

## 30V P-Channel Enhancement Mode MOSFET

### 1. Product Information

#### 1.1 Features

- ◇ Advanced trench cell design
- ◇ Low Thermal Resistance

#### 1.2 Applications

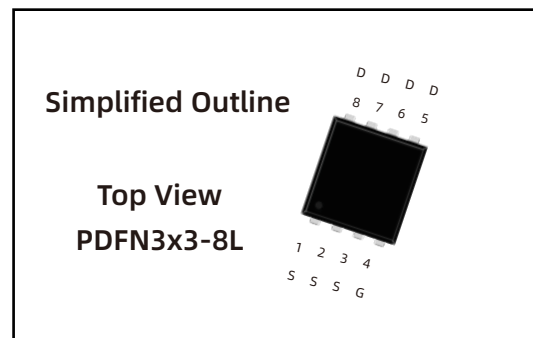
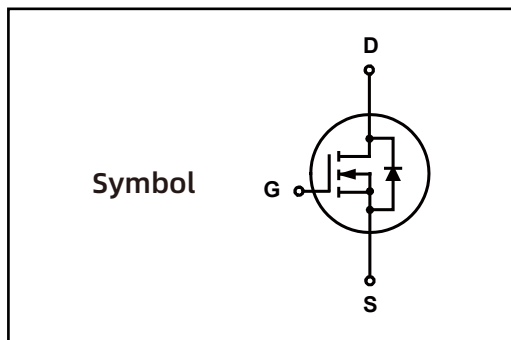
- ◇ Motor drivers
- ◇ DC - DC Converter

#### 1.3 Quick reference

- ◇  $BV \cong -30\text{ V}$
- ◇  $P_{\text{tot}} \cong 20\text{ W}$
- ◇  $I_D \cong -40\text{ A}$

- ◇  $R_{\text{DS(ON)}} \cong 8.8\text{m}\Omega @ V_{\text{GS}} = -10\text{ V}$
- ◇  $R_{\text{DS(ON)}} \cong 13\text{m}\Omega @ V_{\text{GS}} = -4.5\text{ V}$

### 2. Pin Description



### 3. Marking Information

Product Name	Marking
LN078P030Q	LN078P030Q CYWWZZ XXXXXX

## 4.Limiting Values

Symbol	Parameter	Conditions	Min	Max	Unit
$V_{DS}$	Drain-Source Voltage	$T_C = 25\text{ }^\circ\text{C}$	-30	-	V
$V_{GS}$	Gate-Source Voltage	$T_C = 25\text{ }^\circ\text{C}$	-	$\pm 20$	V
$I_D$	Drain Current ( DC )	$T_C = 25\text{ }^\circ\text{C}, V_{GS} = -10\text{ V}$	-	-40	A
$I_{DM}^{*,**,***}$	Drain Current ( Pulsed )	$T_C = 25\text{ }^\circ\text{C}, V_{GS} = -10\text{ V}$	-	-144	A
$P_{tot}^*$	Drain power dissipation	$T_C = 25\text{ }^\circ\text{C}$	-	20	W
$T_{stg}$	Storage Temperature		-55	150	$^\circ\text{C}$
$T_J$	Junction Temperature		-	150	$^\circ\text{C}$
$I_S$	Continuous-Source Current	$T_C = 25\text{ }^\circ\text{C}$	-	-40	A
$R_{\theta JC}^*$	Thermal Resistance- Junction to Ambient		-	6	$^\circ\text{C}/\text{W}$

Notes :

\* Surface Mounted on 1 in<sup>2</sup> pad area,  $t \leq 10\text{ sec}$

\*\* Pulse width  $\leq 10\text{ }\mu\text{s}$ , duty cycle  $\leq 1\%$

\*\*\* limited by bonding wire

## 5.Ordering Code

Product Name	Package	Reel Size	Tape width	Quantity	Note
<b>LN078P030Q</b>	<b>PDFN3.3*3.3</b>			<b>5000</b>	

Note: COMTECH 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 (TA=25 ° Unless Otherwise Noted)

