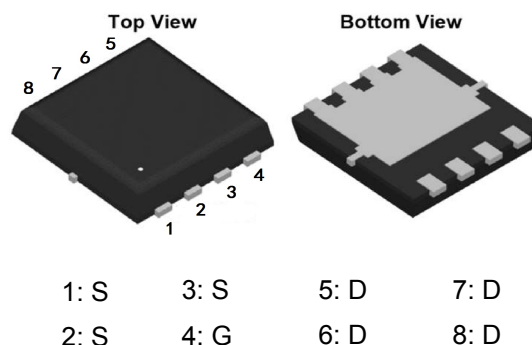


40V N-Channel Mosfet

FEATURES

- $R_{DS(ON)} \leq 8.8m\Omega$ (5.8m Ω Typ.)
@ $V_{GS}=10V$
- $R_{DS(ON)} \leq 15m\Omega$ (8.6m Ω Typ.)
@ $V_{GS}=4.5V$
- AEC Q101 qualified
- Green Product (RoHS compliant)
- 100% UIS TEST

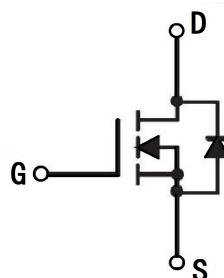
PDFNWB5*6-8L



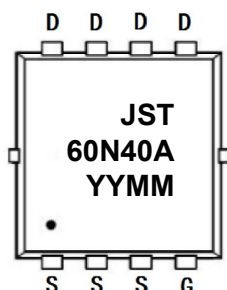
APPLICATIONS

- Automotive Windows
- Synchronous rectification
- Power Management
- PWM Applications

N-CHANNEL MOSFET



MARKING



YYMM:Date Code(year & month)

Absolute Maximum Ratings ($T_C=25^\circ\text{C}$ unless otherwise specified)

Symbol	Parameter		Max.	Units
V_{DSS}	Drain-Source Voltage		40	V
V_{GSS}	Gate-Source Voltage		± 20	V
I_D	Continuous Drain Current	$T_C = 25^\circ\text{C}$	58	A
		$T_C = 100^\circ\text{C}$	40	A
I_{DM}	Pulsed Drain Current ^{note1}		232	A
E_{AS}	Single Pulsed Avalanche Energy ^{note2}		32	mJ
P_D	Power Dissipation	$T_C = 25^\circ\text{C}$	50	W
$R_{\theta JC}$	Thermal Resistance, Junction to Case		3.0	$^\circ\text{C/W}$
T_J, T_{STG}	Operating and Storage Temperature Range		-55 to +175	$^\circ\text{C}$

Electrical Characteristics (T_c=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	40	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =40V, V _{GS} = 0V,	-	-	1.0	μA
I _{GSS}	Gate to Body Leakage Current	V _{DS} =0V, V _{GS} = ±20V	-	-	±100	nA
On Characteristics						
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D =250μA	1.1	1.5	2.4	V
R _{DS(on)}	Static Drain-Source on-Resistance ^{note3}	V _{GS} =10V, I _D =30A	-	5.8	8.8	mΩ
		V _{GS} =4.5V, I _D =20A	-	8.6	15	
g _{FS}	Forward Transconductance	V _{DS} =5V, I _D =15A	10	27	-	S
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} = 20V, V _{GS} =0V, f = 1.0MHz	-	819	-	pF
C _{oss}	Output Capacitance		-	322	-	pF
C _{rss}	Reverse Transfer Capacitance		-	86	-	pF
R _g	Gate resistance	V _{GS} =0V, V _{DS} =0V, f=1MHz	-	6.5	-	Ω
Q _g	Total Gate Charge	V _{DS} =20V, I _D =30A, V _{GS} =10V	-	13	-	nC
Q _{gs}	Gate-Source Charge		-	4.1	-	nC
Q _{gd}	Gate-Drain(“Miller”) Charge		-	1.7	-	nC
Switching Characteristics						
t _{d(on)}	Turn-on Delay Time	V _{DD} =20V, I _D =30A, R _{GEN} =3Ω, V _{GS} =10V	-	8	-	ns
t _r	Turn-on Rise Time		-	6.2	-	ns
t _{d(off)}	Turn-off Delay Time		-	27	-	ns
t _f	Turn-off Fall Time		-	7	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
V _{SD}	Drain to Source Diode Forward Voltage	V _{GS} =0V, I _S =30A	-	0.8	1.2	V
t _{rr}	Body Diode Reverse Recovery Time	T _J =25℃, I _F =20A, dI/dt=100A/μs	-	12	-	ns
Q _{rr}	Body Diode Reverse Recovery Charge		-	4	-	nC

