

## -40V P-Channel Enhancement Mode MOSFET

### 1. Product Information

#### 1.1 Features

- ◇ Advanced TRENCH cell design
- ◇ Low Thermal Resistance

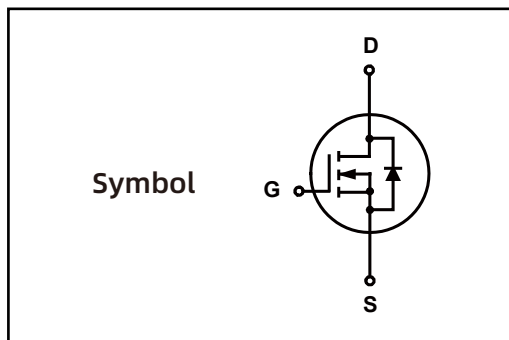
#### 1.2 Applications

- ◇ Motor drivers
- ◇ DC - DC Converter

#### 1.3 Quick reference

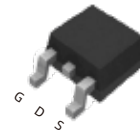
- ◇  $BV \cong -40\text{ V}$
- ◇  $P_{\text{tot}} \cong 35\text{ W}$
- ◇  $I_D \cong -30\text{ A}$
- ◇  $R_{\text{DS(ON)}} \cong 38\text{m}\Omega @ V_{\text{GS}} = -10\text{ V}$
- ◇  $R_{\text{DS(ON)}} \cong 55\text{m}\Omega @ V_{\text{GS}} = -4.5\text{ V}$

### 2. Pin Description



#### Simplified Outline

Top View  
TO-252-3L



### 3. Marking Information

Product Name	Marking
LN330P040J	LN330P040J CYWWZZ XXXXXX

## 4. Limiting Values

Symbol	Parameter	Conditions	Min	Max	Unit
$V_{DS}$	Drain-Source Voltage	$T_C = 25\text{ }^\circ\text{C}$	-40	-	V
$V_{GS}$	Gate-Source Voltage	$T_C = 25\text{ }^\circ\text{C}$	-	$\pm 20$	V
$I_D$	Drain Current	$T_C = 25\text{ }^\circ\text{C}, V_{GS} = -10\text{ V}$	-	-30	A
$I_{DM}^{* **}$	Pulsed Source Current	$T_C = 25\text{ }^\circ\text{C}, V_{GS} = -10\text{ V}$	-	-48	A
$P_{tot}^*$	Total Power Dissipation	$T_C = 25\text{ }^\circ\text{C}$	-	35	W
$T_{stg}$	Storage Temperature		-55	150	$^\circ\text{C}$
$T_J$	Junction Temperature		-	150	$^\circ\text{C}$
$I_S$	Diode Forward Current	$T_C = 25\text{ }^\circ\text{C}$	-	-30	A
$R_{\theta JA}^*$	Thermal Resistance- Junction to Ambient		-	37	$^\circ\text{C}/\text{W}$
$R_{\theta JC}^*$	Thermal Resistance- Junction to Case		-	1.2	

Notes :

- \* Surface Mounted on 1 in<sup>2</sup> pad area, t ≤ 10 sec
- \*\* Pulse width ≤ 300 μs, duty cycle ≤ 2 %
- \*\*\* limited by bonding wire

## 5. Ordering Code

Product Name	Package	Reel Size	Tape width	Quantity	Note
<b>LN330P040J</b>	<b>TO-252</b>			<b>2500</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)

