120V N-Channel Enhancement Mode MOSFET

1.Product Information

1.1 Features

- ◇ Surface-mounted package
- ◇ Advanced SGT cell design
- ◇ MSL1

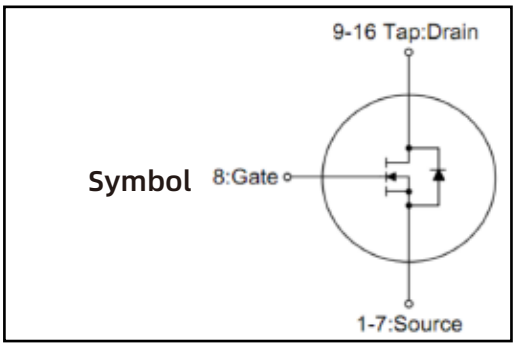
1.2 Applications

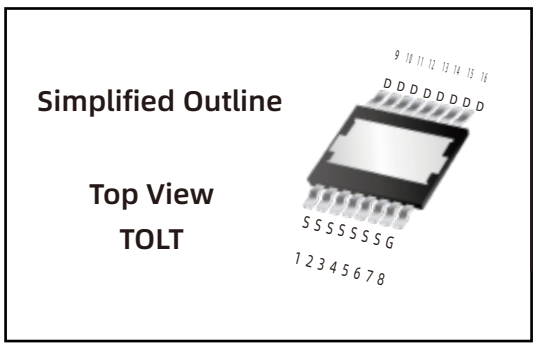
- ◇ BMS
- ◇ High power inverter system
- ◇ Drones
- ◇ Light electric vehicles

1.3 Quick reference

- ◇ BV ≧ 120 V
- ◇ P_{tot} ≦ 333 W
- ◇ I_D ≦ 230 A
- ◇ $R_{DS(ON)}$ ≦ 2.3 mΩ @ V_{GS} = 10 V
- ◇ $R_{DS(ON)}$ ≦ 3.2 mΩ @ V_{GS} = 6 V

2.Pin Description





3.Marking Information

Product Name	Marking
LN016N120LT	LN016N120LT CYWWZZ XXXXXX

4.Limiting Values

Symbol	Parameter		Rating	Unit
V_{DS}	Drain-Source Voltage		120	V
V_{GS}	Gate-Source Voltage		± 20	V
I_D	Drain Current	T_C = 25 ℃	230	A
		T_C = 100 ℃	165	A
I_{DM}	Pulsed Source Current	T_C = 25 ℃	920	A
I_S	Diode Forward Current	T_C = 25 ℃	230	A
E_{AS}	Single Pulsed Avalanche Energy	L = 1.0 mH	2450	mJ
P_{tot}	Total Power Dissipation	T_C = 25 ℃	333	W
$R_{\theta JA}$ Note1	Thermal Resistance- Junction to Ambient		50	℃/W
$R_{\theta JC}$	Thermal Resistance- Junction to Case		0.45	℃/W
T_{stg}	Storage Temperature		-55~175	℃
T_J	Junction Temperature		175	℃

Note1： Surface Mounted on 1 in^2 pad area,t ≤ 10 sec
Note2： Pulse width ≤ 300 μs,, duty cycle ≤ 2 %
Note3： Limited by bonding wire

5.Ordering Code

Product Name	Package	Reel Size	Tape width	Quantity	Note
LN016N120LT	TOLT	Ø330mm	12mm	1800	

Note: COMTECH defines “ Green ” as lead-free (RoHS compliant) and halogen free (Br or Cl does not exceed900 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)

