

30V N-Channel Mosfet

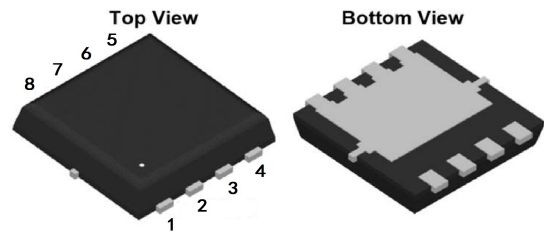
FEATURES

- $R_{DS(ON)} < 2.4m\Omega @ V_{GS} = 10V$
- $R_{DS(ON)} < 3.3m\Omega @ V_{GS} = 4.5V$

APPLICATIONS

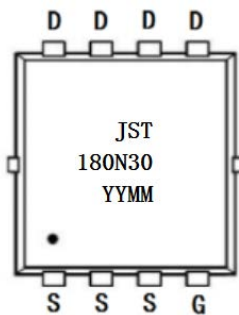
- Load Switch
- PWM Application
- Power management

PDFNWB5*6-8L



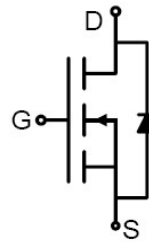
1: S 3: S 5: D 7: D
2: S 4: G 6: D 8: D

MARKING



YYMM:Date Code(year&month)

N-CHANNEL MOSFET



Maximum ratings ($T_c=25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Max.	Units
V_{DSS}	Drain-Source Voltage	30	V
V_{GSS}	Gate-Source Voltage	± 20	V
I_D	Continuous Drain Current	$T_C = 25^\circ\text{C}$	115
		$T_C = 100^\circ\text{C}$	72
I_{DM}	Pulsed Drain Current ^{note1}	460	A
E_{AS}	Single Pulsed Avalanche Energy ^{note2}	240	mJ
P_D	Power Dissipation	$T_C = 25^\circ\text{C}$	70
$R_{\theta JC}$	Thermal Resistance, Junction to Case	1.78	$^\circ\text{C}/\text{W}$
T_J, T_{STG}	Operating and Storage Temperature Range	-55 to +150	$^\circ\text{C}$

MOSFET ELECTRICAL CHARACTERISTICS $T_c=25^\circ\text{C}$ unless otherwise specified

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
Off Characteristic						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	$V_{GS} = 0V, I_D = 250\mu A$	30	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS} = 30V, V_{GS} = 0V$	-	-	1	μA
I_{GSS}	Gate to Body Leakage Current	$V_{GS} = \pm 20V, V_{DS} = 0V$	-	-	± 100	nA
On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D = 250\mu A$	1	1.6	2.5	V
$R_{DS(on)}$	Static Drain-Source On-Resistance <small>note3</small>	$V_{GS} = 10V, I_D = 30A$	-	1.9	2.4	m Ω
		$V_{GS} = 4.5V, I_D = 15A$	-	2.5	3.3	

Dynamic Characteristics						
C_{iss}	Input Capacitance	$V_{DS} = 25V, V_{GS} = 0V,$ $f = 1.0MHz$	-	4800	-	pF
C_{oss}	Output Capacitance		-	735	-	pF
C_{rss}	Reverse Transfer Capacitance		-	420	-	pF
Q_g	Total Gate Charge	$V_{DS}=15V, I_D = 24A,$ $V_{GS} = 4.5V$	-	40	-	nC
Q_{gs}	Gate-Source Charge		-	6	-	nC
Q_{gd}	Gate-Drain("Miller") Charge		-	19	-	nC
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time	$V_{DS} = 15V, I_D = 1A,$ $R_G = 1\Omega, V_{GS} = 10V$	-	20	-	ns
t_r	Turn-On Rise Time		-	32	-	ns
$t_{d(off)}$	Turn-Off Delay Time		-	75	-	ns
t_f	Turn-Off Fall Time		-	28	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I_S	Maximum Continuous Drain to Source Diode Forward Current		-	-	115	A
I_{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	230	A
V_{SD}	Drain to Source Diode Forward Voltage	$V_{GS} = 0V, I_{SD}=30A,$ $T_J = 25^\circ\text{C}$	-	-	1.2	V
t_{rr}	Reverse Recovery Time	$T_J = 25^\circ\text{C}, I_S = 1A,$ $di/dt = 100A/\mu s$	-	49	85	ns
Q_{rr}	Reverse Recovery Charge		-	18	35	nC