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

2. EAS condition T_J=25°C, V_{DD}=20V, V_G=16V, I_D=8A, I_H=I_D*0.9=7.2A, I_L=I_D*0.1=0.8A, L=1mH

3. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%

Typical Performance Characteristics

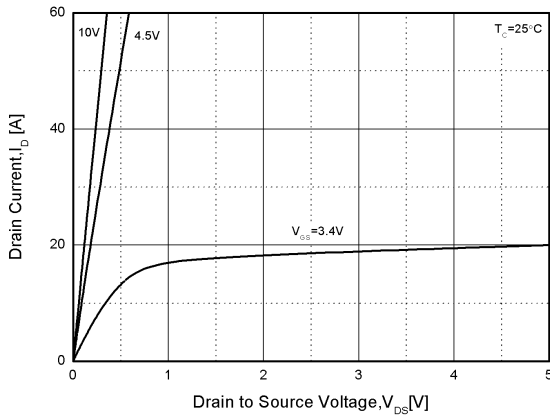


Figure1. Output Characteristics

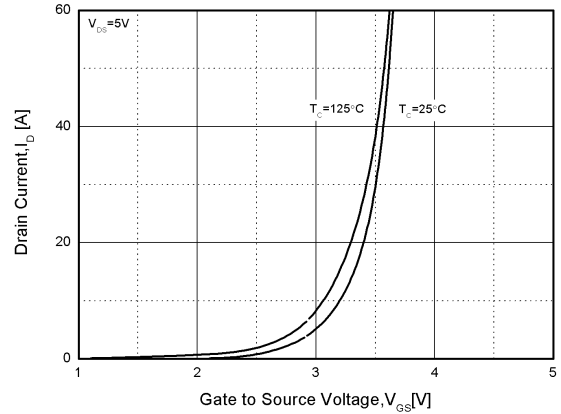


Figure2. Transfer Characteristics

