

## 100V N-Channel Enhancement Mode MOSFET

### 1. Product Information

#### 1.1 Features

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

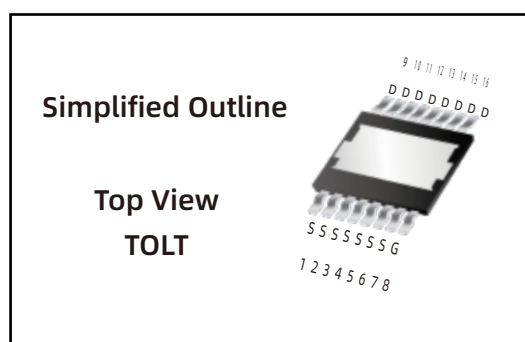
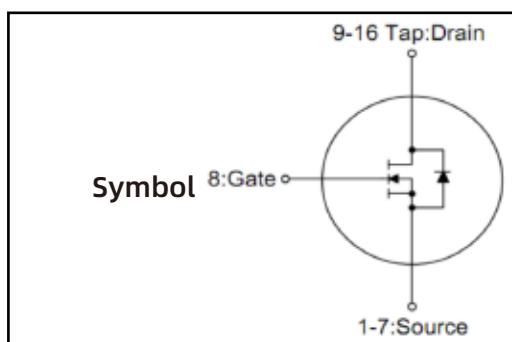
#### 1.2 Applications

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

#### 1.3 Quick reference

- ◇  $BV \cong 100\text{ V}$
- ◇  $P_{\text{tot}} \cong 375\text{ W}$
- ◇  $I_D \cong 300\text{ A}$
- ◇  $R_{\text{DS(ON)}} \cong 1.25\text{ m}\Omega @ V_{\text{GS}} = 10\text{ V}$
- ◇  $R_{\text{DS(ON)}} \cong 1.85\text{ m}\Omega @ V_{\text{GS}} = 6\text{ V}$

### 2. Pin Description



### 3. Marking Information

Product Name	Marking
LN009N100LT	LN009N100LT 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 )	$T_C = 25\text{ }^\circ\text{C}, V_{GS} = 10\text{ V}$	-	300	A
		$T_C = 100\text{ }^\circ\text{C}, V_{GS} = 10\text{ V}$	-	258	A
$I_{DM}^{*,**}$	Drain Current ( Pulsed )	$T_C = 25\text{ }^\circ\text{C}, V_{GS} = 10\text{ V}$	-	1200	A
$P_{tot}$	Drain power dissipation	$T_C = 25\text{ }^\circ\text{C}$	-	375	W
$T_{stg}$	Storage Temperature		-55	175	$^\circ\text{C}$
$T_J$	Junction Temperature		-	175	$^\circ\text{C}$
$I_S$	Continuous-Source Current	$T_C = 25\text{ }^\circ\text{C}$	-	300	A
$E_{AS}$	Single Pulsed Avalanche Energy	$V_{DD} = 50\text{ V}, L = 1.0\text{ mH}$	-	2450	mJ
$R_{\theta JA}^{**}$	Thermal Resistance- Junction to Ambient		-	52	$^\circ\text{C/W}$
$R_{\theta JC}^{**}$	Thermal Resistance- Junction to Case		-	0.4	

Notes :

\* Pulse width  $\leq 300\text{ }\mu\text{s}$ , duty cycle  $\leq 2\%$

\*\* Surface Mounted on 1 in<sup>2</sup> pad area,  $t \leq 10\text{ sec}$

\*\*\* Limited by bonding wire

## 5. Ordering Code

Product Name	Package	Reel Size	Tape width	Quantity	Note
LN009N100LT	TOLT			2000	

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 )

