

## -60V P-Channel Enhancement Mode MOSFET

### 1. Product Information

#### 1.1 Features

- ◇ Surface-mounted package
- ◇ Low gate charge
- ◇ Advanced TRENCH cell design

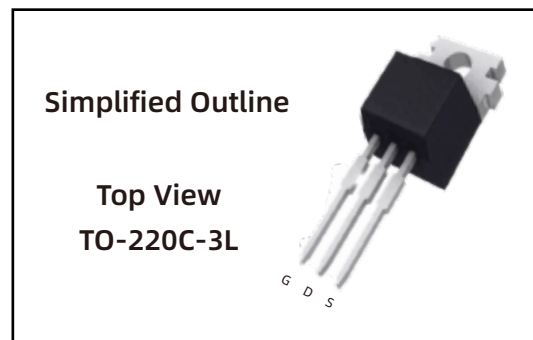
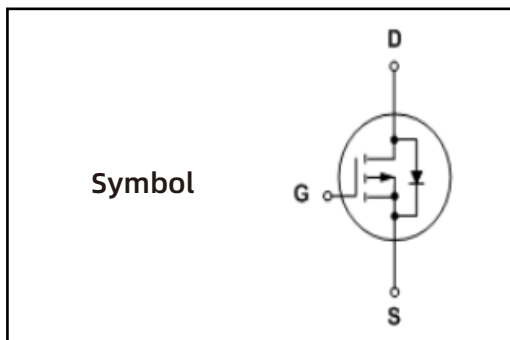
#### 1.2 Applications

- ◇ Motor driver appliances
- ◇ Adapter appliances
- ◇ High power inverter system

#### 1.3 Quick reference

- ◇  $BV \cong -60\text{ V}$
- ◇  $P_{\text{tot}} \cong 50\text{ W}$
- ◇  $I_D \cong -50\text{ A}$
- ◇  $R_{\text{DS(ON)}} \cong 20\text{ m}\Omega @ V_{\text{GS}} = -10\text{ V}$
- ◇  $R_{\text{DS(ON)}} \cong 28\text{ m}\Omega @ V_{\text{GS}} = -4.5\text{ V}$

### 2. Pin Description



### 3. Marking Information

Product Name	Marking
LN180P060C	LN180P060C CYWWZZ XXXXXX

## 4. Limiting Values

Symbol	Parameter	Conditions	Min	Max	Unit
$V_{DS}$	Drain-Source Voltage	$T_C = 25\text{ }^\circ\text{C}$	- 60	-	V
$V_{GS}$	Gate-Source Voltage	$T_C = 25\text{ }^\circ\text{C}$	-	$\pm 20$	V
$I_D^*$	Drain Current ( DC )	$T_C = 25\text{ }^\circ\text{C}, V_{GS} = -10\text{ V}$	-	-50	A
		$T_C = 100\text{ }^\circ\text{C}, V_{GS} = -10\text{ V}$	-	- 24	A
$I_{DM}^{*,**,***}$	Drain Current ( Pulsed )	$T_C = 25\text{ }^\circ\text{C}, V_{GS} = -10\text{ V}$	-	-120	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	$T_C = 25\text{ }^\circ\text{C}$	-	-50	A
$E_{AS}^*$	Single Pulsed Avalanche Energy	$V_{DD} = 50\text{ V}, L = 1.0\text{mH}$	-	276	mJ
$R_{\theta JA}^*$	Thermal Resistance- Junction to Ambient		-	37	$^\circ\text{C/W}$
$R_{\theta JC}^*$	Thermal Resistance- Junction to Case		-	0.75	

Notes :

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

## 5. Ordering Code

Product Name	Package	Reel Size	Tape width	Quantity	Note
LN180P060C	TO220C			800	

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 ( $T_A=25^\circ$ Unless Otherwise Noted )