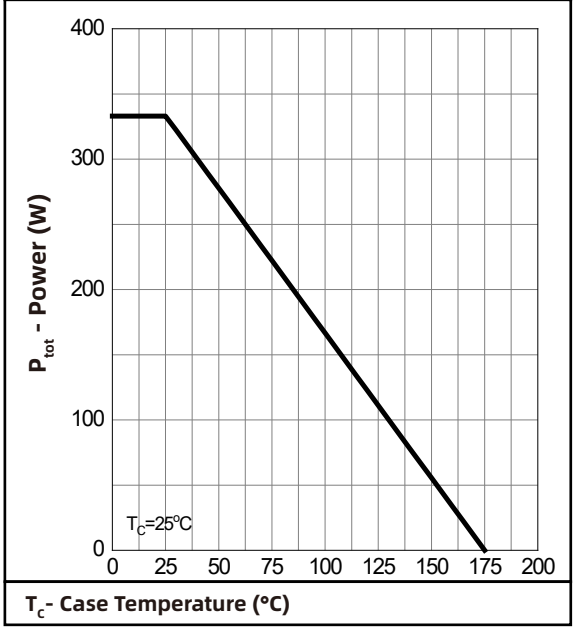
6. Electrical Characteristics (T_A=25 ° Unless Otherwise Noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS} = 0 V, I_{DS} = 250 μA	120	-	-	V
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} = V_{GS}, I_{DS} = 250 μA	2	-	4	V
I_{DSS}	Drain Leakage Current	V_{DS} = 96 V, V_{GS} = 0 V	-	-	1	μA
I_{GSS}	Gate Leakage Current	V_{DS} = 0 V, V_{GS} = ±20 V	-	-	±100	nA
$R_{DS(ON)}$Note1	On-State Resistance	V_{GS} = 10 V, I_{DS} = 50 A	-	2.0	2.3	mΩ
		V_{GS} = 6 V, I_{DS} = 30 A	-	2.5	3.2	
Diode Characteristics						
V_{SD}Note1	Diode Forward Voltage	I_{SD} = 50 A, V_{GS} = 0 V	-	-	1.3	V
t_{rr}	Reverse Recovery Time	I_{DS} = 50 A, V_{GS} = 0 V	-	151	-	nS
Q_{rr}	Reverse Recovery Charge	dI_{SD}/dt = 100 A/μs	-	533	-	nC
Dynamic Characteristics Note2						
C_{iss}	Input Capacitance	V_{GS} = 0 V, V_{DS} = 60 V Frequency = 1 MHz	-	12133	-	pF
C_{oss}	Output Capacitance		-	1312	-	
C_{rss}	Reverse Transfer Capacitance		-	49	-	
t_d(on)	Turn-on Delay Time	V_{DS} = 60 V, V_{GEN} = 10 V, R_G = 3.9 Ω, R_L = 1.2 Ω, I_{DS} = 50 A	-	31	-	nS
t_r	Turn-on Rise Time		-	88	-	
t_d(off)	Turn-off Delay Time		-	137	-	
t_f	Turn-off Fall Time		-	70	-	
Gate Charge Characteristics Note2						
Q_g	Total Gate Charge	V_{DS} = 60 V, V_{GS} = 10 V, I_{DS} = 50 A	-	210	-	nC
Q_{gs}	Gate-Source Charge		-	69	-	
Q_{gd}	Gate-Drain Charge		-	51	-	

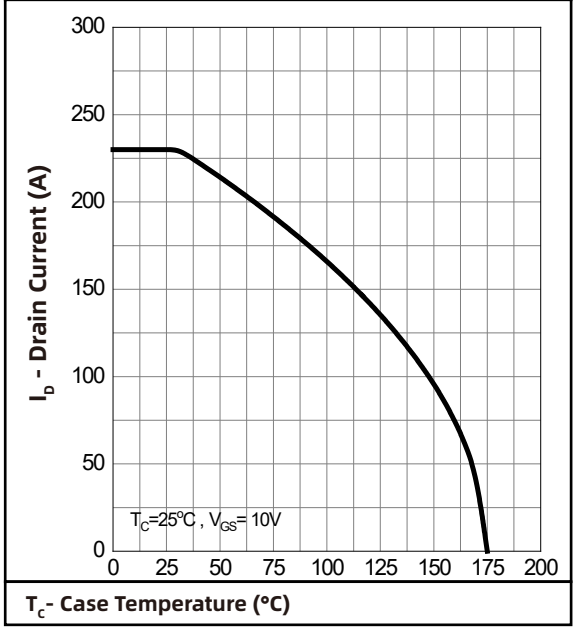
Note1: Pulse test ; pulse width ≤ 300 μs, duty cycle ≤ 2%
Note2: Guaranteed by design, not subject to production testing

