

P-Channel Enhancement Mode MOSFET

1. Product Information

1.1 Features

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

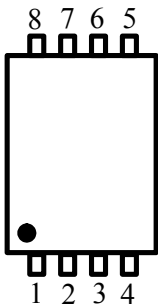
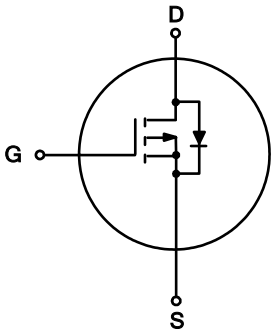
1.2 Applications

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

1.3 Quick reference

- ☒ $BV \geq -100\text{ V}$
☒ $P_{\text{tot}} \leq 50\text{ W}$
☒ $I_D \leq -30\text{ A}$
- ☒ $R_{\text{DS(ON)}} \leq 65\text{ m}\Omega @ V_{\text{GS}} = -10\text{ V}$
☒ $R_{\text{DS(ON)}} \leq 73\text{ m}\Omega @ V_{\text{GS}} = -4.5\text{ V}$

2. Pin Description

Pin	Description	Simplified Outline	Symbol
1,2,3	Source	 Top View PDFN5x6-8L	
4	Gate		
5,6,7,8	Drain		

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)	$T_C = 25\text{ }^{\circ}\text{C}, V_{GS} = -10\text{ V}$	-	- 30	A
		$T_C = 100\text{ }^{\circ}\text{C}, V_{GS} = -10\text{ V}$		- 18	A
$I_{DM}^{*,**}$	Drain Current (Pulsed)	$T_C = 25\text{ }^{\circ}\text{C}, V_{GS} = -10\text{ V}$	-	- 76	A
P_{tot}	Drain power dissipation	$T_C = 25\text{ }^{\circ}\text{C}$	-	50	W
T_{stg}	Storage Temperature		-55	150	$^{\circ}\text{C}$
T_J	Junction Temperature		-	150	$^{\circ}\text{C}$
I_S	Continuous-Source Current	$T_C = 25\text{ }^{\circ}\text{C}$	-	- 30	A
E_{AS}^*	Single Pulsed Avalanche Energy	$V_{DD} = -50\text{ V}, L = 1.0\text{ mH}$	-	242	mJ
$R_{\theta JA}^*$	Thermal Resistance- Junction to Ambient		-	42	$^{\circ}\text{C/W}$
$R_{\theta JC}^*$	Thermal Resistance- Junction to Case		-	1.3	

Notes :