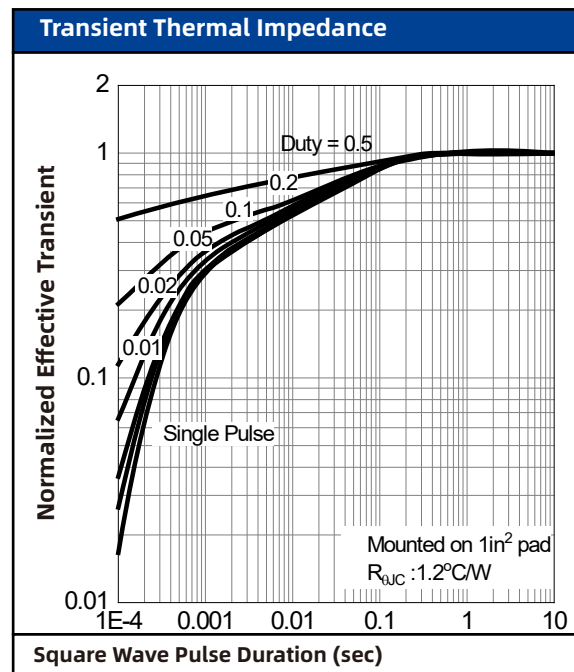
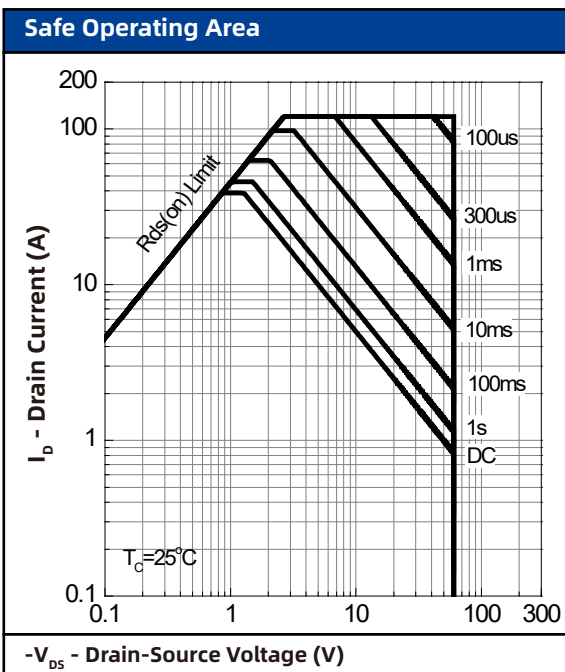
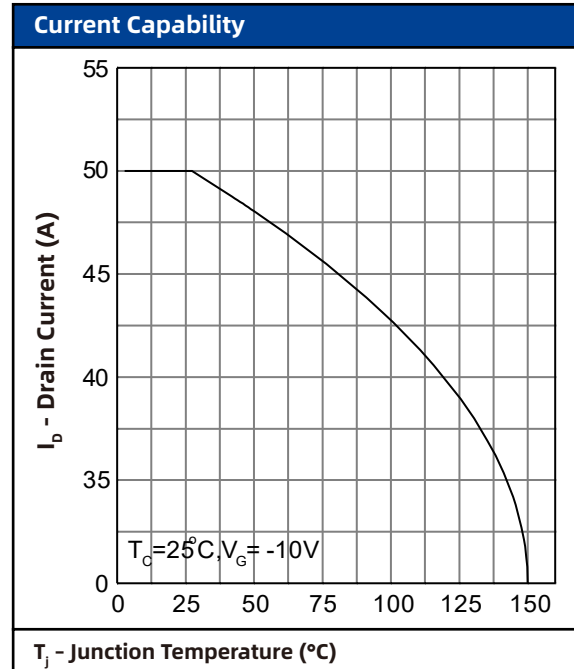
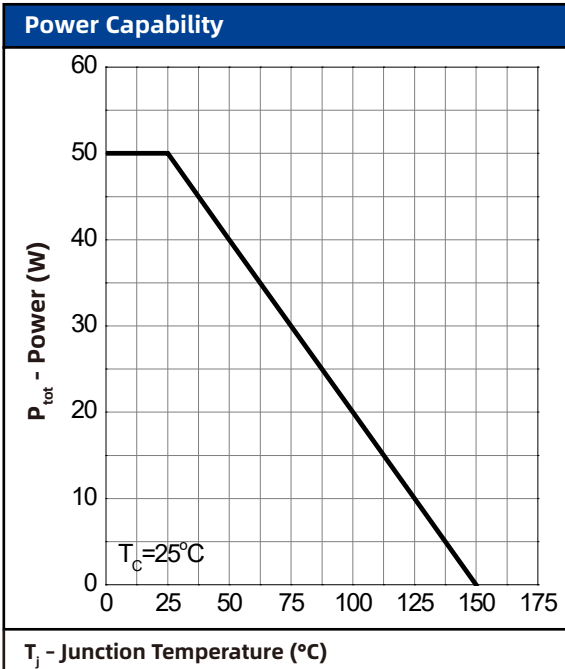
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
<b>Static Characteristics</b>						
$BV_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS} = 0\text{ V}, I_{DS} = -250\ \mu\text{A}$	-60	-	-	V
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_{DS} = -250\ \mu\text{A}$	-1	-	-3	V
$I_{DSS}$	Drain Leakage Current	$V_{DS} = -48\text{ V}, V_{GS} = 0\text{ V}$	-	-	-1	$\mu\text{A}$
$I_{GSS}$	Gate Leakage Current	$V_{DS} = 0\text{ V}, V_{GS} = \pm 20\text{ V}$	-	-	$\pm 100$	nA
$R_{DS(on)}^a$	On-State Resistance	$V_{GS} = -10\text{ V}, I_{DS} = -15\text{ A}$	-	18	20	m $\Omega$
		$V_{GS} = -4.5\text{ V}, I_{DS} = -10\text{ A}$	-	25	28	
<b>Diode Characteristics</b>						
$V_{SD}^a$	Diode Forward Voltage	$I_{SD} = -15\text{ A}, V_{GS} = 0\text{ V}$	-	-	-1.3	V