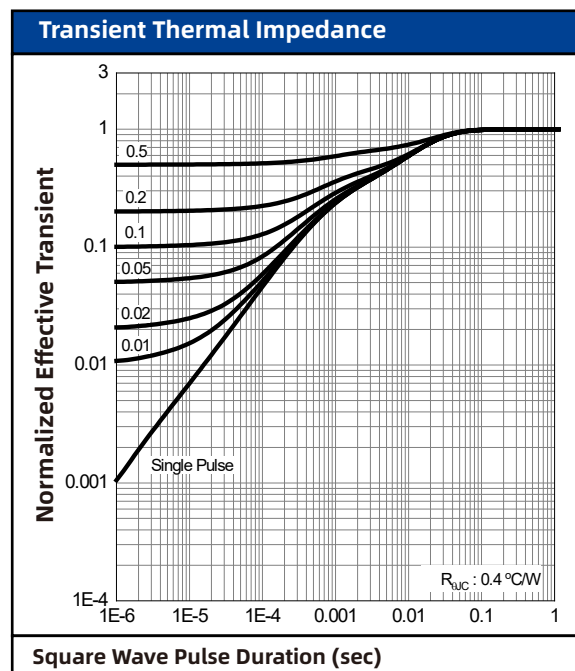
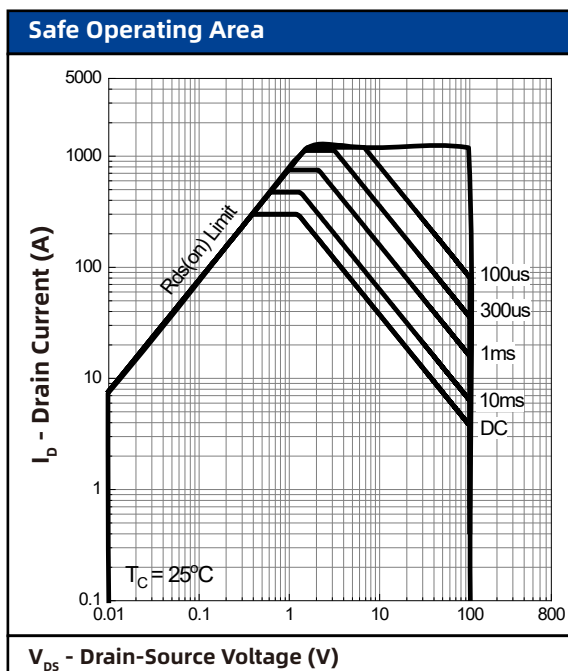
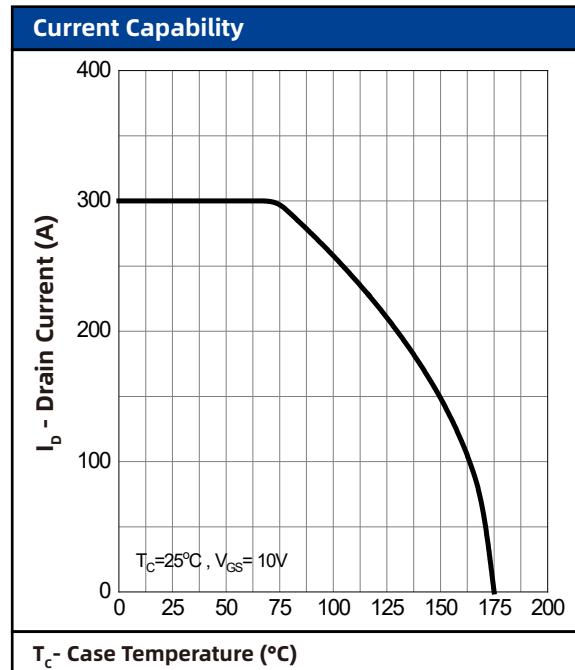
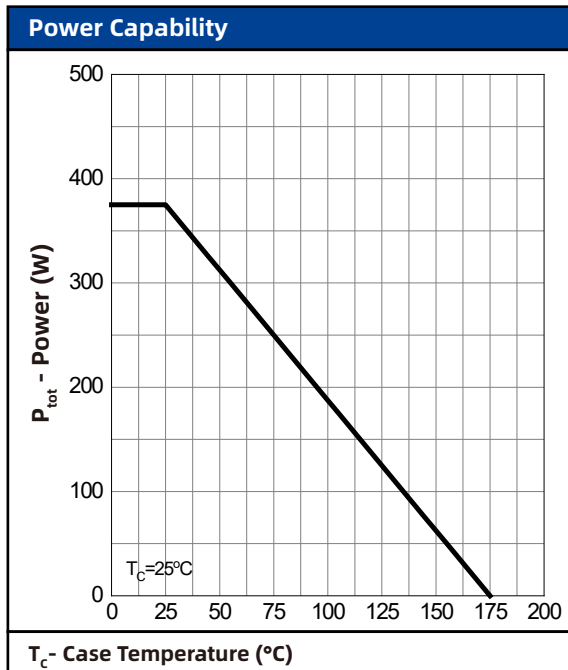
## 6. Electrical Characteristics ( $T_A=25^\circ$ Unless Otherwise Noted )

