

## -150V P-Channel Enhancement Mode MOSFET

### 1. Product Information

#### 1.1 Features

- ◇ Advanced TRENCH cell design
- ◇ Low Thermal Resistance

#### 1.2 Applications

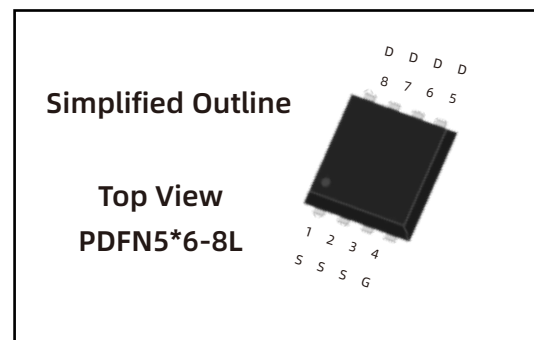
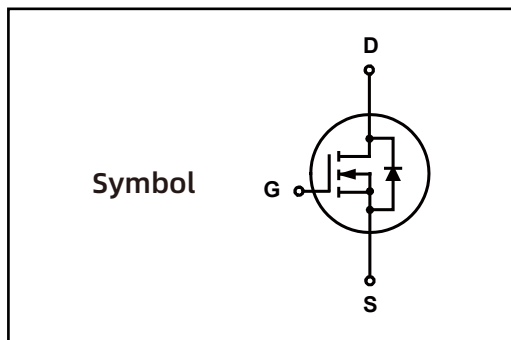
- ◇ Motor drivers
- ◇ DC - DC Converter

#### 1.3 Quick reference

- ◇  $BV \cong -150\text{ V}$
- ◇  $P_{\text{tot}} \cong 35\text{ W}$
- ◇  $I_D \cong -15\text{ A}$

- ◇  $R_{\text{DS(ON)}} \cong 160\text{ m}\Omega @ V_{\text{GS}} = -10\text{ V}$

### 2. Pin Description



### 3. Marking Information

Product Name	Marking
LN1R40P150G	LN1R40P150G CYWWZZ XXXXXX

## 4. Limiting Values

Symbol	Parameter	Conditions	Min	Max	Unit
$V_{DS}$	Drain-Source Voltage	$T_C = 25\text{ }^\circ\text{C}$	-150	-	V
$V_{GS}$	Gate-Source Voltage	$T_C = 25\text{ }^\circ\text{C}$	-	$\pm 20$	V
$I_D^{*,***}$	Drain Current	$T_C = 25\text{ }^\circ\text{C}, V_{GS} = -10\text{ V}$	-	-15	A
$I_{DM}^{**,***}$	Pulsed Source Current	$T_C = 25\text{ }^\circ\text{C}, V_{GS} = -10\text{ V}$	-	-60	A
$P_{tot}^*$	Total Power Dissipation	$T_C = 25\text{ }^\circ\text{C}$	-	89	W
$T_{stg}$	Storage Temperature		-55	150	$^\circ\text{C}$
$T_J$	Junction Temperature		-	150	$^\circ\text{C}$
$I_s$	Diode Forward Current	$T_C = 25\text{ }^\circ\text{C}$	-	-15	A
$R_{\theta JC}^*$	Thermal Resistance- Junction to Ambient		-	62.5	$^\circ\text{C}/\text{W}$

Notes :

- \* Surface Mounted on 1 in<sup>2</sup> pad area, t ≤ 10 sec
- \*\* Pulse width ≤ 10 μs, duty cycle ≤ 1 %
- \*\*\* limited by bonding wire

## 5. Ordering Code

Product Name	Package	Reel Size	Tape width	Quantity	Note
<b>LN1R40P150G</b>	<b>PDFN5*6</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 ( $T_c=25^\circ$ Unless Otherwise Noted )

