100V N-Channel Enhancement Mode MOSFET

1.Product Information

1.1 Features

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

1.2 Applications

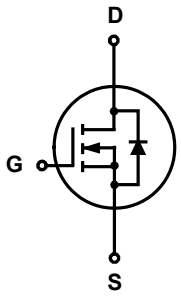
- ◇ BMS
- ◇ High power inverter system
- ◇ Drones
- ◇ Light electric vehicles

1.3 Quick reference

- ◇ BV ≧ 100 V
- ◇ P_{tot} ≦ 263 W
- ◇ I_D ≦ 275 A
- ◇ $R_{DS(ON)}$ ≦ 1.6 mΩ @ V_{GS} = 10 V
- ◇ $R_{DS(ON)}$ ≦ 3.0 mΩ @ V_{GS} = 6 V

2.Pin Description

Symbol



Simplified Outline

Top View

TOLL

3.Marking Information

Product Name	Marking
LN013N100T	LN013N100T CYWWZZ XXXXXX

4.Limiting Values

Symbol	Parameter		Rating	Unit
V_{DS}	Drain-Source Voltage		100	V
V_{GS}	Gate-Source Voltage		± 20	V
I_{D}Note3	Drain Current	T_C = 25 ℃	275	A
		T_C = 100 ℃	194	A
I_{DM}	Pulsed Source Current	T_C = 25 ℃	1100	A
I_S	Diode Forward Current	T_C = 25 ℃	275	A
E_{AS}	Single Pulsed Avalanche Energy	L = 1.0 mH	2450	mJ
P_{tot}	Total Power Dissipation	T_C = 25 ℃	263	W
$R_{\theta JA}$Note1	Thermal Resistance- Junction to Ambient		45	℃/W
$R_{\theta JC}$	Thermal Resistance- Junction to Case		0.57	℃/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
LN013N100T	TOLL-8L	Ø330mm	12mm	2000	

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)

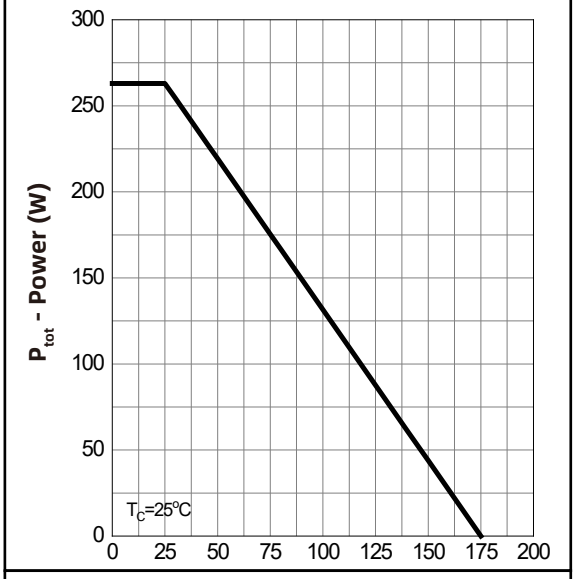
6. Electrical Characteristics (T_A=25 ° Unless Otherwise Noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS} = 0 V, I_{DS} = 250 μA	100	-	-	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} = 80 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	-	1.35	1.6	mΩ
		V_{GS} = 6 V, I_{DS} = 30 A	-	2.2	3.0	
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	-	126	-	nS
Q_{rr}	Reverse Recovery Charge	dI_{SD}/dt = 100 A/μs	-	379	-	nC
Dynamic Characteristics Note2						
C_{iss}	Input Capacitance	V_{GS} = 0 V, V_{DS} = 50 V Frequency = 1 MHz	-	6899	-	pF
C_{oss}	Output Capacitance		-	2078	-	
C_{rss}	Reverse Transfer Capacitance		-	44	-	
t_d(on)	Turn-on Delay Time	V_{DS} = 50 V, V_{GEN} = 10 V, R_G = 3.9 Ω, R_L = 1 Ω, I_{DS} = 50 A	-	23	-	nS
t_r	Turn-on Rise Time		-	78	-	
t_d(off)	Turn-off Delay Time		-	68	-	
t_f	Turn-off Fall Time		-	64	-	
Gate Charge Characteristics Note2						
Q_g	Total Gate Charge	V_{DS} = 50 V, V_{GS} = 10 V, I_{DS} = 50 A	-	103	-	nC
Q_{gs}	Gate-Source Charge		-	38	-	
Q_{gd}	Gate-Drain Charge		-	20	-	

