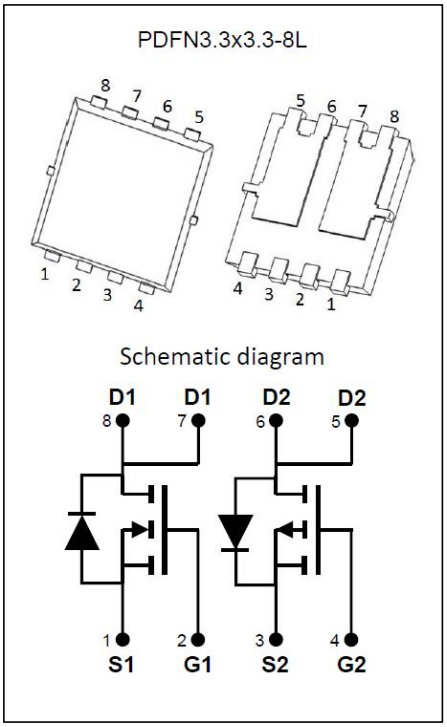
PDFN3.3×3.3-8L Plastic-Encapsulate MOSFETS

CCM30NP16P33 N- and P-Channel Power MOSFET

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
-30V	12mΩ@-10V	-30A
	17mΩ@-4.5V	
30V	10mΩ@10V	31A
	17mΩ@4.5V	



Feature

- Low drain-source ON-resistance
- High forward transfer admittance
- Low leakage current
- AEC-Q101 Qualified

Application

- Low voltage applications

MARKING

30NP16 = Device Code

XX = Date Code

Solid dot = Green Device

ABSOLUTE MAXIMUM RATINGS (T_a=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit	Test Condition
P-MOSFET				
Drain-Source Voltage	V_{DS}	-30	V	
Gate-Source Voltage	V_{GS}	±20	V	
Continuous Drain Current(1)	I_D	-14	A	T_A =25℃
		-30		T_C =25℃
Pulsed Drain Current	I_{DM}	-120	A	
N-MOSFET				
Drain-Source Voltage	V_{DS}	30	V	
Gate-Source Voltage	V_{GS}	±20	V	
Continuous Drain Current	I_D	14	A	T_A =25℃
		31		T_C =25℃
Pulsed Drain Current(1)	I_{DM}	120	A	
Temperature and Thermal Resistance				
Thermal Resistance(2)	$R_{\theta JA}$	44.6	℃/W	from Junction to Ambient
	$R_{\theta JC}$	9.2	℃/W	from Junction to Case
Power Dissipation	P_D	3.36	W	T_A =25℃
		16.3		T_C =25℃
Junction Temperature	T_J	175	℃	
Storage Temperature	T_{STG}	-55~ +175	℃	

P-channel MOSFET ELECTRICAL CHARACTERISTICS(T_a=25℃ unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Type	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} =-24V,V_{GS} = 0V			-1	μA
Gate-body leakage current	I_{GSS}	V_{GS} =±20V, V_{DS} = 0V			±100	nA
Gate threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =-250μA	-1.0	-1.5	-3.0	V
Drain-source on-resistance(3)	$R_{DS(on)}$	V_{GS} =-10V, I_D =-5A		12	16	mΩ
		V_{GS} =-4.5V, I_D =-5A		17	26	
Forward tranconductance	g_{FS}	V_{DS} =-10V, I_D =-10A	5	16		S
Diode forward voltage(3)	V_{DS}	I_S=-5A, V_{GS} = 0V			-1.2	V
Dynamic characteristics(4)						
Input Capacitance	C_{iss}	V_{DS}=-15V,V_{GS}=0V, F=1.0MHz		1350		pF
Output Capacitance	C_{oss}			215		
Reverse Transfer Capacitance	C_{rss}			185		
Total gate charge	Q_g	V_{DS}=-15V,I_D=-9.1A,V_{GS}=-4.5V		15		nC
Gate-source charge	Q_{gs}			4		
Gate-drain charge	Q_{gd}			7.5		
Switching Characteristics(4)						
Turn-on delay time	$t_{d(on)}$	V_{DD}=-15V,I_D=-1A V_{GS}=-10V,R_{GEN}=1Ω R_L=15Ω			15	nS
Turn-on rise time	t_r				15	
Turn-off delay time	$t_{d(off)}$				70	
Turn-off fall time	t_f				25	