$t_{rr}$	Reverse Recovery Time	$I_{DS} = -15\text{ A}$	-	23	-	nS
$Q_{rr}$	Reverse Recovery Charge	$dI_{SD}/dt = 100\text{ A}/\mu\text{s}$	-	23	-	nC
<b>Dynamic Characteristics<sup>b</sup></b>						
$C_{iss}$	Input Capacitance	$V_{GS} = 0\text{ V}, V_{DS} = -30\text{ V}$ Frequency = 1 MHz	-	4584	-	pF
$C_{oss}$	Output Capacitance		-	178	-	
$C_{riss}$	Reverse Transfer Capacitance		-	133	-	
$t_d(on)$	Turn-on Delay Time	$V_{DS} = -30\text{ V}, V_{GEN} = -10\text{ V},$ $R_G = 3.9\ \Omega, R_L = 2\ \Omega,$ $I_{DS} = -15\text{ A}$	-	66	-	nS
$t_r$	Turn-on Rise Time		-	101	-	
$t_d(off)$	Turn-off Delay Time		-	465	-	
$t_f$	Turn-off Fall Time		-	205	-	
<b>Gate Charge Characteristics<sup>b</sup></b>						
$Q_g$	Total Gate Charge	$V_{DS} = -30\text{ V}, V_{GS} = -10\text{ V},$ $I_{DS} = -15\text{ A}$	-	72	-	nC
$Q_{gs}$	Gate-Source Charge		-	19	-	
$Q_{gd}$	Gate-Drain Charge		-	9.8	-	

