

## 40V N-Channel Enhancement Mode MOSFET

### 1. Product Information

#### 1.1 Features

- ◇ MSL1
- ◇ Low Thermal Resistance
- ◇ Advanced SGT cell design

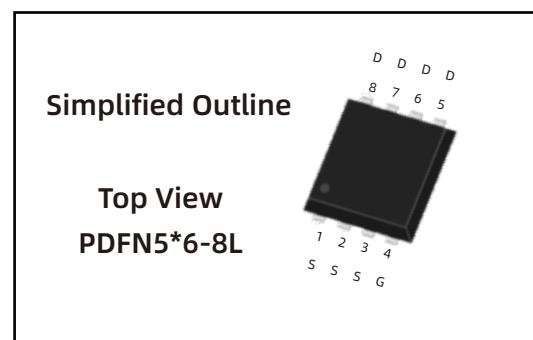
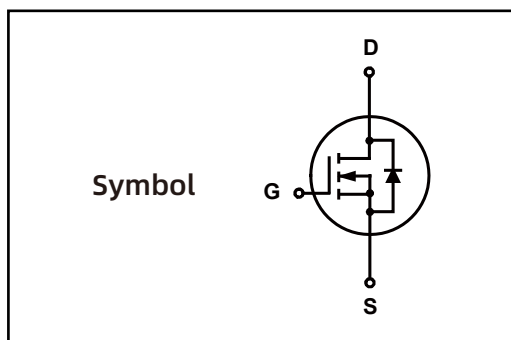
#### 1.2 Applications

- ◇ Motor drivers
- ◇ DC-DC Converter

#### 1.3 Quick reference

- ◇  $BV \cong 40\text{ V}$
- ◇  $P_{\text{tot}} \cong 250\text{ W}$
- ◇  $I_D \cong 200\text{ A}$
- ◇  $R_{\text{DS(ON)}} \cong 0.65\text{ m}\Omega @ V_{\text{GS}} = 10\text{ V}$
- ◇  $R_{\text{DS(ON)}} \cong 1.35\text{ m}\Omega @ V_{\text{GS}} = 6\text{ V}$

### 2. Pin Description



### 3. Marking Information

Product Name	Marking
LN006N040G	LN006N040G 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 ( DC )	$T_C = 25\text{ }^\circ\text{C}, V_{GS} = 10\text{ V}$	-	200	A
		$T_C = 100\text{ }^\circ\text{C}, V_{GS} = 10\text{ V}$	-	200	A
$I_{DM}^{*,**,***}$	Drain Current ( Pulsed )	$T_C = 25\text{ }^\circ\text{C}, V_{GS} = 10\text{ V}$	-	800	A
$P_{tot}^*$	Total Power Dissipation	$T_C = 25\text{ }^\circ\text{C}$	-	250	W
$T_{stg}$	Storage Temperature		-55	175	$^\circ\text{C}$
$T_J$	Junction Temperature		-	175	$^\circ\text{C}$
$I_S$	Diode Forward Current	$T_C = 25\text{ }^\circ\text{C}$	-	200	A
$E_{AS}^*$	Single Pulsed Avalanche Energy	$V_{DD} = 40\text{ V}, L = 1.0\text{mH}$	-	1152	mJ
$R_{\theta JA}^*$	Thermal Resistance- Junction to Ambient		-	55	$^\circ\text{C/W}$
$R_{\theta JC}$	Thermal Resistance- Junction to Case		-	0.6	

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>LN006N040G</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 ( $T_A=25^\circ$ Unless Otherwise Noted )

