

N-Channel Enhancement Mode MOSFET

1. Product Information

1.1 Features

- ☒ Surface-mounted package
- ☒ Advanced trench cell design

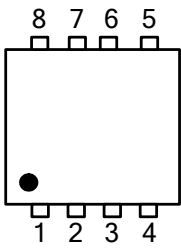
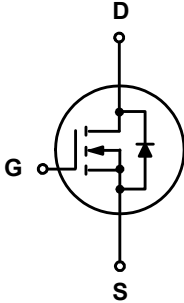
1.2 Applications

- ☒ MB and NB
- ☒ Half – bridge Drivers
- ☒ Motor drivers

1.3 Quick reference

- ☒ $BV \geq 100\text{ V}$
- ☒ $P_{tot} \leq 35\text{ W}$
- ☒ $I_D \leq 31\text{ A}$
- ☒ $R_{DS(ON)} \leq 17\text{ m}\Omega @ V_{GS} = 10\text{ V}$
- ☒ $R_{DS(ON)} \leq 24\text{ m}\Omega @ V_{GS} = 4.5\text{ V}$

2. Pin Description

Pin	Description	Simplified Outline	Symbol
1,2,3	Source(S)	 Top View PDFN3.3x3.3-8L	
5,6,7,8	Drain(D)		
4	Gate(G)		

3. Limiting Values

Symbol	Parameter	Conditions	Min	Max	Unit
V _{DS}	Drain-Source Voltage	T _C = 25 °C	100	-	V
V _{GS}	Gate-Source Voltage	T _C = 25 °C	-	± 20	V
I _D *	Drain Current	T _C = 25 °C, V _{GS} = 10 V	-	31	A
I _{DM} *,**,***	Pulsed Source Current	T _C = 25 °C, V _{GS} = 10 V	-	112	A
P _{tot} *	Total Power Dissipation	T _C = 25 °C	-	20.8	W
T _{stg}	Storage Temperature		- 55	150	°C
T _J	Junction Temperature		-	150	°C
I _S	Diode Forward Current	T _C = 25 °C	-	31	A
R _{θJA} *	Thermal Resistance- Junction to Ambient		-	62.5	°C / W
R _{θJC} *	Thermal Resistance- Junction to Case		-	6	

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
N30N10QGS	30N10S YWWXXX YWWXXX: Date Code

5. Ordering Code

Product Name	Package	Reel Size	Tape width	Quantity	Note
N30N10QGS	PDFN3.3*3.3 -8L			5000	

Note: JSHD defines “ Green ” as lead-free (RoHS compliant) and halogen free (Br or Cl does not exceed 900 ppm by weight in homogeneous material and total of Br and Cl does not exceed 1500 ppm by weight; Follow IEC 61249-2-21 and IPC / JEDEC J-STD-020C)

