

N-Channel Enhancement Mode MOSFET

1. Product Information

1.1 Features

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

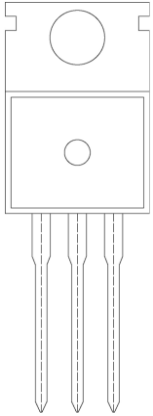
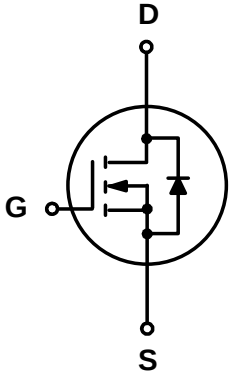
1.2 Applications

- ☒ LCD TV appliances
- ☒ LCDM appliances
- ☒ High power inverter system

1.3 Quick reference

- ☒ $BV \geq 100\text{ V}$
- ☒ $P_{tot} \leq 416\text{ W}$
- ☒ $I_D \leq 180\text{ A}$
- ☒ $R_{DS(ON)} \leq 2.2\text{ m}\Omega @ V_{GS} = 10\text{ V}$

2. Pin Description

Pin	Description	Simplified Outline	Symbol
1	Gate (G)	 Top View TO-220-3L	
2	Drain (D)		
3	Source (S)		

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)	$T_C = 25\text{ }^{\circ}\text{C}, V_{GS} = 10\text{ V}$	-	180	A
		$T_C = 100\text{ }^{\circ}\text{C}, V_{GS} = 10\text{ V}$	-	120	A
$I_{DM^{*,**,*}}$	Drain Current (Pulsed)	$T_C = 25\text{ }^{\circ}\text{C}, V_{GS} = 10\text{ V}$	-	240	A
P_{tot}^*	Drain power dissipation	$T_C = 25\text{ }^{\circ}\text{C}$	-	416	W
T_{stg}	Storage Temperature		- 55	150	$^{\circ}\text{C}$
T_J	Junction Temperature		-	150	$^{\circ}\text{C}$
I_S	Continuous-Source Current	$T_C = 25\text{ }^{\circ}\text{C}$	-	180	A
E_{AS}^*	Single Pulsed Avalanche Energy	$V_{DD} = 50\text{ V}, L = 1\text{ mH}$	-	928	mJ
$R_{\theta JA}^*$	Thermal Resistance- Junction to Ambient		-	45	$^{\circ}\text{C/W}$
$R_{\theta JC}^*$	Thermal Resistance- Junction to Case		-	0.3	

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
N018N10C	018N10 YWWXXX YWWXXX: Date Code