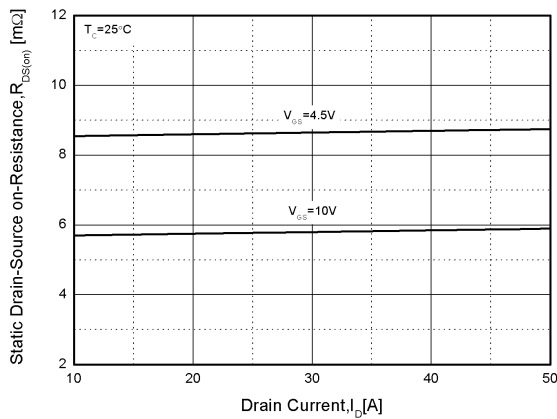


Figure3. Rdson-Drain Current

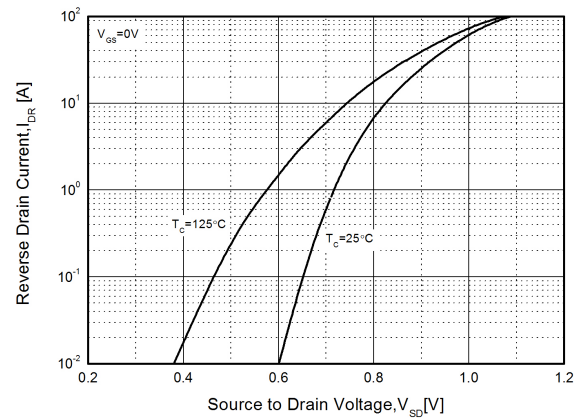


Figure4. Typical Source-Drain Diode Forward Voltage

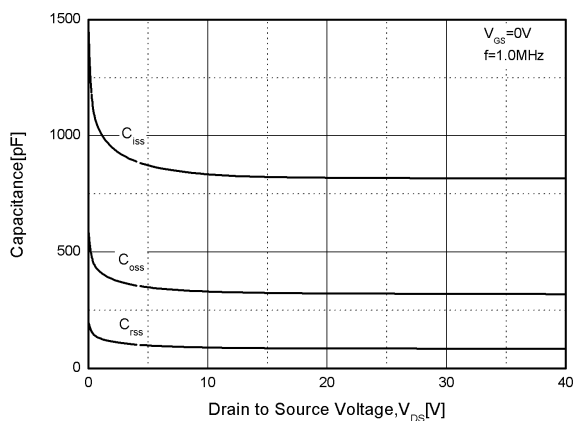


Figure5. Capacitance Characteristics

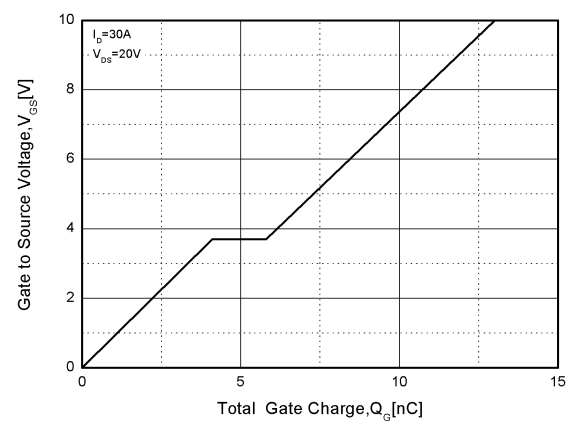


Figure6. Gate Charge

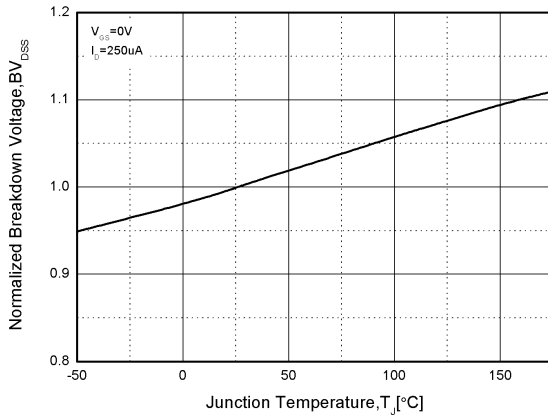


Figure7. Normalized Breakdown Voltage vs. Temperature

