

N-Channel Enhancement Mode MOSFET

1. Product Information

1.1 Features

- ☒ Surface-mounted package
- ☒ MSL1
- ☒ Advanced trench cell design

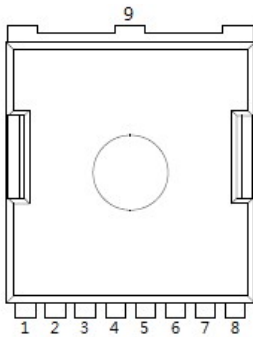
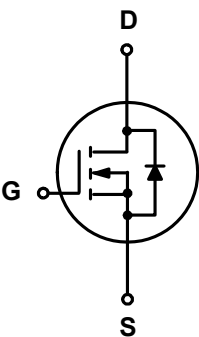
1.2 Applications

- ☒ BMS
- ☒ Drones
- ☒ High power inverter system
- ☒ Light electric vehicles

1.3 Quick reference

- ☒ $BV \geq 100\text{ V}$
- ☒ $P_{tot} \leq 533\text{ W}$
- ☒ $I_D \leq 500\text{ A}$
- ☒ $R_{DS(ON)} \leq 1.5\text{ m}\Omega @ V_{GS} = 10\text{ V}$
- ☒ $R_{DS(ON)} \leq 2.5\text{ m}\Omega @ V_{GS} = 6\text{ V}$

2. Pin Description

Pin	Description	Simplified Outline	Symbol
1	Gate(G)	 Top View TOLL	
2,3,4,5,6,7,8	Source(S)		
9	Drain(D)		

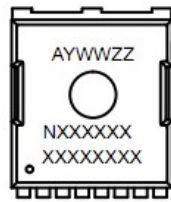
3. Limiting Values

Symbol	Parameter	Conditions	Min	Max	Unit
V_{DS}	Drain-Source Voltage	$T_C = 25\text{ }^{\circ}\text{C}$	100	-	V
V_{GS}	Gate-Source Voltage	$T_C = 25\text{ }^{\circ}\text{C}$	-	± 20	V
I_D^*	Drain Current (DC)	$T_C = 25\text{ }^{\circ}\text{C}, V_{GS} = 10\text{ V}$	-	500	A
		$T_C = 100\text{ }^{\circ}\text{C}, V_{GS} = 10\text{ V}$	-	366	A
$I_{DM}^{*,**}$	Drain Current (Pulsed)	$T_C = 25\text{ }^{\circ}\text{C}, V_{GS} = 10\text{ V}$	-	1200	A
P_{tot}	Drain power dissipation	$T_C = 25\text{ }^{\circ}\text{C}$	-	533	W
T_{stg}	Storage Temperature		-55	150	$^{\circ}\text{C}$
T_J	Junction Temperature		-	150	$^{\circ}\text{C}$
I_S	Continuous-Source Current	$T_C = 25\text{ }^{\circ}\text{C}$	-	500	A
E_{AS}^*	Single Pulsed Avalanche Energy	$V_{DD}=40\text{ V}, L=0.1\text{ mH}$	-	2900	mJ
$R_{\theta JA}^*$	Thermal Resistance- Junction to Ambient		-	32.8	$^{\circ}\text{C/W}$
$R_{\theta JC}^*$	Thermal Resistance- Junction to Case		-	0.45	

Notes :

- * Surface Mounted on 1 in² pad area, $t \leq 10\text{ sec}$
- ** Pulse width $\leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$
- *** limited by bonding wire

