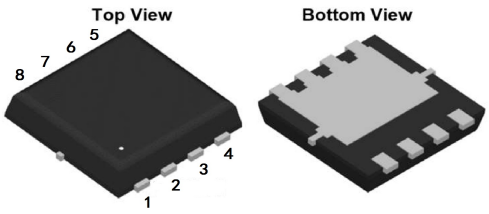
60V N-Channel Mosfet

FEATURES

- $R_{DS(ON)}$ ≤ 8.5mΩ (6.8mΩ Typ.) @V_{GS}=10V
- $R_{DS(ON)}$ ≤ 15.6mΩ (12mΩ Typ.) @V_{GS}=4.5V
- AEC Q101 qualified
- Green Product (RoHS compliant)

PDFNWB3.3*3.3-8L

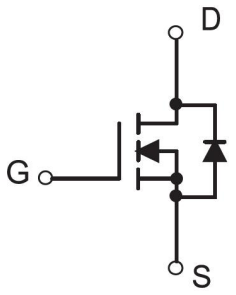


1: S	3: S	5: D	7: D
2: S	4: G	6: D	8: D

APPLICATIONS

- On board wireless charging
- Motor drivers
- DC - DC Converter

N-CHANNEL MOSFET



MARKING

YYMM:Date Code(year & month)

MAXIMUM RATINGS (T_C=25℃ unless otherwise noted)

Symbol	Parameter	Limit.	Units
V_{DSS}	Drain-Source Voltage	60	V
V_{GSS}	Gate-Source Voltage	±20	V
I_D	Continuous Drain Current @V_{GS}=10V	40	A
I_{DM}	Pulsed Drain Current note1	112	A
P_D	Power Dissipation	25	W
$R_{\theta JC}$	Thermal Resistance, Junction to Case	6	℃/W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	62.5	℃/W
T_J	Operating Temperature	175	℃
T_J, T_{STG}	Operating and Storage Temperature Range	-55 to +175	℃

MOSFET ELECTRICAL CHARACTERISTICS Tc=25℃ unless otherwise specified

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
Off Characteristic						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=250μA	60	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=48V, V_{GS}=0V	-	-	1	μA
I_{GSS}	Gate to Body Leakage Current	V_{GS}= ±20V, V_{DS}=0V	-	-	±100	nA
On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250μA	1.0	2.0	3.0	V
$R_{DS(on)}$	Static Drain-Source On-Resistance note2	V_{GS}=10V, I_D=20A	-	6.8	8.5	mΩ
		V_{GS}=4.5V, I_D=10A	-	12	15.6	
Dynamic Characteristics note3						
C_{iss}	Input Capacitance	V_{DS}=30V, V_{GS}=0V, f=1.0MHz	-	1362	-	pF
C_{oss}	Output Capacitance		-	581	-	pF
C_{rss}	Reverse Transfer Capacitance		-	44	-	pF
Q_g	Total Gate Charge	V_{DS}=30V, I_D=20A, V_{GS}=10V	-	28	-	nC
Q_{gs}	Gate-Source Charge		-	6	-	nC
Q_{gd}	Gate-Drain(“Miller”) Charge		-	7.7	-	nC
Switching Characteristics note3						
$t_{d(on)}$	Turn-On Delay Time	V_{DS} =30V, I_D=20A, R_G=4.5Ω, V_{GS}=10V R_L=1.5Ω	-	8	-	ns
t_r	Turn-On Rise Time		-	18	-	ns
$t_{d(off)}$	Turn-Off Delay Time		-	22	-	ns
t_f	Turn-Off Fall Time		-	11	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I_S	Maximum Continuous Drain to Source Diode Forward Current		-	-	40	A
V_{SD}	Drain to Source Diode Forward Voltage	V_{GS} = 0V, I_{SD}=20A, T_J = 25℃	-	-	1.3	V
t_{rr}	Reverse Recovery Time	V_{GS} = 0V, I_S =20A, di/dt =100A/μs	-	61	-	ns
Q_{rr}	Reverse Recovery Charge		-	46	-	nC