Notes :

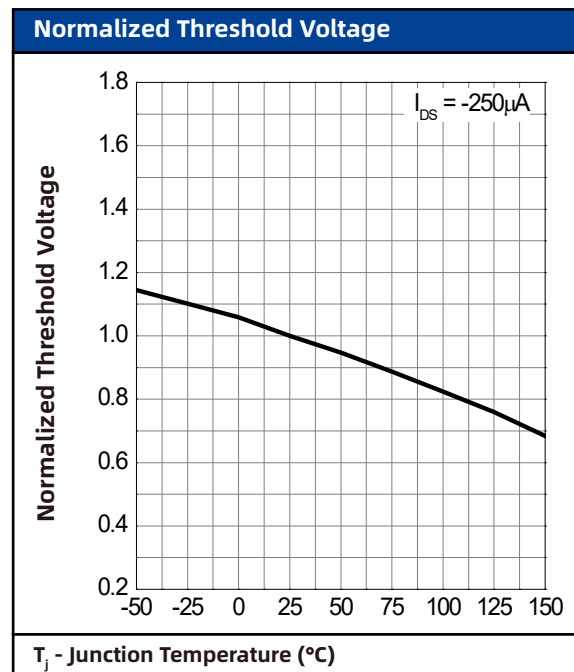
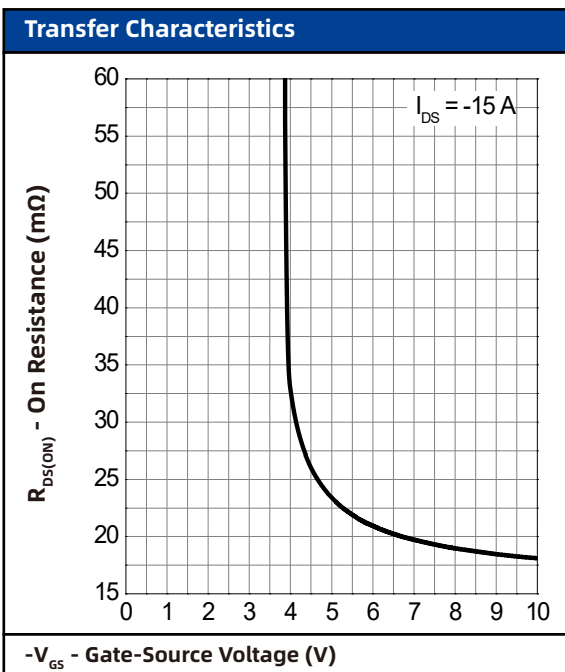
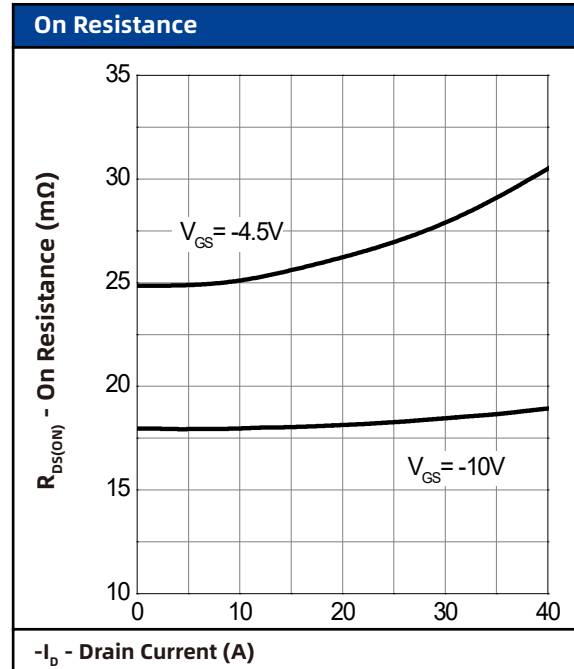
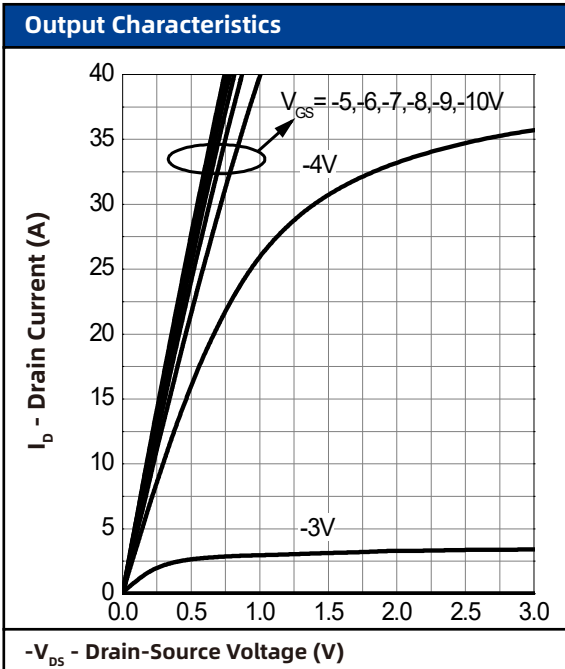
a : Pulse test ; pulse width  $\leq 300\ \mu\text{s}$ , duty cycle  $\leq 2\%$

