

**40V,50A
N-Channel Mosfet**

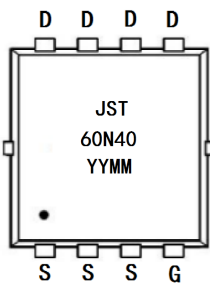
FEATURES

- $R_{DS(ON)} < 7.7m\Omega @ V_{GS} = 10V$
- $R_{DS(ON)} < 16m\Omega @ V_{GS} = 4.5V$

APPLICATIONS

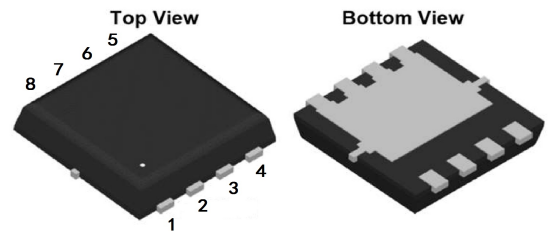
- PWM Applications
- Load Switch
- Power Management

MARKING



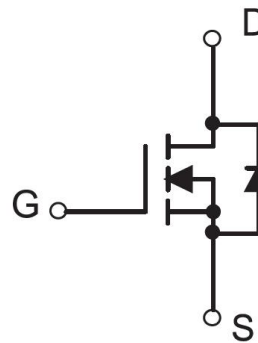
YYMM:Date Code(year&month)

PDFN5*6-8L



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

N-CHANNEL MOSFET



Absolute Maximum Ratings (TC=25°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	$T_C = 25^\circ C$	50 A
		$T_C = 100^\circ C$	32.5 A
I_{DM}	Pulsed Drain Current ^{note1}	200	A
E_{AS}	Single Pulsed Avalanche Energy ^{note2}	81	mJ
P_D	Power Dissipation	$T_C = 25^\circ C$ 33.7	W
$R_{\theta JC}$	Thermal Resistance, Junction to Case	3.7	°C/W
T_J, T_{STG}	Operating and Storage Temperature Range	-55 to +150	°C

Electrical Characteristics (T_J=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	1.7	2.4	V
R _{DS(on)}	Static Drain-Source on-Resistance <small>note3</small>	V _{GS} =10V, I _D =30A	-	5.9	7.7	mΩ
		V _{GS} =4.5V, I _D =20A	-	11	16	
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =20V, V _{GS} =0V, f=1.0MHz	-	2400	-	pF
C _{oss}	Output Capacitance		-	192	-	pF
C _{rss}	Reverse Transfer Capacitance		-	165	-	pF
Q _g	Total Gate Charge	V _{DS} =20V, I _D =30A, V _{GS} =10V	-	37	-	nC
Q _{gs}	Gate-Source Charge		-	6	-	nC
Q _{gd}	Gate-Drain("Miller") Charge		-	7	-	nC
Switching Characteristics						
t _{d(on)}	Turn-on Delay Time	V _{DD} =20V, I _D =25A, R _L =1Ω, R _{GEN} =3Ω, V _{GS} =10V	-	12	-	ns
t _r	Turn-on Rise Time		-	12	-	ns
t _{d(off)}	Turn-off Delay Time		-	38	-	ns
t _f	Turn-off Fall Time		-	9	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I _S	Maximum Continuous Drain to Source Diode Forward Current		-	-	50	A
I _{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	200	A
V _{SD}	Drain to Source Diode Forward Voltage	V _{GS} =0V, I _S =30A	-	-	1.2	V
t _{rr}	Body Diode Reverse Recovery Time	T _J =25°C, I _F =20A, di/dt=100A/μs	-	22	-	ns
Q _{rr}	Body Diode Reverse Recovery Charge		-	11	-	nC

