

## 100 V N-Channel Enhancement Mode MOSFET

### 1. Product Information

#### 1.1 Features

- ◇ Advanced SGT cell design
- ◇ Low Thermal Resistance
- ◇ MSL1
- ◇ Tj max 175°C

#### 1.2 Applications

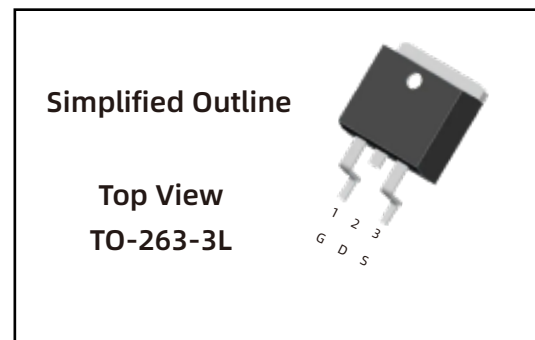
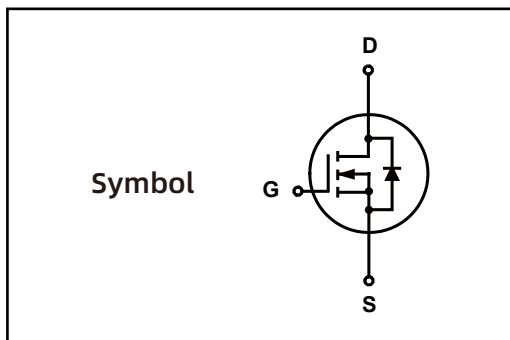
- ◇ Motor drivers
- ◇ DC - DC Converter

#### 1.3 Quick reference

- ◇ BV  $\cong$  100 V
- ◇ P<sub>tot</sub>  $\cong$  227 W
- ◇ I<sub>D</sub>  $\cong$  120 A

◇ R<sub>DS(ON)</sub>  $\cong$  4.2mΩ @ V<sub>GS</sub> = 10 V

### 2. Pin Description



### 3. Marking Information

Product Name	Marking
LN038N100K	LN038N100K AYWWZZ XXXXXX

## 4.Limiting Values

Symbol	Parameter	Conditions	Min	Max	Unit
$V_{DS}$	Drain-Source Voltage	$T_C = 25\text{ }^\circ\text{C}$	100	-	V
$V_{GS}$	Gate-Source Voltage	$T_C = 25\text{ }^\circ\text{C}$	-	$\pm 20$	V
$I_D^*$	Drain Current ( DC )	$T_C = 25\text{ }^\circ\text{C}, V_{GS} = 10\text{ V}$	-	120	A
		$T_C = 100\text{ }^\circ\text{C}, V_{GS} = 10\text{ V}$	-	109	A
$I_{DM}^{*,**}$	Drain Current ( Pulsed )	$T_C = 25\text{ }^\circ\text{C}, V_{GS} = 10\text{ V}$	-	480	A
$P_{tot}^*$	Total power dissipation	$T_C = 25\text{ }^\circ\text{C}$	-	227	W
$T_{stg}$	Storage Temperature		-55	150	$^\circ\text{C}$
$T_J$	Junction Temperature		-	150	$^\circ\text{C}$
$I_S$	Diode Forward Current	$T_C = 25\text{ }^\circ\text{C}$	-	120	A
$E_{AS}^*$	Single Pulsed Avalanche Energy	$V_{DD} = 50\text{ V}, L = 0.5\text{ mH}$	-	625	mJ
$R_{\theta JA}^*$	Thermal Resistance- Junction to Ambient			62	$^\circ\text{C/W}$
$R_{\theta JC}^*$	Thermal Resistance- Junction to Case		-	0.5	

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>LN038N100K</b>	<b>T0263</b>			<b>800</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 )

