60V N-Channel Mosfet

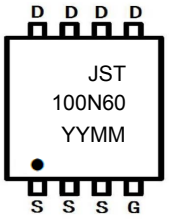
FEATURES

- $R_{DS(ON)}$ ≤ 3mΩ (2mΩ Typ.) @V_{GS}=10V
- $R_{DS(ON)}$ ≤ 4mΩ (3mΩ Typ.) @V_{GS}=4.5V
- AEC Q101 qualified
- Green Product (RoHS compliant)

APPLICATIONS

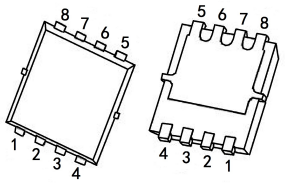
- Automobile wiper module
- Automotive domain controller
- PWM Applications
- Load Switch
- Power Management

MARKING



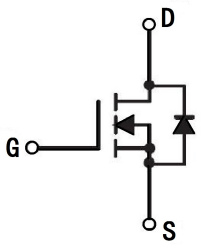
YYMM:Date Code(year & month)

PDFNWB5*6-8L



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

N-CHANNEL MOSFET



MAXIMUM RATINGS (Tc=25°C 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 note1	105	A
I_{DM}	Pulsed Drain Current note2	420	A
P_D	Power Dissipation	60	W
$R_{\theta JC}$	Thermal Resistance, Junction to Case	2.5	℃/W
T_J	Operating Temperature	175	℃
T_{STG}	Storage Temperature Range	-55 to +175	℃

MOSFET ELECTRICAL CHARACTERISTICS Tc=25 °C 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} = 60V, V_{GS} = 0V, T_J = 25℃	-	-	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	-	3.0	V
$R_{DS(on)}$	Static Drain-Source On-Resistance note3	V_{GS} =10V, I_D =20A	-	2	3	mΩ
		V_{GS} =4.5V, I_D =20A	-	3	4	mΩ
Dynamic Characteristics note4						
C_{iss}	Input Capacitance	V_{DS} =30V, V_{GS} = 0V f = 1.0MHz	-	4894	-	pF
C_{oss}	Output Capacitance		-	2208	-	pF
C_{rss}	Reverse Transfer Capacitance		-	171	-	pF
Q_g	Total Gate Charge	V_{DS}=30V, I_D=25A V_{GS}=10V	-	99	-	nC
Q_{gs}	Gate-Source Charge		-	16	-	nC
Q_{gd}	Gate-Drain(“Miller”) Charge		-	27	-	nC
Switching Characteristics note4						
$t_{d(on)}$	Turn-On Delay Time	V_{GS} =10V, V_{DS}=30V R_G =4.5Ω, I_D=25A R_L=1.2Ω	-	14	-	ns
t_r	Turn-On Rise Time		-	36	-	ns
$t_{d(off)}$	Turn-Off Delay Time		-	75	-	ns
t_f	Turn-Off Fall Time		-	50	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
V_{SD}	Drain to Source Diode Forward Voltage	V_{GS} = 0V, I_{SD}=20A T_J = 25℃	-	-	1.2	V
t_{rr}	Reverse Recovery Time	V_{GS} = 0V, I_S =25A, di/dt =100A/μs	-	67	-	ns
Q_{rr}	Reverse Recovery Charge		-	90	-	nC

Notes:1. T_C=25℃ Limited only by maximum temperature allowed. Calculated continuous current based on maximum allowable junction temperature.

