

40V N-Channel Enhancement Mode MOSFET

1. Product Information

1.1 Features

- ◇ Surface-mounted package
- ◇ Advanced SGT cell design
- ◇ T_j max 175°C
- ◇ MSL1

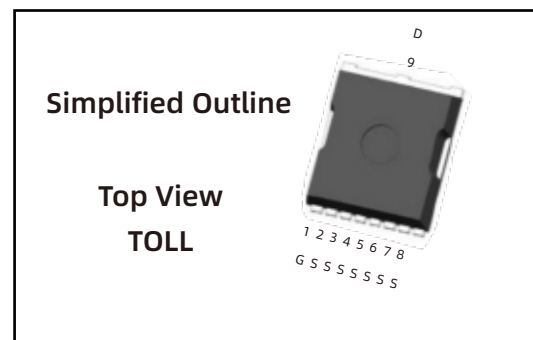
1.2 Applications

- ◇ Power appliances
- ◇ E- Tool appliances
- ◇ High power inverter system
- ◇ BMS

1.3 Quick reference

- ◇ $BV \cong 40\text{ V}$
- ◇ $P_{\text{tot}} \cong 600\text{ W}$
- ◇ $I_D \cong 400\text{ A}$
- ◇ $R_{\text{DS(ON)}} \cong 0.7\text{ m}\Omega @ V_{\text{GS}} = 10\text{ V}$
- ◇ $R_{\text{DS(ON)}} \cong 1.1\text{ m}\Omega @ V_{\text{GS}} = 4.5\text{ V}$

2. Pin Description



3. Marking Information

Product Name	Marking
LN008N040T	LN008N040T AYWWZZ 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	$T_C = 25\text{ }^\circ\text{C}$	-	± 20	V
$I_D^{*,***}$	Drain Current (DC)	$T_C = 25\text{ }^\circ\text{C}, V_{GS} = 10\text{ V}$	-	400	A
$I_{DM}^{**,***}$	Drain Current (Pulsed)	$T_C = 25\text{ }^\circ\text{C}, V_{GS} = 10\text{ V}$	-	1600	A
P_{tot}^*	Drain power dissipation	$T_C = 25\text{ }^\circ\text{C}$	-	600	W
T_{stg}	Storage Temperature		-55	175	$^\circ\text{C}$
T_J	Junction Temperature		-	175	$^\circ\text{C}$
I_S	Continuous-Source Current	$T_C = 25\text{ }^\circ\text{C}$	-	400	A
E_{AS}	Single Pulsed Avalanche Energy	$V_{DD} = 50\text{ V}, L = 1\text{ mH}$	-	1325	mJ
$R_{\theta JA}^{**}$	Thermal Resistance- Junction to Ambient		-	32.8	$^\circ\text{C/W}$
$R_{\theta JC}^{**}$	Thermal Resistance- Junction to Case		-	0.45	

Notes :

* Surface Mounted on 1 in^2 pad area, $t \leq 10\text{ sec}$

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

*** Limited by bonding wire

5. Ordering Code

Product Name	Package	Reel Size	Tape width	Quantity	Note
LN008N040T	TOLL-8			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 (TA=25 ° Unless Otherwise Noted)