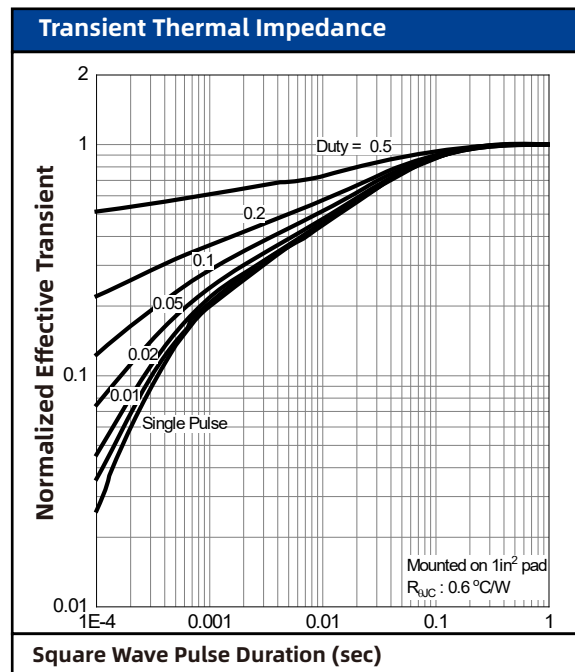
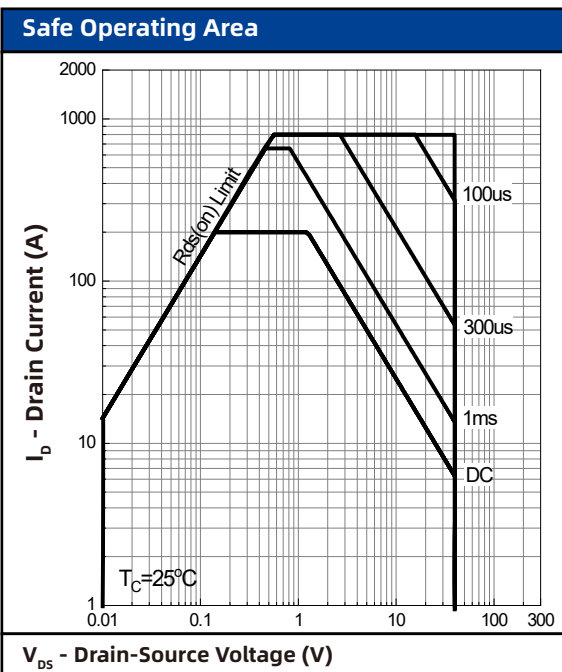
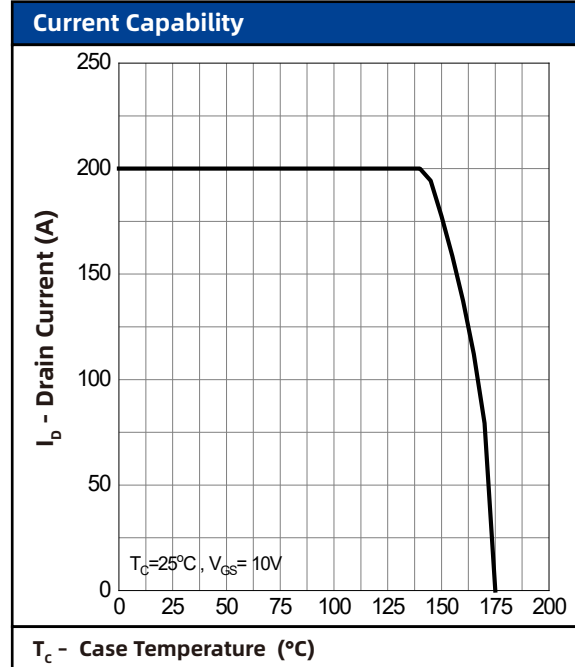
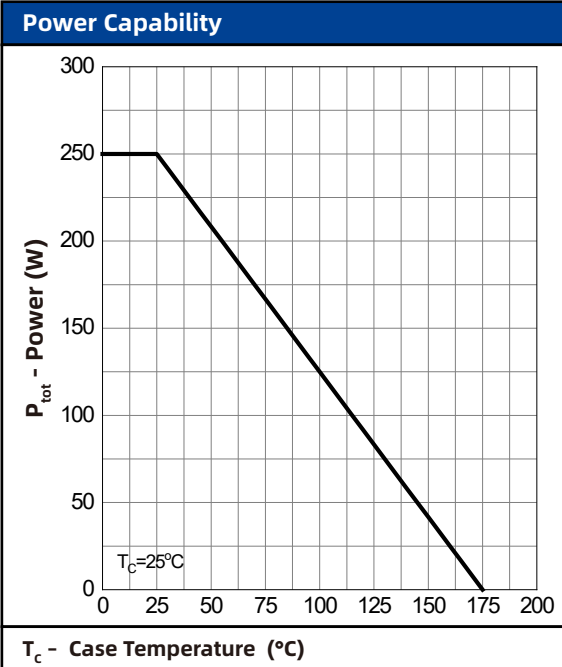
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
<b>Static Characteristics</b>						
$BV_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS} = 0\text{ V}, I_{DS} = 250\ \mu\text{A}$	40	-	-	V
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_{DS} = 250\ \mu\text{A}$	2	-	4	V
$I_{DSS}$	Drain Leakage Current	$V_{DS} = 32\text{ V}, V_{GS} = 0\text{ V}$	-	-	1	$\mu\text{A}$
$I_{GSS}$	Gate Leakage Current	$V_{GS} = 0\text{ V}, V_{GS} = \pm 20\text{ V}$	-	-	$\pm 100$	nA
$R_{DS(on)}^a$	On-State Resistance	$V_{GS} = 10\text{ V}, I_{DS} = 50\text{ A}$	-	0.57	0.65	m $\Omega$
		$V_{GS} = 6\text{ V}, I_{DS} = 30\text{ A}$	-	1.12	1.35	
<b>Diode Characteristics</b>						