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

4. Marking Information

Product Name	Marking
N30P10G	30P10 YWWXXX YWWXXX: Date Code

5. Ordering Code

Product Name	Package	Reel Size	Tape width	Quantity	Note
N30P10G	PDFN5*6			5000	

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

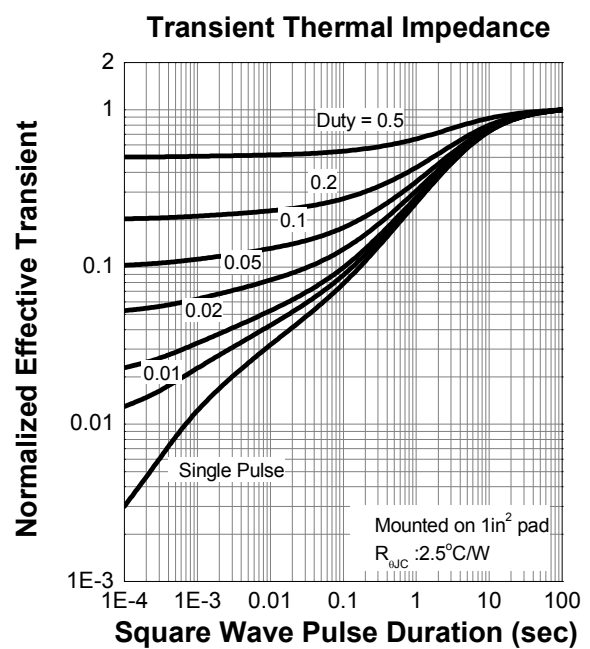
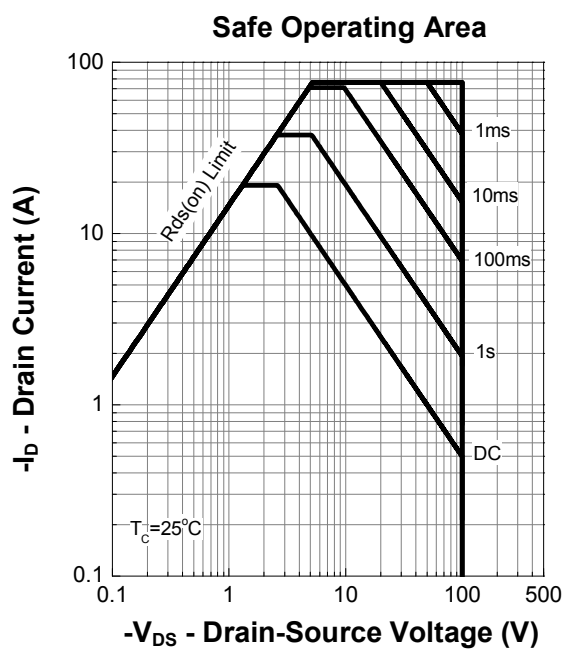
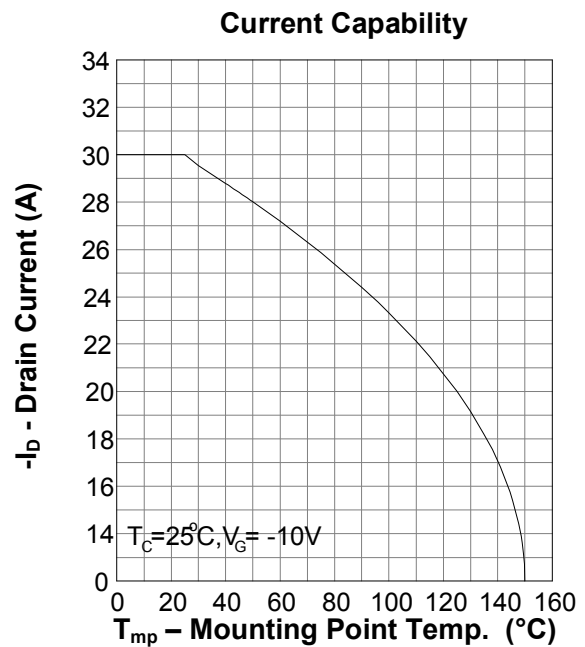
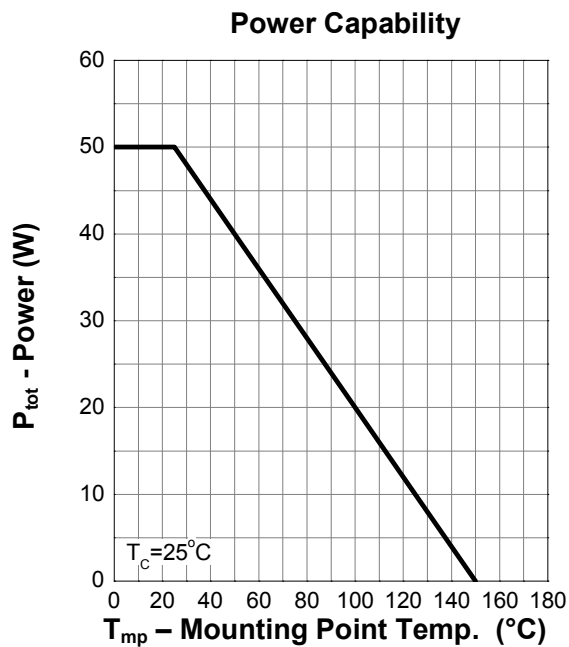
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} = 0 V, I _{DS} = - 250 μA	- 100	-	-	V
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _{DS} = - 250 μA	- 1	-	- 2	V
I _{DSS}	Drain Leakage Current	V _{DS} = - 50 V, V _{GS} = 0 V	-	-	- 1	μA
		T _J = 85 °C	-	-	- 30	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} = - 10 A	-	57	65	mΩ
		V _{GS} = - 4.5 V, I _{DS} = - 5 A	-	63	73	