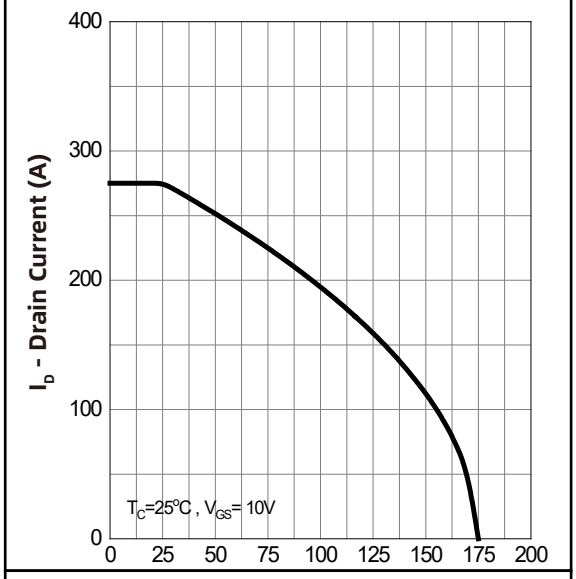
Note1: Pulse test ; pulse width ≤ 300 μs, duty cycle ≤ 2%
Note2: Guaranteed by design, not subject to production testing

7. Typical Characteristics

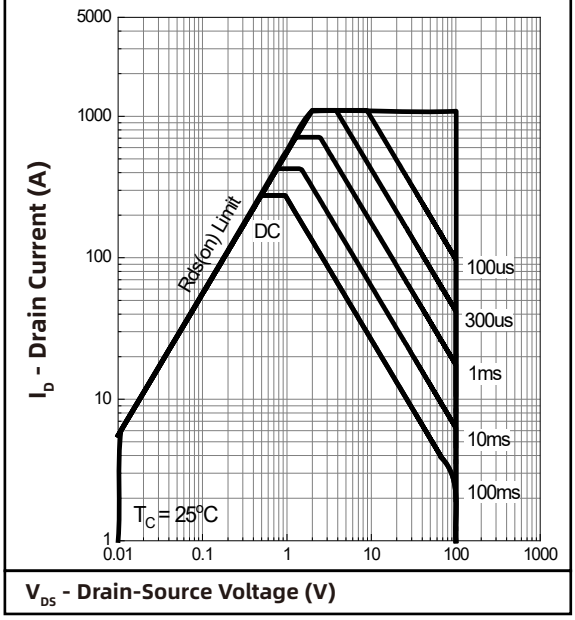
Power Capability



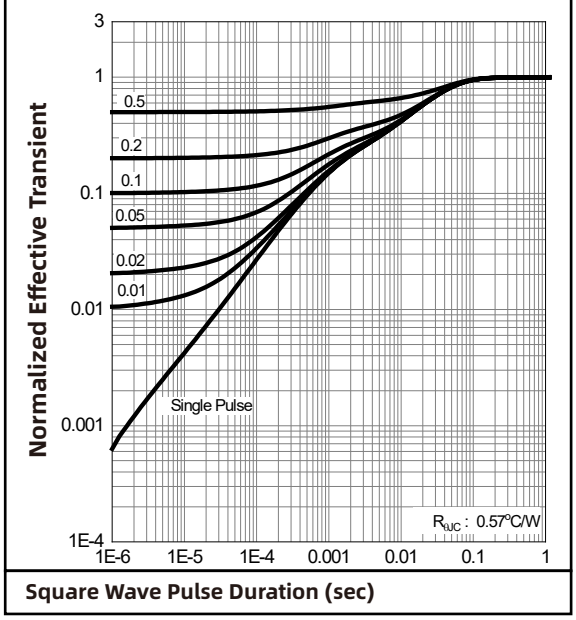
Current Capability



Safe Operating Area

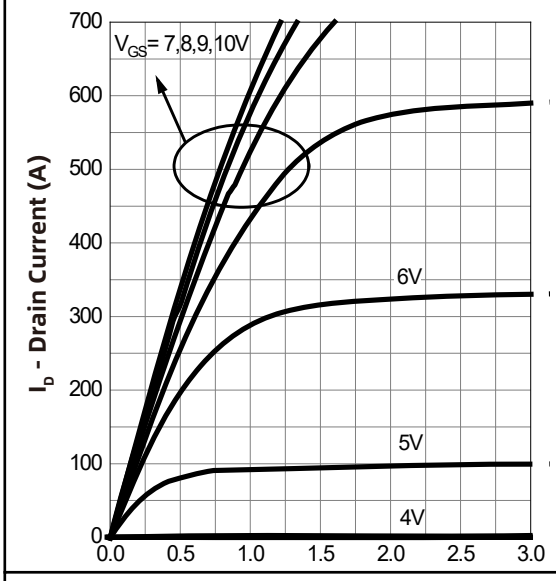


Transient Thermal Impedance