N-channel MOSFET ELECTRICAL CHARACTERISTICS(T_a=25℃ unless otherwise noted)

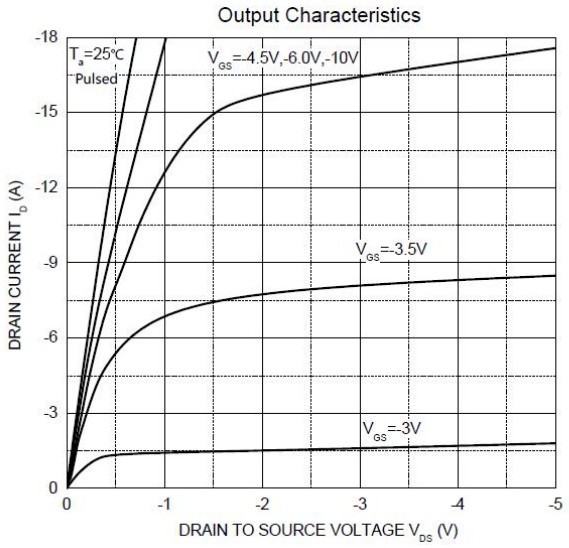
Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D =250μA	30			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =24V,V_{GS} = 0V			1	μA
Gate-body leakage current	I_{GSS}	V_{GS} =±20V, V_{DS} = 0V			±100	nA
Gate threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	1.0	1.5	3.0	V
Drain-source on-resistance(3)	$R_{DS(on)}$	V_{GS} =10V, I_D =5A		10	14	mΩ
		V_{GS} =4.5V, I_D =5A		17	26	
Forward tranconductance	g_{FS}	V_{DS} =5V, I_D =10A	10	43		S
Diode Forward voltage(3)	V_{DS}	I_S=5A, V_{GS} = 0V			1.2	V
Dynamic characteristics(4)						
Input Capacitance	C_{iss}	V_{DS}=15V,V_{GS}=0V, F=1.0MHz		968		pF
Output Capacitance	C_{oss}			146		
Reverse Transfer Capacitance	C_{rss}			136		
Total gate charge	Q_g	V_{DS}=15V,I_D=10A,V_{GS}=10V		13		nC
Gate-source charge	Q_{gs}			3		
Gate-drain charge	Q_{gd}			4.5		
Switching Characteristics(4)						
Turn-on delay time	$t_{d(on)}$	V_{DD}=15V, R_L=1.8Ω V_{GS}=10V,R_{GEN}=1.8Ω			10	ns
Turn-on rise time	t_r				8	
Turn-off delay time	$t_{d(off)}$				30	
Turn-off fall time	t_f				5	

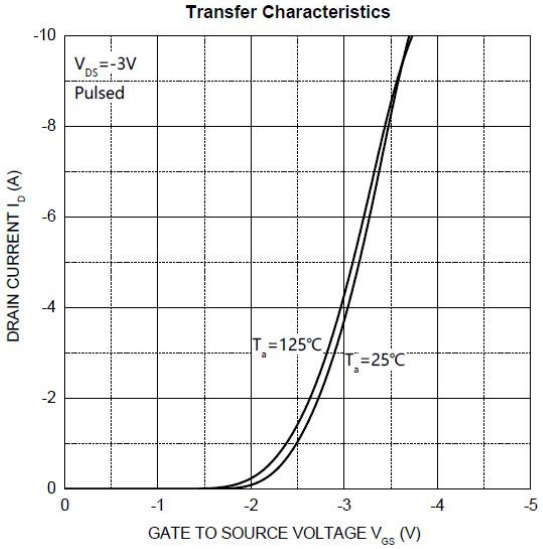
Notes:

