitance vs. Drain-Source Voltage.

## PDFNWB3.3×3.3-8L 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°