

N-Channel Enhancement Mode MOSFET

1. Product Information

1.1 Features

- Surface-mounted package
- Low gate charge

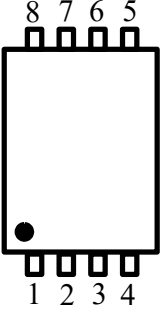
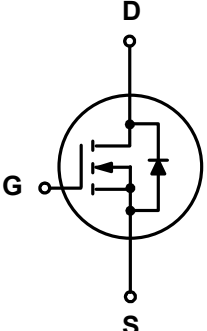
1.2 Applications

- Motor driver appliances
- High power inverter system
- Adapter appliances

1.3 Quick reference

- $BV \geq 60\text{ V}$
- $R_{DS(ON)} \leq 3.0\text{ m}\Omega @ V_{GS} = 10\text{ V}$
- $P_{tot} \leq 56\text{ W}$
- $R_{DS(ON)} \leq 3.8\text{ m}\Omega @ V_{GS} = 4.5\text{ V}$
- $I_D \leq 78\text{ A}$

2. Pin Description

Pin	Description	Simplified Outline	Symbol
1,2,3	Source	 <p style="text-align: center;">Top View PDFN5x6-8L</p>	
4	Gate		
5,6,7,8	Drain		

3. Limiting Values

Symbol	Parameter	Conditions	Min	Max	Unit
V _{DS}	Drain-Source Voltage	T _C = 25 °C	60	-	V
V _{GS}	Gate-Source Voltage	T _C = 25 °C	-	± 20	V
I _D *	Drain Current	T _C = 25 °C, V _{GS} = 10 V	-	78	A
		T _C = 100 °C, V _{GS} = 10 V	-	49	
I _{DM} *	Pulsed Drain Current	T _C = 25 °C, V _{GS} = 10 V	-	312	A
P _{tot} *	Total Power Dissipation	T _C = 25 °C	-	56	W
T _{stg}	Storage Temperature		- 55	150	°C
T _J	Junction Temperature		-	150	°C
I _S	Continuous-Source Current	T _C = 25 °C	-	78	A
E _{AS} *	Single Pulsed Avalanche Energy	V _{DD} =50V , L=1.0mH	-	162	mJ
R _{θJC} *	Thermal Resistance- Junction to Case		-	2.2	°C / W
R _{θJA} *	Thermal Resistance- Junction to Ambient		-	43	°C / W

Notes :

- * Surface Mounted on 1 in² pad area, t ≤ 10 sec
- ** Pulse width ≤ 10 μs, duty cycle ≤ 1 %
- *** limited by bonding wire

4. Marking Information

Product Name	Marking
N03N06G	<div style="display: inline-block; background-color: black; color: white; padding: 2px;">03N06 YWWXXX</div> YWW: Date Code