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
<b>Static Characteristics</b>						
$BV_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS} = 0\text{ V}, I_{DS} = 250\ \mu\text{A}$	100	-	-	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	$V_{DS} = 80\text{ V}, V_{GS} = 0\text{ V}$	-	-	1	$\mu\text{A}$
$I_{GSS}$	Gate Leakage Current	$V_{GS} = 0\text{ V}, V_{GS} = \pm 20\text{ V}$	-	-	$\pm 100$	nA
$R_{DS(ON)}$ <sup>Note1</sup>	On-State Resistance	$V_{GS} = 10\text{ V}, I_{DS} = 50\text{ A}$	-	1.1	1.25	m $\Omega$
		$V_{GS} = 6\text{ V}, I_{DS} = 30\text{ A}$	-	1.55	1.85	
<b>Diode Characteristics</b>						
$V_{SD}$ <sup>Note1</sup>	Diode Forward Voltage	$I_{SD} = 50\text{ A}, V_{GS} = 0\text{ V}$	-	-	1.3	V
$t_{rr}$	Reverse Recovery Time	$I_{DS} = 50\text{ A}, V_{GS} = 0\text{ V}$	-	89	-	nS
$Q_{rr}$	Reverse Recovery Charge	$dI_{SD}/dt = 100\text{ A}/\mu\text{s}$	-	160	-	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	-	13374	-	pF
$C_{OSS}$	Output Capacitance		-	2026	-	
$C_{rSS}$	Reverse Transfer Capacitance		-	118	-	
$t_d(on)$	Turn-on Delay Time	$V_{DS} = 50\text{ V}, V_{GEN} = 10\text{ V},$ $R_G = 3.9\ \Omega, R_L = 1\ \Omega,$ $I_{DS} = 50\text{ A}$	-	41	-	nS
$t_r$	Turn-on Rise Time		-	116	-	
$t_d(off)$	Turn-off Delay Time		-	137	-	
$t_f$	Turn-off Fall Time		-	80	-	
<b>Gate Charge Characteristics<sup>b</sup></b>						
$Q_g$	Total Gate Charge	$V_{DS} = 50\text{ V}, V_{GS} = 10\text{ V},$ $I_{DS} = 50\text{ A}$	-	222	-	nC
$Q_{gs}$	Gate-Source Charge		-	75	-	
$Q_{gd}$	Gate-Drain Charge		-	49	-	