4. Marking Information

Product Name	Marking
N015N10T	

5. Ordering Code

Product Name	Package	Reel Size	Tape width	Quantity	Note
N015N10T	TOLL-8L			2000	

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

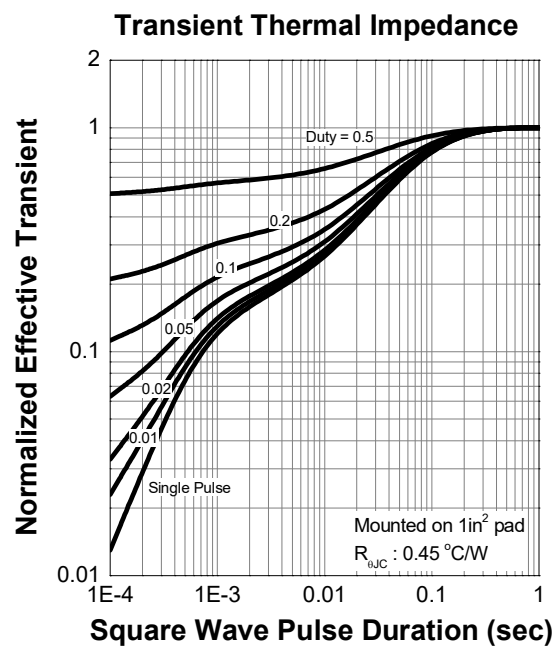
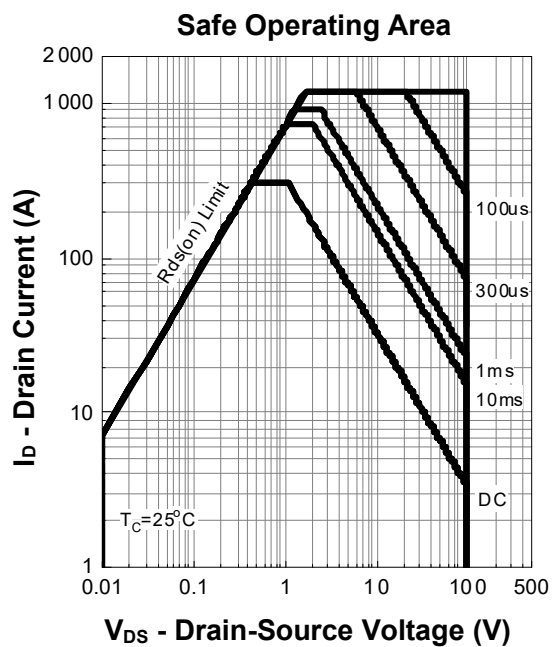
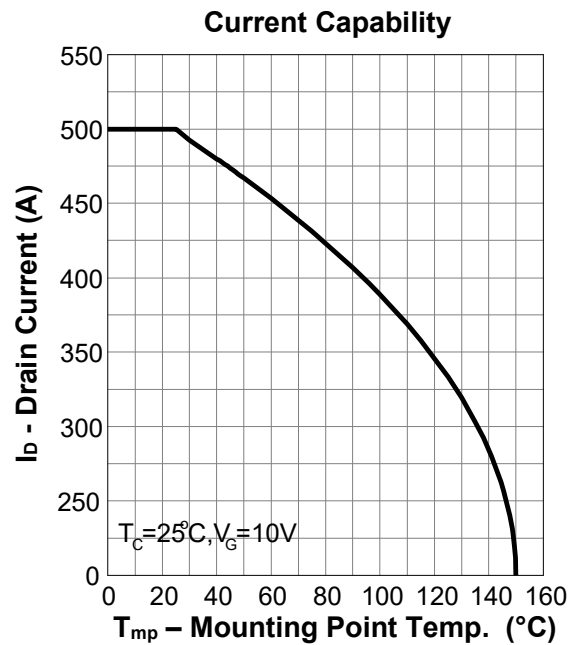
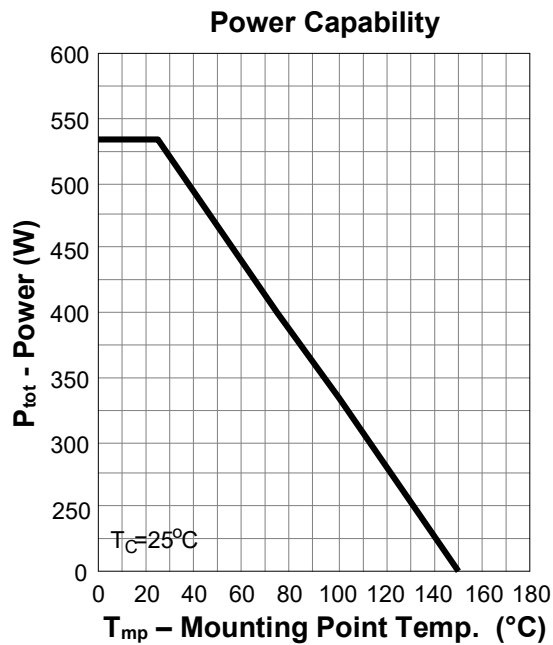
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} = 0 V, I _{DS} = 250 μA	100	-	-	V
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _{DS} = 250 μA	2	-	4	V
I _{DSS}	Drain Leakage Current	V _{DS} = 80 V, V _{GS} = 0 V	-	-	1	μA
I _{GSS}	Gate Leakage Current	V _{GS} = ± 20 V, V _{DS} = 0 V	-	-	±100	nA
R _{DS(ON)} ^a	On-State Resistance	V _{GS} = 10 V, I _{DS} = 50 A	-	1.35	1.5	m Ω
		V _{GS} = 6 V, I _{DS} = 25 A	-	1.85	2.5	
Diode Characteristics						