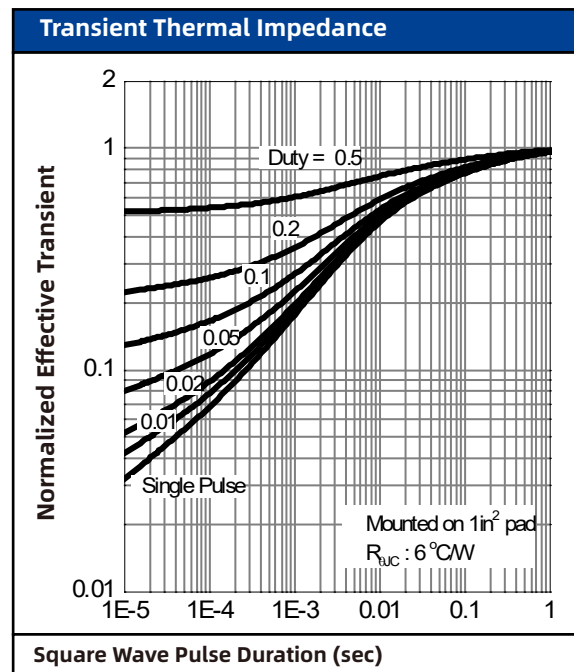
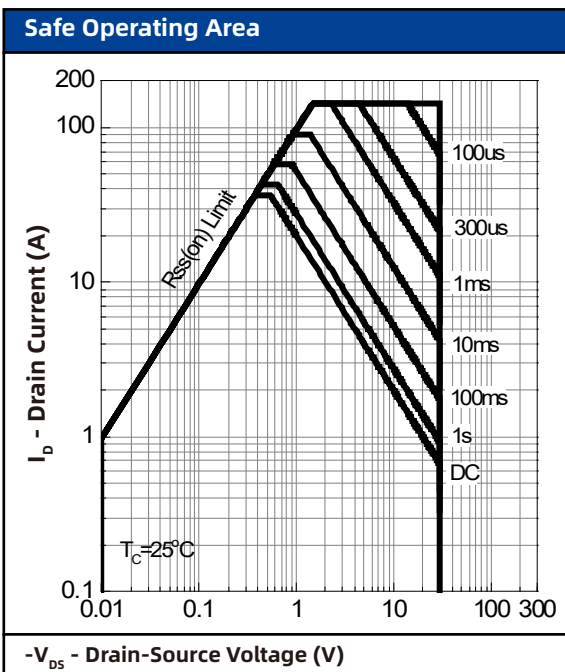
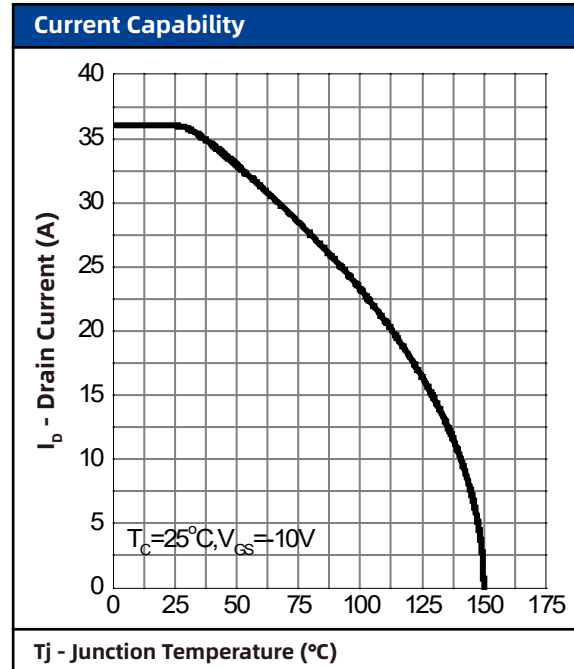
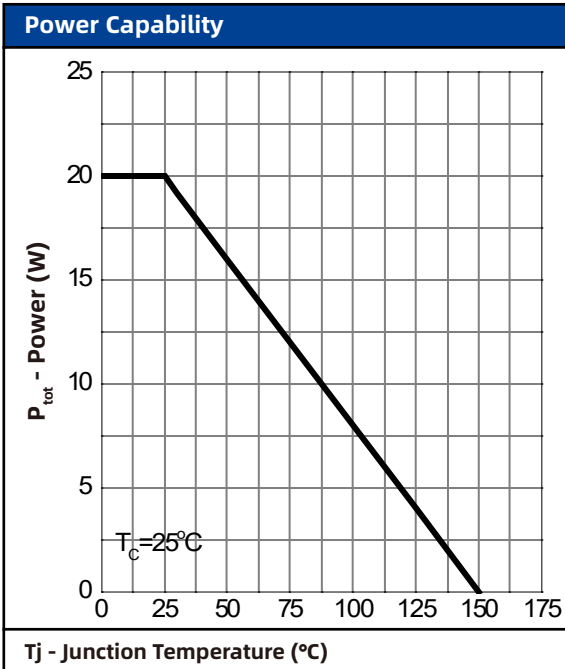
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
<b>Static Characteristics</b>						
$BV_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS} = 0\text{ V}, I_{DS} = -250\ \mu\text{A}$	-30	-	-	V
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_{DS} = -250\ \mu\text{A}$	-1.0	-	-2.0	V
$I_{DSS}$	Drain Leakage Current	$V_{DS} = -24\text{ V}, V_{GS} = 0\text{ V}$	-	-	-1	$\mu\text{A}$
		$T_j = 85^\circ\text{C}$	-	-	-30	$\mu\text{A}$
$I_{GSS}$	Gate Leakage Current	$V_{GS} = \pm 20\text{ V}, V_{DS} = 0\text{ V}$	-	-	$\pm 100$	nA
$R_{DS(ON)}^a$	On-State Resistance	$V_{GS} = -10\text{ V}, I_{DS} = -20\text{ A}$	-	7.8	8.8	m $\Omega$
		$V_{GS} = -4.5\text{ V}, I_{DS} = -10\text{ A}$	-	11.8	13	m $\Omega$
<b>Diode Characteristics</b>						