$V_{SD}^a$	Diode Forward Voltage	$I_{SD} = 50\text{ A}, V_{GS} = 0\text{ V}$	-	-	1.3	V
$t_{rr}$	Reverse Recovery Time	$I_{DS} = 50\text{ A}, V_{GS} = 0\text{ V}$	-	42	-	nS
$Q_{rr}$	Reverse Recovery Charge	$di_{SD}/dt = 100\text{ A}/\mu\text{s}$	-	32	-	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	-	7223	-	pF
$C_{OSS}$	Output Capacitance		-	3148	-	
$C_{rSS}$	Reverse Transfer Capacitance		-	167	-	
$t_d(on)$	Turn-on Delay Time	$V_{DS} = 20\text{ V}, V_{GEN} = 10\text{ V},$ $R_G = 3.9\ \Omega, R_L = 0.4\ \Omega,$ $I_{DS} = 50\text{ A}$	-	23	-	nS
$t_r$	Turn-on Rise Time		-	107	-	
$t_d(off)$	Turn-off Delay Time		-	92	-	
$t_f$	Turn-off Fall Time		-	85	-	
<b>Gate Charge Characteristics<sup>b</sup></b>						
$Q_g$	Total Gate Charge	$V_{DS} = 20\text{ V}, V_{GS} = 10\text{ V},$ $I_{DS} = 50\text{ A}$	-	129		nC
$Q_{gs}$	Gate-Source Charge		-	39		
$Q_{gd}$	Gate-Drain Charge		-	33		