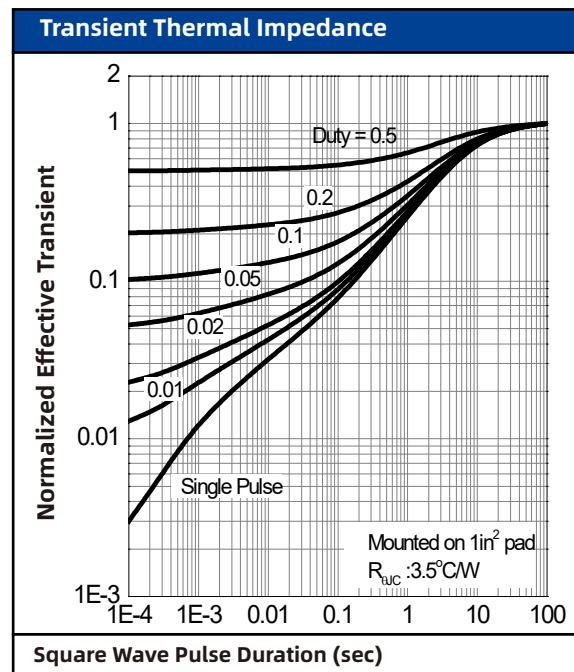
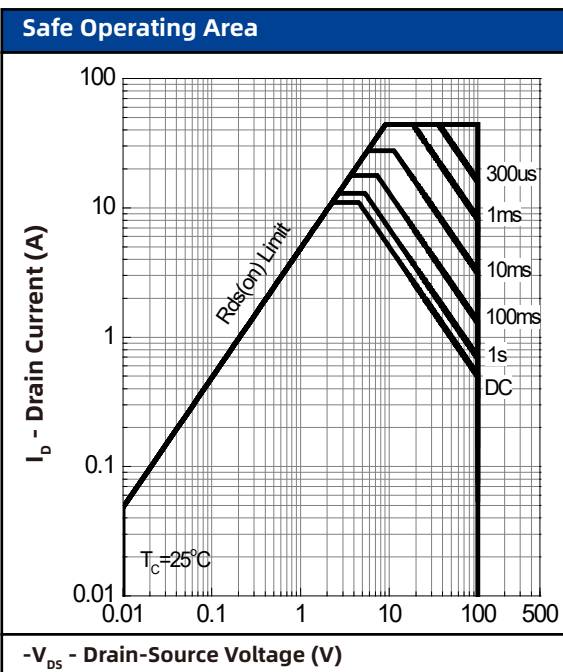
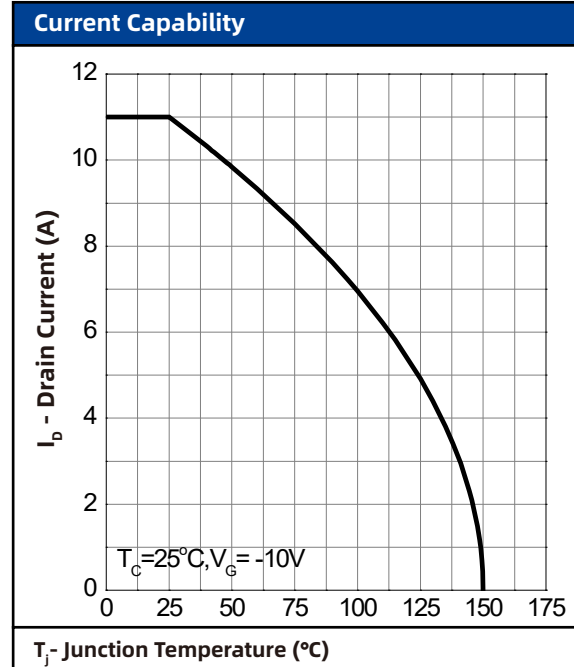
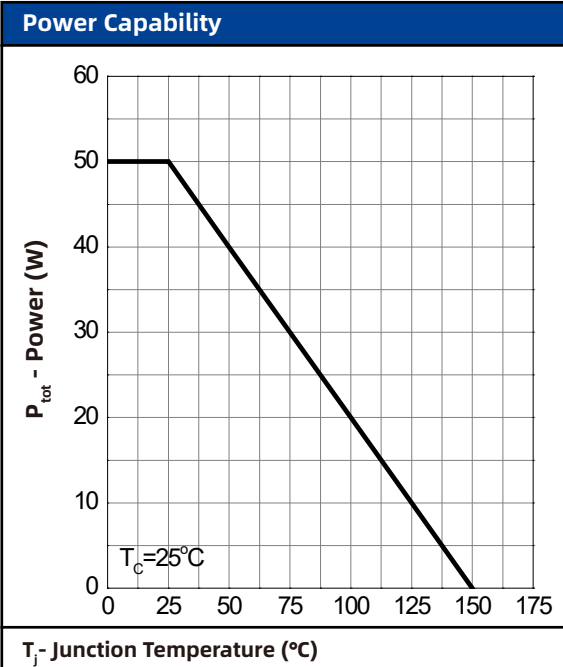
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
<b>Static Characteristics</b>						
$BV_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS} = 0\text{ V}, I_D = -250\ \mu\text{A}$	-150	-	-	V
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_{DS} = -250\ \mu\text{A}$	-1	-	-3	V
$I_{DSS}$	Zero Gate Voltage Source Current	$V_{DS} = -120\text{ V}, V_{GS} = 0\text{ V}$	-	-	-25	$\mu\text{A}$
		$T_j=85^\circ\text{C}$	-	-	-30	$\mu\text{A}$
$I_{GSS}$	Gate Leakage Current	$V_{GS} = \pm 20\text{ V}, V_{DS} = 0\text{ V}$	-	-	$\pm 100$	nA
$R_{DS(ON)}^a$	Drain-Source On-State Resistance	$V_{GS} = -10\text{ V}, I_D = -12\text{ A}$	-	140	160	m $\Omega$
<b>Diode Characteristics</b>						
$V_{SD}^a$	Diode Forward Voltage	$I_{SD} = -12\text{ A}, V_{GS} = 0\text{ V}$	-	-	-1.3	V