Notes: 1. Repetitive Rating: Pulse width limited by maximum junction temperature

2. $T_J=25^\circ\text{C}, V_{DD}=25V, V_G=10V, R_G=25\Omega$

3. Pulse Test: Pulse width $\leq 380\mu s$, Duty Cycle $\leq 2\%$

Typical Characteristics

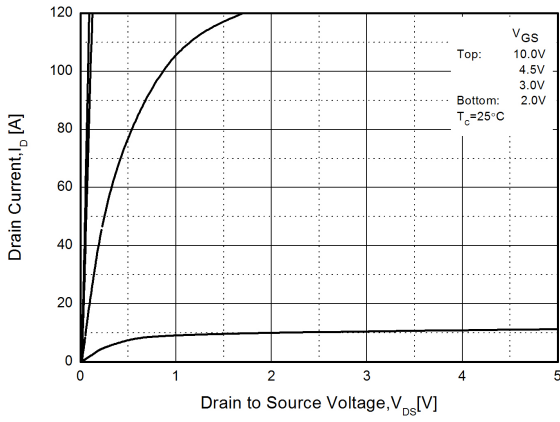


Figure1. Output Characteristics

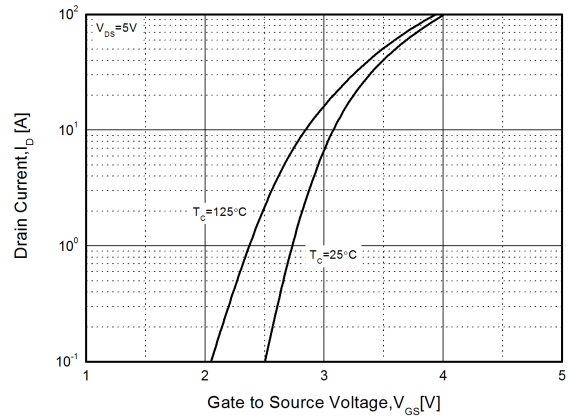


Figure2. Transfer Characteristics

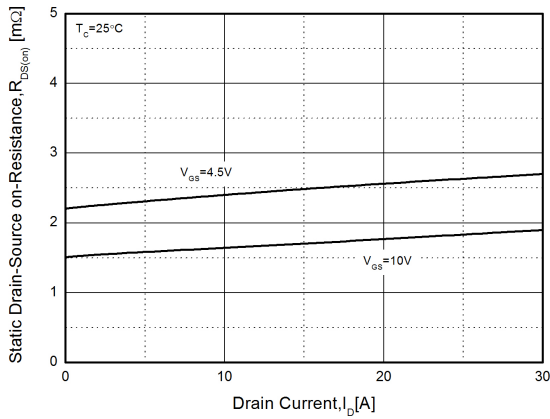