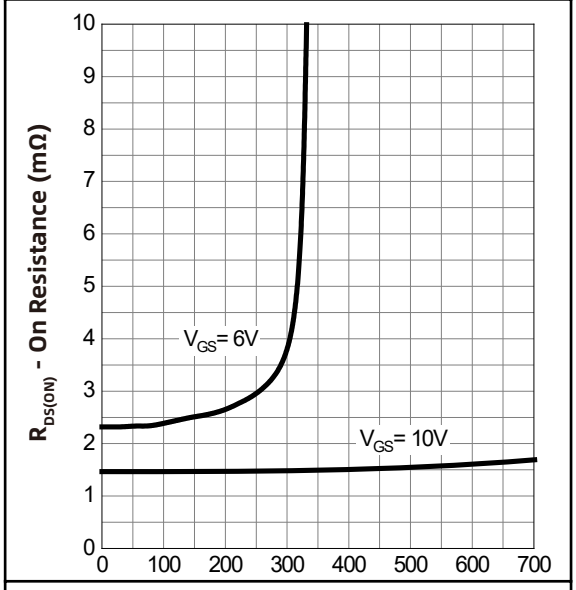


7. Typical Characteristics (cont.)

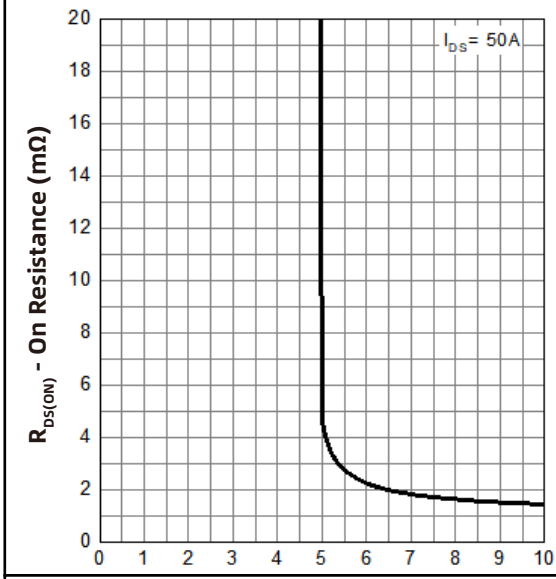
Output Characteristics



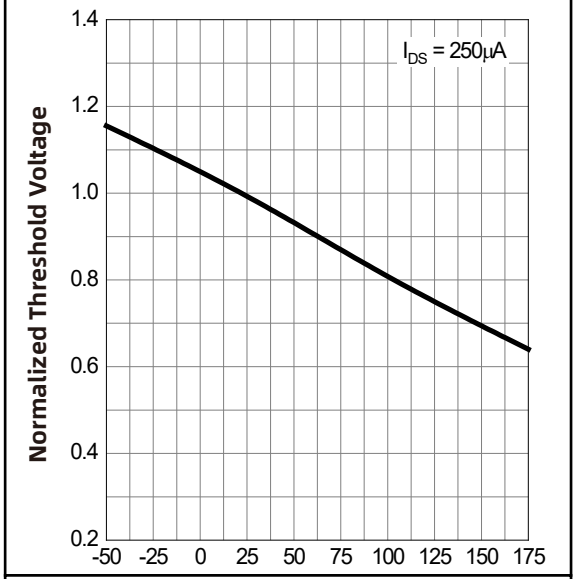
On Resistance



Transfer Characteristics

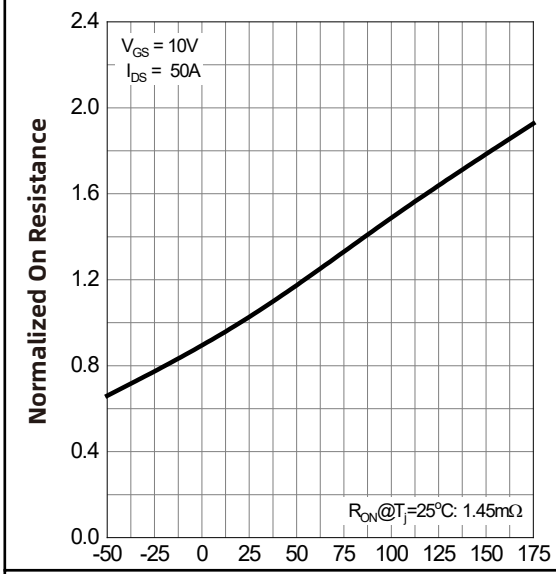


Normalized Threshold Voltage

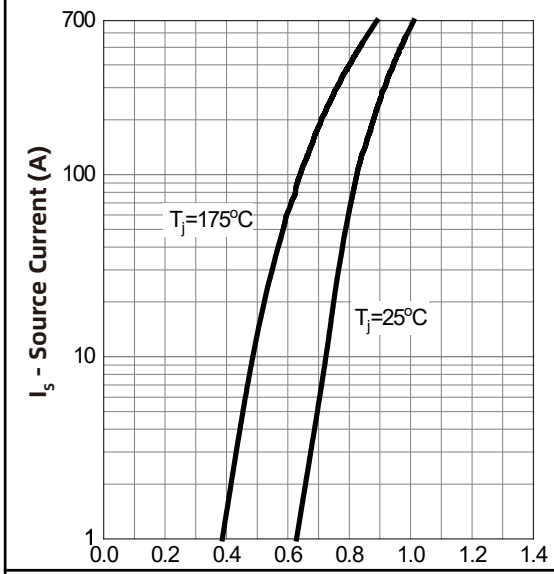


7. Typical Characteristics (cont.)

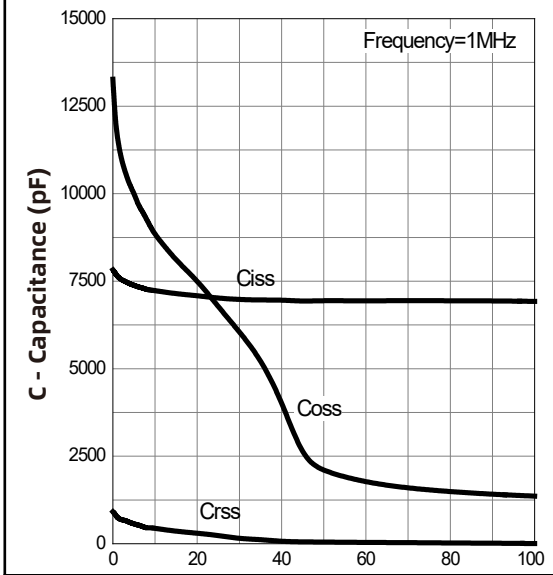