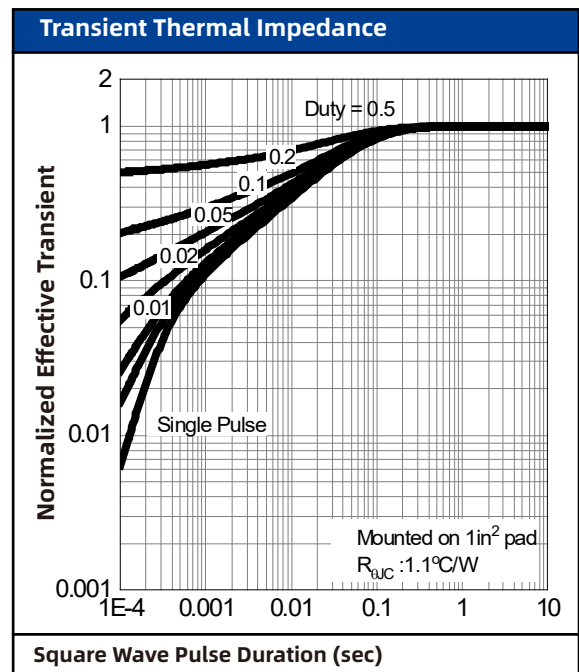
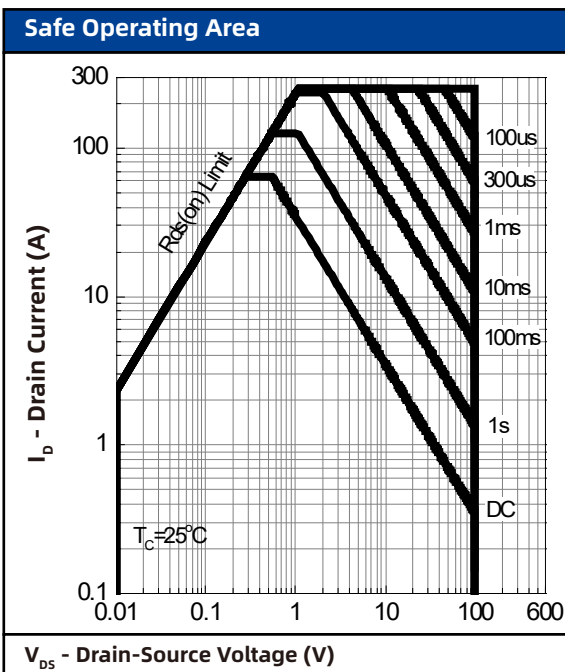
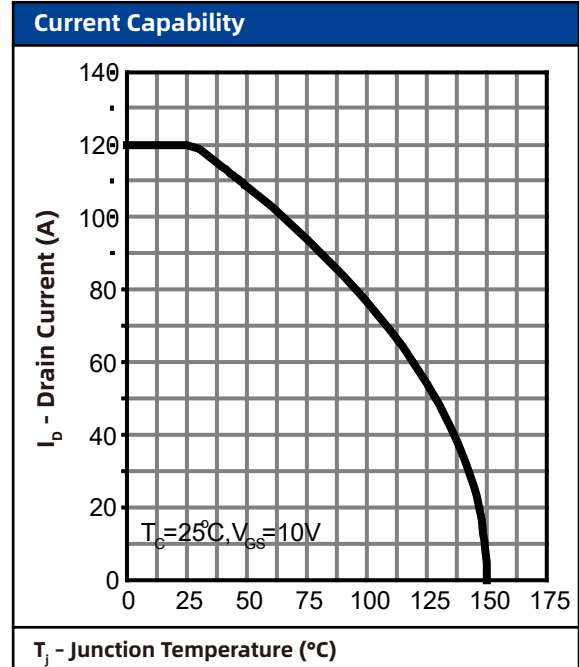
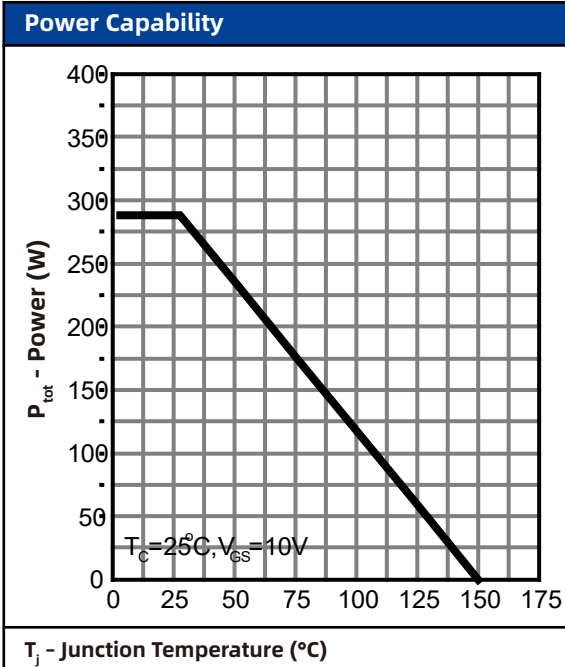
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
<b>Static Characteristics</b>						
$BV_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS} = 0\text{ V}, I_{DS} = 250\ \mu\text{A}$	100	-	-	V
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_{DS} = 250\ \mu\text{A}$	2	-	4	V
$I_{DSS}$	Zero Gate Voltage Source Current	$V_{DS} = 80\text{ V}, V_{GS} = 0\text{ V}$	-	-	1	$\mu\text{A}$
$I_{GSS}$	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	$V_{GS} = 10\text{ V}, I_{DS} = 30\text{ A}$	-	3.8	4.2	m $\Omega$
<b>Diode Characteristics</b>						
$V_{SD}^a$	Diode Forward Voltage	$I_{SD} = 30\text{ A}, V_{GS} = 0\text{ V}$	-	-	1.3	V