Diode Characteristics						
V _{SD} ^a	Diode Forward Voltage	I _{SD} = - 10 A, V _{GS} = 0 V	-	-	- 1.2	V
t _{rr}	Reverse Recovery Time	I _{DS} = - 10 A, dI _{SD} /dt = 100 A/μs	-	32	-	nS
Q _{rr}	Reverse Recovery Charge		-	49	-	nC
Dynamic Characteristics ^b						
C _{iSS}	Input Capacitance	V _{GS} = 0 V, V _{DS} = - 50 V Frequency = 1 MHz	-	4507	-	pF
C _{oSS}	Output Capacitance		-	97	-	
C _{rSS}	Reverse Transfer Capacitance		-	15	-	
t _{d(on)}	Turn-on Delay Time	V _{DS} = - 50 V, V _{GEN} = - 10 V, R _G = 4.5 Ω, R _L = 5 Ω, I _{DS} = - 10 A	-	49	-	nS
t _r	Turn-on Rise Time		-	71	-	
t _{d(off)}	Turn-off Delay Time		-	555	-	
t _f	Turn-off Fall Time		-	187	-	
Gate Charge Characteristics ^b						
Q _g	Total Gate Charge	V _{DS} = - 50 V, V _{GS} = - 10 V, I _{DS} = - 10 A	-	73	-	nC
Q _{gs}	Gate-Source Charge		-	17	-	
Q _{gd}	Gate-Drain Charge		-	9.1	-	