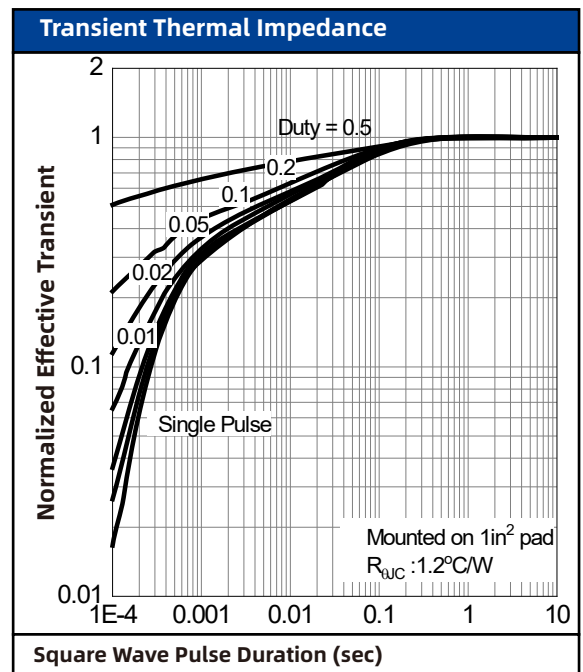
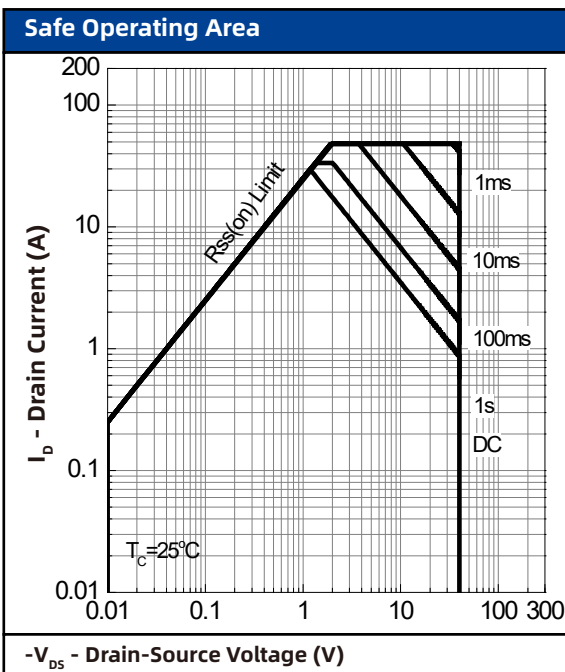
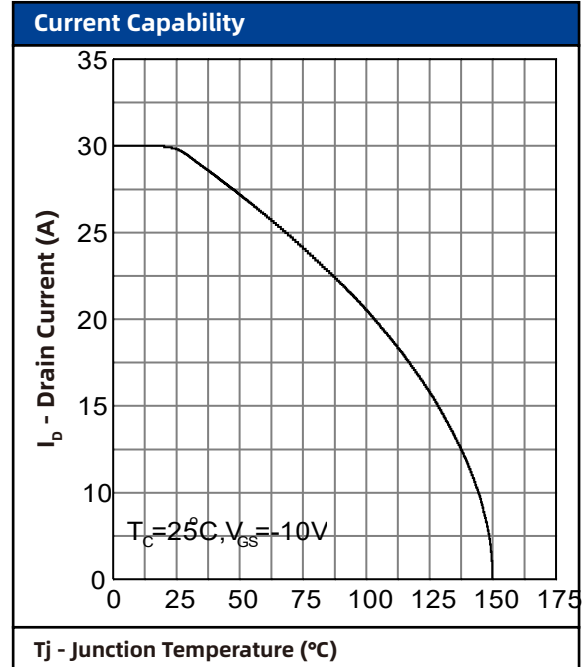
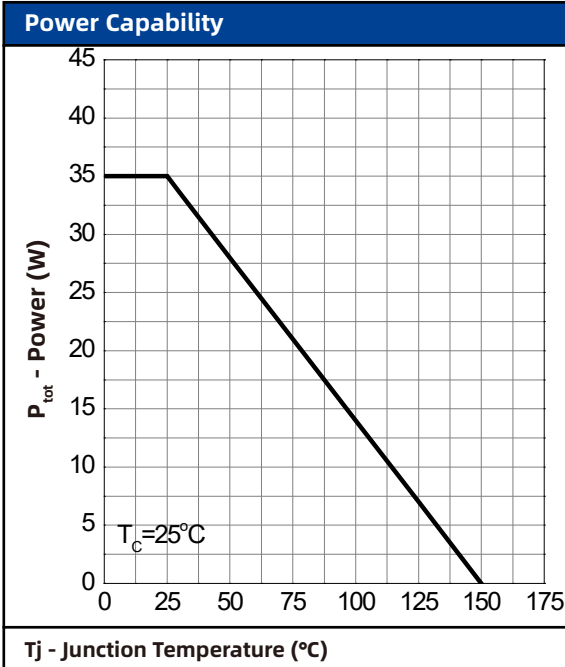
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
<b>Static Characteristics</b>						
$BV_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS} = 0\text{ V}, I_{DS} = -250\ \mu\text{A}$	-40	-	-	V
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_{DS} = -250\ \mu\text{A}$	-1.5	-	-2.5	V
$I_{DSS}$	Zero Gate Voltage Source Current	$V_{DS} = -32\text{ V}, V_{GS} = 0\text{ V}$	-	-	-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
$R_{DS(on)}^a$	Drain-Source On-State Resistance	$V_{GS} = -10\text{ V}, I_{DS} = -10\text{ A}$	-	33	38	m $\Omega$
		$V_{GS} = -4.5\text{ V}, I_{DS} = -5\text{ A}$	-	46	55	m $\Omega$
<b>Diode Characteristics</b>						
$V_{SD}^a$	Diode Forward Voltage	$I_{SD} = -10\text{ A}, V_{GS} = 0\text{ V}$	-	-	-1.3	V