$t_{rr}$	Reverse Recovery Time	$I_{SD} = 30\text{ A}$	-	80	-	nS
$Q_{rr}$	Reverse Recovery Charge	$dI_{SD}/dt = 100\text{ A}/\mu\text{s}$	-	189	-	nC
<b>Dynamic Characteristics<sup>b</sup></b>						
$C_{ISS}$	Input Capacitance	$V_{GS} = 0\text{ V}, V_{DS} = 50\text{ V}$ Frequency = 1 MHz	-	6975	-	pF
$C_{OSS}$	Output Capacitance		-	965	-	
$C_{rSS}$	Reverse Transfer Capacitance		-	115	-	
$t_d(on)$	Turn-on Delay Time	$V_{DS} = 50\text{ V}, V_{GEN} = 10\text{ V},$ $R_G = 3.9\ \Omega, R_L = 1.66\ \Omega,$ $I_{DS} = 30\text{ A}$	-	29	-	nS
$t_r$	Turn-on Rise Time		-	33	-	
$t_d(off)$	Turn-off Delay Time		-	48	-	
$t_f$	Turn-off Fall Time		-	25	-	
<b>Gate Charge Characteristics<sup>b</sup></b>						
Qg	Total Gate Charge	$V_{DS} = 50\text{ V}, V_{GS} = 10\text{ V},$ $I_{DS} = 30\text{ A}$	-	102	-	nC
Qgs	Gate-Source Charge		-	30	-	
Qgd	Gate-Drain Charge		-	18	-	