7. Typical Characteristics

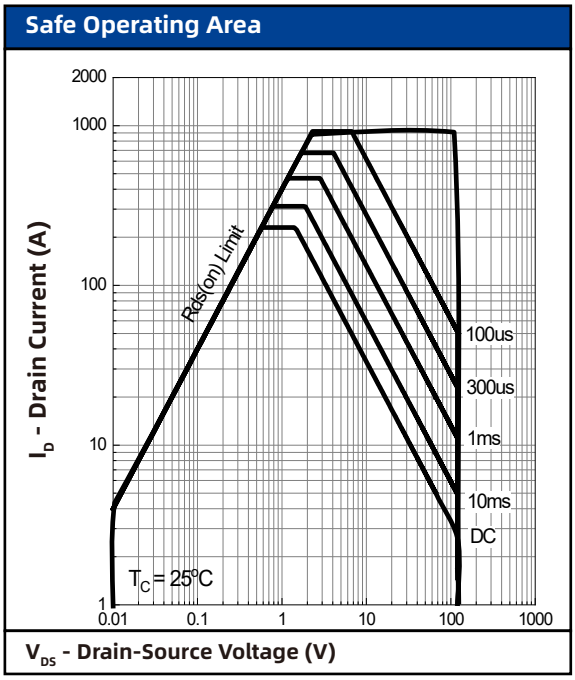
Power Capability



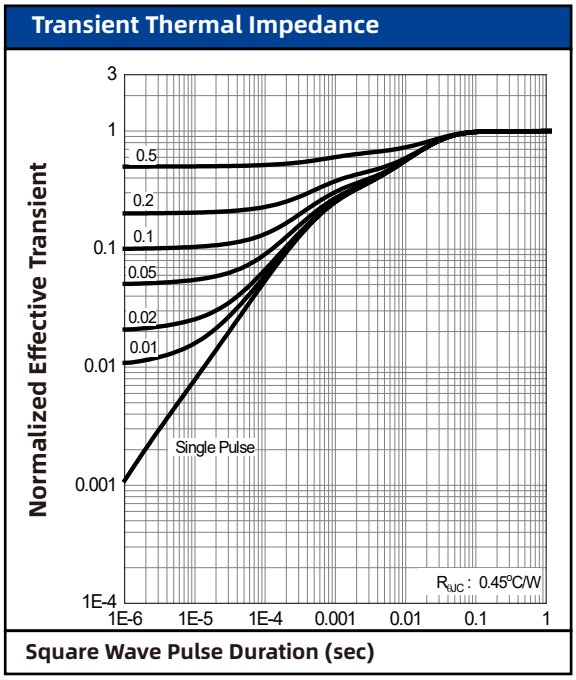
Current Capability



Safe Operating Area

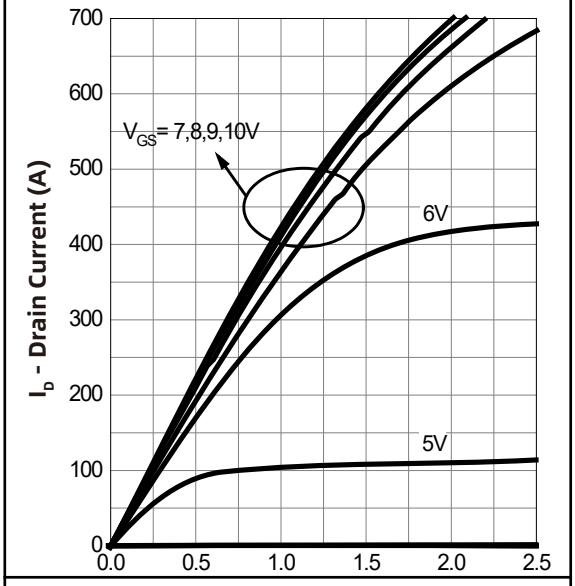


Transient Thermal Impedance

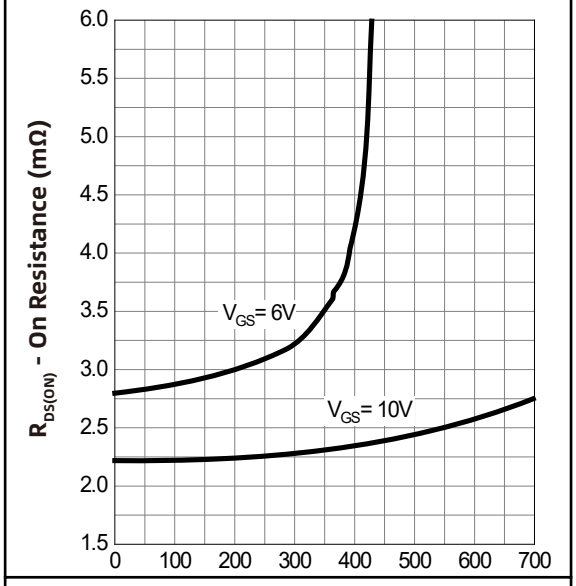


7. Typical Characteristics (cont.)

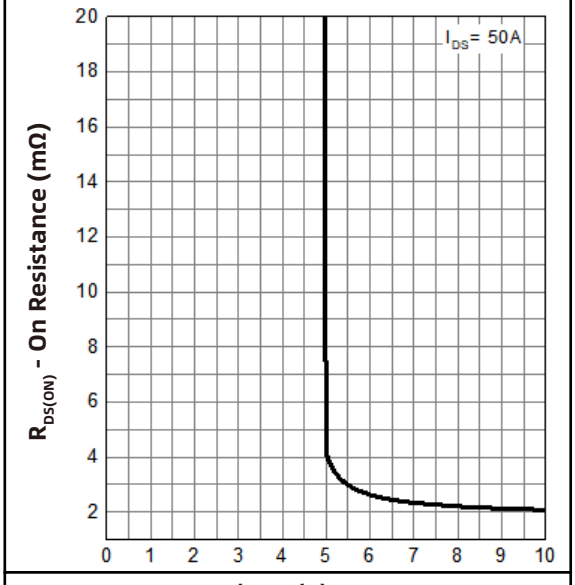