2. PW≤10μs, Duty cycle≤1%

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

4 . Guaranteed by design, not subject to production testing

TYPICAL PERFORMANCE CHARACTERISTICS

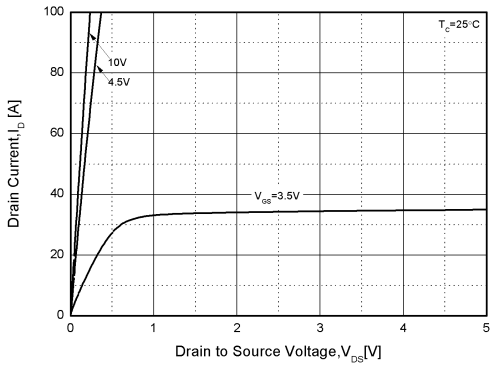


Figure1. Output Characteristics

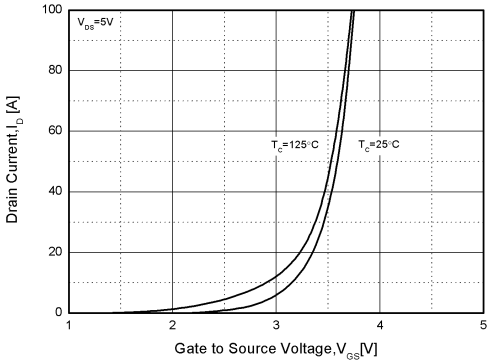


Figure2. Transfer Characteristics

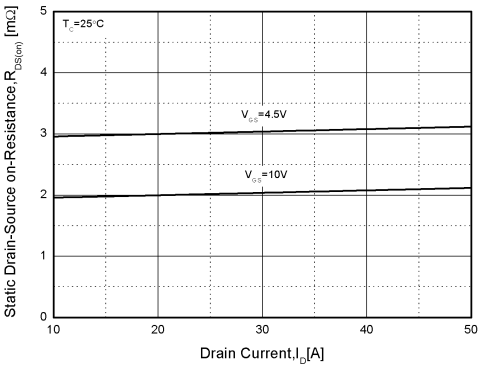


Figure3. Rdson-Drain Current

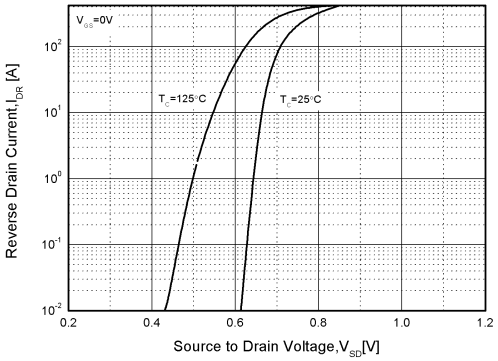


Figure4. Typical Source-Drain Diode Forward Voltage

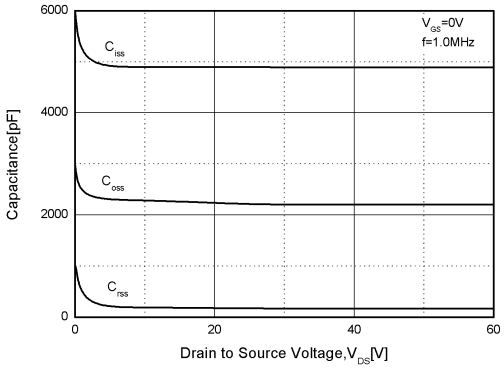


Figure5. Capacitance Characteristics

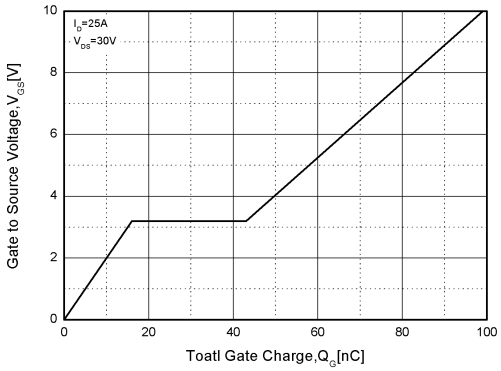


Figure6. Gate Charge

TYPICAL PERFORMANCE CHARACTERISTICS (cont.)