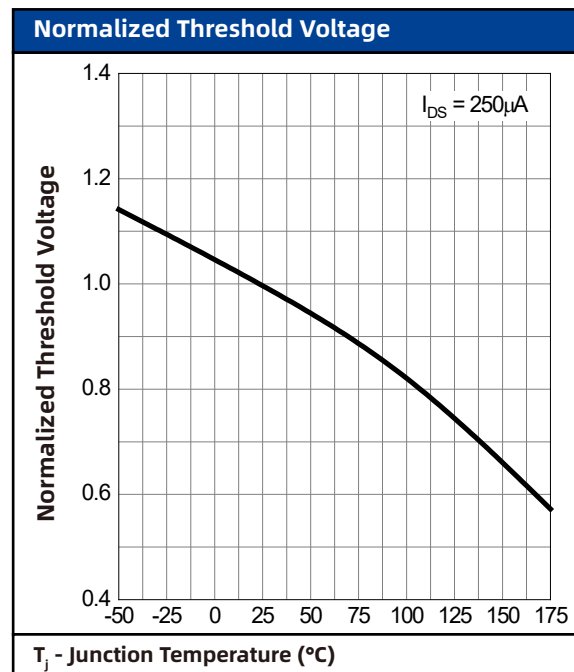
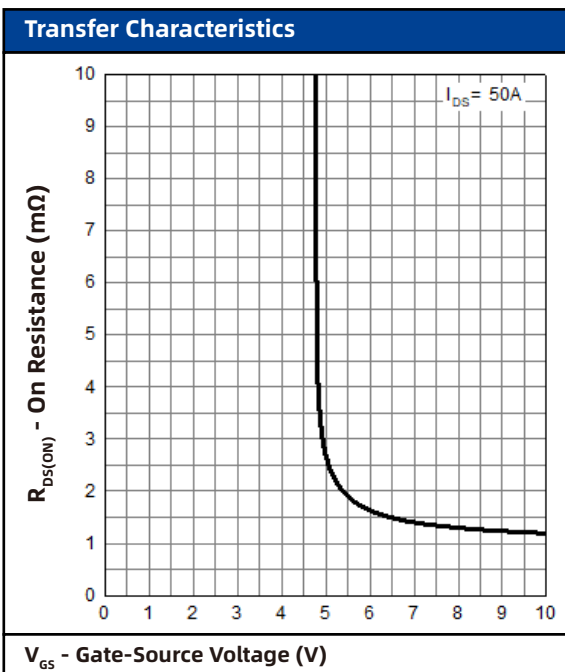
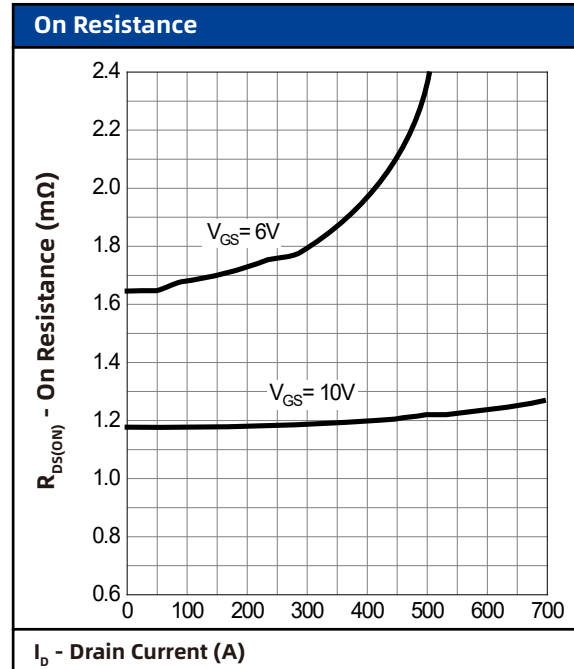
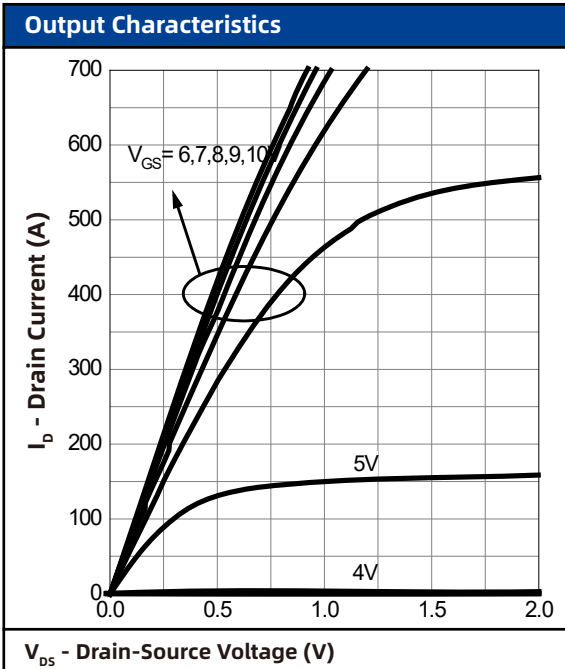
Note1 : Pulse test ; pulse width  $\leq 300\ \mu\text{s}$ , duty cycle  $\leq 2\%$