Notes :

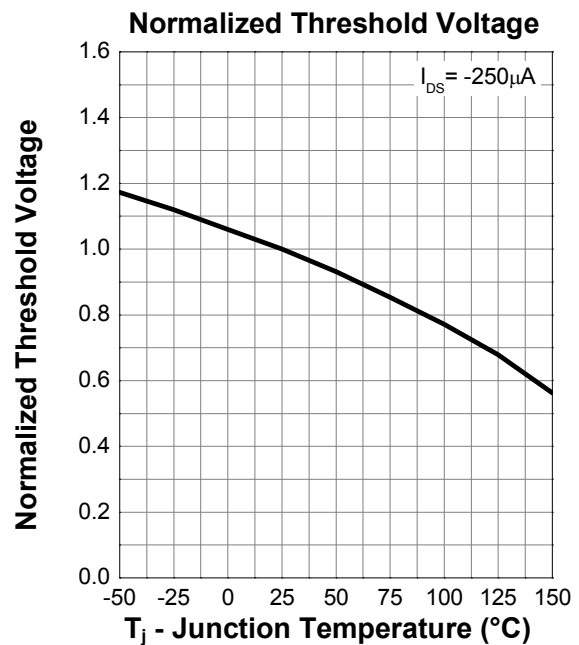
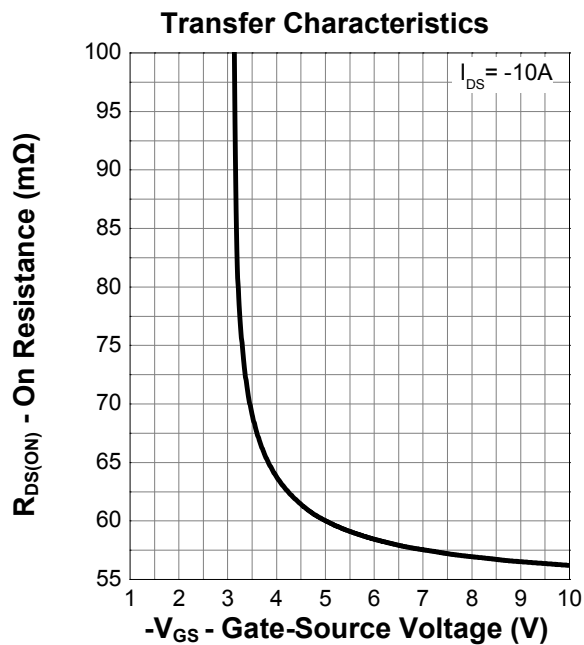
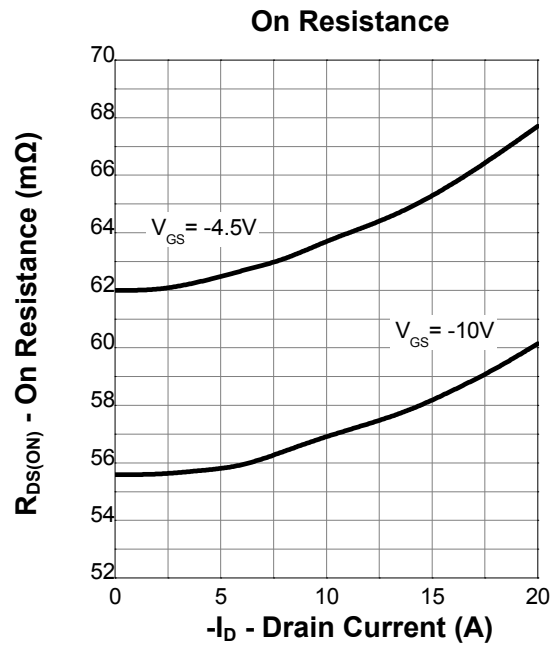
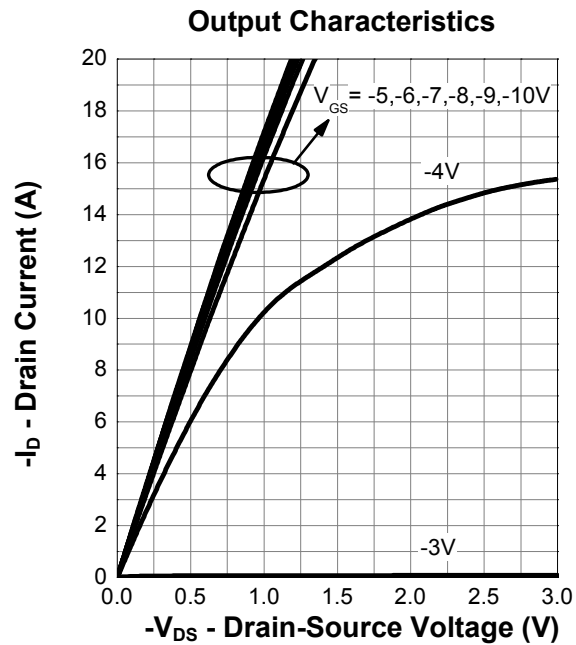
a : Pulse test ; pulse width ≤ 300 μs, duty cycle ≤ 2%