Notes:1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature

2. Pulse Test: Pulse Width≤300μs, Duty Cycle≤2%

3. Guaranteed by design, not subject to production testing

Typical Performance Characteristics

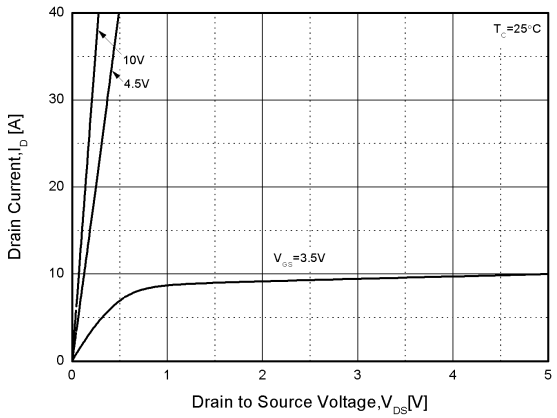


Figure1. Output Characteristics

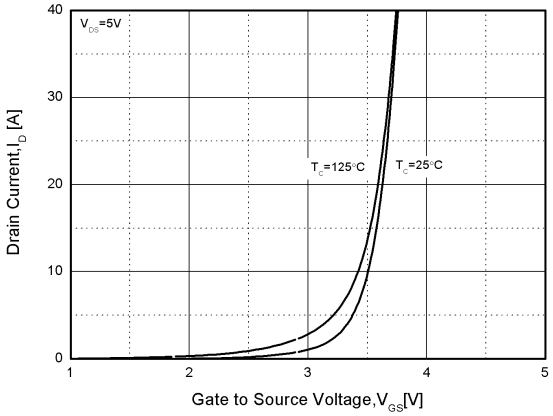


Figure2. Transfer Characteristics

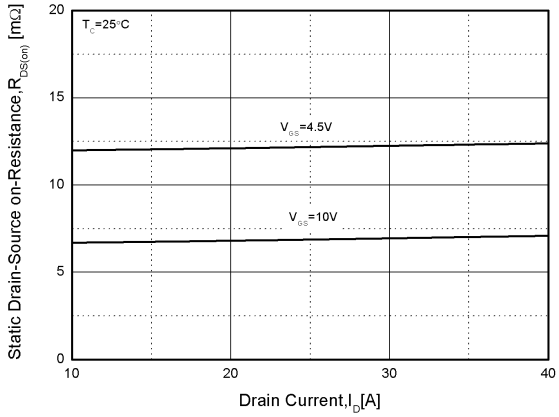


Figure3. Rdson-Drain Current

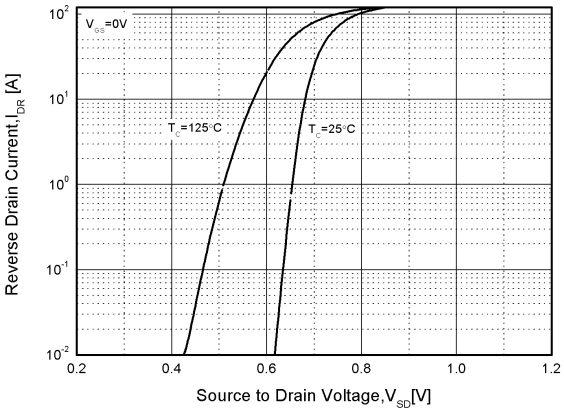


Figure4. Typical Source-Drain Diode Forward Voltage

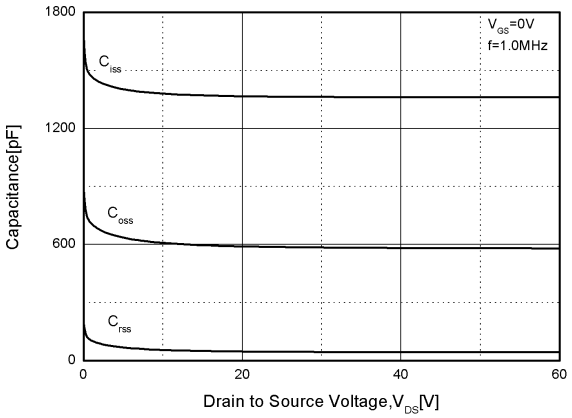


Figure5. Capacitance Characteristics

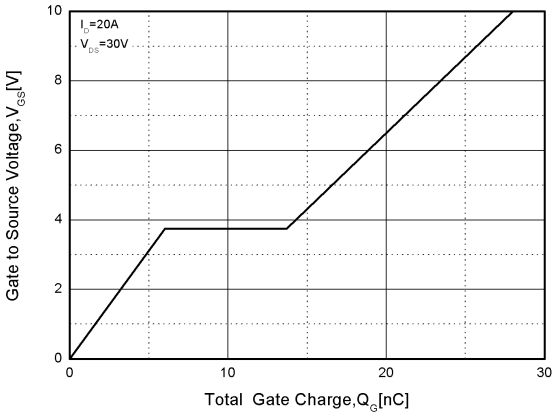


Figure6. Gate Charge

Typical Performance Characteristics (cont.)