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

2. EAS condition: T_J=25°C, V_{DD}=20V, V_G=10V, R_G=25Ω, L=0.5mH, I_{AS}=18A

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

Figure 1: Output Characteristics

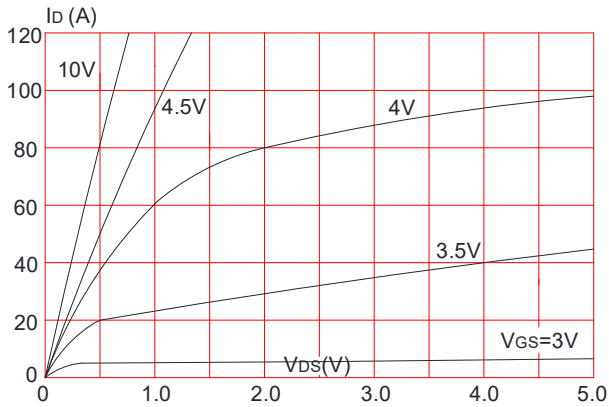


Figure 2: Typical Transfer Characteristics

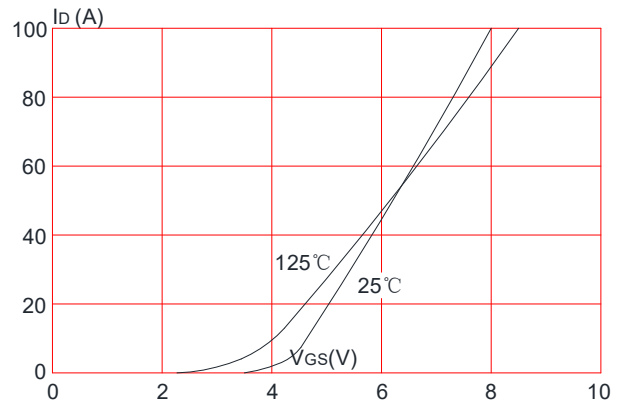


Figure 3: On-resistance vs. Drain Current

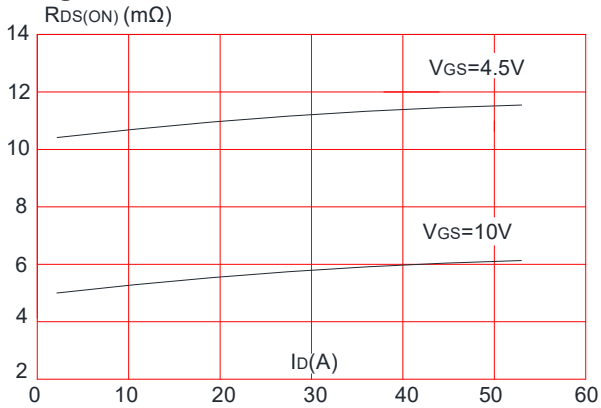


Figure 4: Body Diode Characteristics

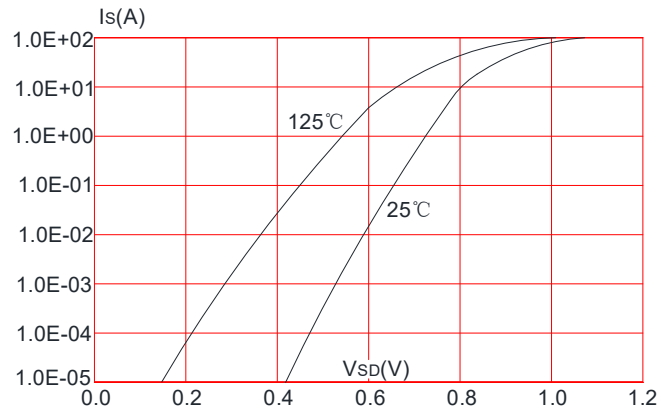


Figure 5: Gate Charge Characteristics

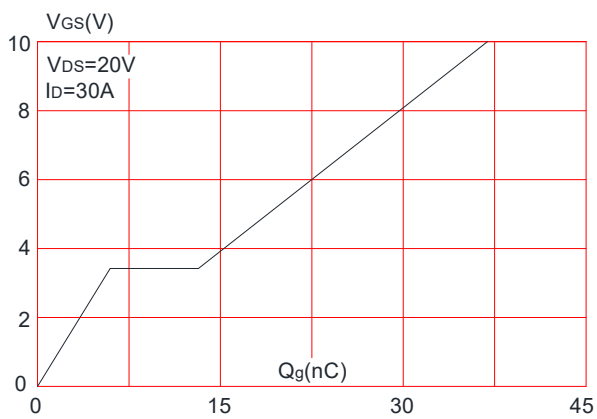