$t_{rr}$	Reverse Recovery Time	$I_{DS} = -10\text{ A}$	-	13.5	-	nS
$Q_{rr}$	Reverse Recovery Charge	$dI_{SD}/dt = 100\text{ A}/\mu\text{s}$	-	2.8	-	nC
<b>Dynamic Characteristics<sup>b</sup></b>						
$C_{ISS}$	Input Capacitance	$V_{GS} = 0\text{ V}, V_{DS} = -20\text{ V}$ Frequency = 1 MHz	-	1169	-	pF
$C_{OSS}$	Output Capacitance		-	79	-	
$C_{rSS}$	Reverse Transfer Capacitance		-	64	-	
$t_d(on)$	Turn-on Delay Time	$V_{DS} = -20\text{ V}, V_{GEN} = -10\text{ V},$ $R_G = 4.5\ \Omega, R_L = 2\ \Omega,$ $I_{DS} = -10\text{ A}$	-	13	-	nS
$t_r$	Turn-on Rise Time		-	43	-	
$t_d(off)$	Turn-off Delay Time		-	135	-	
$t_f$	Turn-off Fall Time		-	84	-	
<b>Gate Charge Characteristics<sup>b</sup></b>						
$Q_g$	Total Gate Charge	$V_{DS} = -10\text{ V}, V_{GS} = -20\text{ V},$ $I_{DS} = -10\text{ A}$	-	20	-	nC
$Q_{gs}$	Gate-Source Charge		-	5.5	-	
$Q_{gd}$	Gate-Drain Charge		-	2.5	-	