5. Ordering Code

Product Name	Package	Reel Size	Tape width	Quantity	Note
N03N06G	PDFN5*6			5000	

6. Electrical Characteristics (T_A = 25 °C Unless Otherwise Noted)

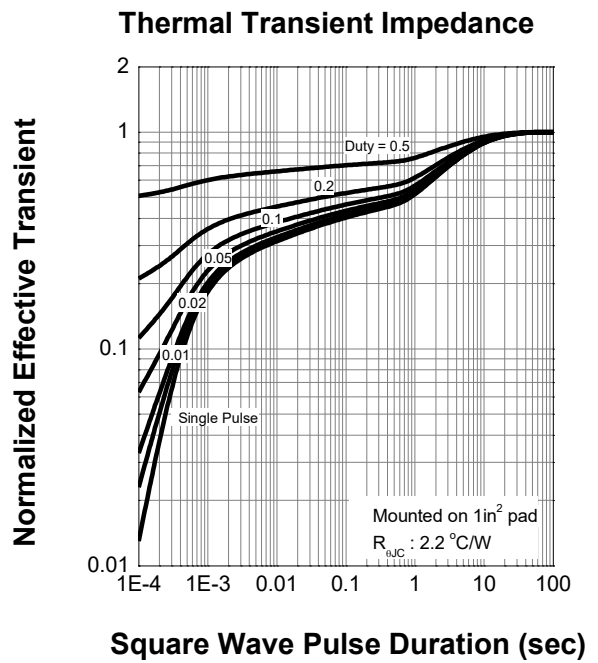
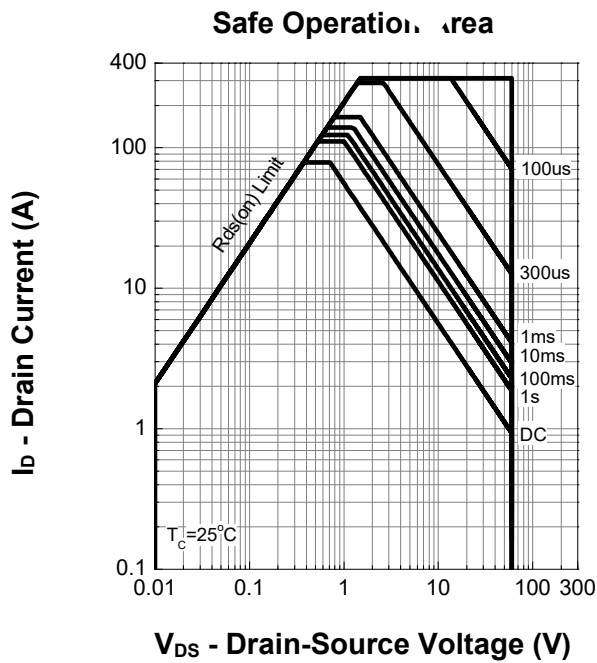
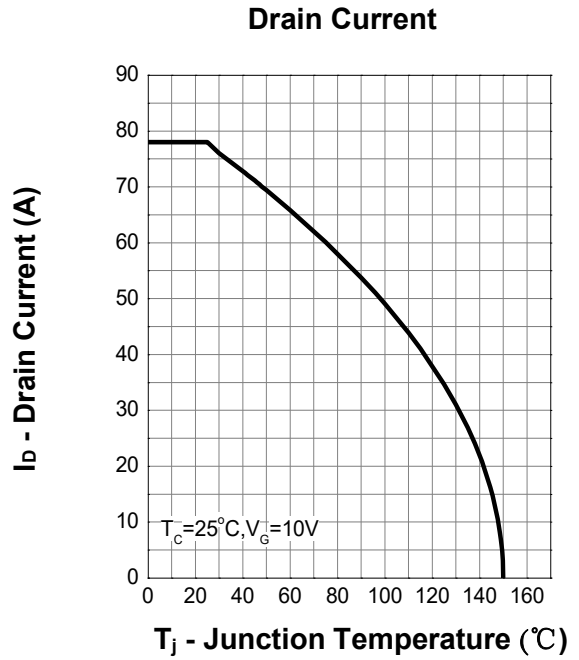
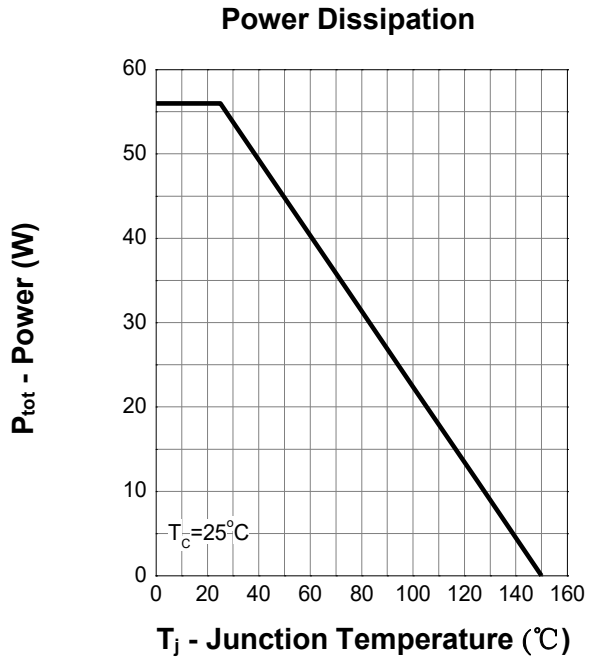
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} = 0 V, I _{DS} = 250 μA	60	-	-	V
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _{DS} = 250 μA	1.0	-	2.0	V
I _{DSS}	Drain Leakage Current	V _{DS} = 48 V, V _{GS} = 0 V	-	-	1	μA
I _{GSS}	Gate Leakage Current	V _{GS} = ± 20 V, V _{DS} = 0 V	-	-	± 100	nA
R _{DS(ON)} ^a	Channel On-State Resistance	V _{GS} = 10 V, I _D = 20 A	-	2.6	3.0	mΩ
	Channel On-State Resistance	V _{GS} = 4.5 V, I _D = 10 A	-	3.5	3.8	
Diode Characteristics						