5. Ordering Code

Product Name	Package	Reel Size	Tape width	Quantity	Note
N018N10C	TO220C			50	

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

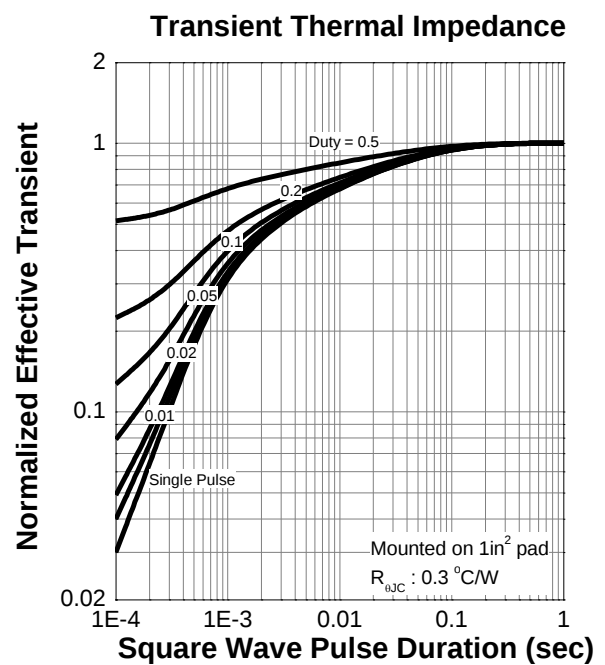
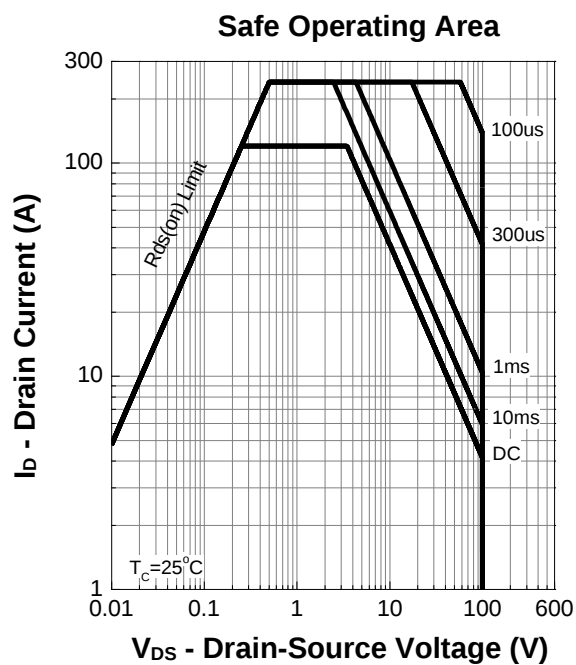
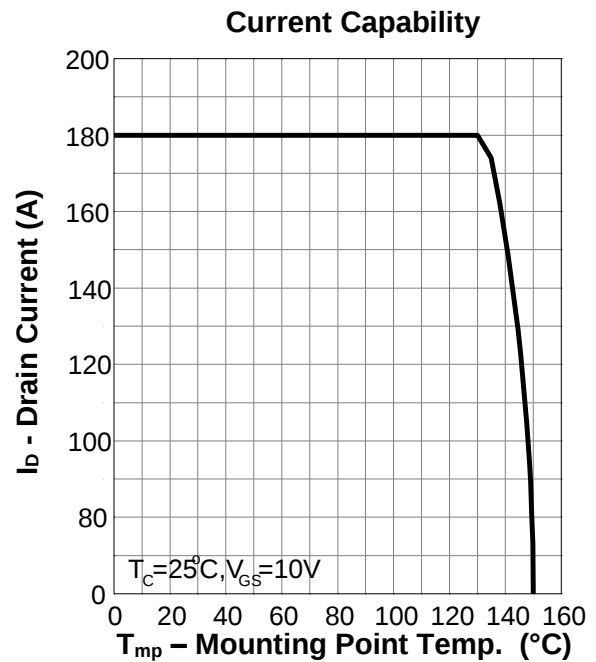
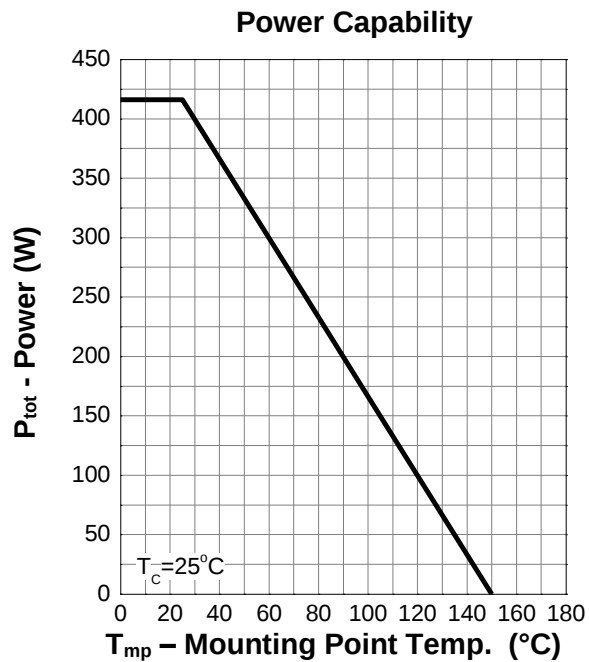
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} = 0 V, I _{DS} = 250 μA	100	-	-	V
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _{DS} = 250 μA	2	-	4	V
I _{DSS}	Drain Leakage Current	V _{DS} = 80 V, V _{GS} = 0 V	-	-	1	μA
I _{GSS}	Gate Leakage Current	V _{GS} = 0 V, V _{GS} = ± 20 V	-	-	±100	nA
R _{DS(ON)} ^a	On-State Resistance	V _{GS} = 10 V, I _{DS} = 50 A	-	1.8	2.2	m Ω
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, dI _{SD} /dt = 100 A/μs	-	123	-	nS
Q _{rr}	Reverse Recovery Charge		-	342	-	nC
Dynamic Characteristics ^b						
C _{iss}	Input Capacitance	V _{GS} = 0 V, V _{DS} = 50 V Frequency = 1 MHz	-	11416	-	pF
C _{oss}	Output Capacitance		-	2790	-	
C _{rss}	Reverse Transfer Capacitance		-	530	-	
t _{d(on)}	Turn-on Delay Time	V _{DS} = 50 V, V _{GEN} = 10 V, R _G = 3.9 Ω, R _L = 1 Ω, I _{DS} = 50 A	-	32	-	nS
t _r	Turn-on Rise Time		-	34	-	
t _{d(off)}	Turn-off Delay Time		-	80	-	
t _f	Turn-off Fall Time		-	36	-	
Gate Charge Characteristics ^b						
Q _g	Total Gate Charge	V _{DS} = 50 V, V _{GS} = 10 V, I _{DS} = 50 A	-	168	-	nC
Q _{gs}	Gate-Source Charge		-	59	-	
Q _{gd}	Gate-Drain Charge		-	35	-	