Figure3. $R_{DS(on)}$ -Drain Current

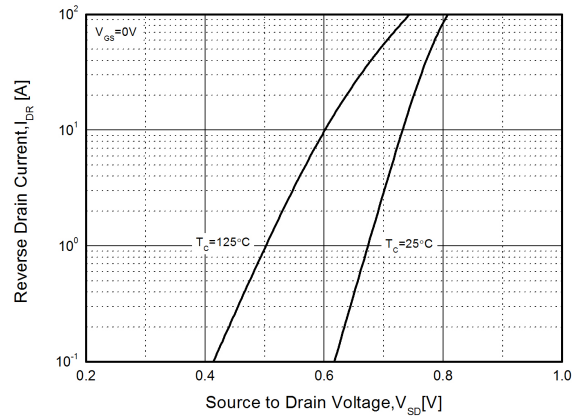


Figure4. Typical Source-Drain Diode Forward Voltage

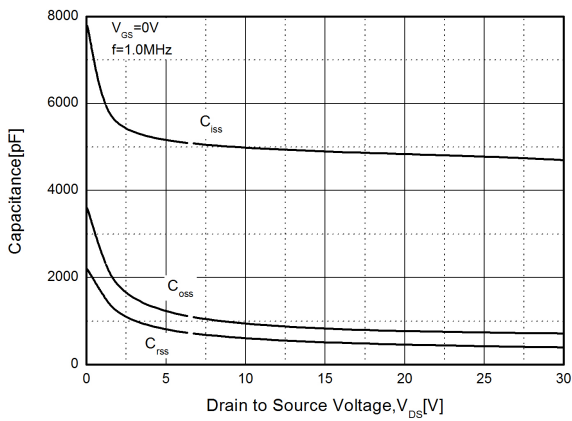


Figure5. Capacitance Characteristics

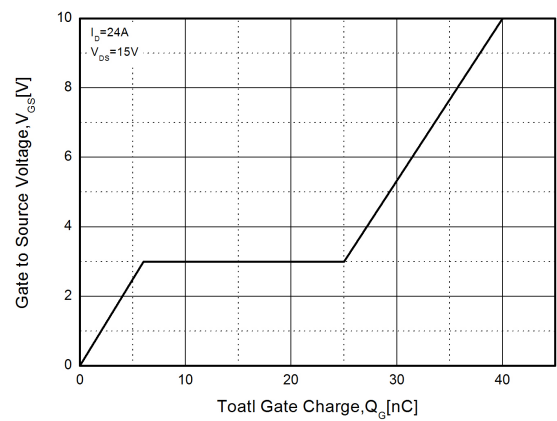


Figure6. Gate Charge

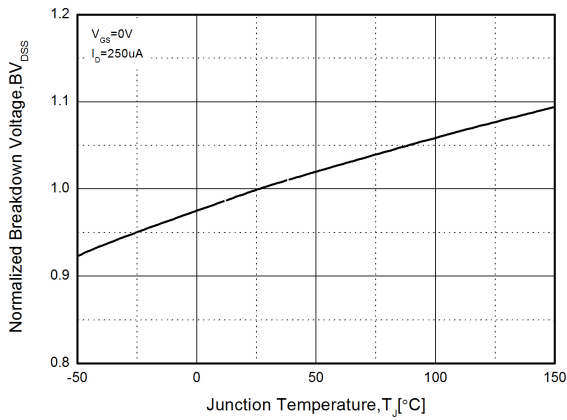


Figure7. Normalized Breakdown Voltage vs. Temperature

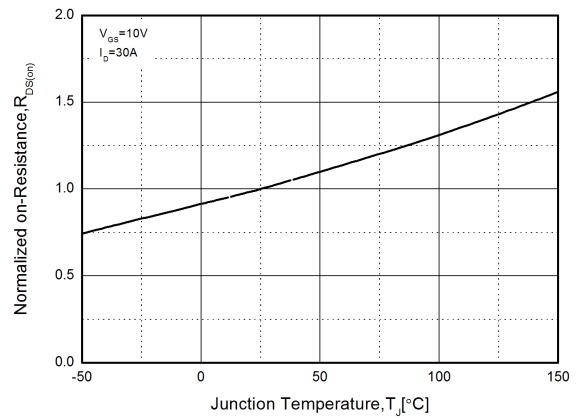


Figure8. Normalized on Resistance vs. Temperature