$V_{SD}^a$	Diode Forward Voltage	$I_{SD} = -20\text{ A}, V_{GS} = 0\text{ V}$	-	-	-1.3	V
$t_{rr}$	Reverse Recovery Time	$I_{DS} = -20\text{ A}$	-	21	-	nS
$Q_{rr}$	Reverse Recovery Charge	$dI_{SD}/dt = 100\text{ A}/\mu\text{s}$	-	14	-	nC
<b>Dynamic Characteristics<sup>b</sup></b>						
$C_{ISS}$	Input Capacitance	$V_{GS} = 0\text{ V}, V_{DS} = -15\text{ V}$ Frequency = 1 MHz	-	3651	-	pF
$C_{OSS}$	Output Capacitance		-	341	-	
$C_{rISS}$	Reverse Transfer Capacitance		-	278	-	
$t_d(on)$	Turn-on Delay Time	$V_{DS} = -15\text{ V}, V_{GEN} = -10\text{ V},$ $R_G = 4.5\ \Omega, R_L = 0.75\ \Omega,$ $I_{DS} = -20\text{ A}$	-	42.8	-	nS
$t_r$	Turn-on Rise Time		-	89	-	
$t_d(off)$	Turn-off Delay Time		-	409	-	
$t_f$	Turn-off Fall Time		-	193	-	
<b>Gate Charge Characteristics<sup>b</sup></b>						
$Q_g$	Total Gate Charge	$V_{DS} = -10\text{ V}, V_{GS} = -15\text{ V},$ $I_{DS} = -20\text{ A}$	-	59	-	nC
$Q_{gs}$	Gate-Source Charge		-	13	-	
$Q_{gd}$	Gate-Drain Charge		-	7.7	-	