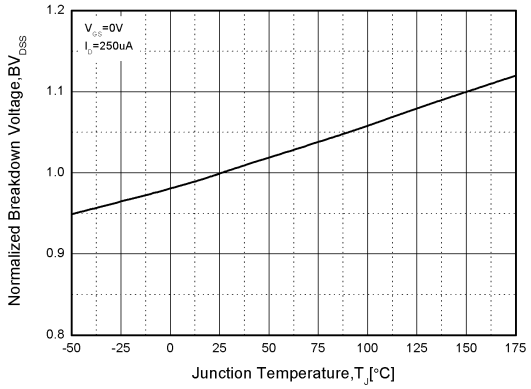


Figure7. Normalized Breakdown Voltage vs. Temperature

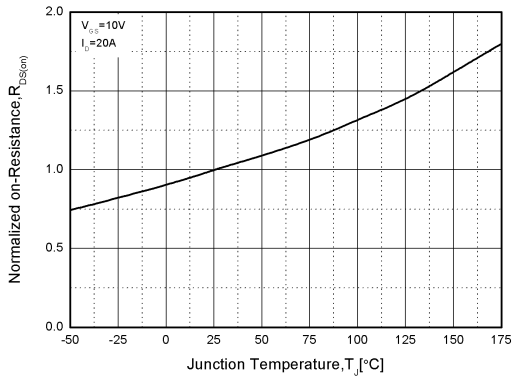


Figure8. Normalized on Resistance vs. Temperature

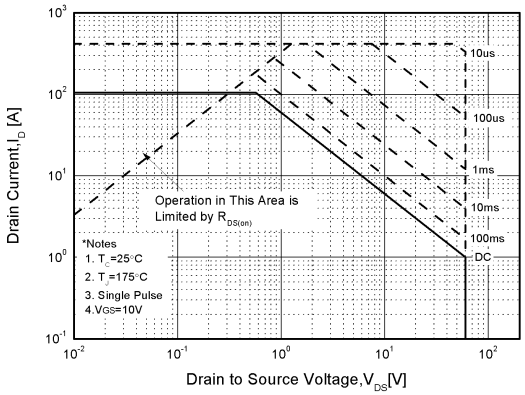


Figure9. Safe Operation Area

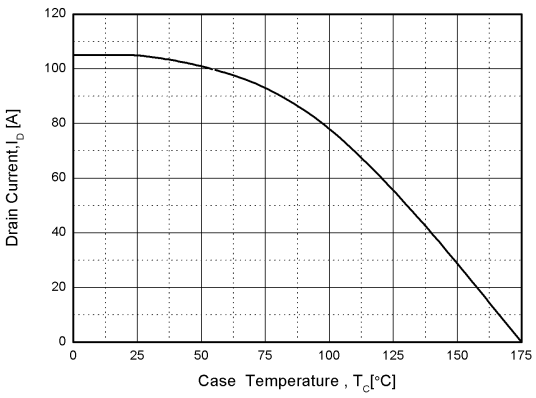


Figure10. Drain Current vs .Case Temperature

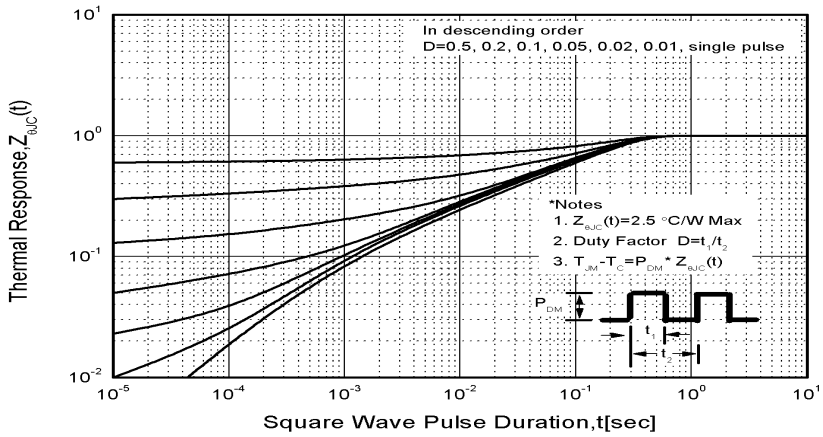
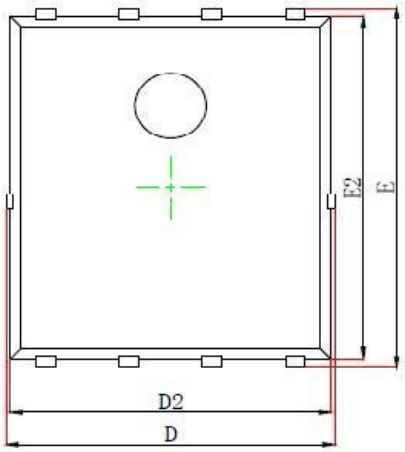
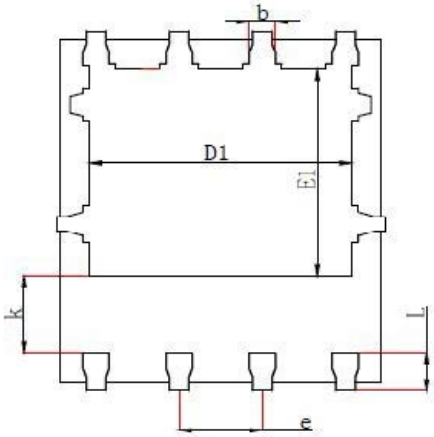


Figure11. Transient Thermal Response Curve

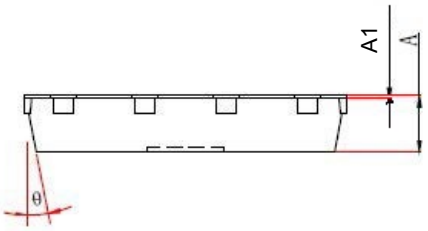
PDFNWB5*6-8L PACKAGE OUTLINE DRAWING



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	0.800	1.100	0.031	0.043
A1	0.000	0.05	0.000	0.002
D	-	5.4	-	0.212
E	-	6.200	-	0.244
D1	3.900	4.200	0.153	0.165
E1	3.350	3.650	0.132	0.144
D2	4.800	5.100	0.189	0.201
E2	5.674	5.950	0.223	0.234
k	1.100	1.500	0.043	0.059
b	0.250	0.490	0.010	0.019
e	1.170	1.370		
L	0.510	0.711	0.020	0.028
θ	6°	14°	6°	14°