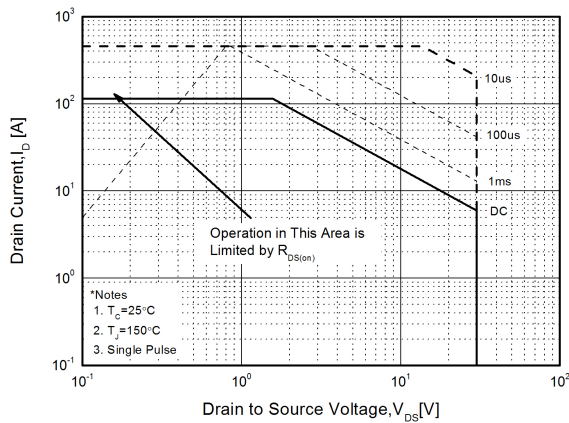


Figure9. Safe Operation Area

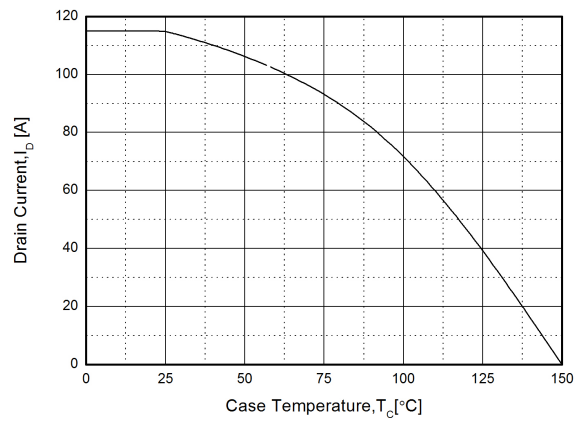


Figure10. Maximum Drain Current vs. Case Temperature

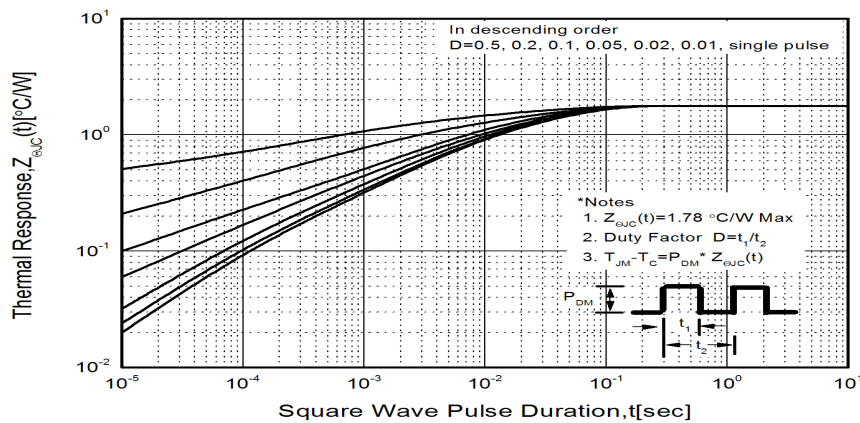


Figure11. Transient Thermal Response Curve

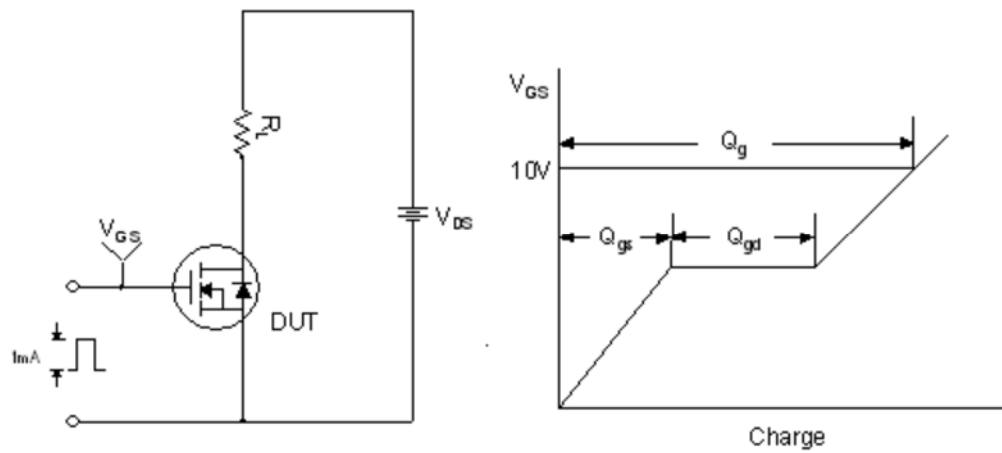


Figure 1. Gate Charge Test Circuit & Waveform

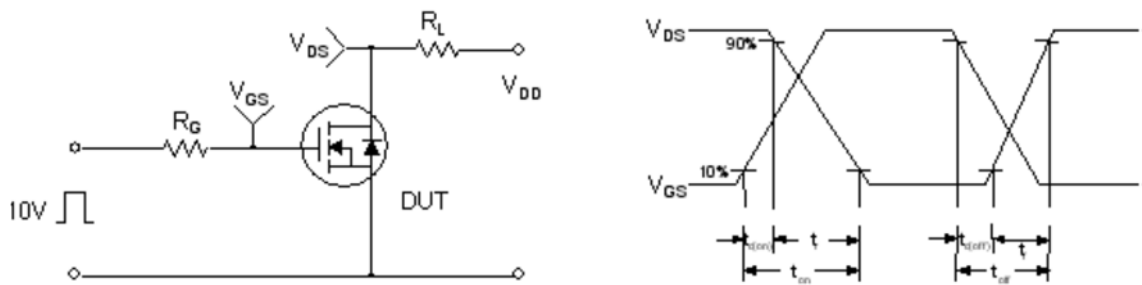


Figure 2. Resistive Switching Test Circuit & Waveforms