Notes :

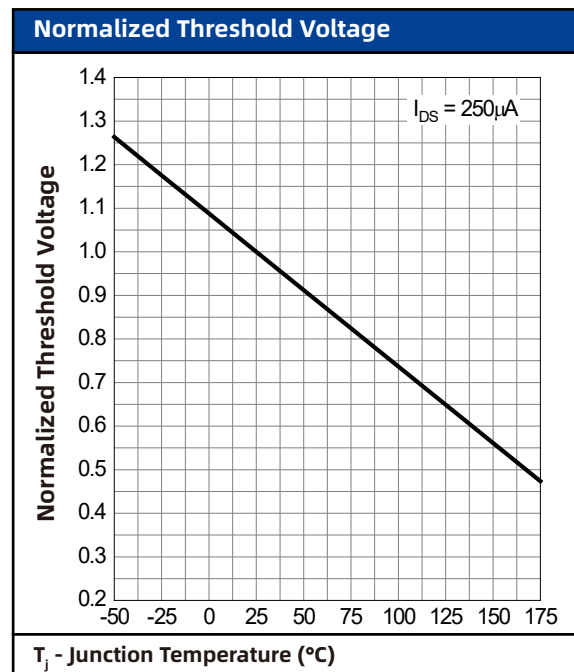
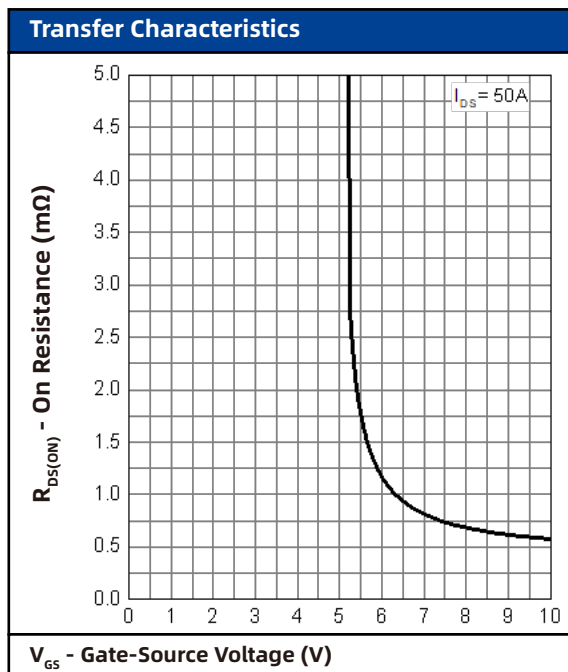
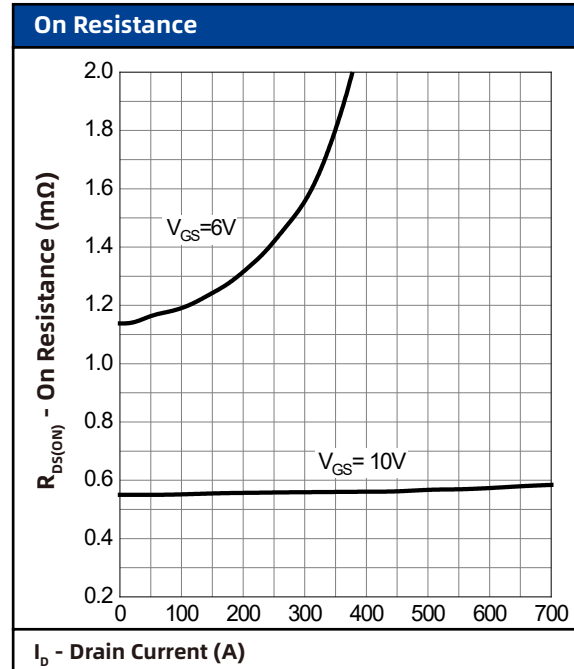
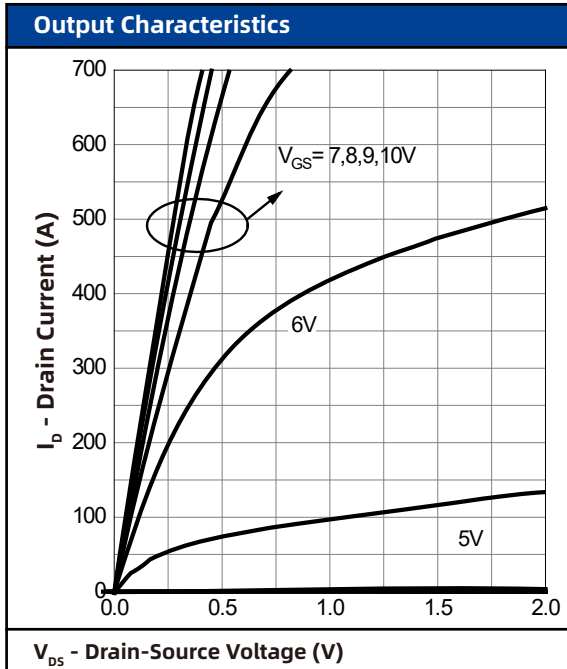
a : Pulse test ; pulse width  $\leq 300\ \mu\text{s}$ , duty cycle  $\leq 2\%$