Notes :

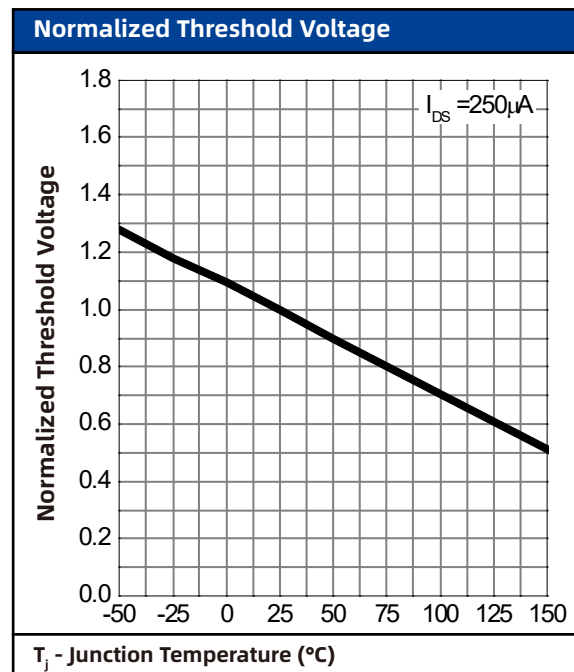
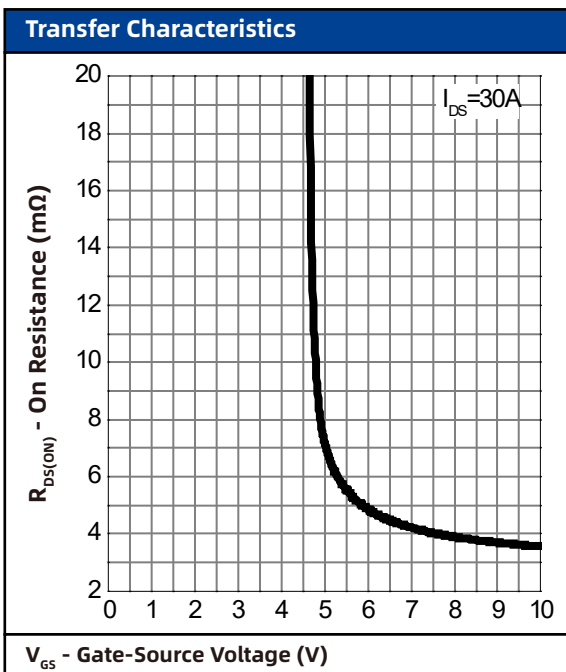
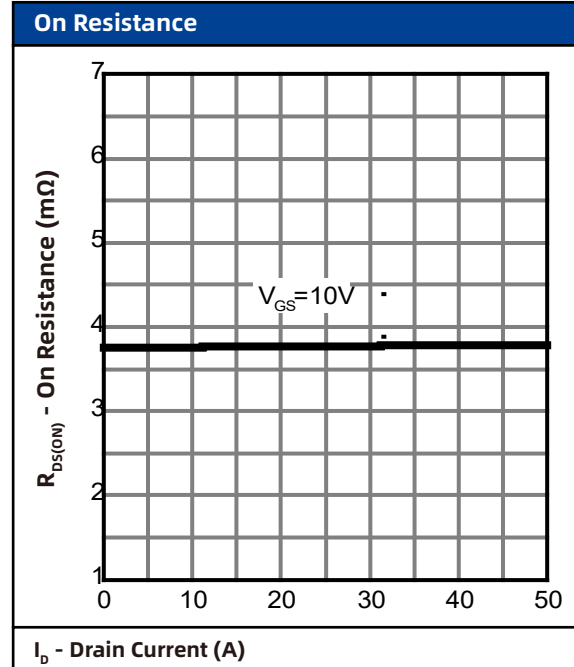
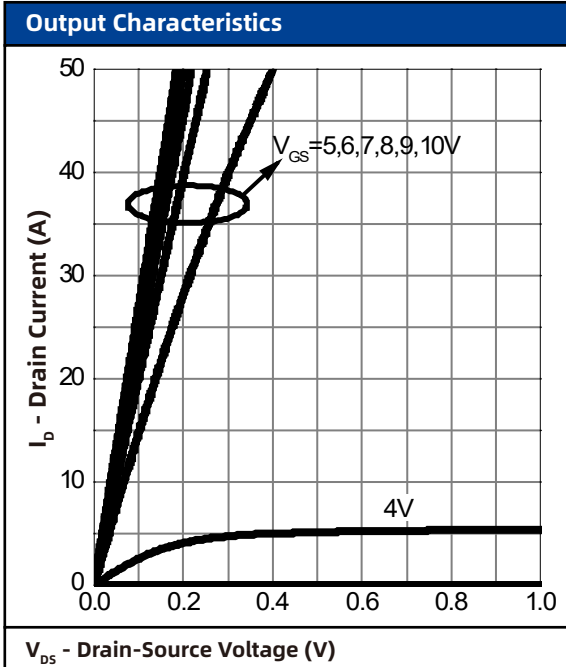
a : Pulse test ; pulse width  $\leq 300\ \mu\text{s}$ , duty cycle  $\leq 2\%$