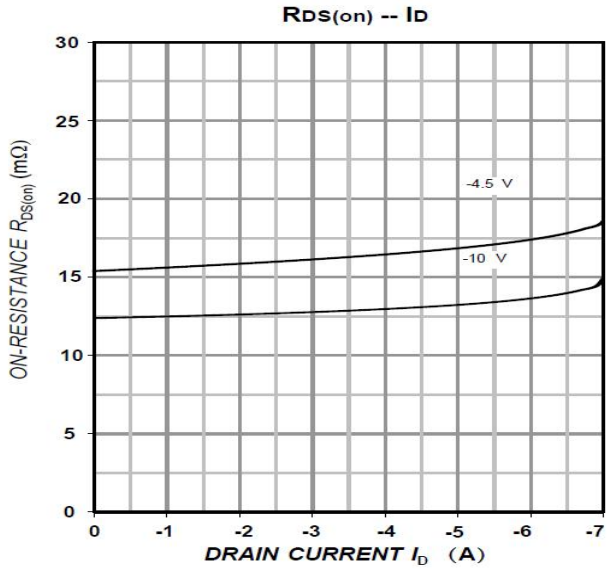
1. Repetitive Rating : Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t < 5 sec.
3. Pulse Test : Pulse Width≤300μs, Duty Cycle ≤ 2%.
4. Guaranteed by design, not subject to production testing.

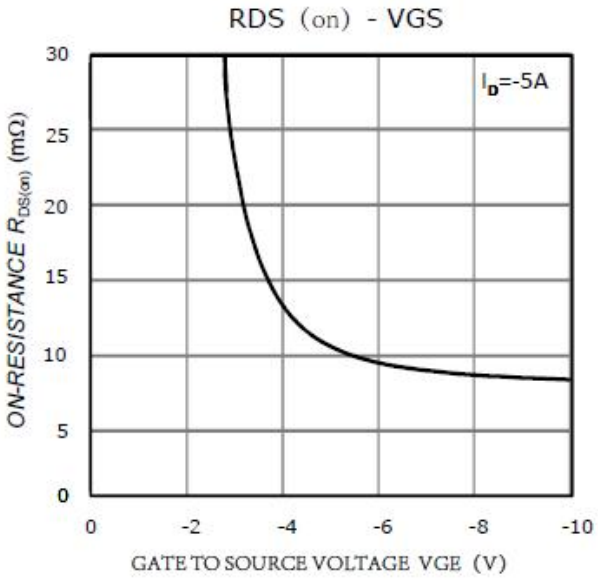
Typical Electrical and Thermal Characteristics