Output Characteristics



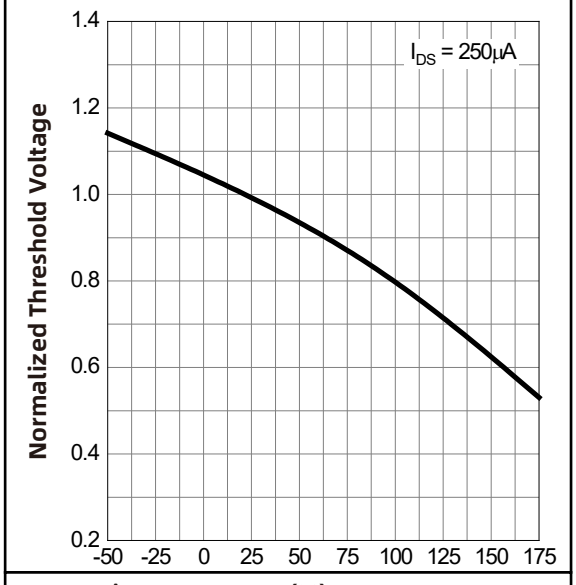
On Resistance



Transfer Characteristics

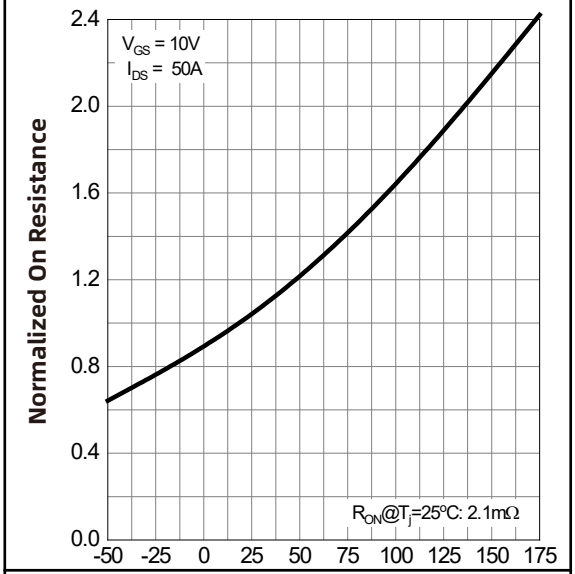


Normalized Threshold Voltage

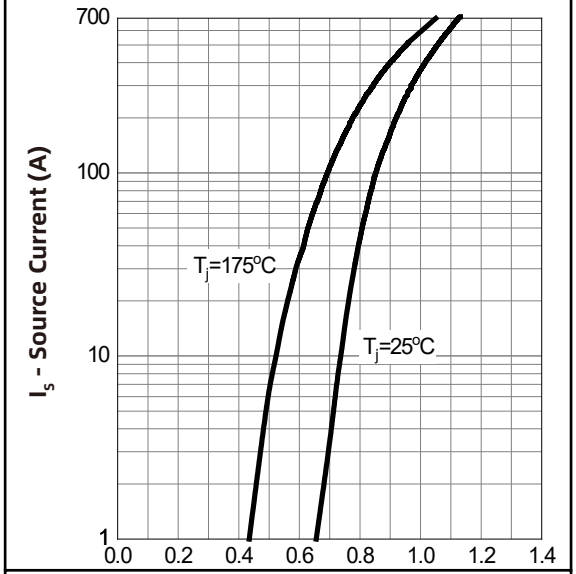


7. Typical Characteristics (cont.)

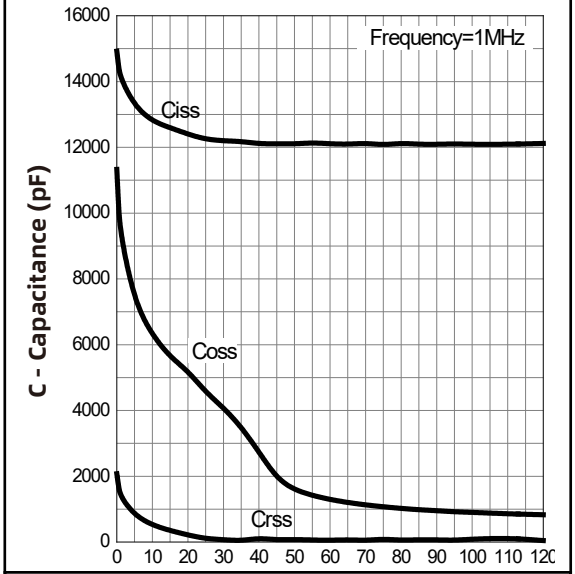
Normalized On Resistance



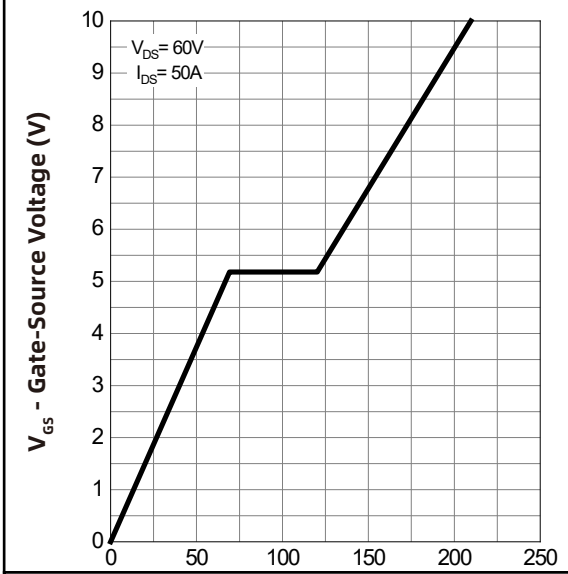