Notes :

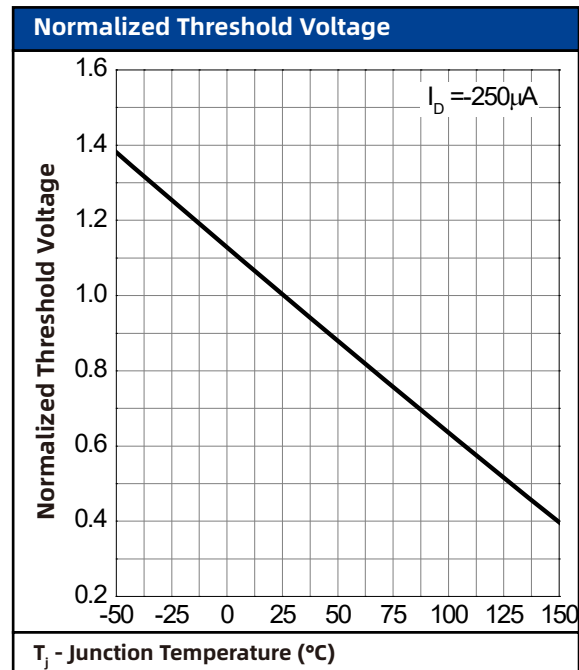
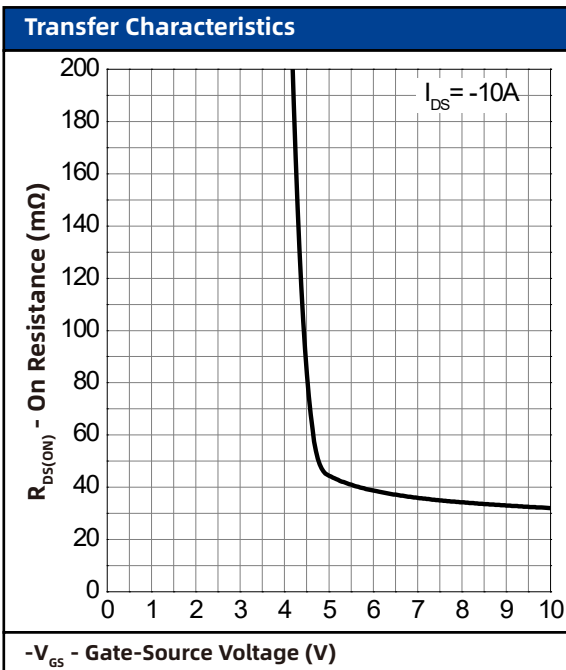
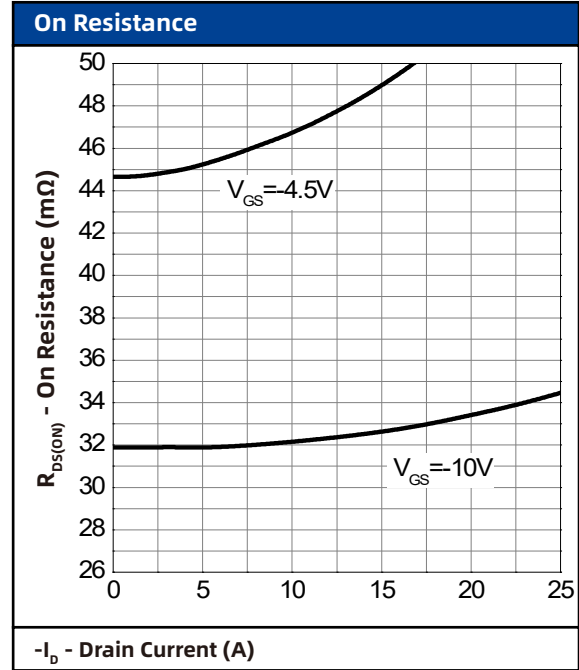
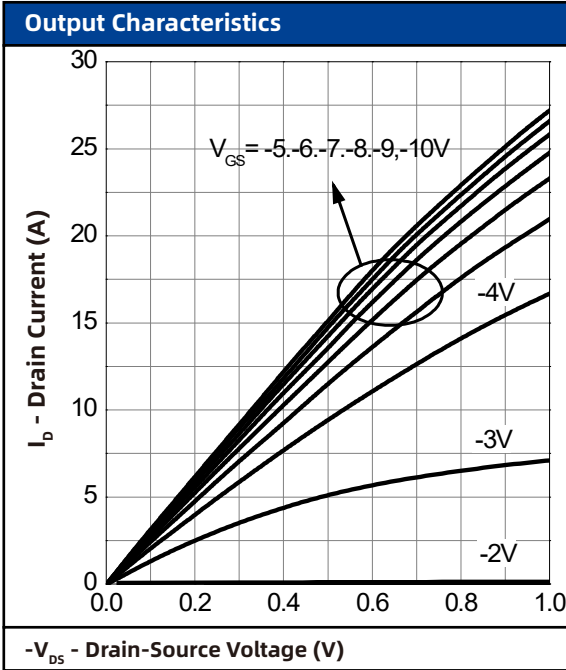
a : Pulse test ; pulse width  $\leq 300\ \mu\text{s}$ , duty cycle  $\leq 2\%$ 