Notes :

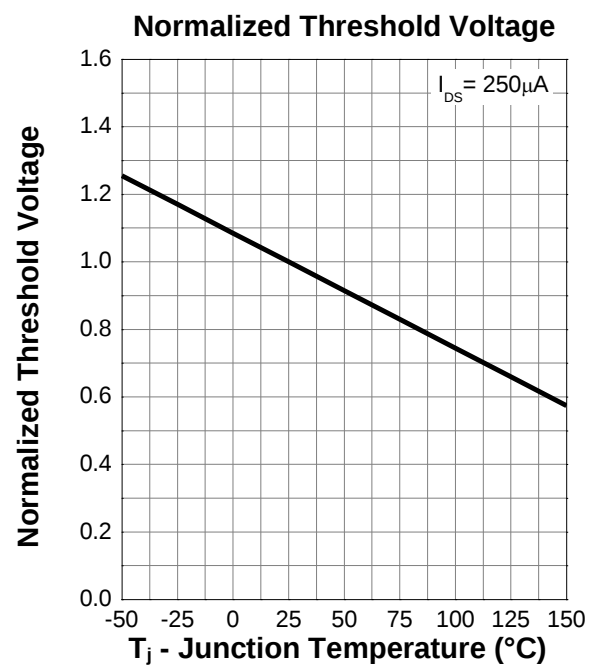
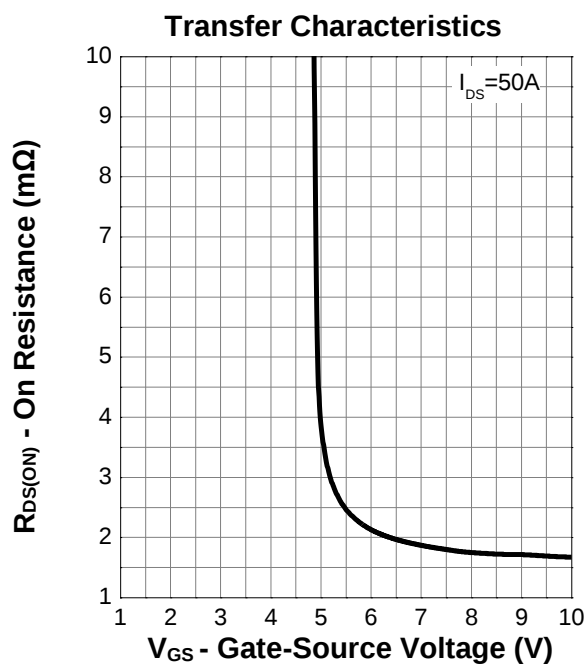
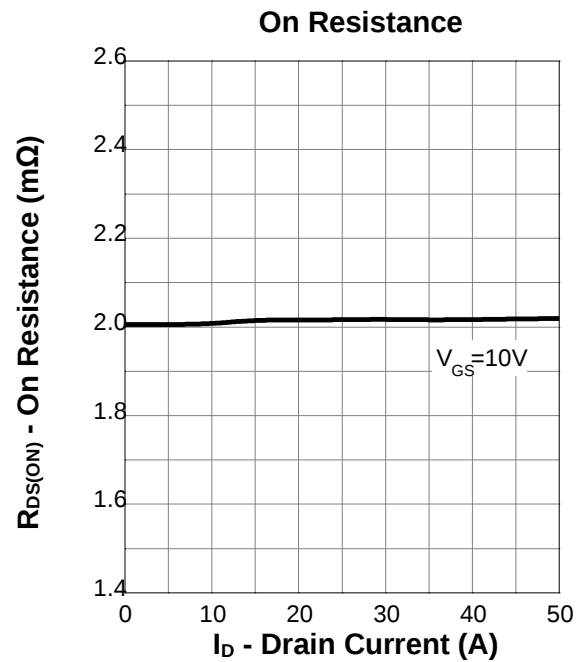
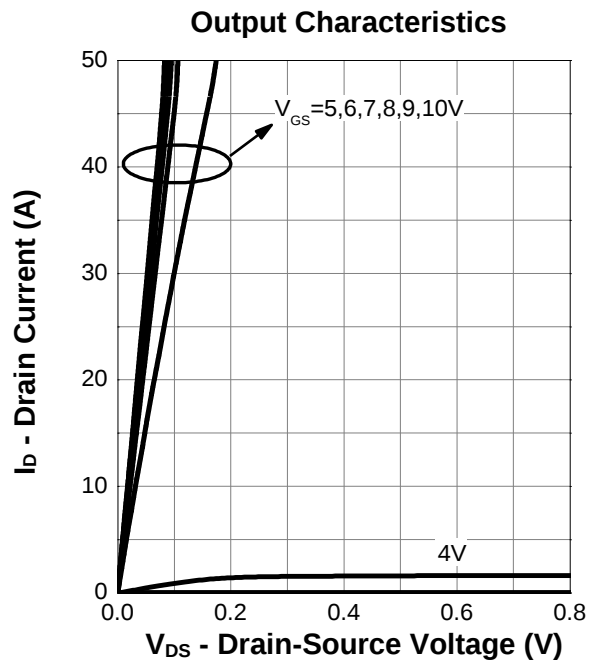
a : Pulse test ; pulse width $\leq$ 300 μ s, duty cycle $\leq$ 2%