$t_{rr}$	Reverse Recovery Time	$I_{SD} = -12\text{ A}$	-	75	-	nS
$Q_{rr}$	Reverse Recovery Charge	$dI_{SD}/dt = 100\text{ A}/\mu\text{s}$	-	250	-	nC
<b>Dynamic Characteristics<sup>b</sup></b>						
$C_{ISS}$	Input Capacitance	$V_{GS} = 0\text{ V}, V_{DS} = -25\text{ V}$ Frequency = 1 MHz	-	2850	4560	pF
$C_{OSS}$	Output Capacitance		-	150	-	
$C_{rSS}$	Reverse Transfer Capacitance		-	100	-	
$t_d(on)$	Turn-on Delay Time	$V_{DS} = -50\text{ V}, V_{GEN} = -10\text{ V},$ $R_G = 3.3\ \Omega, I_D = -10\text{ A}$	-	11	-	nS
$t_r$	Turn-on Rise Time		-	26	-	
$t_d(off)$	Turn-off Delay Time		-	67	-	
$t_f$	Turn-off Fall Time		-	60	-	
<b>Gate Charge Characteristics<sup>b</sup></b>						
$Q_g$	Total Gate Charge	$V_{GS} = -10\text{ V}, V_{DS} = -80\text{ V},$ $I_{DS} = -12\text{ A}$	-	55	90	nC
$Q_{gs}$	Gate-Source Charge		-	8.2	-	
$Q_{gd}$	Gate-Drain Charge		-	16.6	-	