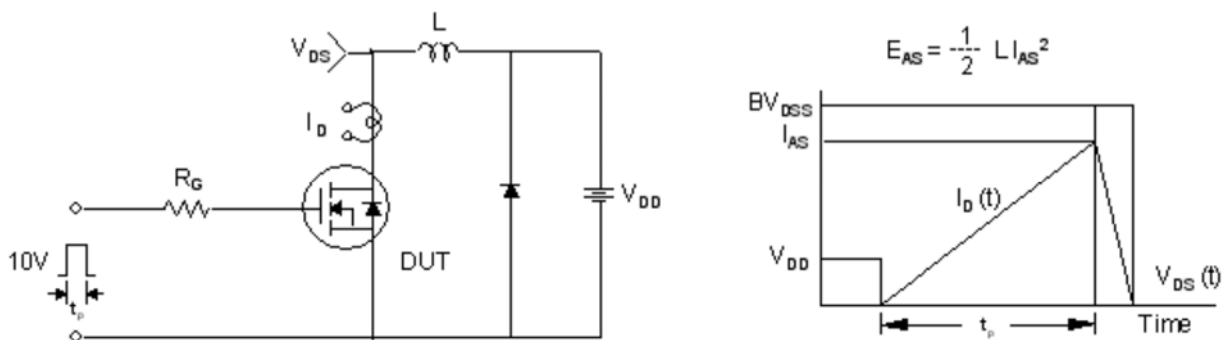
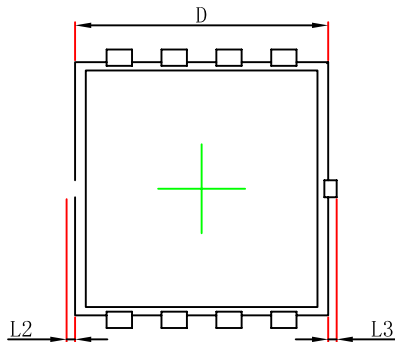
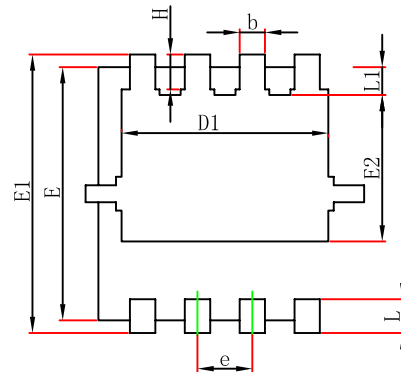


Figure 3. Unclamped Inductive Switching Test Circuit & Waveforms

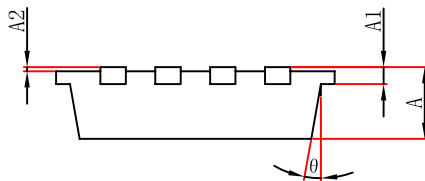
Package Outline Dimensions



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	0.650	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°

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