Normalized On Resistance



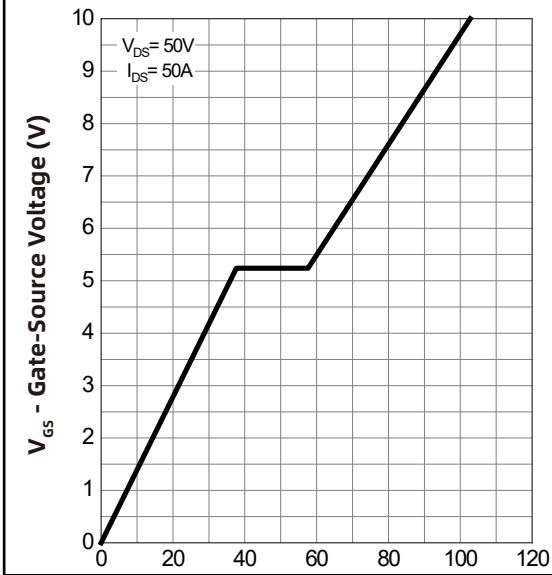
Diode Forward Current



Capacitance

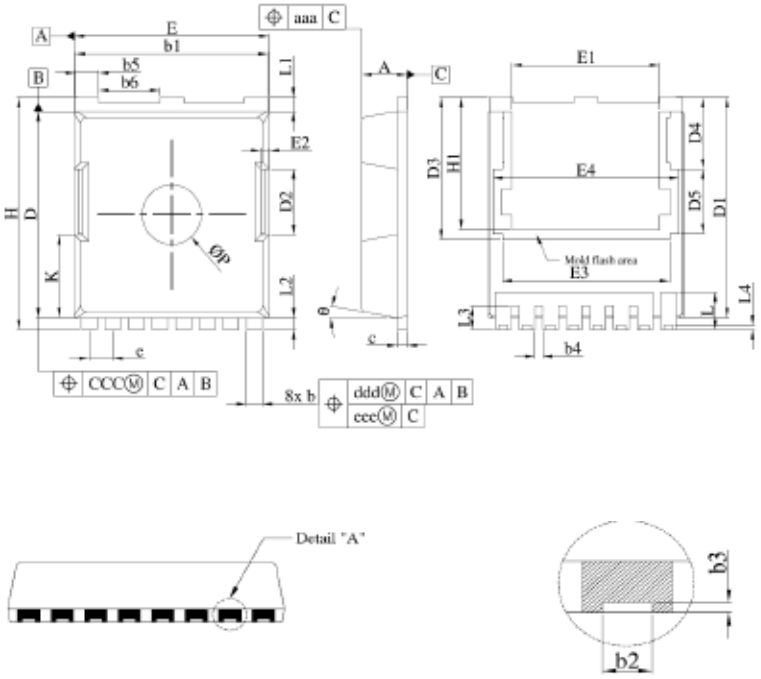


Gate Charge



8. Package Dimensions

TOLL-8L Package



Symbol	Dimensions In Millimeters		
	MIN.	NOM.	MAX.
A	2.20	2.30	2.40
b	0.70	0.80	0.90
b1	9.70	9.80	9.90
b2	0.36	0.45	0.55
b3	0.05	0.10	/
b4	0.30	0.40	0.50
b5	1.10	1.20	1.30
b6	3.00	3.10	3.20
c	0.40	0.50	0.60
D	10.28	10.38	10.55
D1	10.98	11.08	11.18
D2	3.20	3.30	3.40
D3	7.15		
D4	3.59		
D5	3.26		
e	1.10	1.20	1.30
E	9.80	9.90	10.00
E1	7.40	7.50	7.60
E2	0.30	0.40	0.50
E3	8.50		
E4	9.46		
H	11.50	11.68	11.85
H1	6.55	6.65	6.75
K	4.08	4.18	4.28
L	1.60	1.90	2.10
L1	0.50	0.70	0.90
L2	0.50	0.60	0.70
L3	1.00	1.20	1.30
L4	0.13	0.23	0.33
P	2.85	3.00	3.15
θ	10°REF		
aaa	0.20		
ccc	0.20		
ddd	0.25		
eee	0.20		