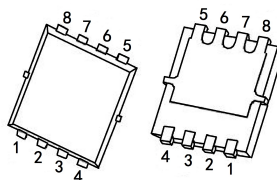


40V N-Channel Mosfet

FEATURES

- $R_{DS(ON)} \leq 3.5m\Omega$ (2.7m Ω Typ.)
@ $V_{GS}=10V$
- AEC Q101 qualified
- Green Product (RoHS compliant)
- 100% UIS TEST

PDFNWB5*6-8L

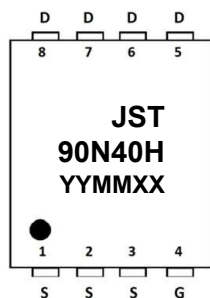


APPLICATIONS

- Automotive Systems
- PWM Applications
- Load Switch
- Power Management

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

MARKING



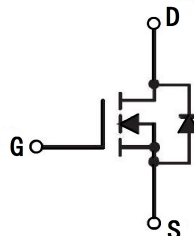
YYMM:Date Code(year & month)

XX: Internal Code

Other mark: **G035N04A**

xxxxx xxx

N-CHANNEL MOSFET



MAXIMUM RATINGS (Tc=25°C unless otherwise noted)

Symbol	Parameter		Max.	Units
V_{DSS}	Drain-Source Voltage		40	V
V_{GSS}	Gate-Source Voltage		± 25	V
I_D	Continuous Drain Current @ $V_{GS}=10V$ note1	$T_C = 25^\circ C$	100	A
		$T_C = 100^\circ C$	70	A
I_{DM}	Pulsed Drain Current note2		400	A
E_{AS}	Single Pulsed Avalanche Energy note3		272	mJ
P_D	Power Dissipation		75	W
$R_{\theta JC}$	Thermal Resistance, Junction to Case		2	$^\circ C/W$
T_J, T_{STG}	Operating and Storage Temperature Range		-55 to +175	$^\circ C$

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	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} = ±25V	-	-	±100	nA
On Characteristics						
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250μA	2	2.8	4	V
R _{DS(on)}	Static Drain-Source on-Resistance <small>note4</small>	V _{GS} =10V, I _D =30A	-	2.7	3.5	mΩ
Dynamic Characteristics <small>note5</small>						
C _{iss}	Input Capacitance	V _{DS} =20V, V _{GS} =0V, f=1.0MHz	-	4899	-	pF
C _{oss}	Output Capacitance		-	527	-	pF
C _{rss}	Reverse Transfer Capacitance		-	316	-	pF
Q _g	Total Gate Charge	V _{DS} =20V, I _D =30A, V _{GS} =10V	-	80	-	nC
Q _{gs}	Gate-Source Charge		-	16.9	-	nC
Q _{gd}	Gate-Drain(“Miller”) Charge		-	20.8	-	nC
Switching Characteristics <small>note5</small>						
t _{d(on)}	Turn-on Delay Time	V _{DD} =20V, I _D =30A, R _{GEN} =3Ω, V _{GS} =10V	-	21	-	ns
t _r	Turn-on Rise Time		-	32	-	ns
t _{d(off)}	Turn-off Delay Time		-	71	-	ns
t _f	Turn-off Fall Time		-	40	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
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℃, I _F =30A,dl/dt=100A/μs	-	26.8	-	ns
Q _{rr}	Body Diode Reverse Recovery Charge		-	45	-	nC

Notes:1. $T_C=25^\circ C$ Limited only by maximum temperature allowed. Calculated continuous current based on maximum allowable junction temperature.