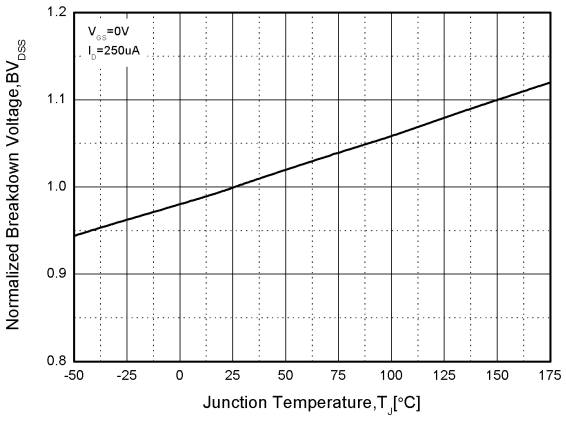


Figure7. Normalized Breakdown Voltage vs. Temperature

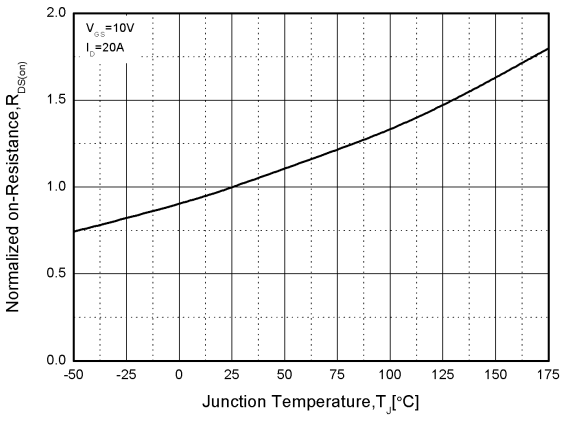


Figure8. Normalized on Resistance vs. Temperature

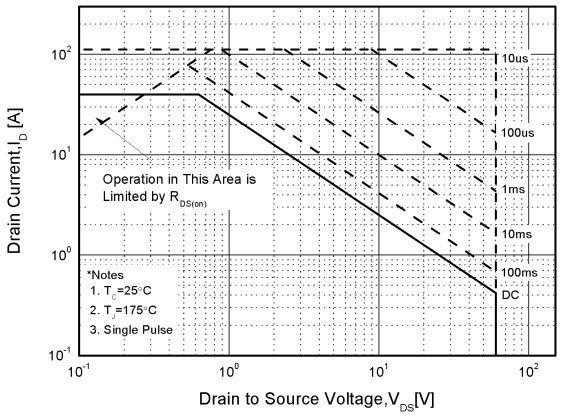


Figure9. Safe Operation Area

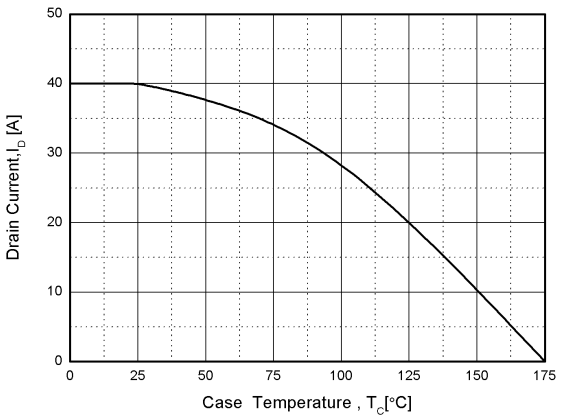


Figure10. Drain Current vs. Case Temperature

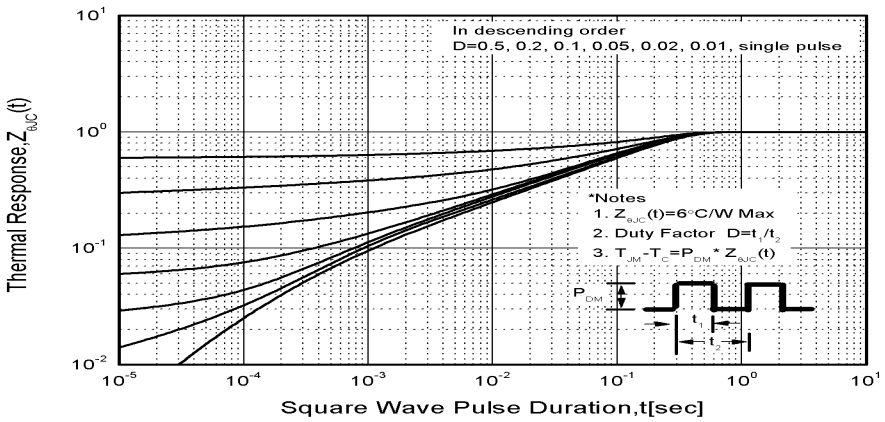
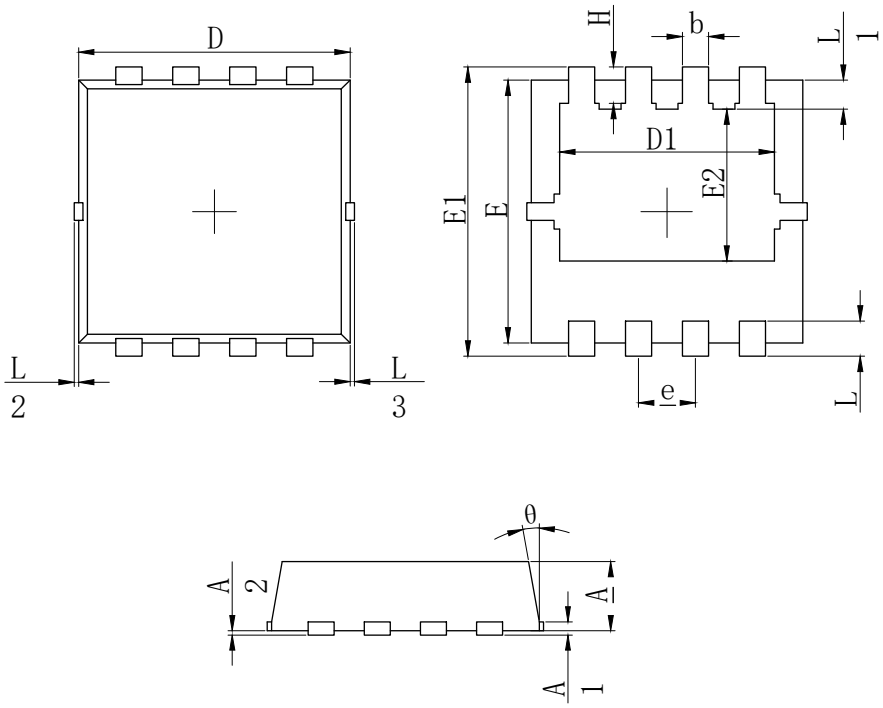


Figure11. Transient Thermal Response Curve

PDFNWB3.3*3.3-8L Package Outline Dimensions



SYMBOL	MILLIMETER		
	MIN	Typ.	MAX
A	0.700	0.800	0.900
A1	0.152 REF.		
A2	0~0.05		
D	3.000	3.100	3.200
D1	2.300	2.450	2.600
E	2.900	3.000	3.100
E1	3.150	3.300	3.450
E2	1.535	1.735	1.935
b	0.200	0.300	0.400
e	0.550	0.650	0.750
L	0.300	0.400	0.500
L1	0.180	0.330	0.480
L2	0~0.100		
L3	0~0.100		
H	0.315	0.415	0.515
θ	8°	10°	12°