b : Guaranteed by design, not subject to production testing

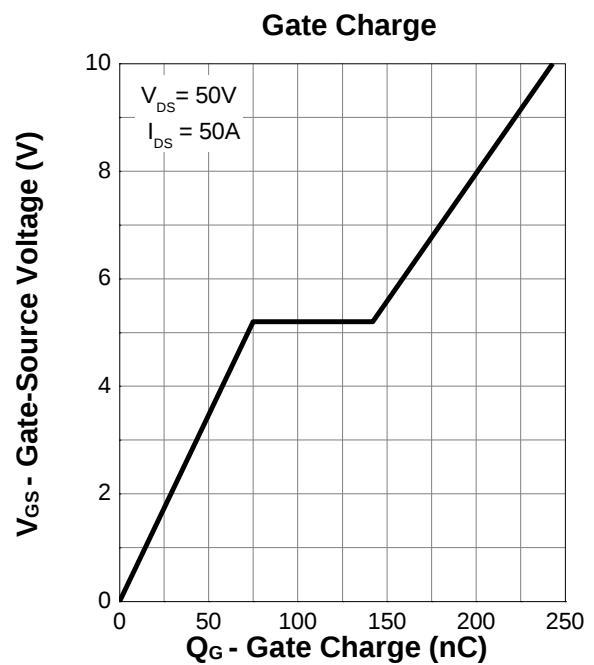
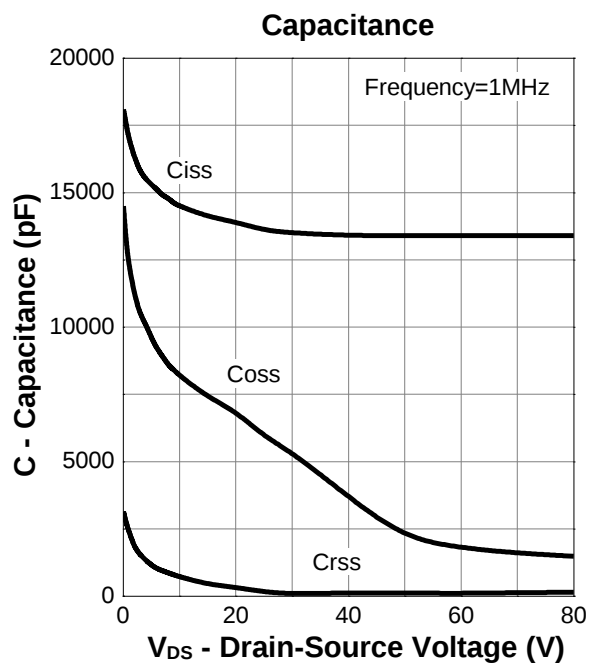
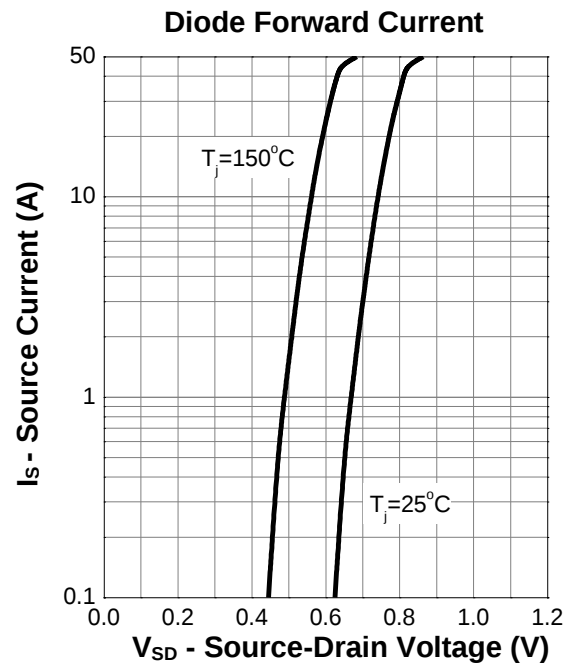
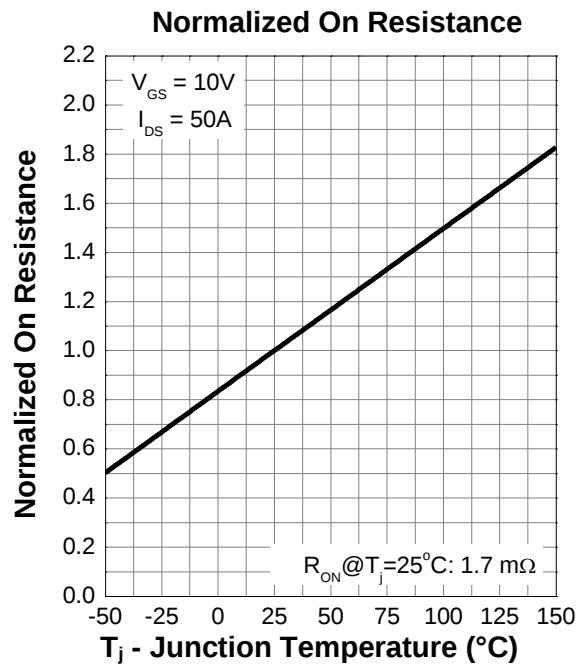
7. Typical Characteristics