2. $PW \leq 10\mu s$, Duty cycle $\leq 1\%$

3. EAS condition: $V_{DD}=20V, V_G=10V, R_G=25\Omega, L=0.5mH, I_{AS}=33A$ starting $T_J=25^\circ C$.

4. Pulse Test: Pulse width $\leq 300\mu s$, Duty Cycle $\leq 0.5\%$

5. Guaranteed by design, not subject to production testing

TYPICAL PERFORMANCE CHARACTERISTICS

Figure 1: Output Characteristics

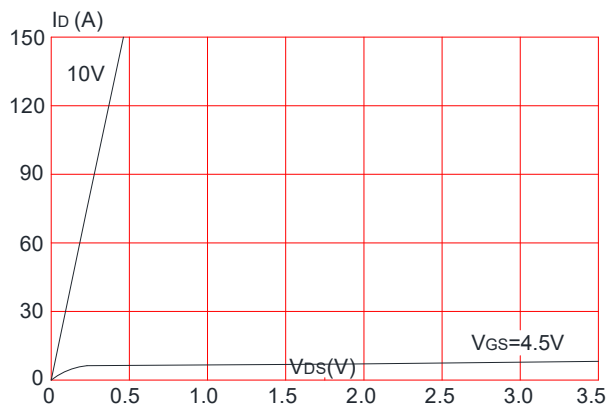


Figure 2: Typical Transfer Characteristics

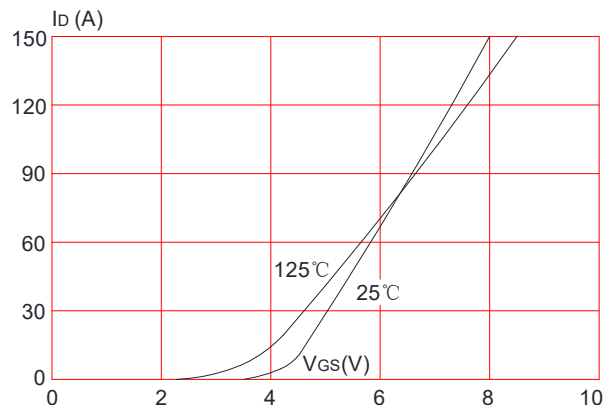


Figure 3: On-resistance vs. Drain Current

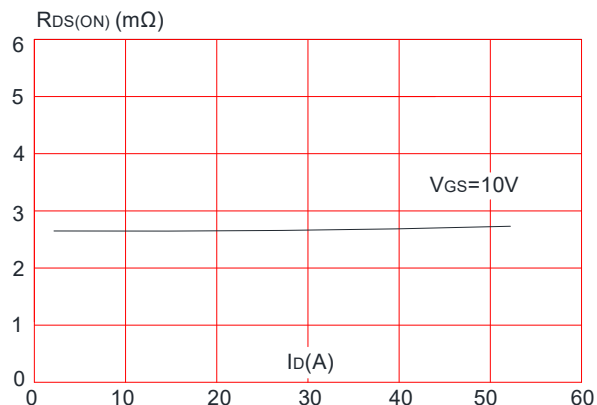


Figure 4: Body Diode Characteristics

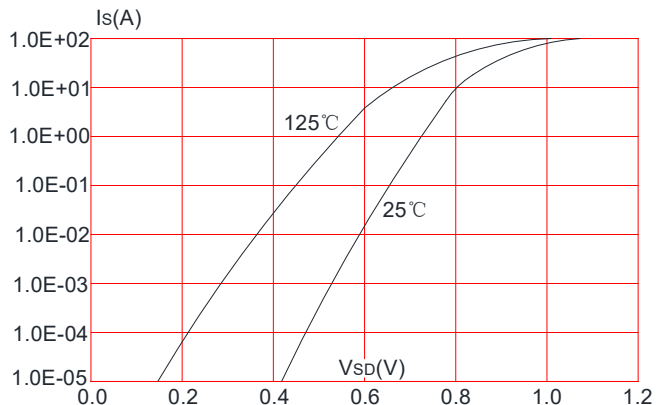


Figure 5: Gate Charge Characteristics

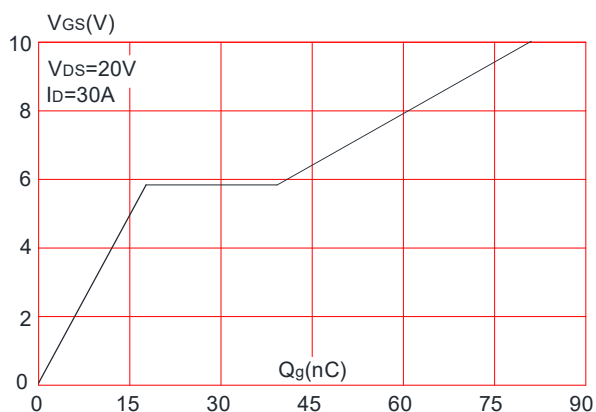
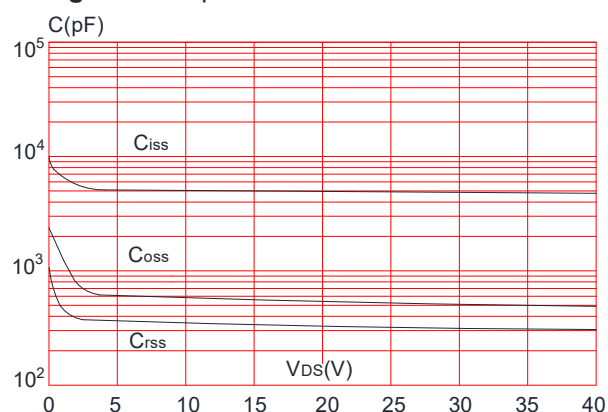


Figure 6: Capacitance Characteristics



TYPICAL PERFORMANCE CHARACTERISTICS (cont.)

Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

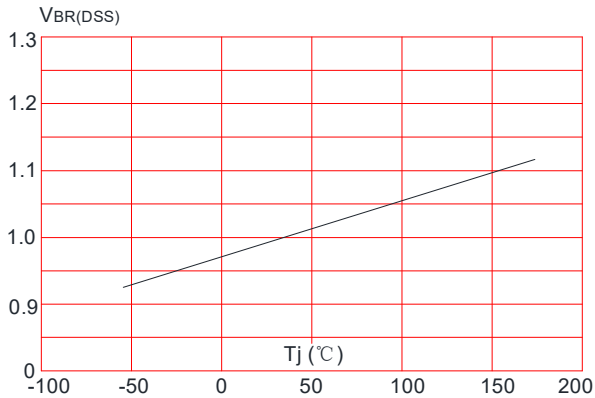


Figure 8: Normalized on Resistance vs. Junction Temperature

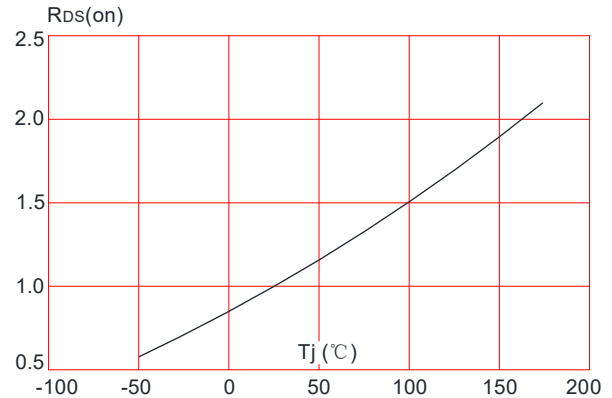


Figure 9: Maximum Safe Operating Area

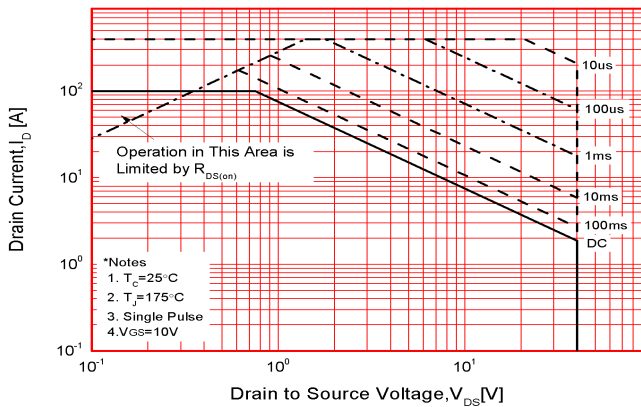


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

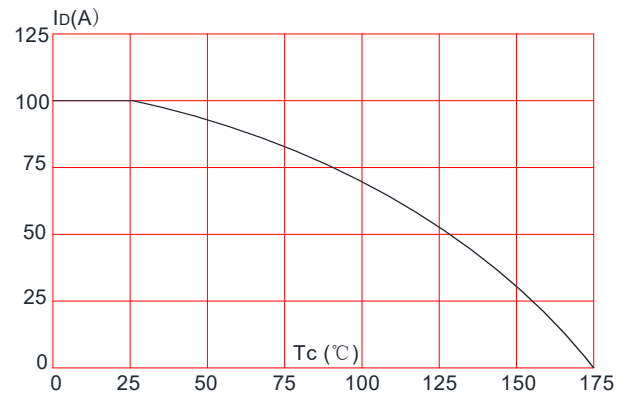
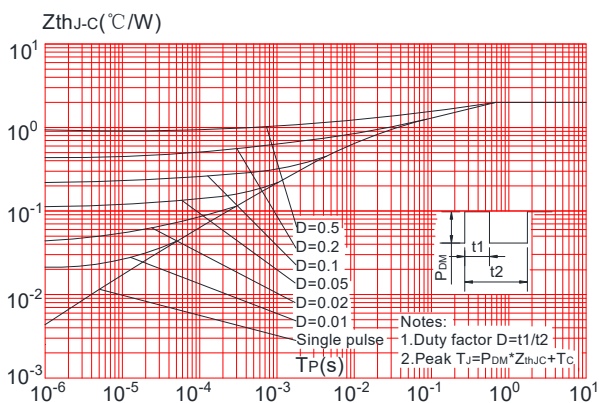
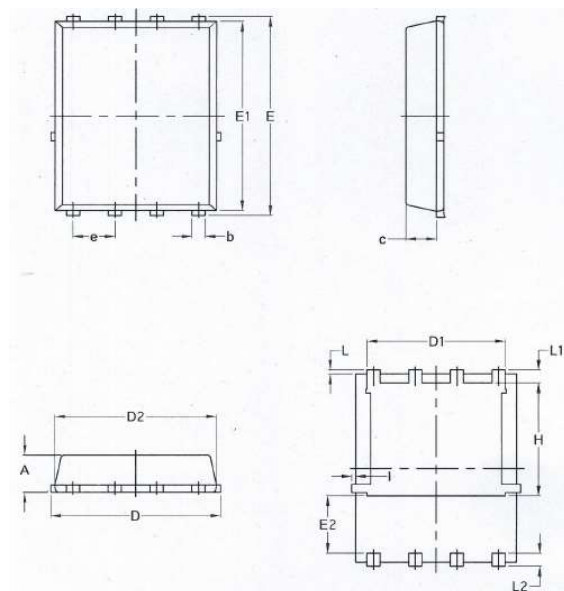


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case



PDFNWB5*6-8L PACKAGE OUTLINE DRAWING



SYMBOL	COMMON			
	MM		INCH	
	MIN.	MAX.	MIN.	MAX.
A	1.03	1.17	0.0406	0.0461
b	0.34	0.48	0.0134	0.0189
c	0.824	0.970	0.0324	0.0382
D	4.80	5.40	0.1890	0.2126
D1	4.11	4.31	0.1618	0.1697
D2	4.80	5.00	0.1890	0.1969
E	5.95	6.15	0.2343	0.2421
E1	5.65	5.85	0.2224	0.2303
E2	1.60	—	0.0630	—
e	1.27 BSC		0.05 BSC	
L	0.05	0.25	0.0020	0.0098
L1	0.38	0.50	0.0150	0.0197
L2	0.38	0.50	0.0150	0.0197
H	3.30	3.50	0.1299	0.1378
I	—	0.18	—	0.0070