Notes :

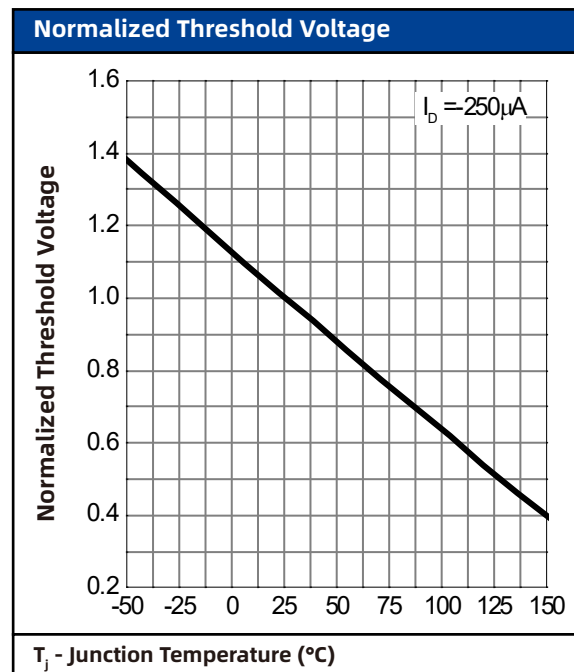
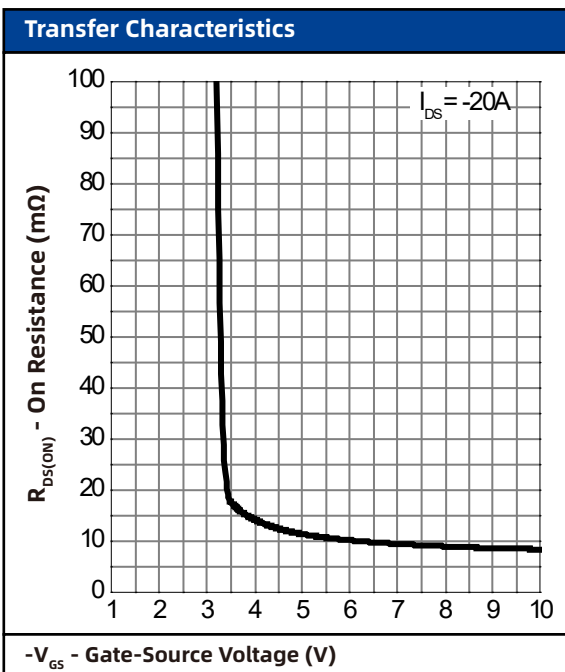
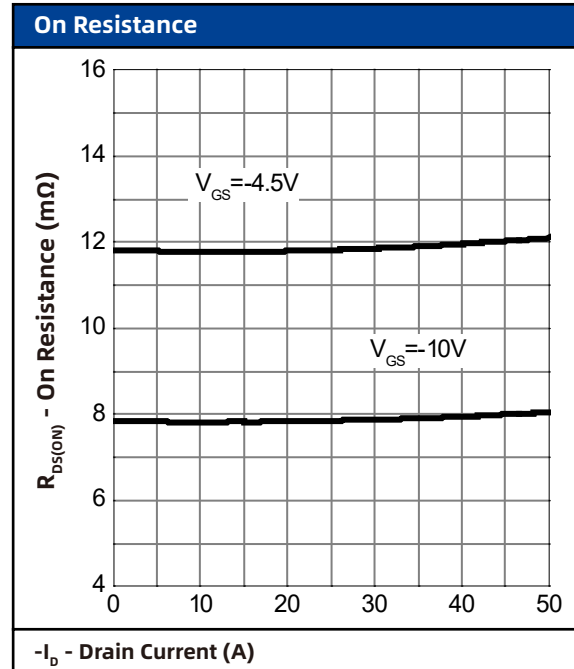
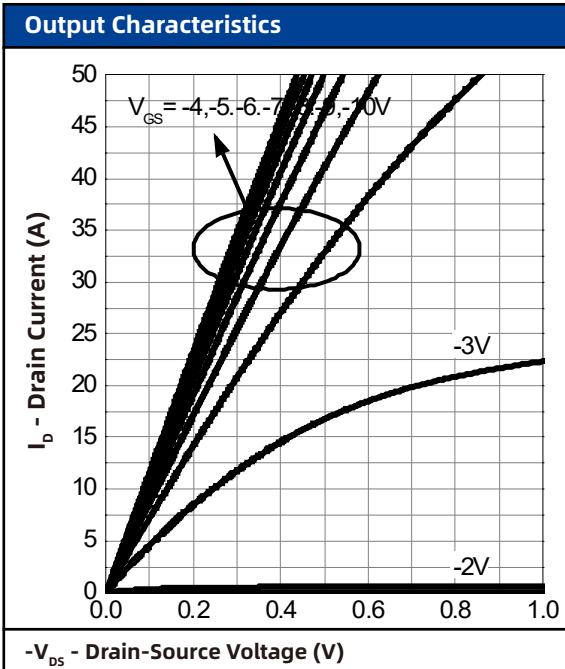
a : Pulse test ; pulse width  $\leq 300\ \mu\text{s}$ , duty cycle  $\leq 2\%$ 