Note2 : Guaranteed by design, not subject to production testing

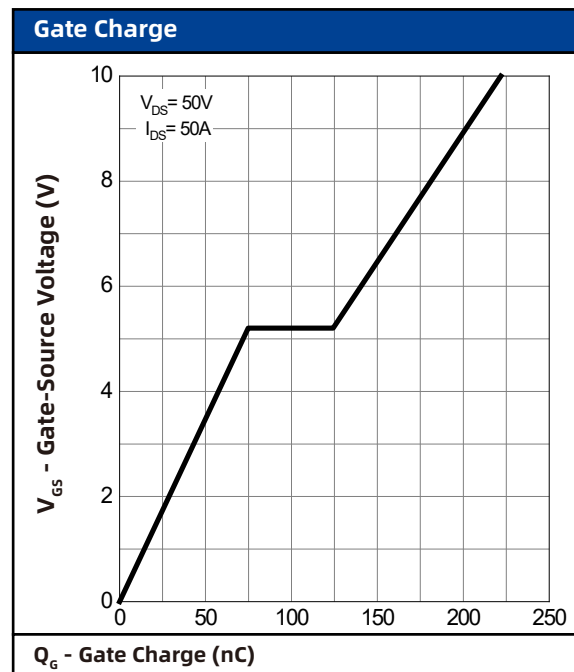
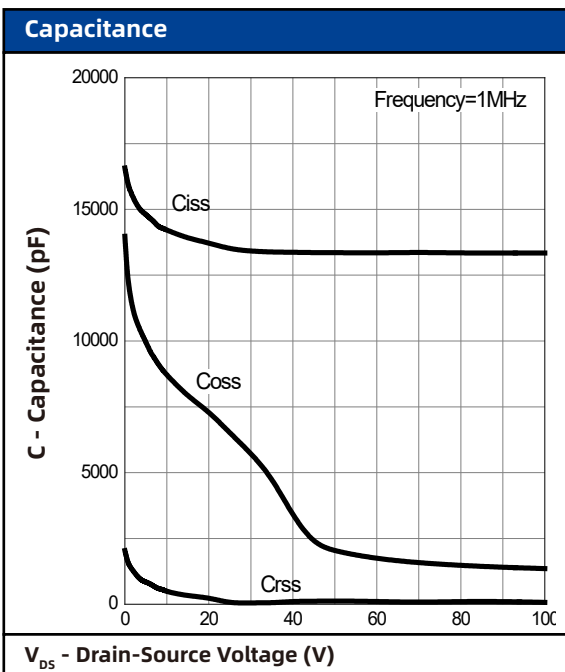
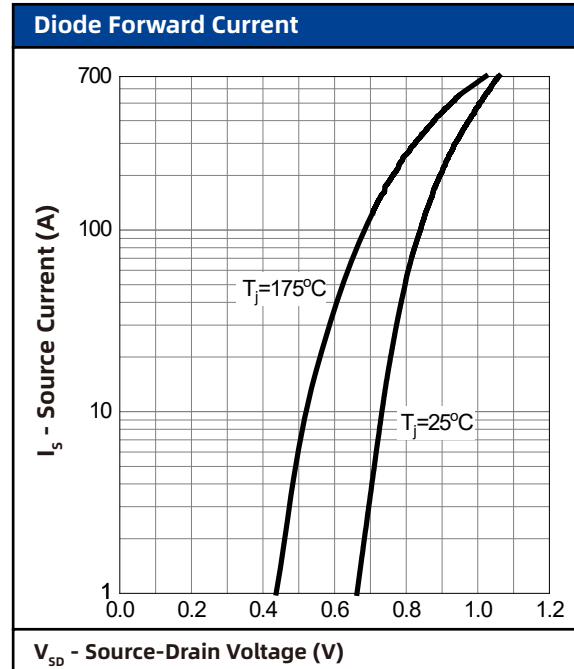
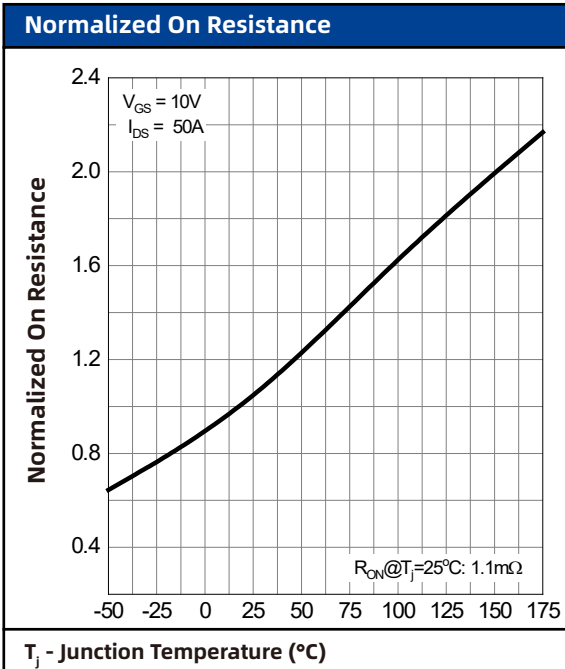
## 7. Typical Characteristics