b : Guaranteed by design, not subject to production testing

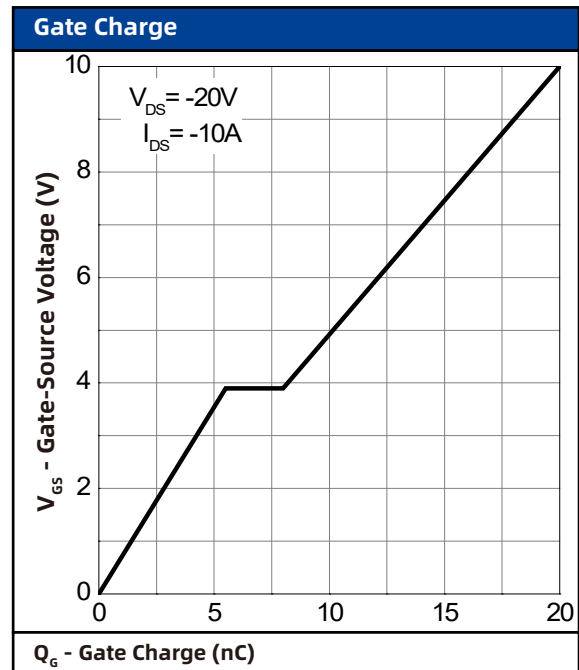
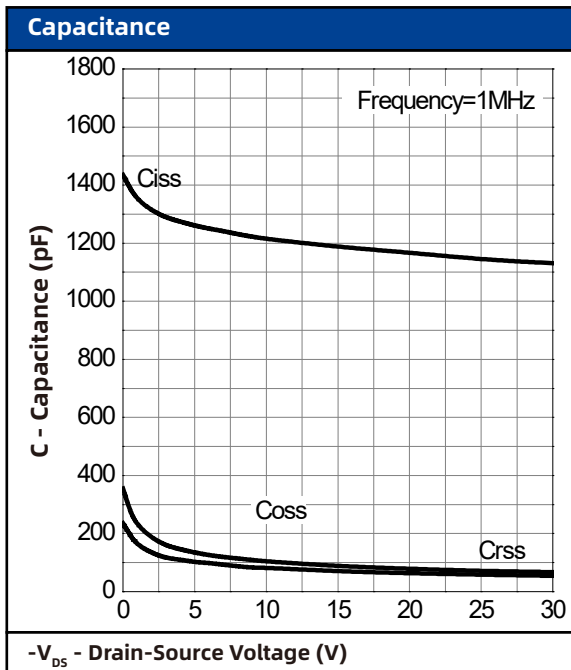
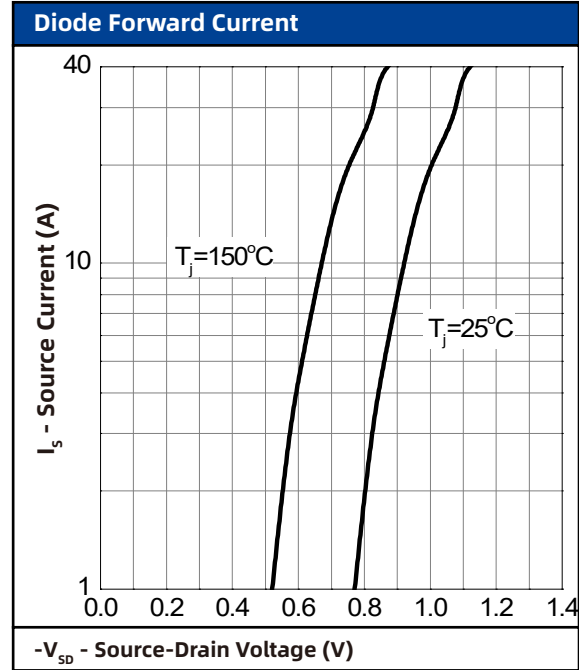
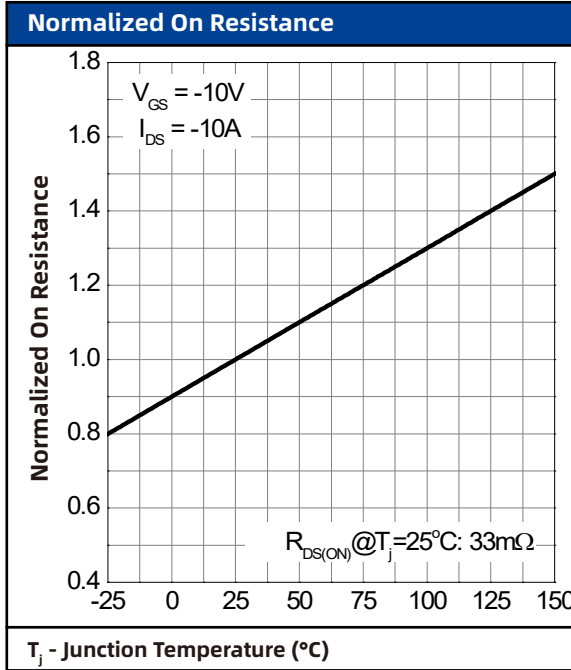
## 7. Typical Characteristics