V _{SD} ^a	Diode Forward Voltage	I _{SD} = 50 A, V _{GS} = 0 V	-	-	1.3	V
t _{rr}	Reverse Recovery Time	I _{DS} = 50 A, V _{GS} = 0 V dI _{SD} /dt = 100 A/μs	-	137	-	nS
Q _{rr}	Reverse Recovery Charge		-	347	-	nC
Dynamic Characteristics ^b						
C _{iss}	Input Capacitance	V _{GS} = 0 V, V _{DS} = 50 V Frequency = 1 MHz	-	13574	-	pF
C _{oss}	Output Capacitance		-	2036	-	
C _{rss}	Reverse Transfer Capacitance		-	196	-	
t _{d(on)}	Turn-on Delay Time	V _{DS} = 50 V, V _{GEN} = 10 V, R _G = 4.5 Ω, R _L = 1 Ω, I _{DS} = 50 A	-	44	-	nS
t _r	Turn-on Rise Time		-	132	-	
t _{d(off)}	Turn-off Delay Time		-	154	-	
t _f	Turn-off Fall Time		-	137	-	
Gate Charge Characteristics ^b						
Q _g	Total Gate Charge	V _{DS} = 50 V, V _{GS} = 10 V, I _{DS} = 50 A	-	167	-	nC
Q _{gs}	Gate-Source Charge		-	71		
Q _{gd}	Gate-Drain Charge		-	58	-	