b : Guaranteed by design, not subject to production testing

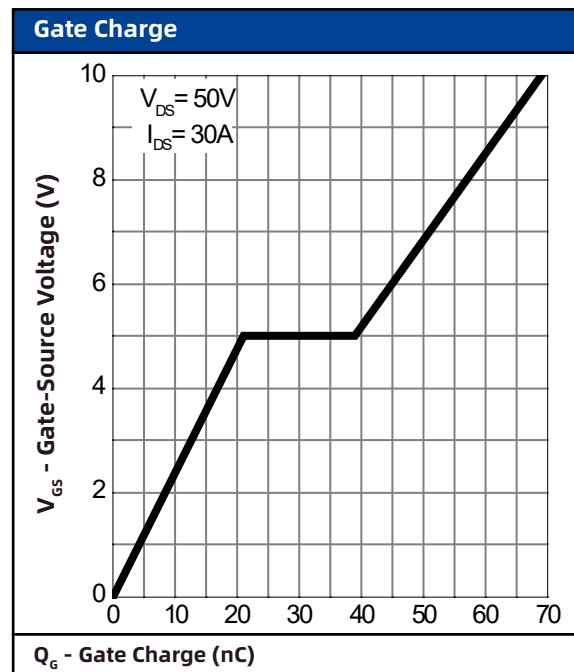
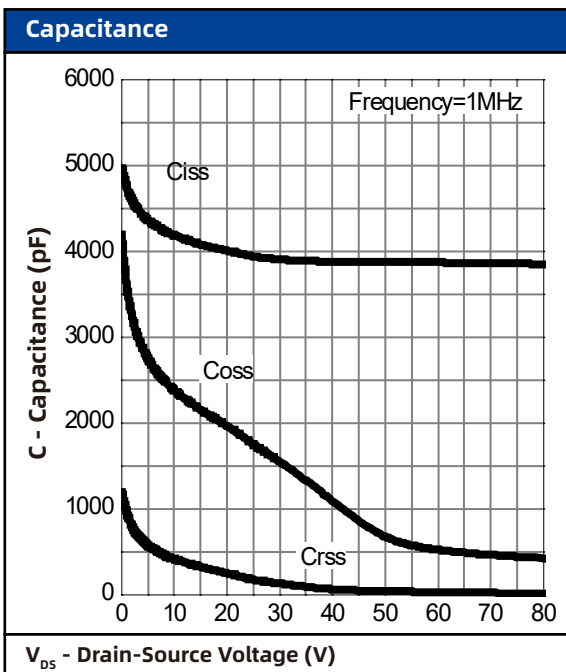
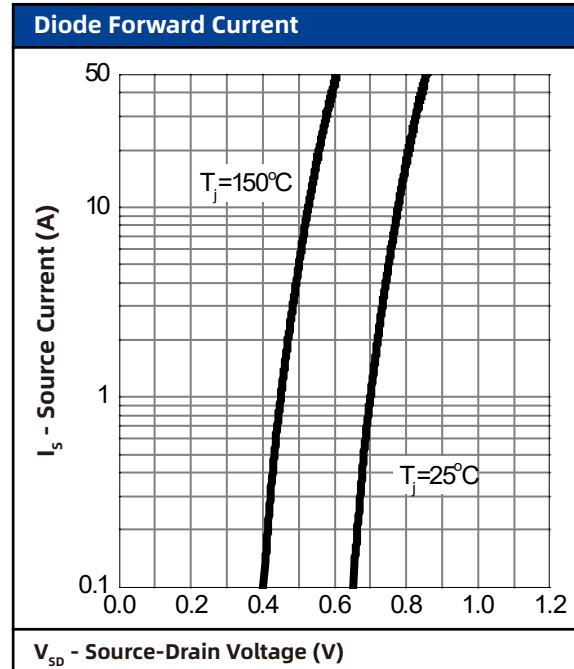
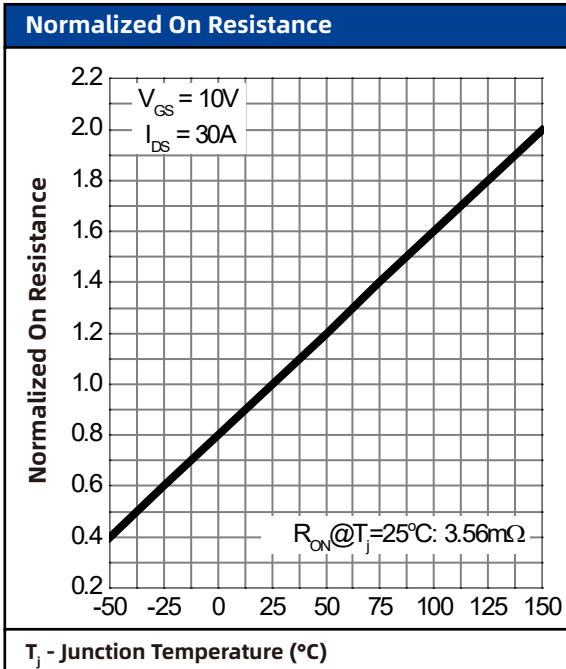
## 7. Typical Characteristics