b : Guaranteed by design, not subject to production testing

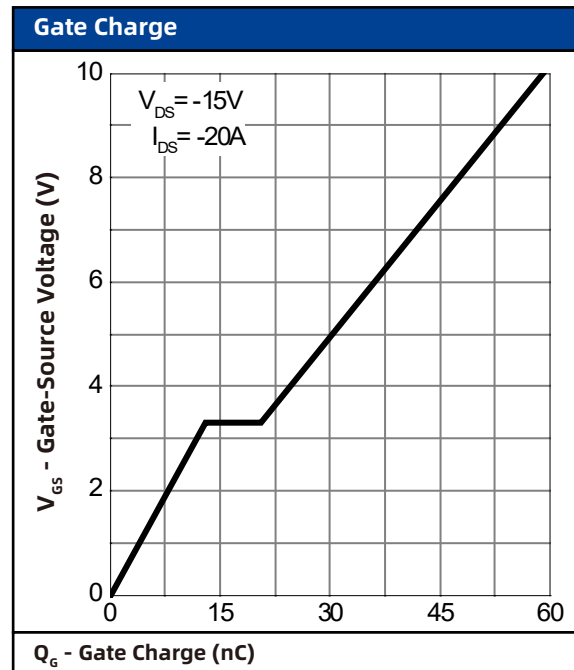
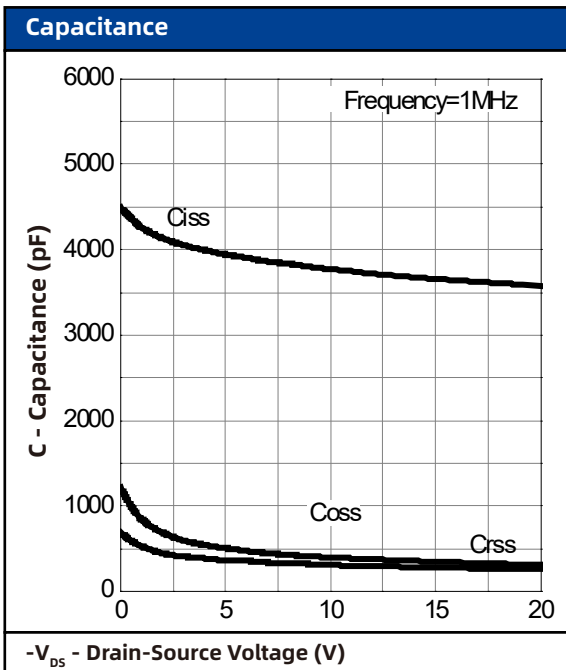
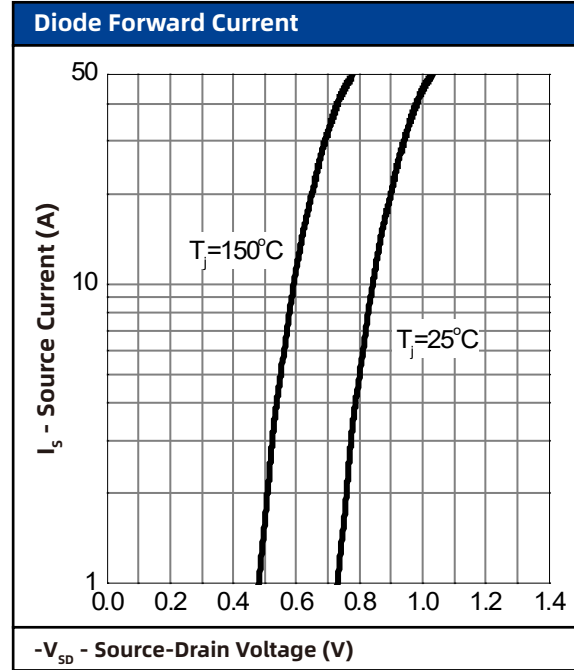
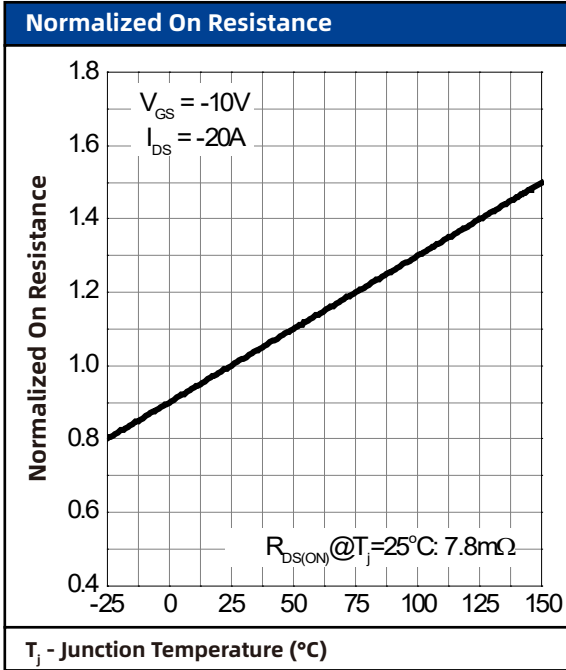
## 7. Typical Characteristics