6. Electrical Characteristics ($T_A=25^\circ$ Unless Otherwise Noted)

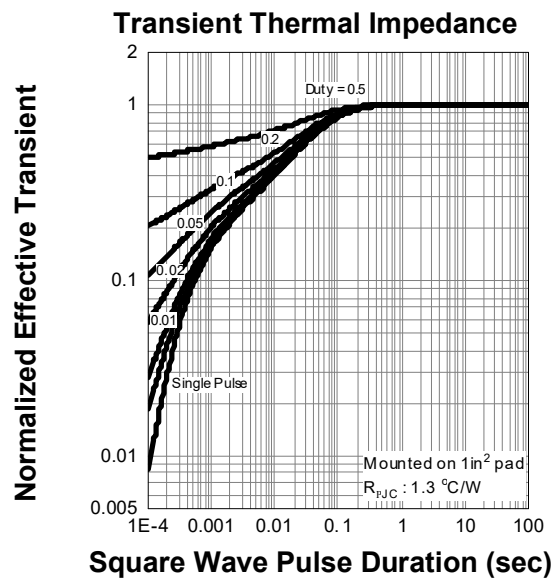
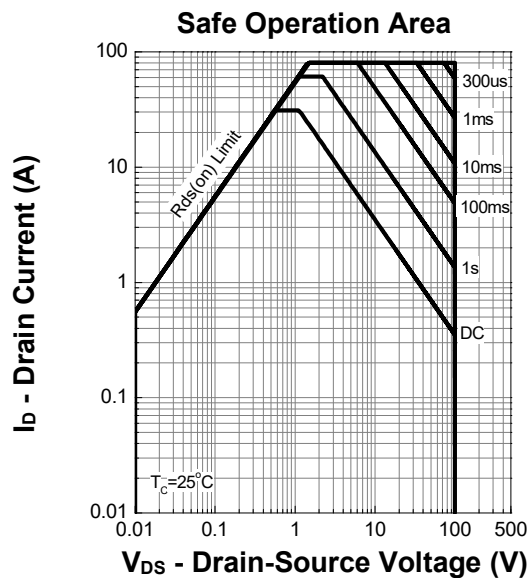
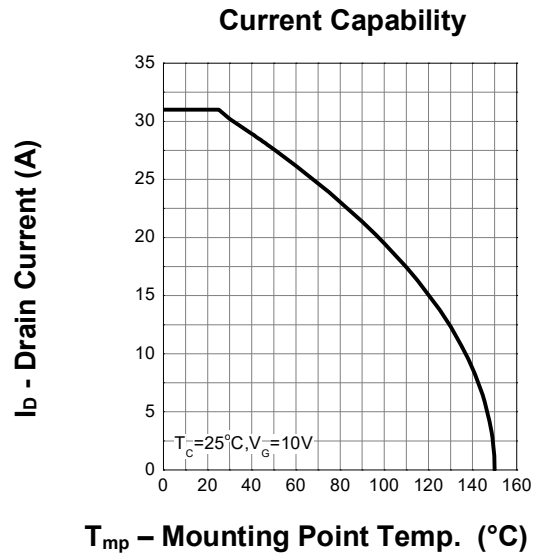
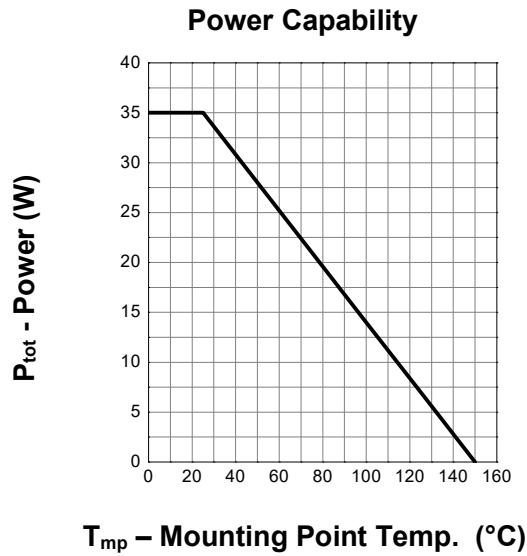
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} = 0 V, I _{DS} = 250 μA	100	-	-	V
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _{DS} = 250 μA	1.0	1.8	2.6	V
I _{DSS}	Drain Leakage Current	V _{DS} = 100 V, V _{GS} = 0 V	-	-	1	μA
I _{GSS}	Gate Leakage Current	V _{GS} = 0 V, V _{GS} = ± 20 V	-	-	±100	nA
R _{DS(ON)} ^a	On-State Resistance	V _{GS} = 10 V, I _{DS} = 20 A	-	15	17	m Ω
		V _{GS} = 4.5 V, I _{DS} =10 A	-	21	24	
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 _{DS} = 20 A, V _{GS} = 0 V dI _{SD} /dt = 100 A/μs	-	24	-	nS
Q _{rr}	Reverse Recovery Charge		-	125	-	nC
Dynamic Characteristics ^b						
C _{iss}	Input Capacitance	V _{GS} = 0 V, V _{DS} = 50 V Frequency = 1 MHz	-	1230	-	pF
C _{oss}	Output Capacitance		-	256	-	
C _{rss}	Reverse Transfer Capacitance		-	2.8	-	
t _{d(on)}	Turn-on Delay Time	V _{DS} = 50 V, V _{GEN} = 10 V, R _G = 4.5 Ω, R _L = 2.5 Ω, I _{DS} = 20 A	-	8.4	-	nS
t _r	Turn-on Rise Time		-	6.3	-	
t _{d(off)}	Turn-off Delay Time		-	24	-	
t _f	Turn-off Fall Time		-	6	-	
Gate Charge Characteristics ^b						
Q _g	Total Gate Charge	V _{DS} = 50 V, V _{GS} = 10 V, I _{DS} = 20 A	-	26	-	nC
Q _{gs}	Gate-Source Charge		-	6.1	-	
Q _{gd}	Gate-Drain Charge		-	4.8	-	