## 7. Typical Characteristics (cont.)

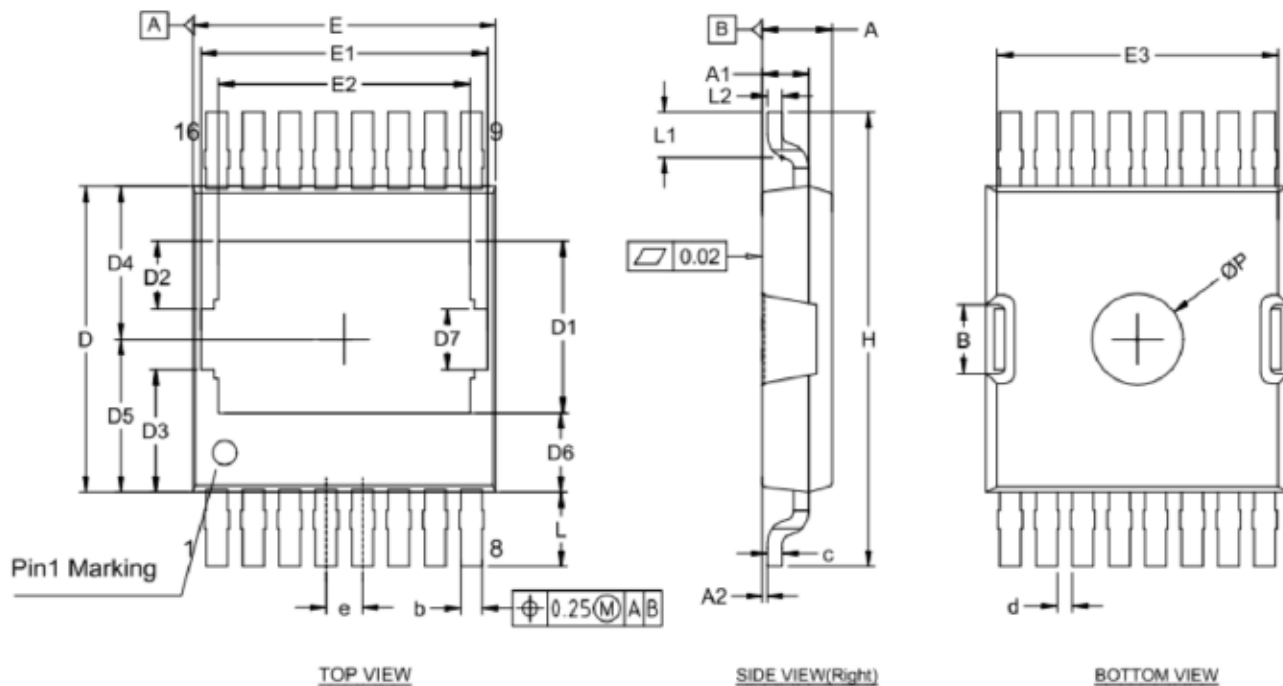


## 7. Typical Characteristics (cont.)



## 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		
$\phi p$	2.900	3.000	3.100
B	0.812	2.280	1.212
$\theta$	1°	3°	5°
$\theta 1$	6°	7°	8°