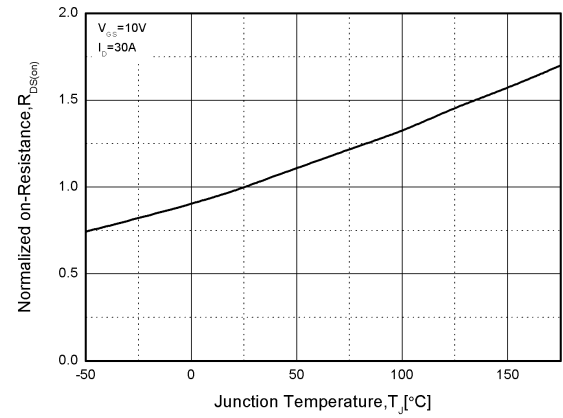


Figure8. Normalized on Resistance vs. Temperature

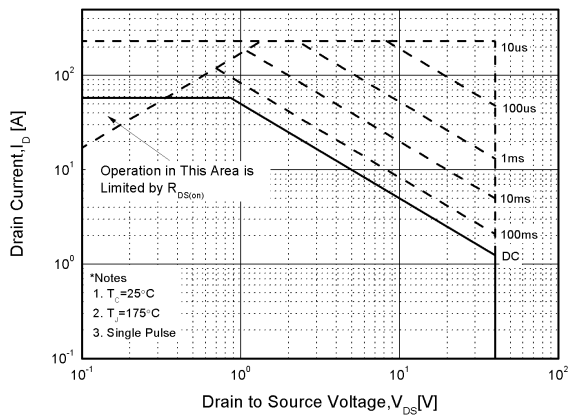


Figure9. Safe Operation Area

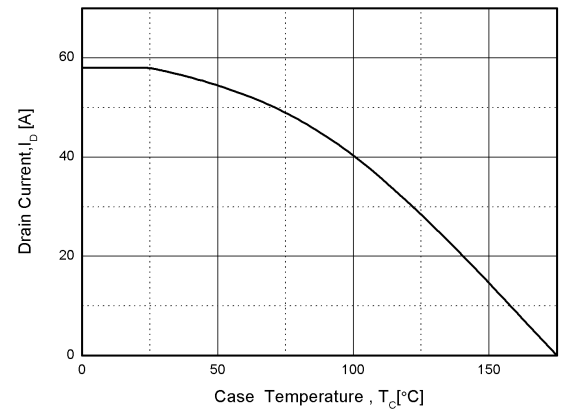


Figure10. Drain Current vs. Case Temperature

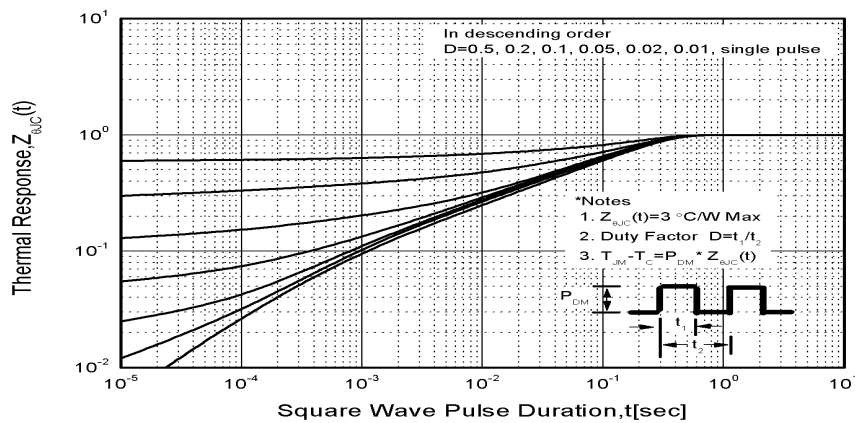


Figure11. Transient Thermal Response Curve

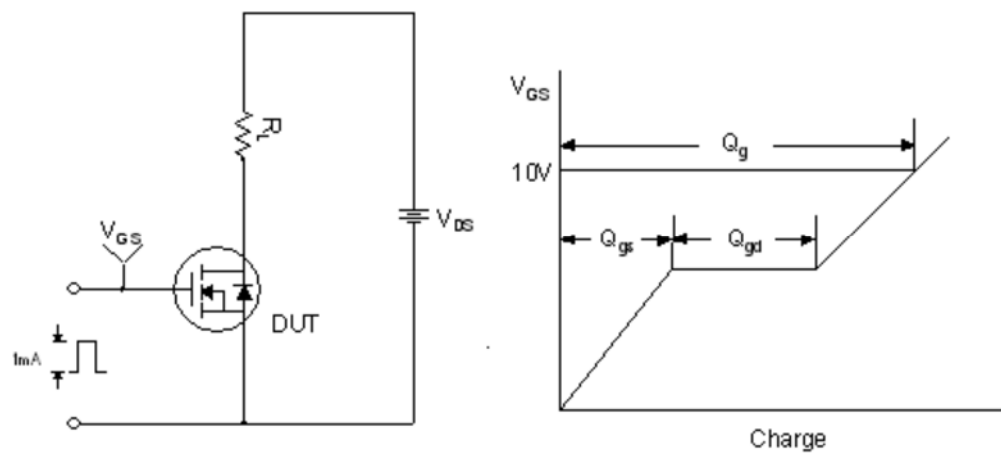


Figure 1. Gate Charge Test Circuit & Waveform