Notes :

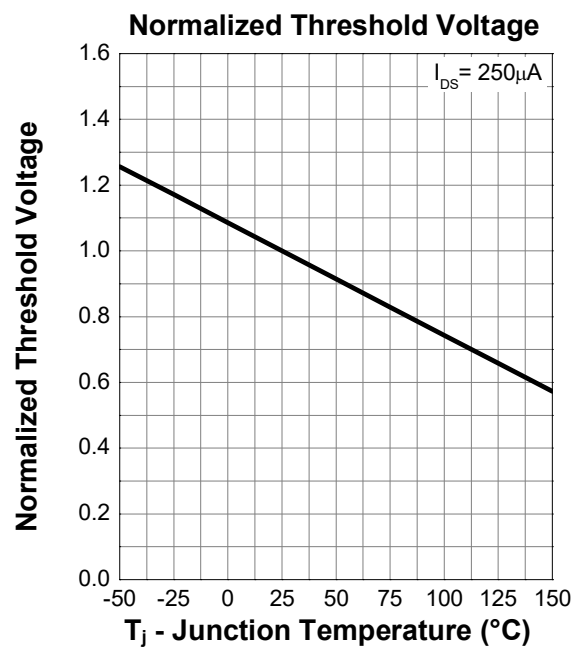
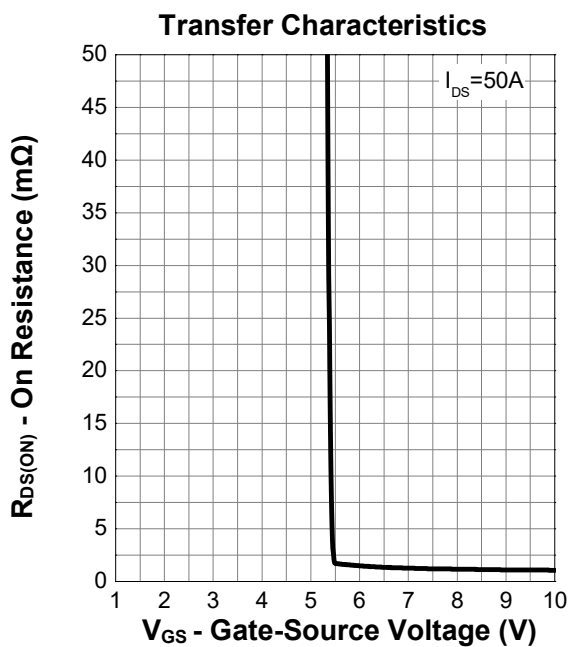
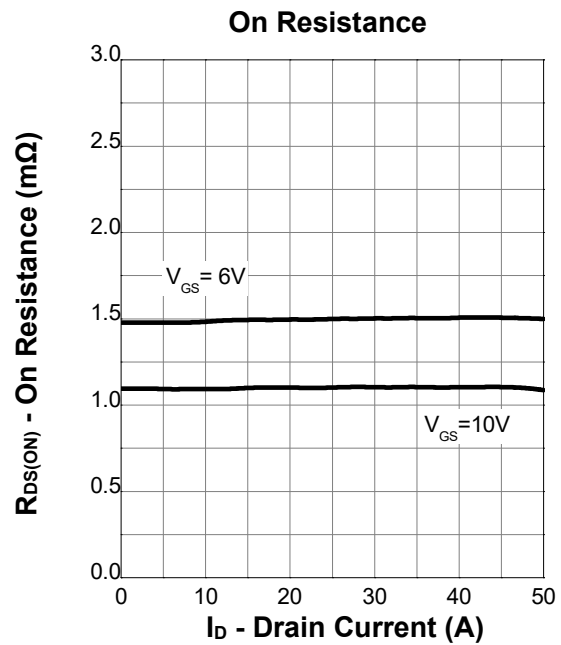
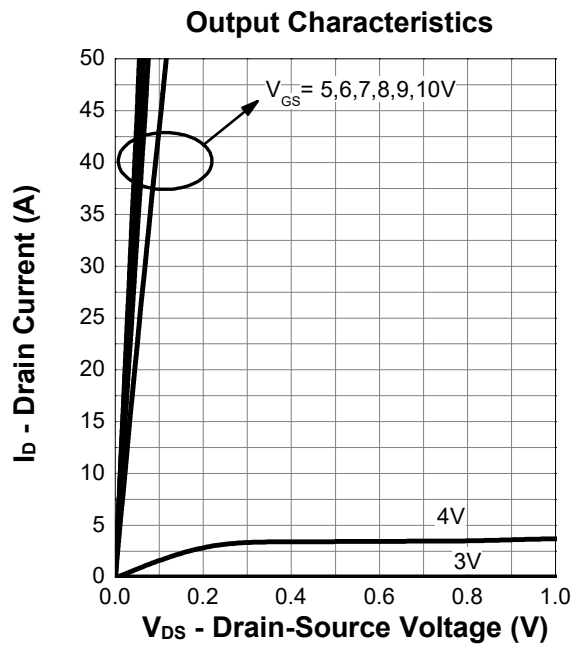
a : Pulse test ; pulse width $\leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$