Notes :

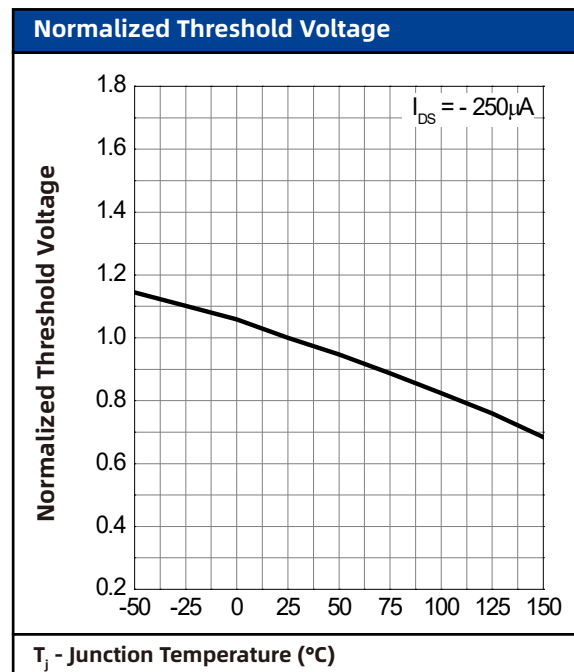
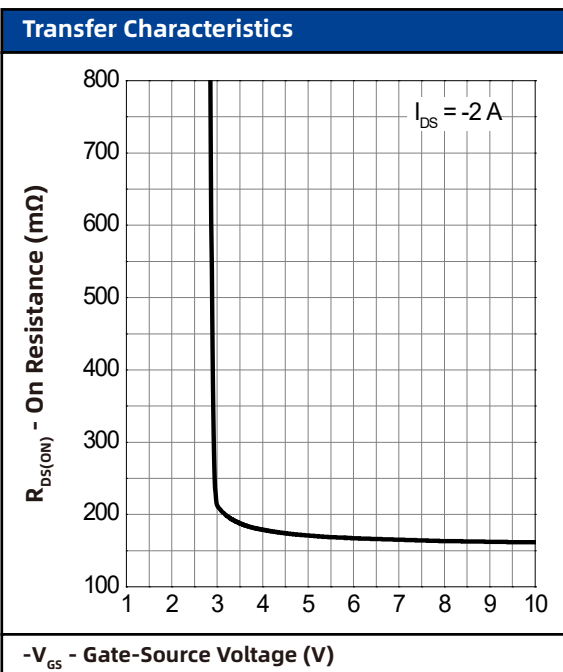
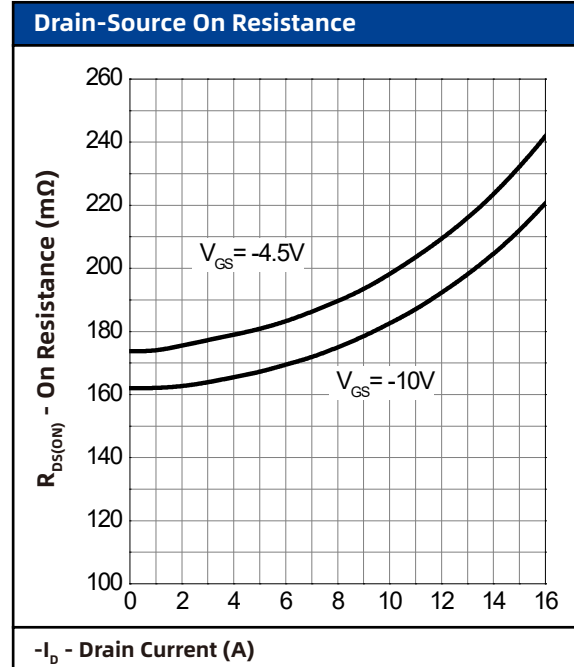
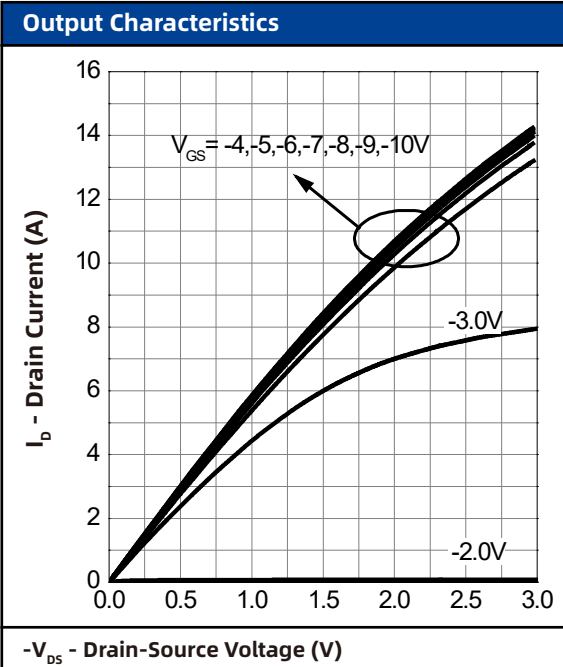
a : Pulse test ; pulse width  $\leq 300\ \mu\text{s}$ , duty cycle  $\leq 2\%$