V _{SD} ^a	Diode Forward Voltage	I _{SD} = 20 A, V _{GS} = 0 V	-	-	1.3	V
t _{rr}	Reverse Recovery Time	I _{SD} = 20 A, dI _{SD} /dt = 100 A / μs	-	60	-	ns
Q _{rr}	Reverse Recovery Charge		-	90	-	nC
Dynamic Characteristics^b						
C _{iss}	Input Capacitance	V _{GS} = 0 V, V _{DS} = 30 V Frequency = 1 MHz	-	2810	-	pF
C _{oss}	Output Capacitance		-	1005	-	
C _{rss}	Reverse Transfer Capacitance		-	42	-	
t _{d(on)}	Turn-on Delay Time	V _{DS} = 30 V, V _{GEN} = 10 V, R _G = 3.9 Ω, R _L = 1.5 Ω, I _{DS} = 20 A	-	24	-	nS
t _r	Turn-on Rise Time		-	19	-	
t _{d(off)}	Turn-off Delay Time		-	52	-	
t _f	Turn-off Fall Time		-	10	-	
Gate Charge Characteristics^b						
Q _g	Total Gate Charge	V _{GS} = 10 V, V _{DS} = 30 V, I _{DS} = 20 A	-	51	-	nC
Q _{gs}	Gate-Source Charge		-	11	-	
Q _{gd}	Gate-Drain Charge		-	8	-	