Notes :

a : Pulse test ; pulse width $\leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$

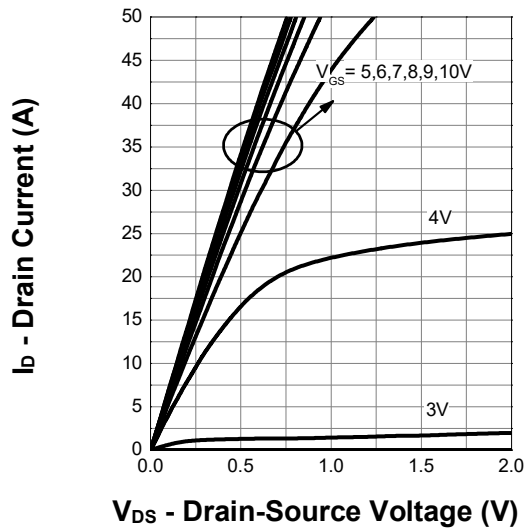
b : Guaranteed by design, not subject to production testing

7. Typical Characteristics

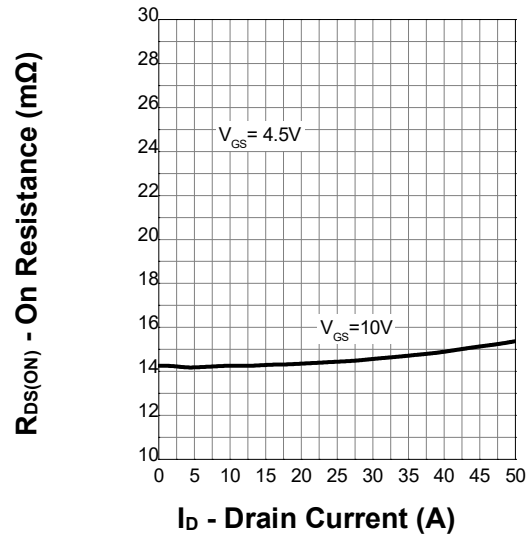


7. Typical Characteristics (cont.)