b : Guaranteed by design, not subject to production testing

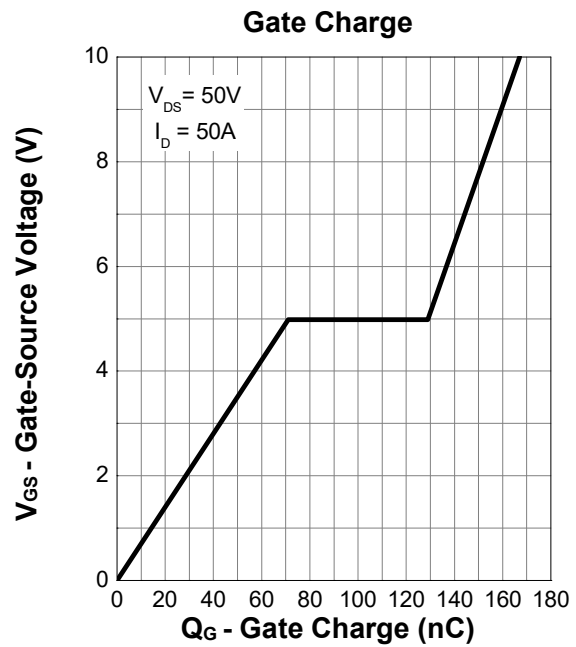
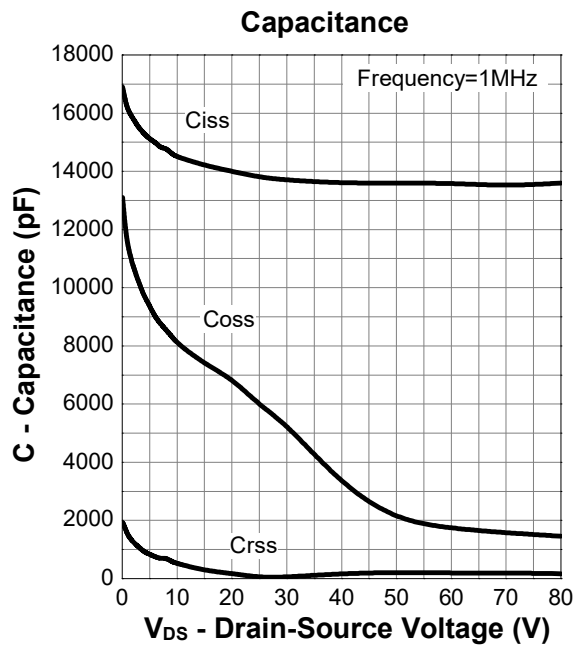
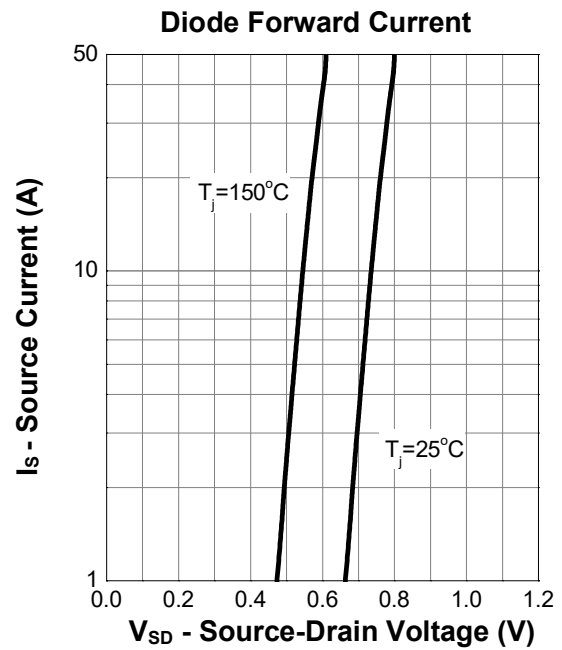
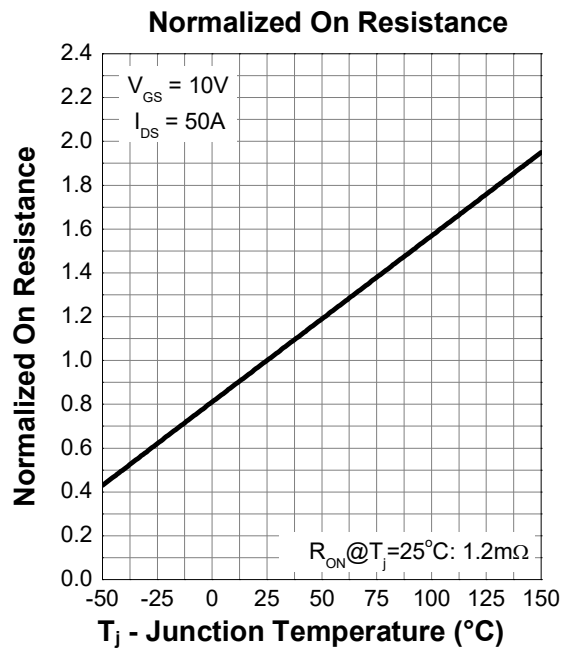
7. Typical Characteristics