b : Guaranteed by design, not subject to production testing

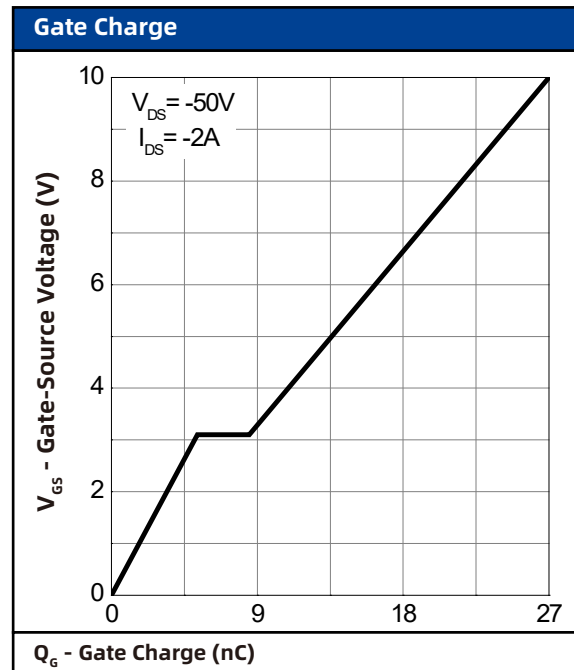
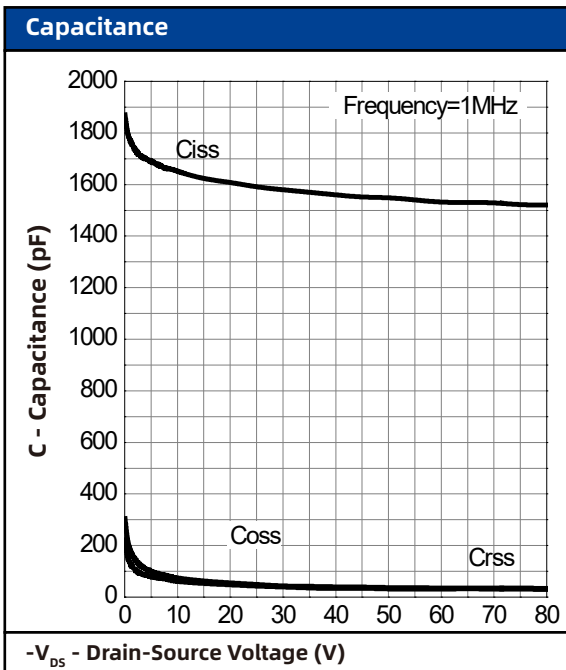
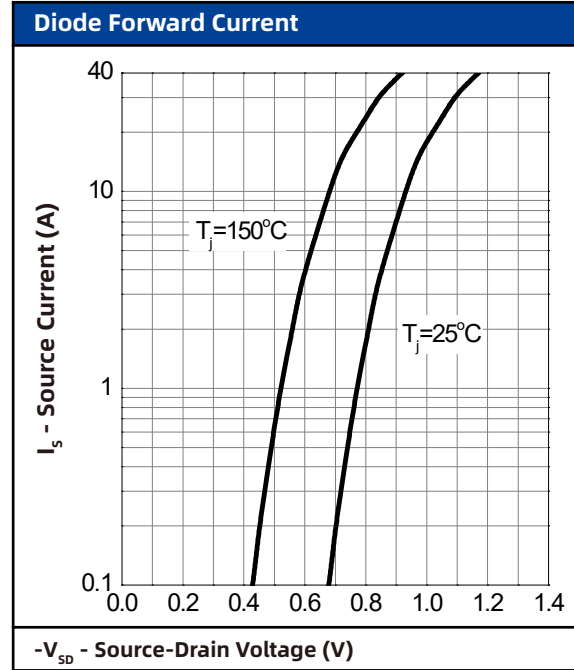
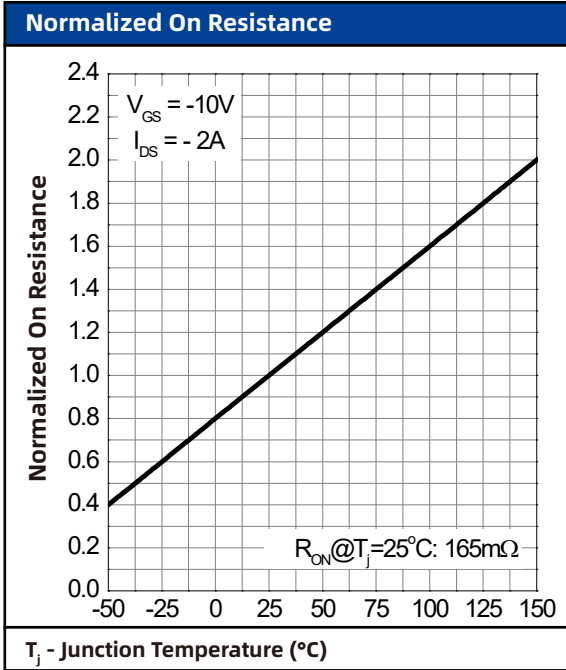
## 7. Typical Characteristics