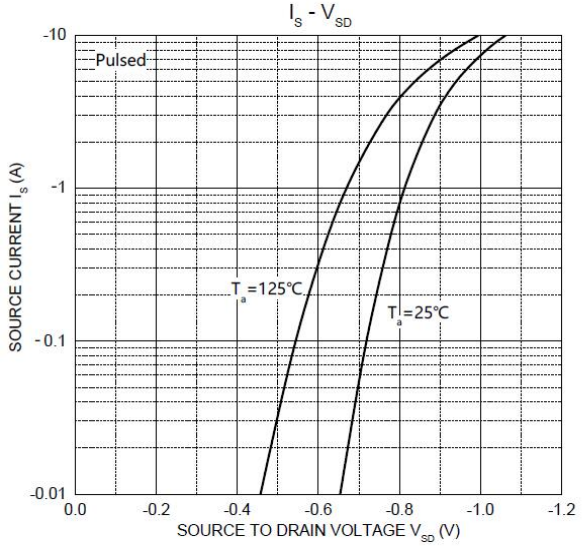
P-Channel MOS

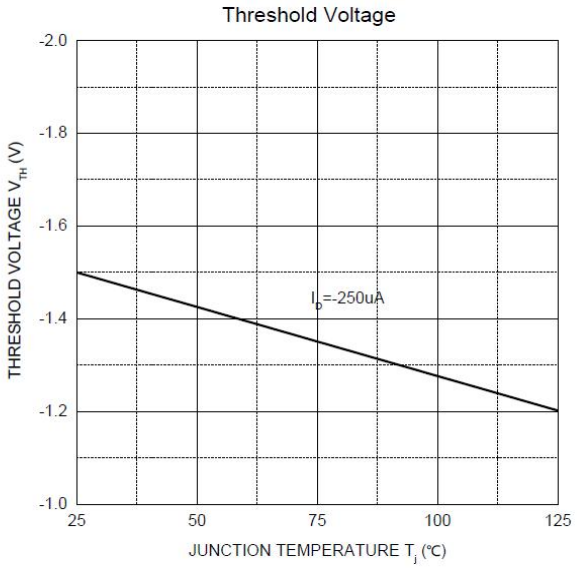




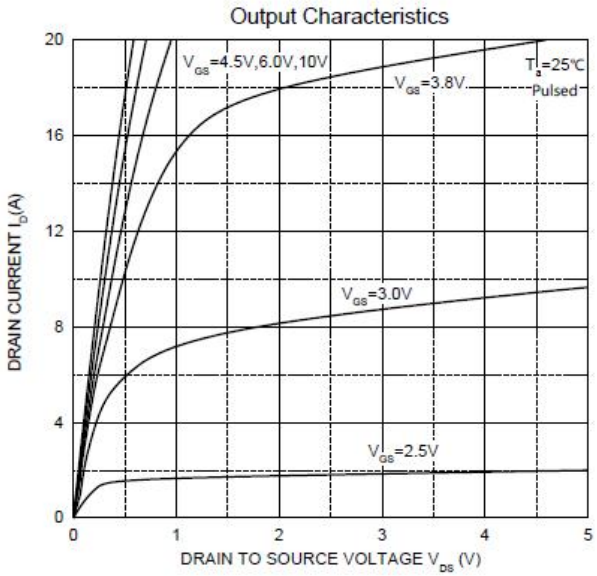


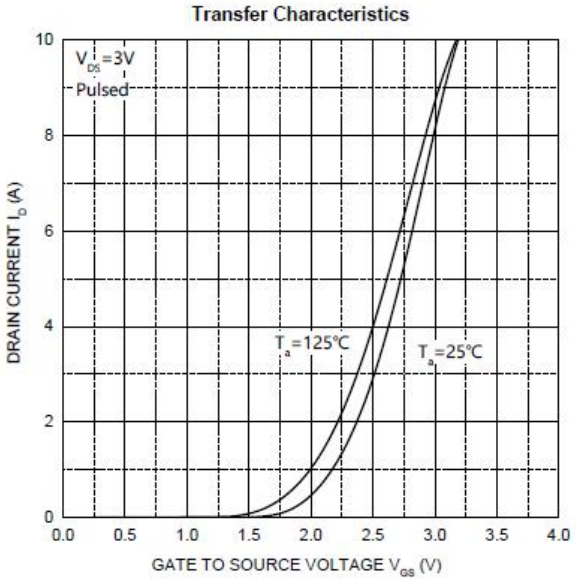


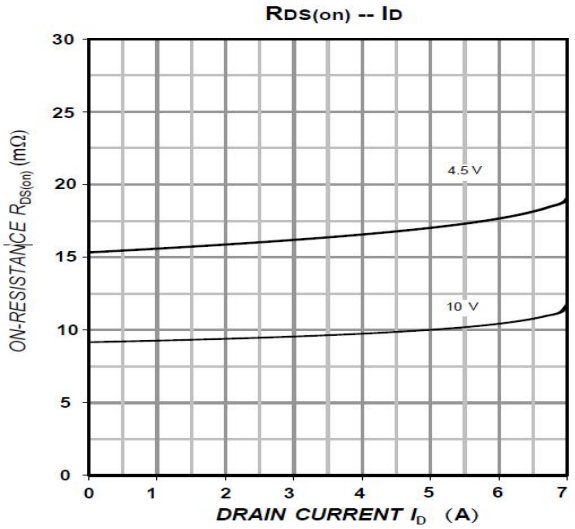


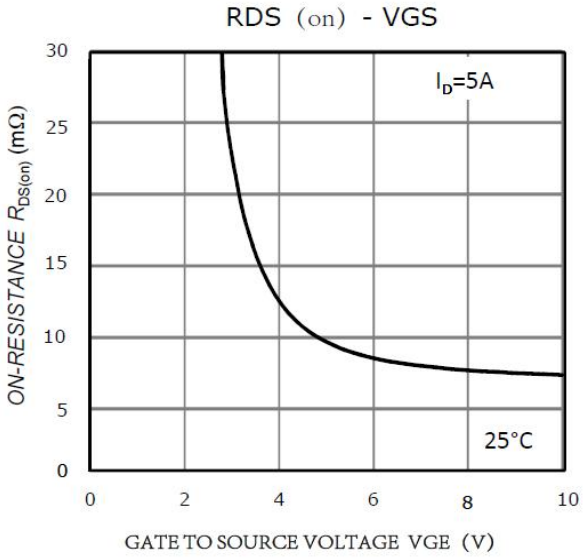


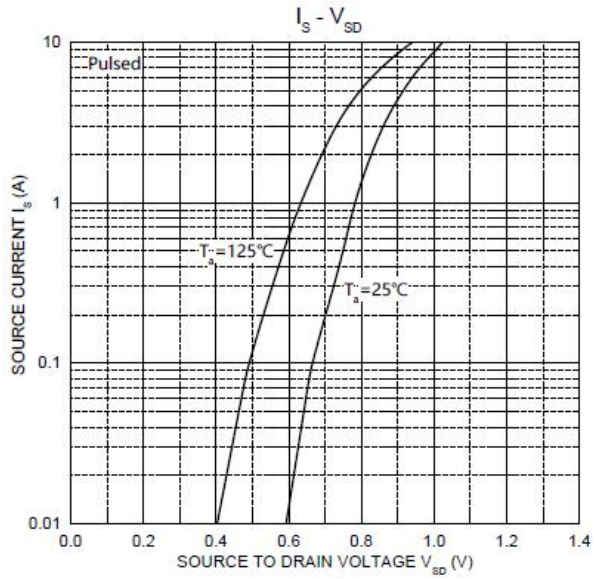
N-Channel MOS

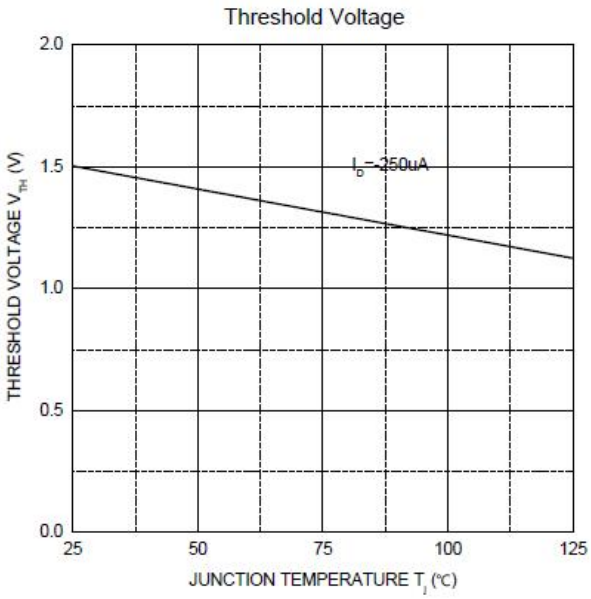




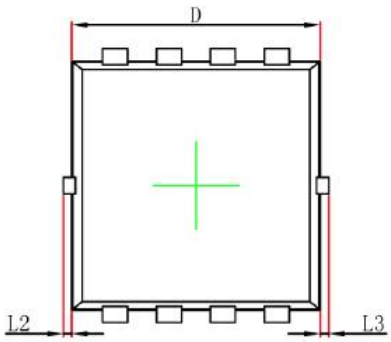




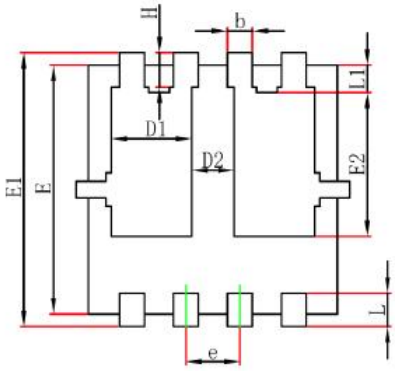




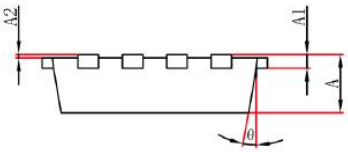
PDFN3.3X3.3-8L Package Information



Top View
[顶视图]



Bottom View
[背视图]



Side View
[侧视图]

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.700	0.900	0.028	0.035
A1	0.152REF		0.006REF	
A2	0.000	0.050	0.000	0.002
D	2.900	3.200	0.114	0.126
D1	0.935	1.135	0.037	0.045
D2	0.280	0.480	0.011	0.019
E	2.900	3.200	0.114	0.126
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	0.000	0.100	0.000	0.004
L3	0.000	0.100	0.000	0.004
H	0.315	0.515	0.012	0.020
θ	0°	12°	0°	12°

Date of change	Rev #	revise content
2023/05/10	A/0	/