Figure 6: Capacitance Characteristics

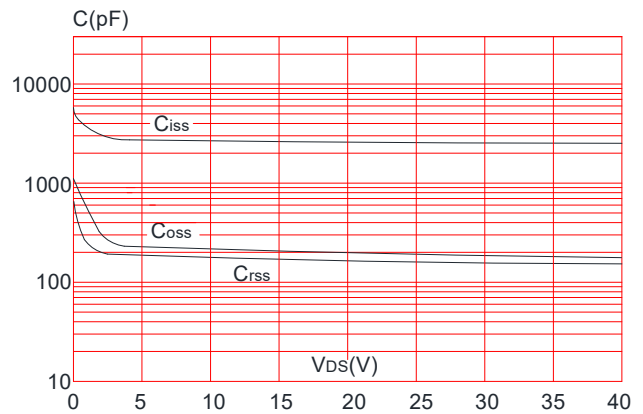


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

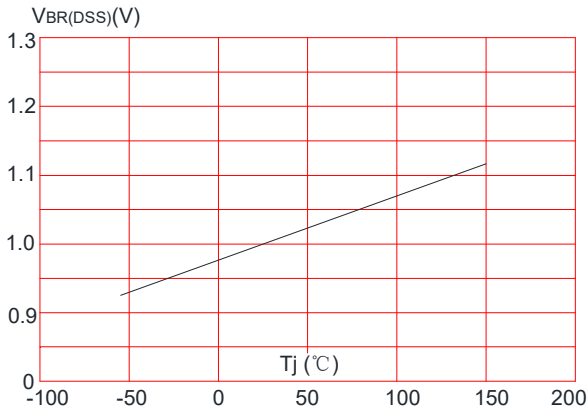


Figure 8: Normalized on Resistance vs. Junction Temperature

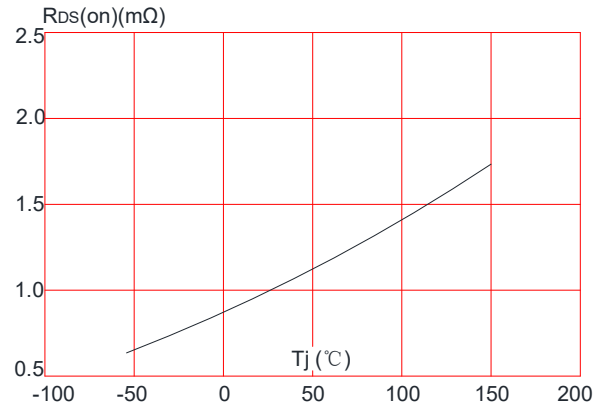


Figure 9: Maximum Safe Operating Area

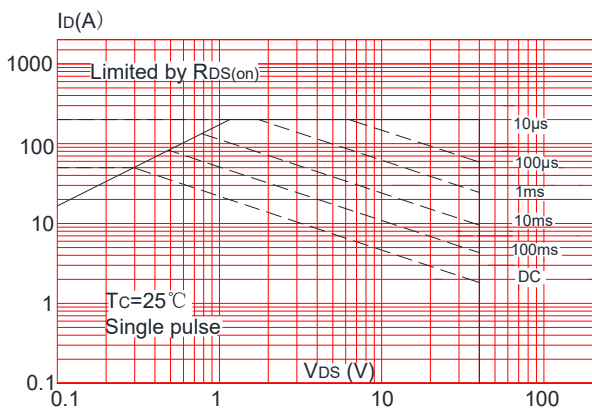


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

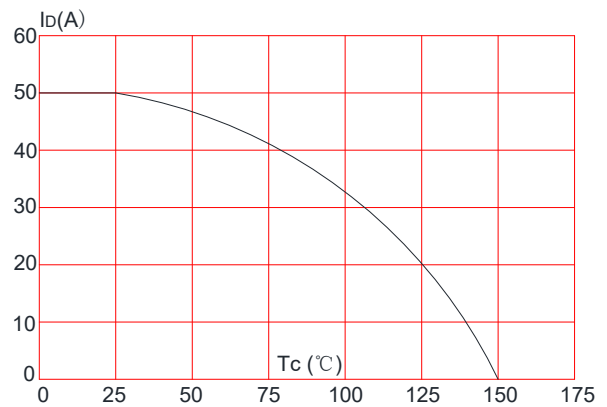
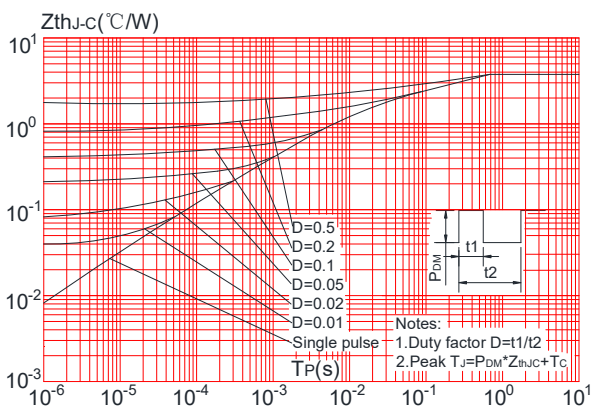
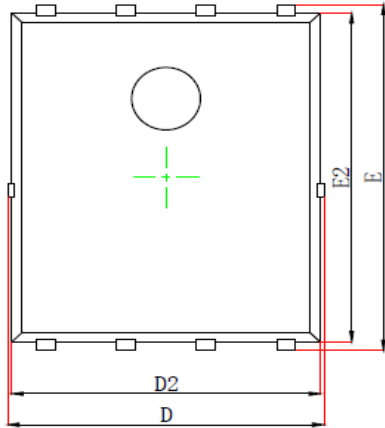


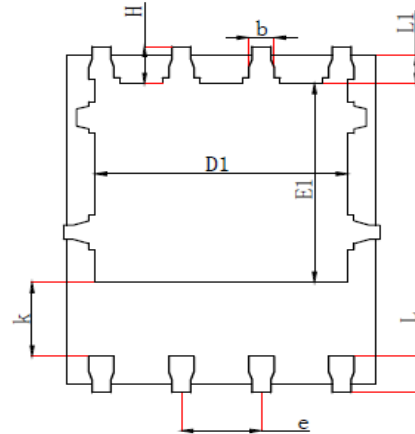
Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case



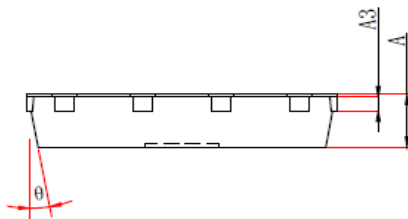
PDFNWB5×6-8L (P1. 27T0. 95) PACKAGE OUTLINE DIMENSIONS



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	0.900	1.000	0.035	0.039
A3	0.254REF		0.010REF	
D	4.944	5.096	0.195	0.201
E	5.974	6.126	0.235	0.241
D1	3.910	4.110	0.154	0.162
E1	3.375	3.575	0.133	0.141
D2	4.824	4.976	0.190	0.196
E2	5.674	5.826	0.223	0.229
k	1.190	1.390	0.047	0.055
b	0.350	0.450	0.014	0.018
e	1.270TYP		0.050TYP	
L	0.559	0.711	0.022	0.028
L1	0.424	0.576	0.017	0.023
H	0.574	0.726	0.023	0.029
θ	10°	12°	10°	12°