## 7. Typical Characteristics (cont.)

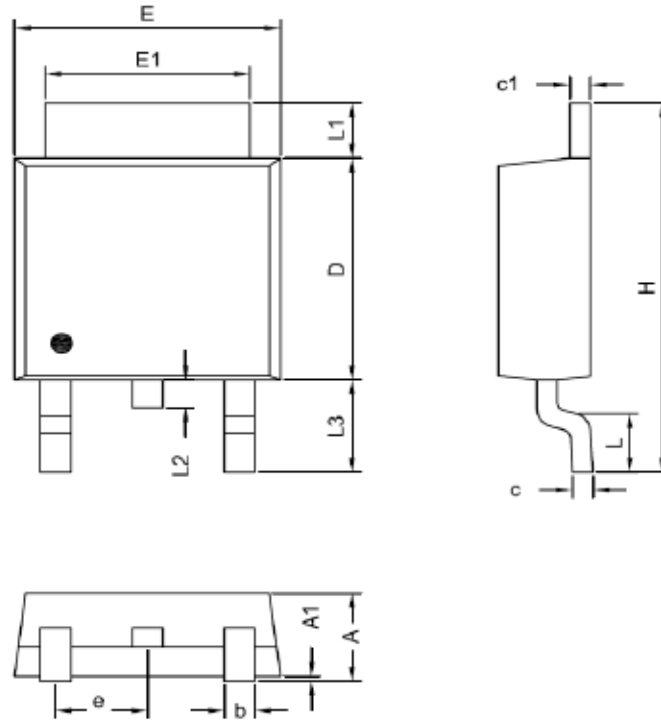


## 7. Typical Characteristics (cont.)



## 8. Package Dimensions

### T0252-3L



Symbol	Dimensions In Millimeters	
	MIN.	MAX.
A	2.19	2.38
A1	0.02	0.13
D	5.30	6.40
E	6.35	6.80
E1	5.20	5.50
c	0.40	0.60
c1	0.40	0.60
b	0.55	0.85
e	2.30BCS	
L	1.00	1.80
L1	0.70	1.80
L2	0.70BCS	
L3	2.40	2.80
H	9.20	10.40