7. Typical Characteristics (cont.)

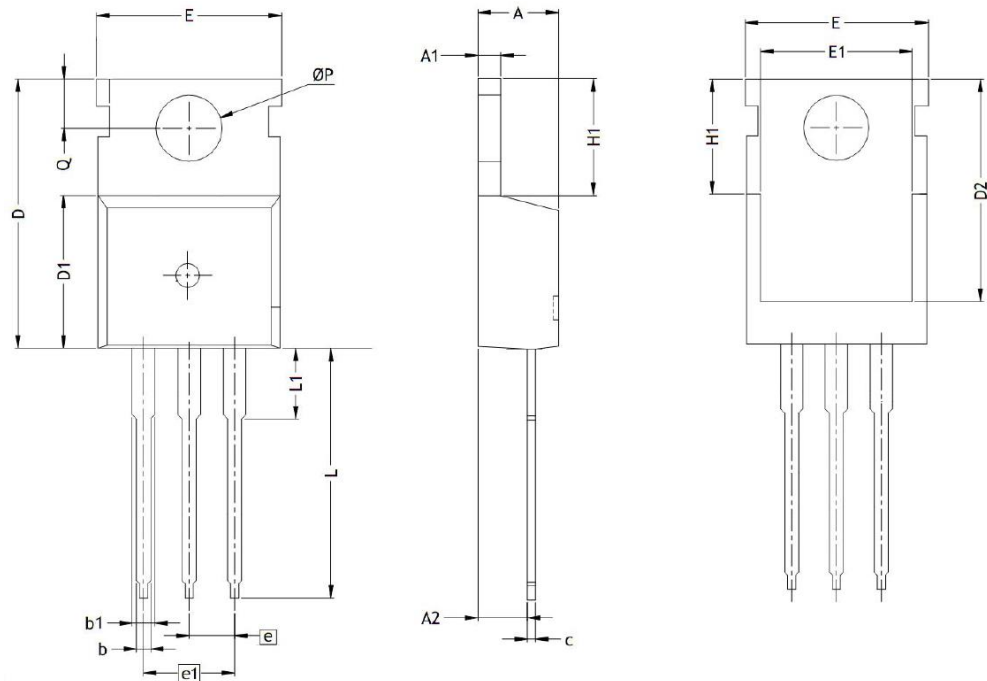


7. Typical Characteristics (cont.)



8. Package Dimensions

TO-220 -3L



Symbol	Dimensions In Millimeters	
	MIN.	MAX.
A	4.25	4.65
A1	1.25	1.35
A2	2.35	2.55
b	0.7	0.9
b1	1.15	1.75
c	0.45	0.61
D	14.35	16.51
D1	8.58	9.50
D2	13.05	13.65
E	9.90	10.50
E1	7.85	8.89
e	2.54BSC	
e1	5.08BSC	
H1	6.30	6.65
L	12.85	13.50
L1	2.85	3.25
ØP	3.53	4.09
Q	2.70	2.93