b : Guaranteed by design, not subject to production testing

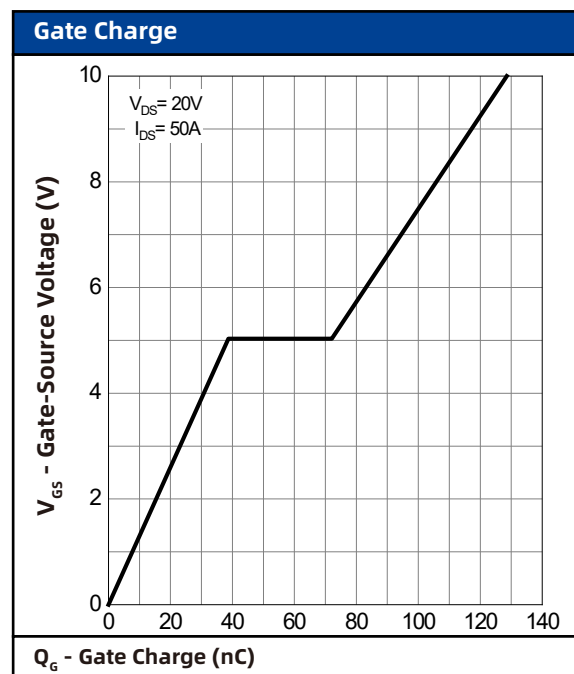
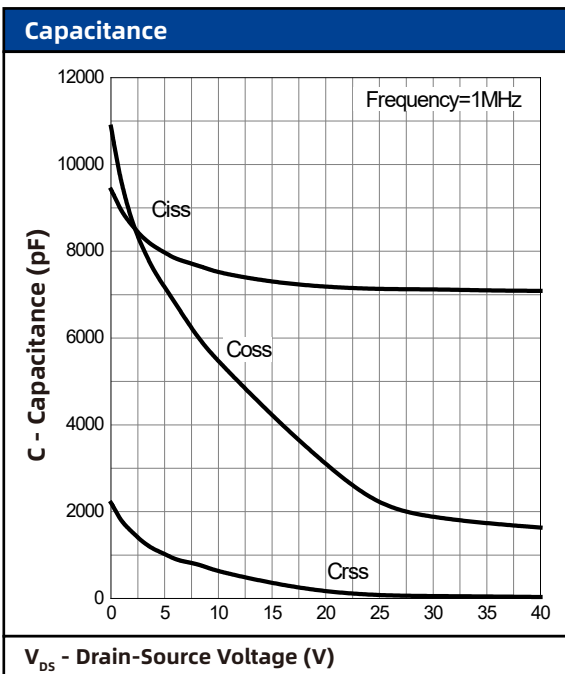
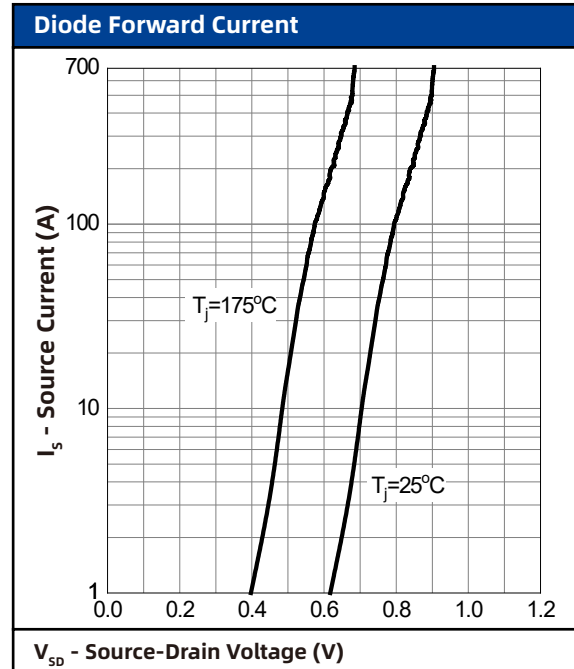
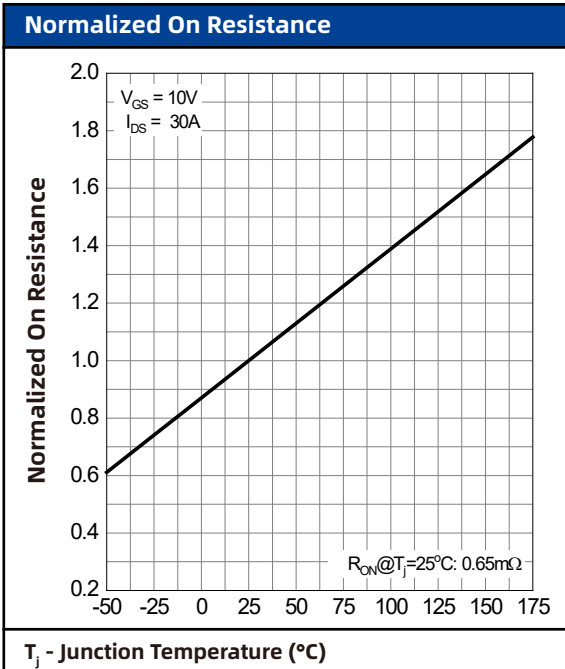
## 7. Typical Characteristics