b : Guaranteed by design, not subject to production testing

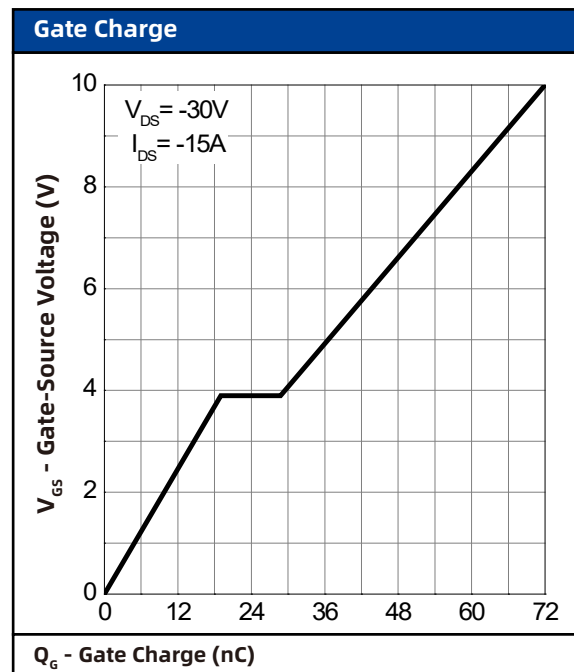
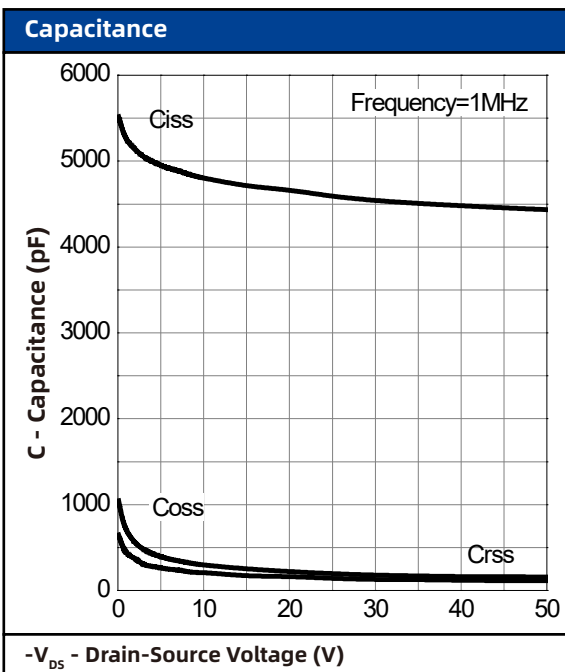
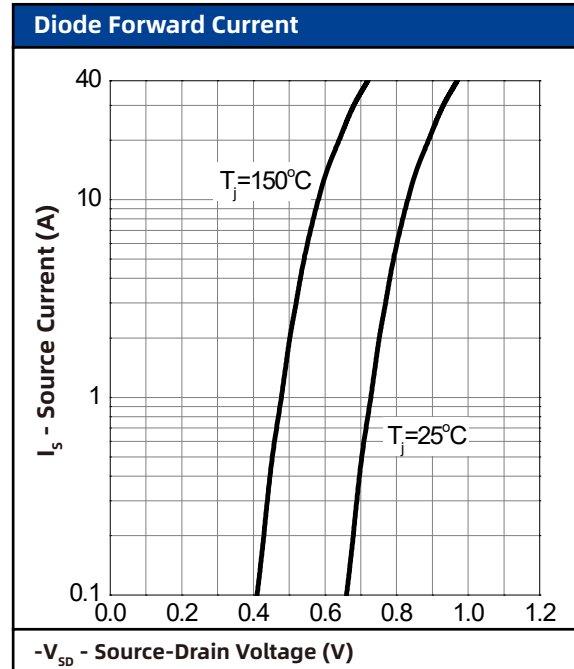
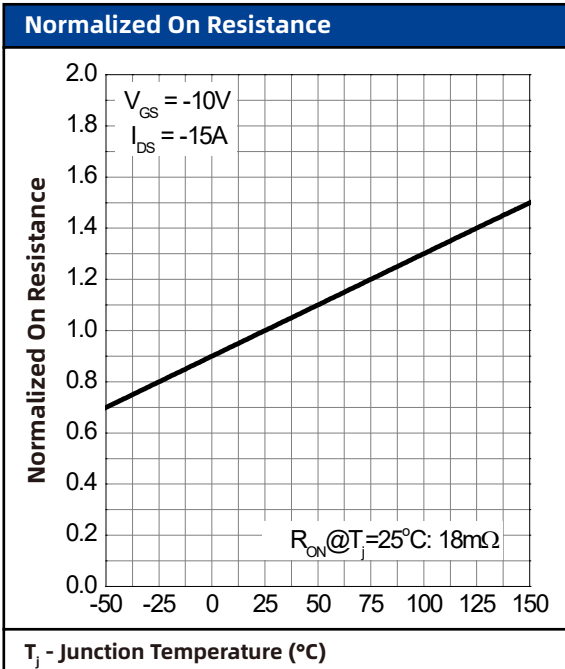
## 7. Typical Characteristics