Notes :

a : Pulse test ; pulse width ≤ 300 μs, duty cycle ≤ 2 %

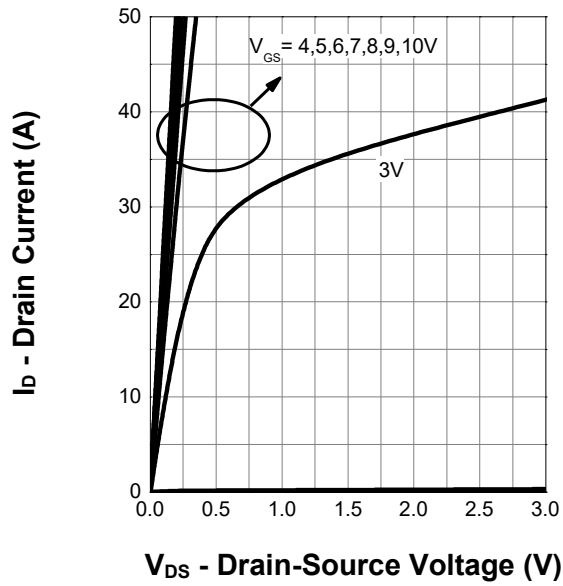
b : Guaranteed by design, not subject to production testing

7. Typical Characteristics

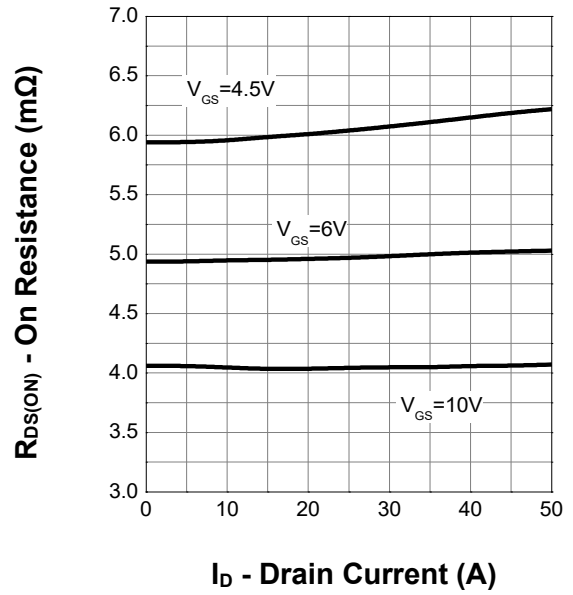


7. Typical Characteristics (cont.)

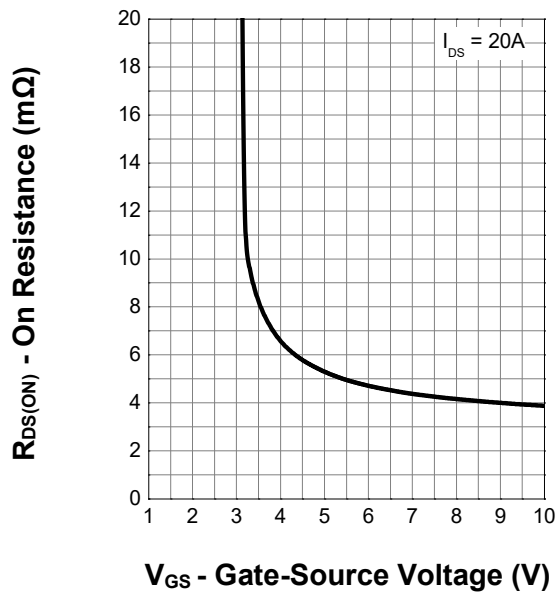
Output Characteristics



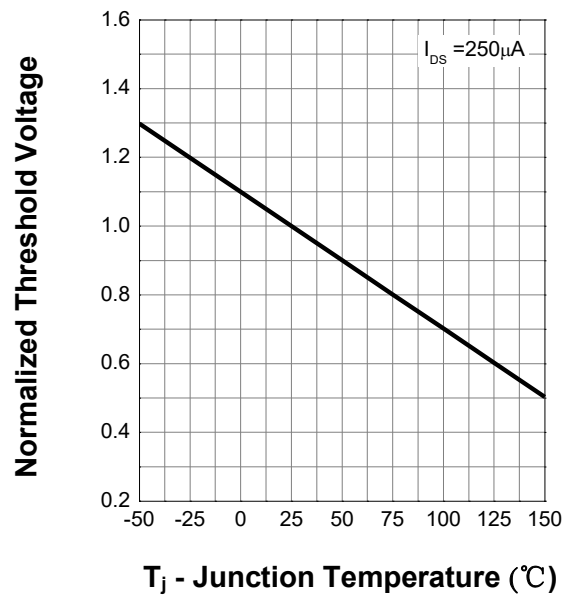
Drain-Source On Resistance



Transfer Characteristics

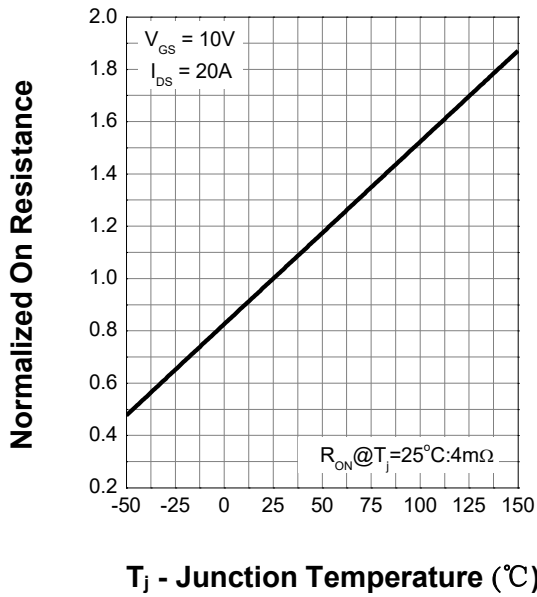


Gate Threshold Voltage

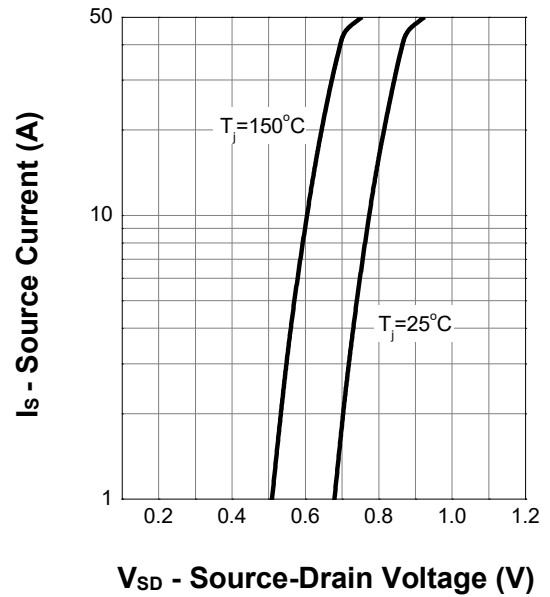