## 7. Typical Characteristics (cont.)

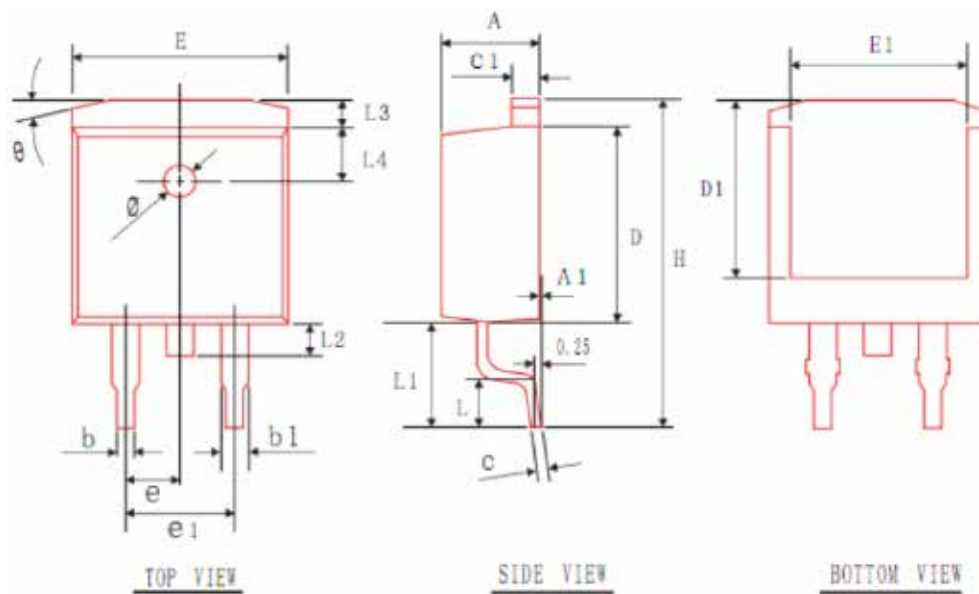


## 7. Typical Characteristics (cont.)



## 8. Package Dimensions

### T0263-3L Package



Symbol	Dimensions In Millimeters	
	MIN.	MAX.
A	4.30	4.70
A1	0.00	0.25
b	0.70	0.90
b1	1.20	1.40
c	0.40	0.55
c1	1.25	1.35
D	9.00	9.20
D1	8.00	8.20
H	14.90	15.20
E	9.80	10.20
E1	7.85	8.15
e1	4.93	5.23
L	2.00	2.45
L1	4.60	5.00
L2	1.30	1.70
L3	1.15	1.35
L4	2.40	2.60
$\phi$	1.50 REF	
e	2.54 BSC	
$\theta$	13°TYP	