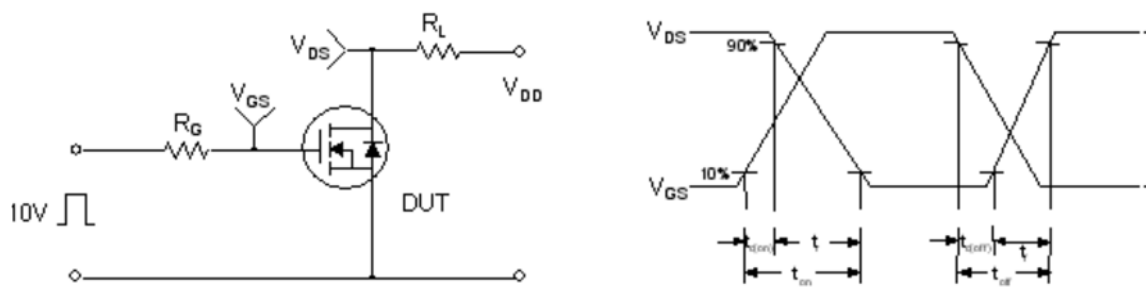


Figure 2. Resistive Switching Test Circuit & Waveforms

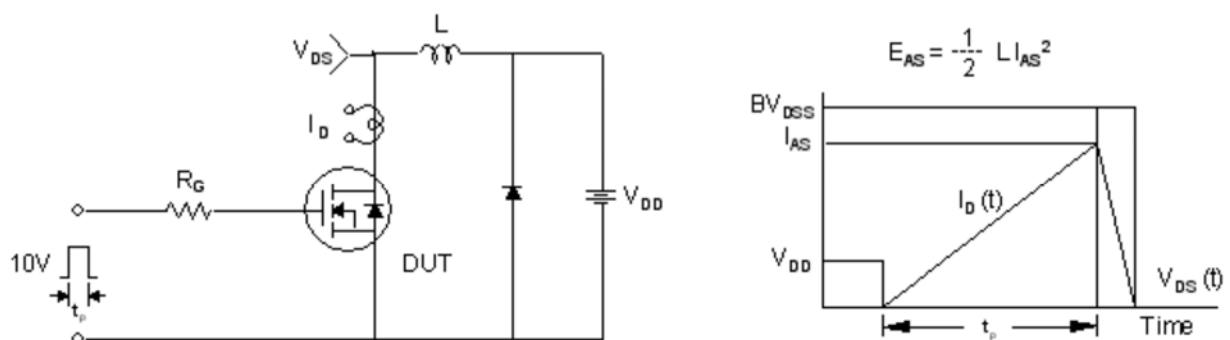
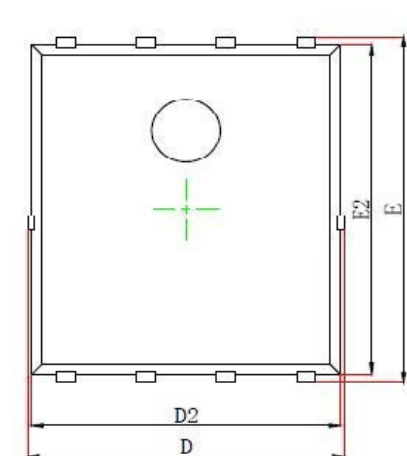
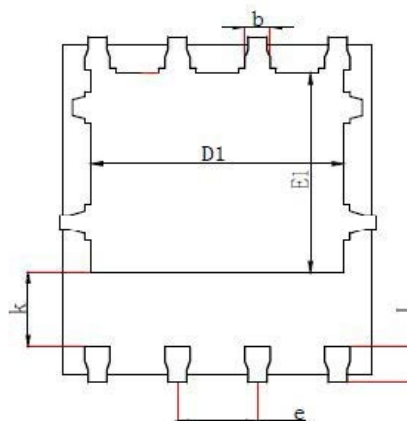


Figure 3. Unclamped Inductive Switching Test Circuit & Waveforms

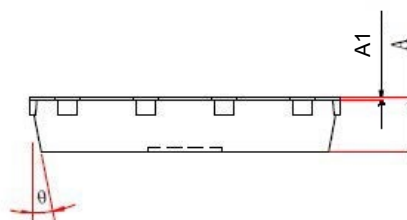
PDFNWB5*6-8L PACKAGE OUTLINE DRAWING



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°