7. Typical Characteristics (cont.)

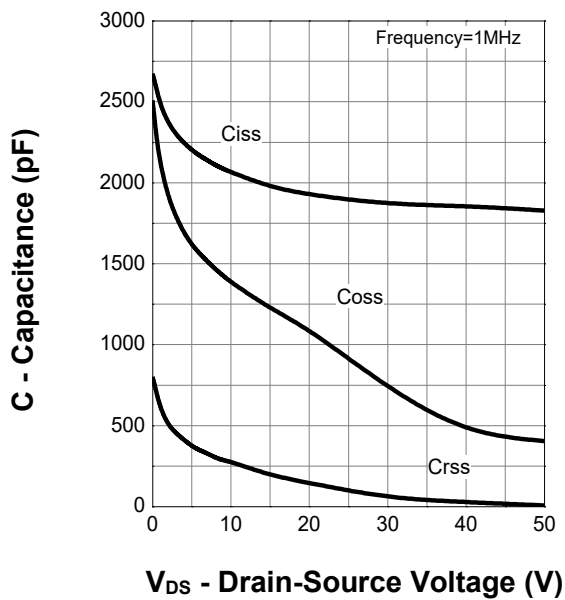
Drain-Source On Resistance



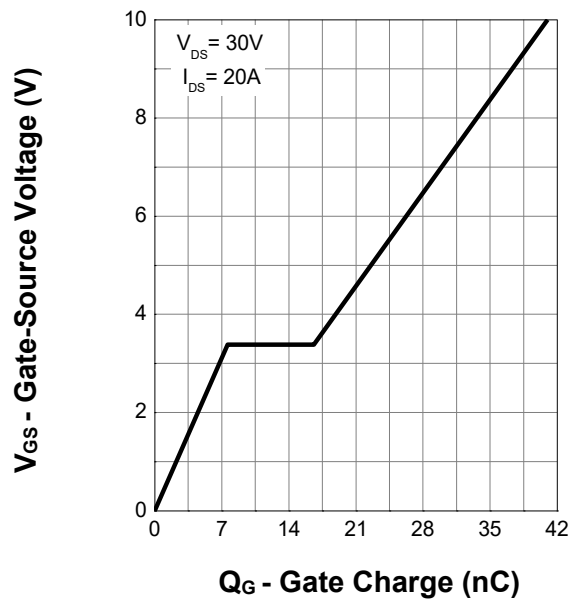
Source-Drain Diode Forward



Capacitance

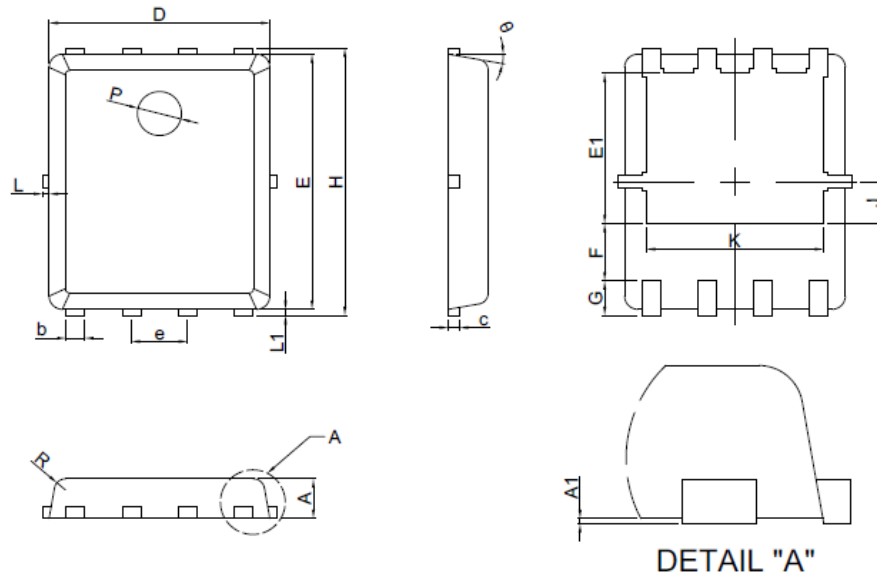


Gate Charge



8. Package Dimensions

PDFN5x6 - 8L Package



Symbol	Dimensions In Millimeters	
	MIN.	MAX.
A	0.80	1.00
A1	0.00	0.05
b	0.35	0.49
c	0.254REF	
D	4.90	5.10
F	1.40REF	
E	5.70	5.90
e	1.27BSC	
H	5.95	6.20
L1	0.10	0.18
G	0.60REF	
K	4.00REF	
L	-	0.15
J	0.95BSC	
P	1.00REF	
E1	3.40REF	
θ	6°	14°
R	0.25REF	