## 7. Typical Characteristics (cont.)

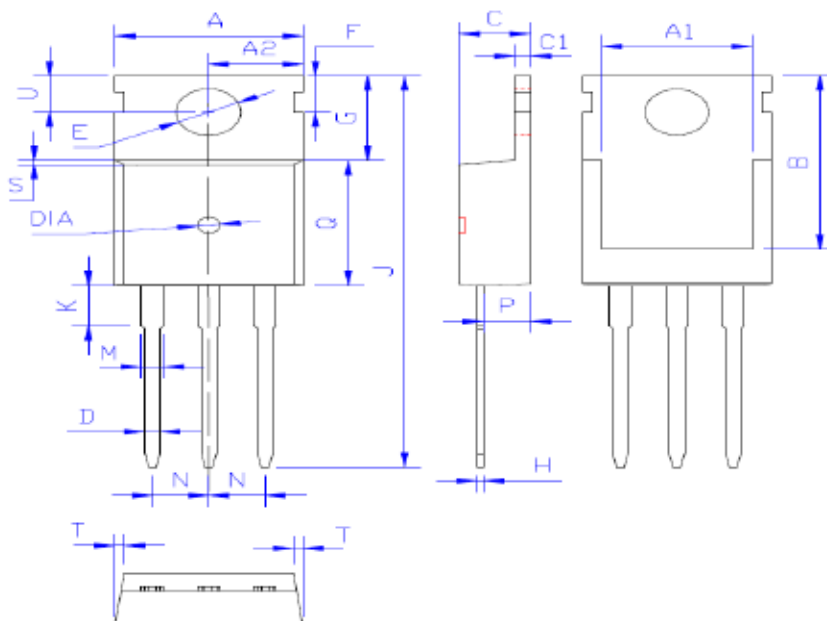


## 7. Typical Characteristics (cont.)



## 8. Package Dimensions

### TO-220C-3L



Symbol	Dimensions In Millimeters	
	MIN.	MAX.
A	9.80	10.20
A1	7.80	8.20
A2	4.80	5.20
B	13.00	13.40
C	4.35	4.65
C1	1.15	1.45
D	0.65	0.95
E	3.45	3.75
F	2.85	3.15
G	6.40	6.80
H	0.35	0.65
J	28.68	29.08
K	2.80	3.20
M	1.15	1.45
N	TYP2.54	
P	2.20	2.60
Q	9.00	9.40
S	0.15	0.35
T	0.15	0.35
U	2.65	2.95
DIA	直径2.5±0.1 深MAX0.5	