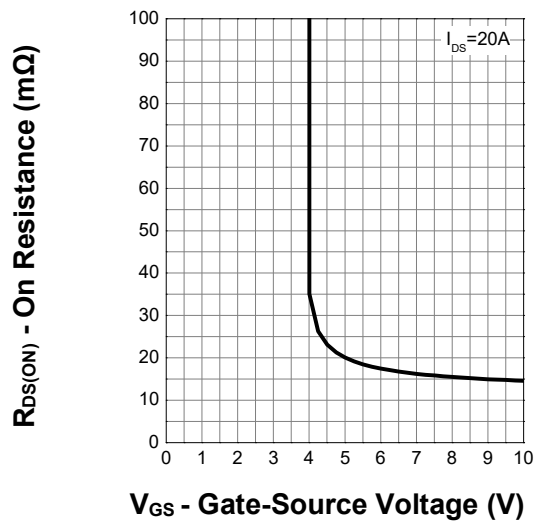
Output Characteristics



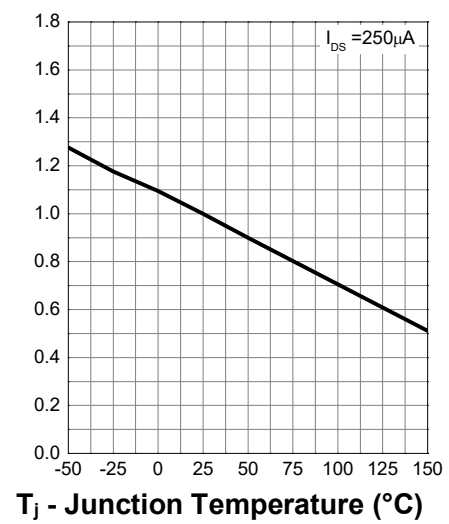
On Resistance



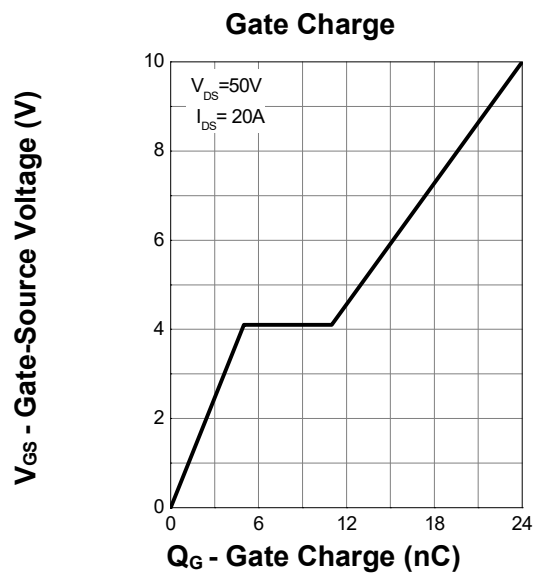
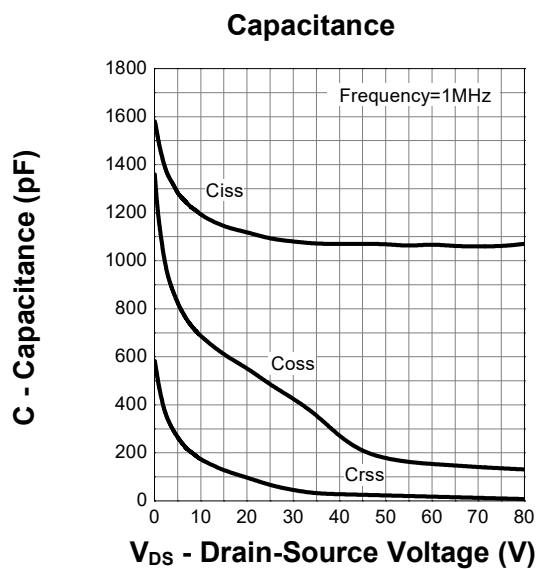
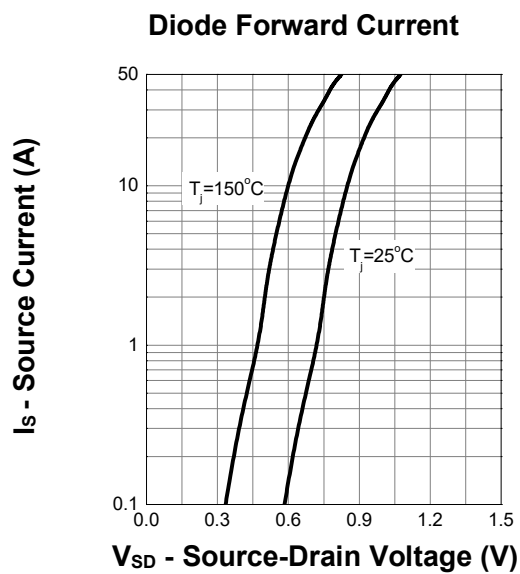
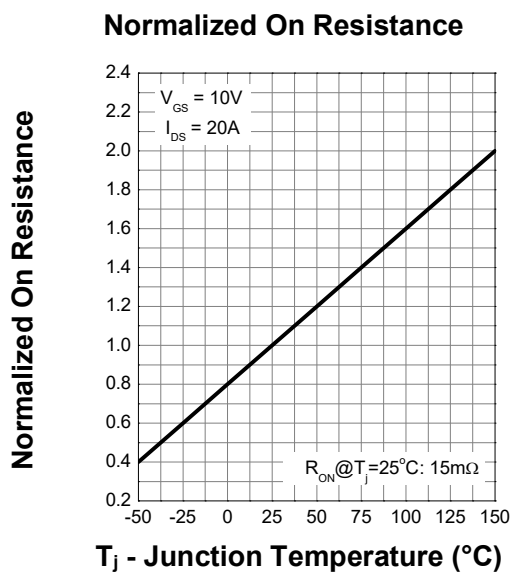
Transfer Characteristics