## 7. Typical Characteristics (cont.)

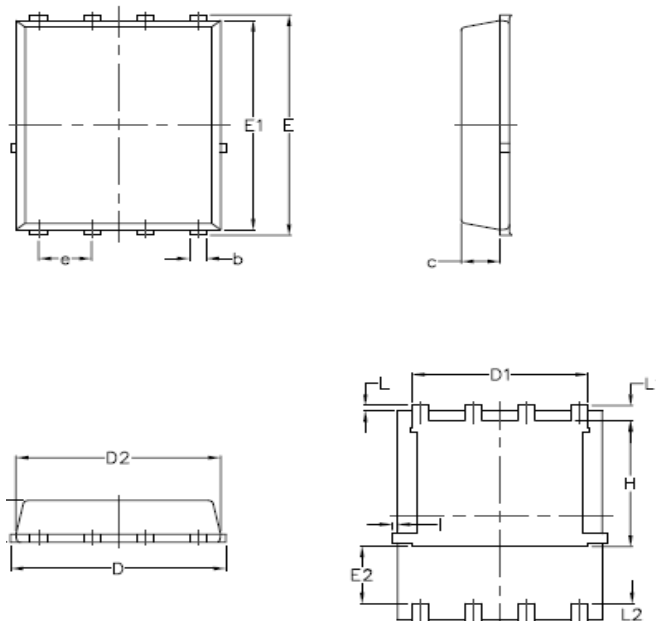


## 7. Typical Characteristics (cont.)



## 8. Package Dimensions

### PDFN5\*6-8L Package



Symbol	Dimensions in Millimeters	
	Min.	Max.
A	1.03	1.17
b	0.34	0.48
c	0.824	0.970
D	4.80	5.40
D1	4.11	4.31
D2	4.80	5.00
E	5.95	6.15
E1	5.65	5.85
E2	1.40	-
E	1.27 BSC	
L	0.05	0.25
L1	0.38	0.50
L2	0.38	0.71
H	3.30	3.50
I	-	0.18