## 7. Typical Characteristics (cont.)

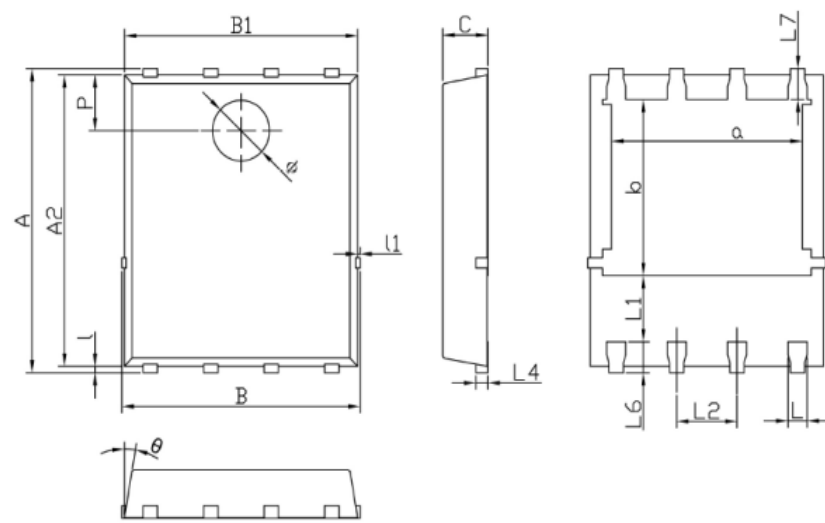


## 7. Typical Characteristics (cont.)



## 8. Package Dimensions

### PDFN5\*6-8L Package



Symbol	Dimensions In Millimeter		
	MIN	TYP	MAX
A	5.90	6.00	6.10
a	3.91	4.01	4.11
A2	5.70	5.75	5.80
B	4.90	5.00	5.10
b	3.37	3.47	3.57
B1	4.80	4.90	5.00
C	0.90	0.95	1.00
L	0.35	0.40	0.45
l	0.06	0.13	0.20
L1	1.10	—	—
l1	—	—	0.10
L2	1.17	1.27	1.37
L4	0.21	0.26	0.34
L6	0.51	0.61	0.71
L7	0.51	0.61	0.71
P	1.00	1.10	1.20
$\theta$	8°	10°	12°
$\phi$	1.10	1.20	1.30