Normalized Threshold Voltage

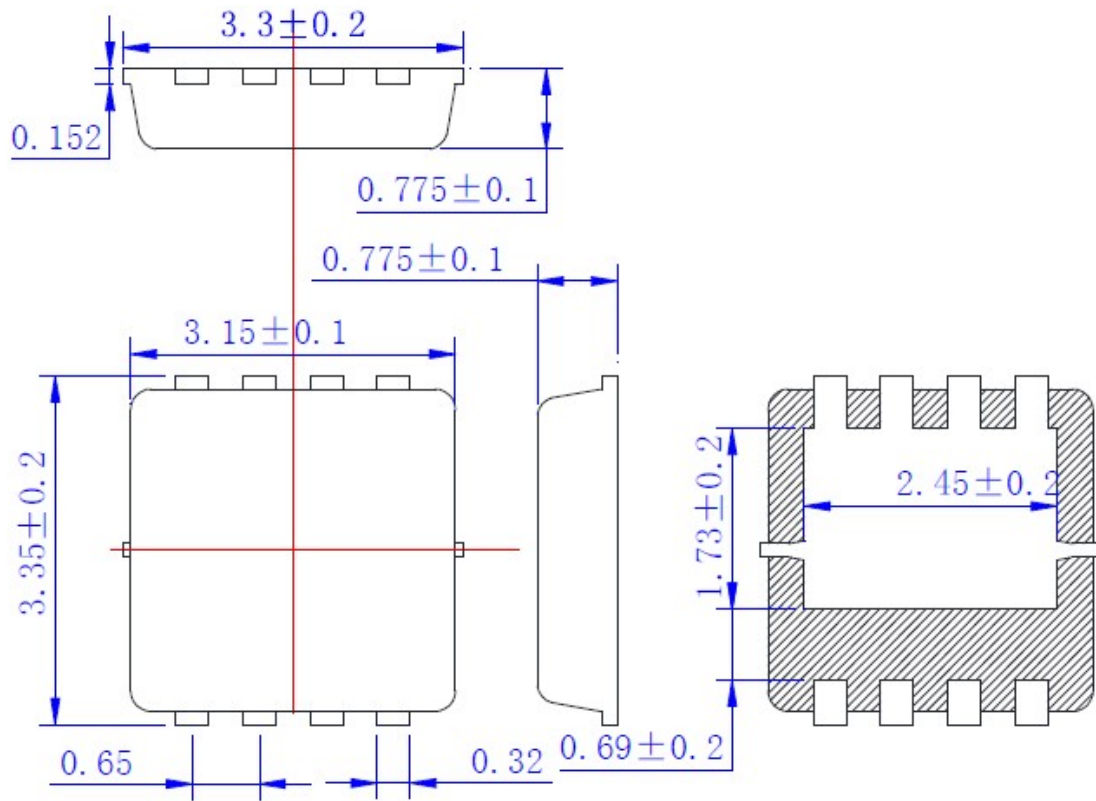


7. Typical Characteristics (cont.)



8. Package Dimensions

PDFN3.3*3.3-8L



NOTICE

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