Diode Forward Current



Capacitance

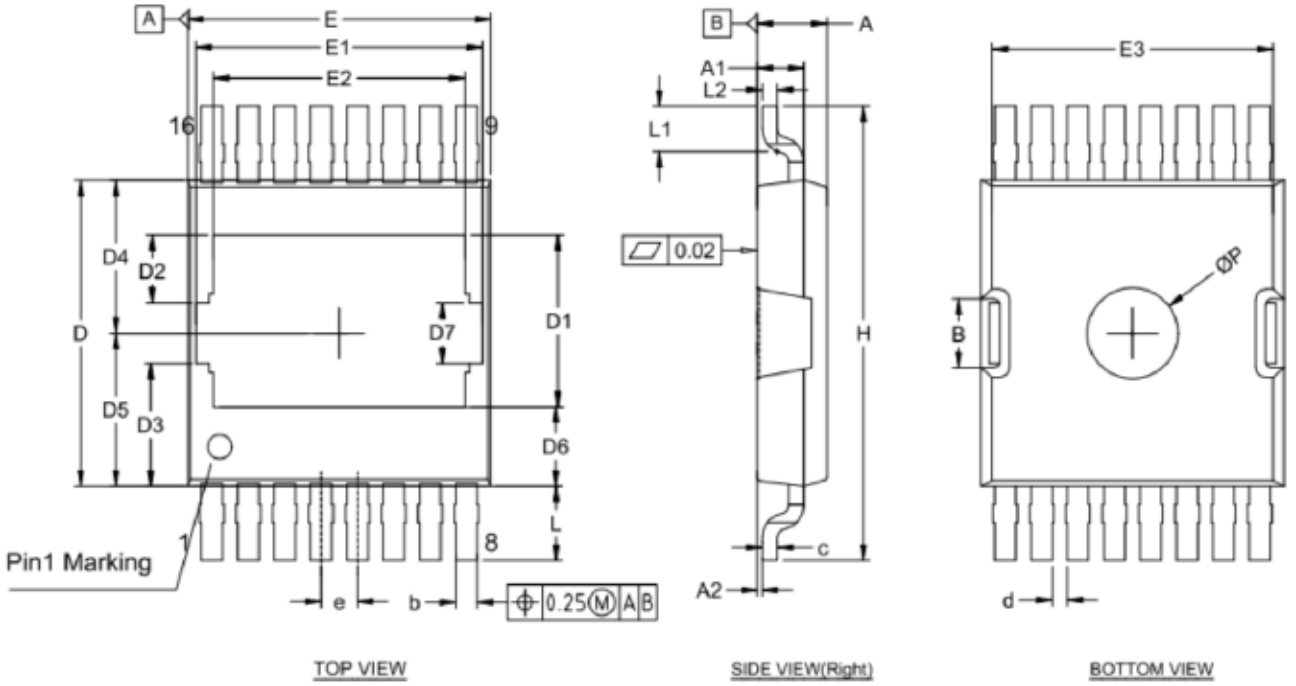


Gate Charge



8. Package Dimensions

TOLT Package



Symbol	Dimensions In Millimeters		
	MIN.	NOM.	MAX.
A	2.250	2.300	2.350
A1	1.440	1.540	1.640
A2	0.010	-	0.160
b	0.600	0.700	0.800
c	0.400	0.500	0.600
d	0.400	0.500	0.600
e	1.200 BSC		
D	10.000	10.100	10.300
D1	5.470	5.670	5.870
D2	2.040	2.240	2.440
D3	4.050 REF.		
D4	5.050 REF.		
D5	5.050 REF.		
D6	2.620 REF.		
D7	2.000 REF.		

Symbol	Dimensions In Millimeters		
	MIN.	NOM.	MAX.
E	9.700	10.000	10.100
E1	9.460 REF.		
E2	8.100	8.300	8.500
E3	9.070	9.270	9.470
H	14.800	15.000	15.200
L	2.250	2.450	2.650
L1	1.350	1.500	1.650
L2	0.500 BSC		
øp	2.900	3.000	3.100
B	0.812	2.280	1.212
θ	1°	3°	5°
θ1	6°	7°	8°