## 7. Typical Characteristics (cont.)

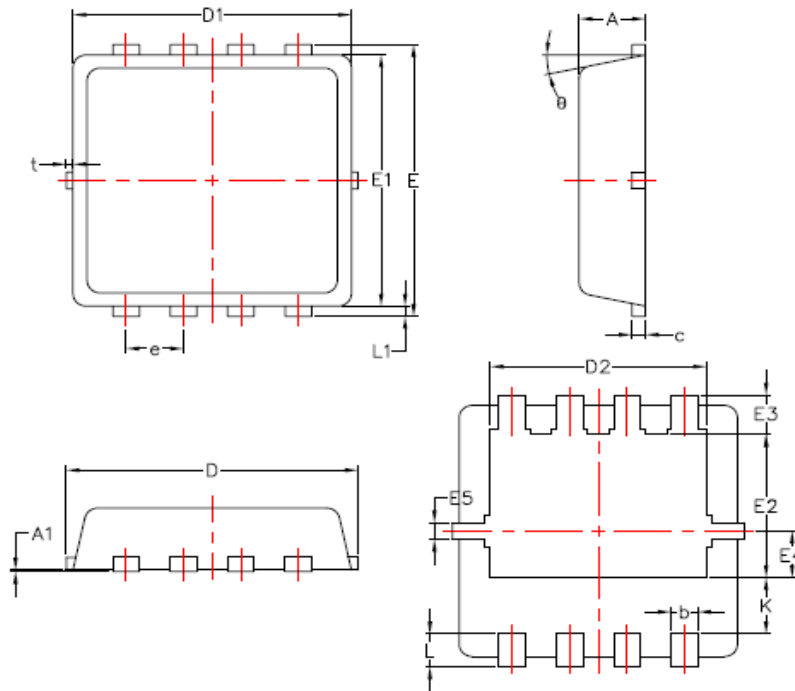


## 7. Typical Characteristics (cont.)



## 8. Package Dimensions

### PDFN3\*3-8L Package



Symbol	Dimensions In Millimeters	
	MIN.	MAX.
A	0.7	0.85
A1	/	0.05
b	0.20	0.40
c	0.10	0.25
D	3.15	3.45
D1	3.00	3.25
D2	2.29	2.65
E	3.15	3.45
E1	2.90	3.20
E2	1.54	1.94
E3	0.28	0.68
E4	0.37	0.77
E5	0.10	0.30
e	0.60	0.70
K	0.59	0.89
L	0.30	0.50
L1	0.06	0.20
T	0	0.13
$\theta$	/	12°