7. Typical Characteristics (cont.)

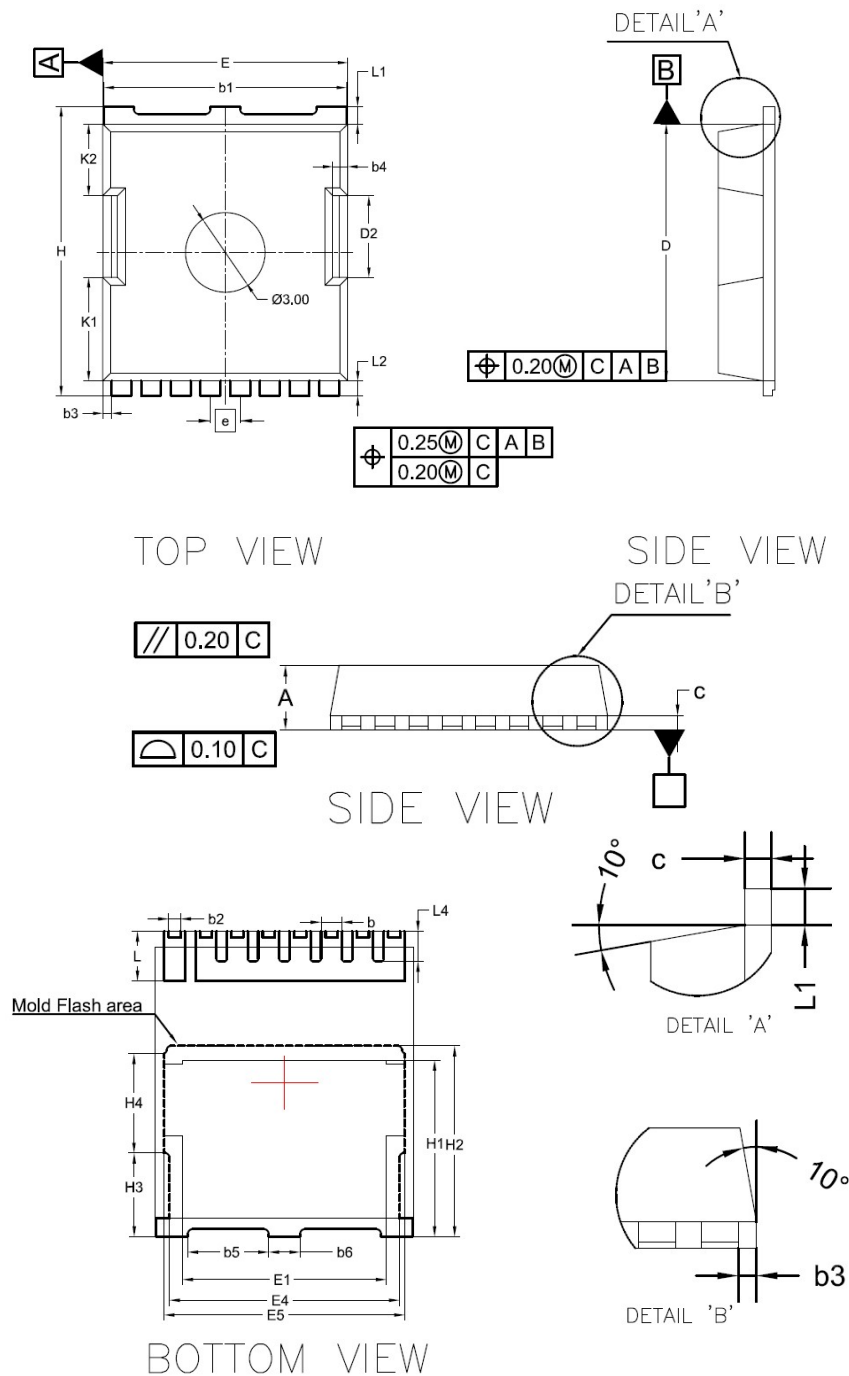


7. Typical Characteristics (cont.)



8. Package Dimensions

TOLL-8L Package



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