b : Guaranteed by design, not subject to production testing

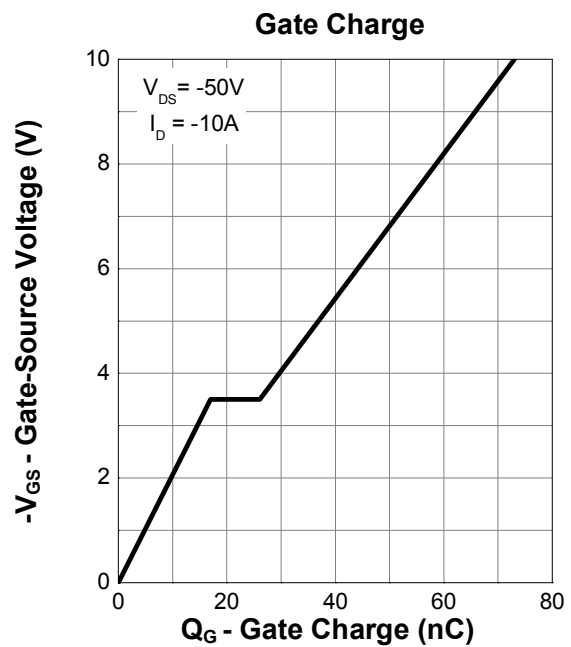
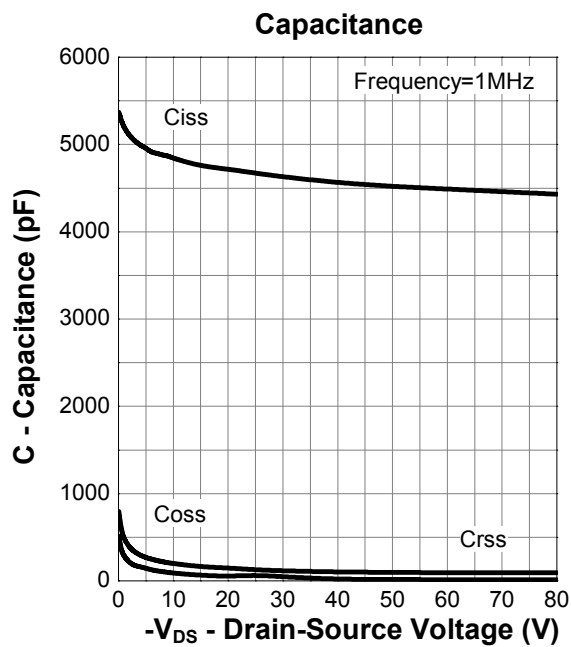
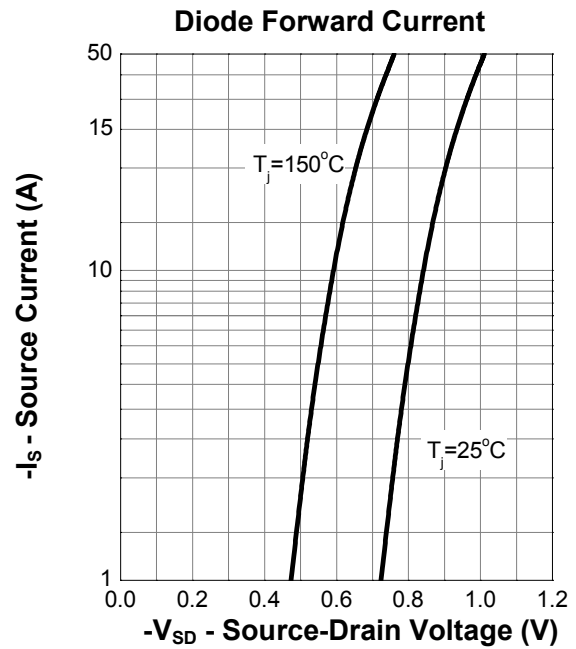
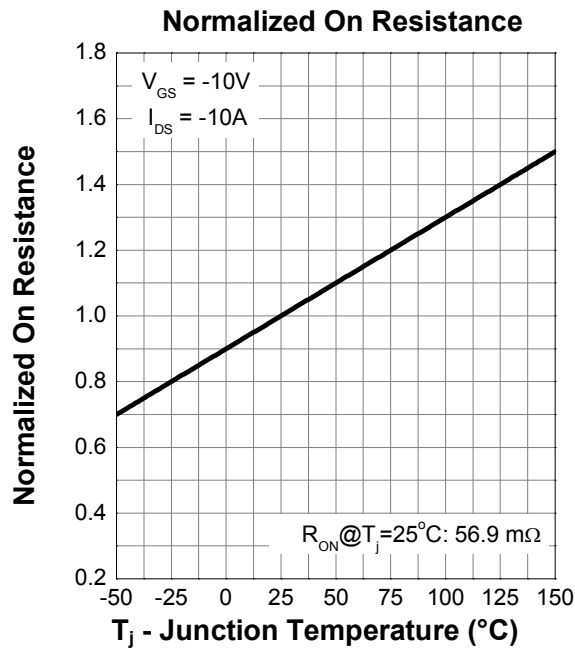
7. Typical Characteristics



7. Typical Characteristics (cont.)

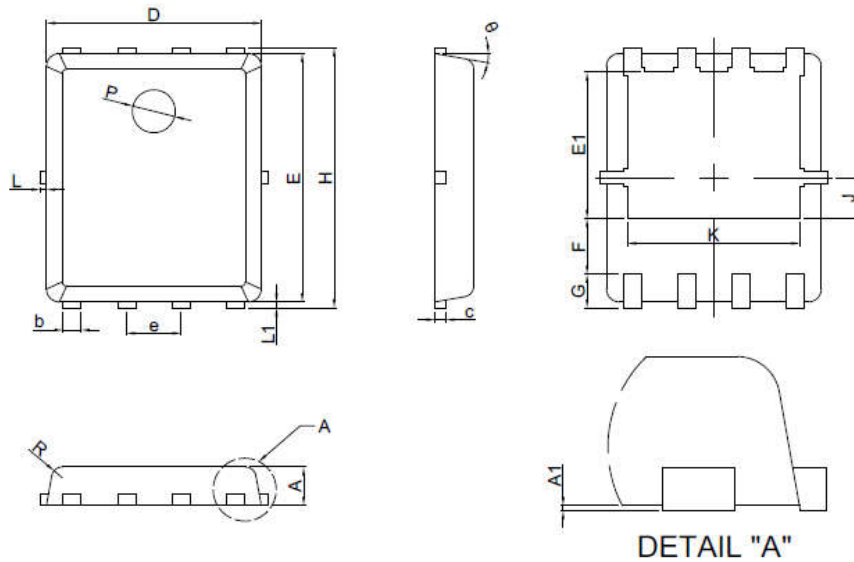


7. Typical Characteristics (cont.)



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	

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