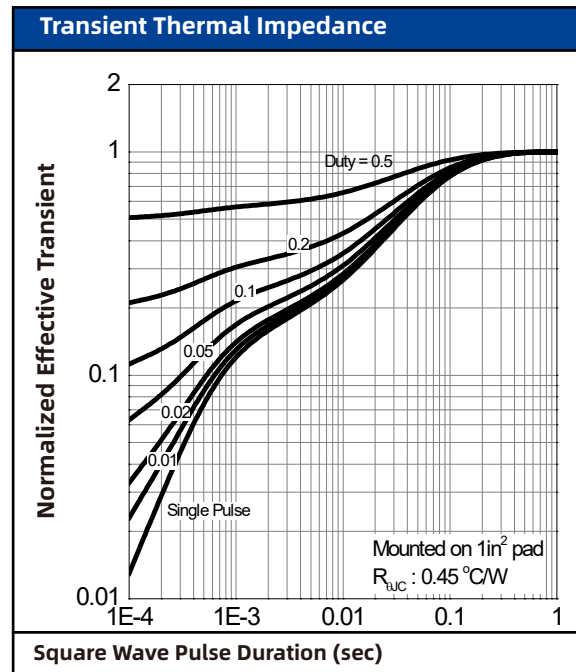
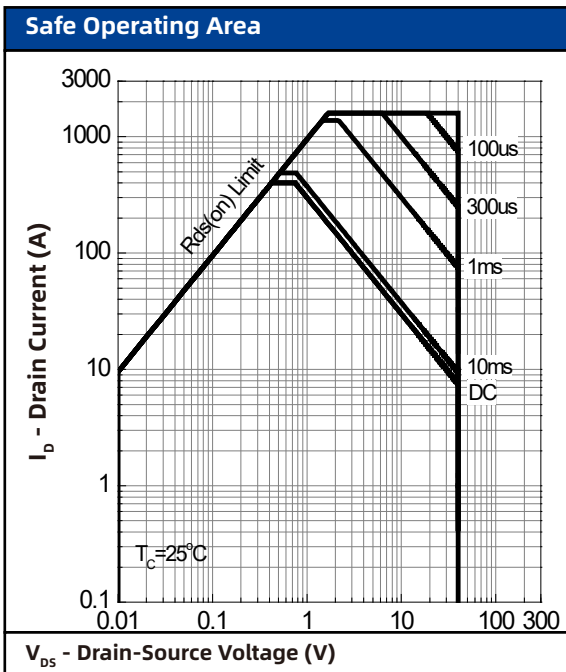
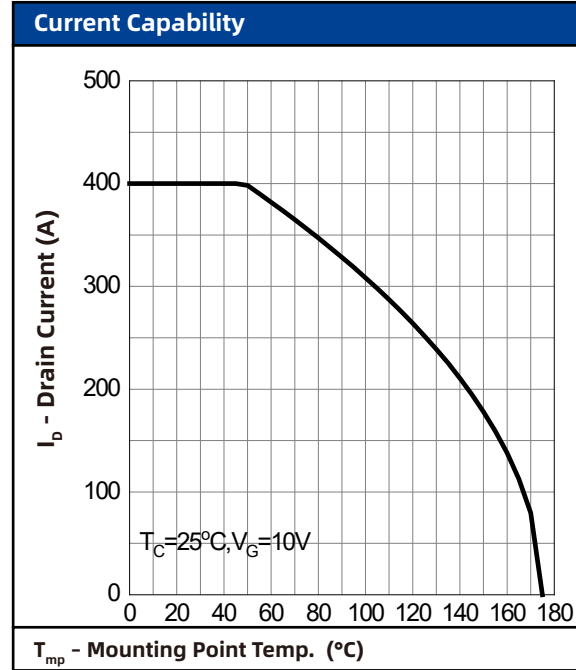
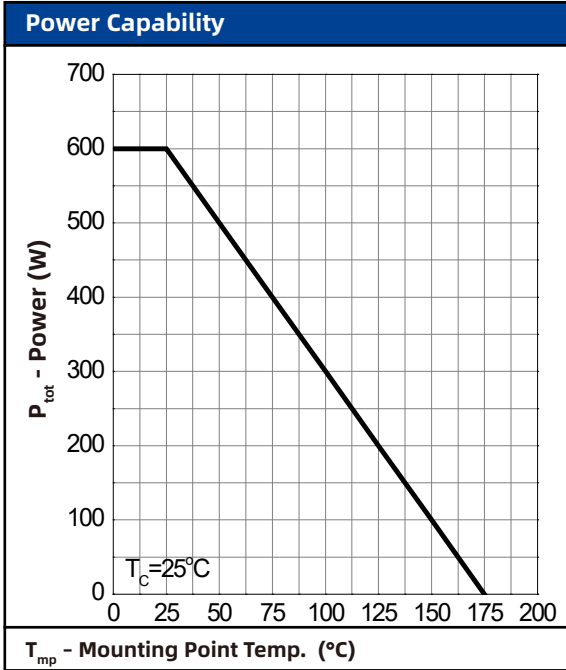
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS} = 0\text{ V}, I_{DS} = 250\ \mu\text{A}$	40	-	-	V
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_{DS} = 250\ \mu\text{A}$	1	-	2	V
I_{DSS}	Drain Leakage Current	$V_{DS} = 32\text{ V}, V_{GS} = 0\text{ V}$	-	-	1	μA
I_{GSS}	Gate Leakage Current	$V_{GS} = 0\text{ V}, V_{GS} = \pm 20\text{V}$	-	-	± 100	nA
$R_{DS(on)}^a$	On-State Resistance	$V_{GS} = 10\text{ V}, I_{DS} = 50\text{ A}$	-	0.6	0.7	m Ω
		$V_{GS} = 4.5\text{ V}, I_{DS} = 20\text{ A}$	-	0.95	1.1	
Diode Characteristics						
V_{SD}^a	Diode Forward Voltage	$I_{SD} = 50\text{ A}, V_{GS} = 0\text{ V}$	-	-	1.3	V
t_{rr}	Reverse Recovery Time	$I_{DS} = 50\text{ A}, V_{GS} = 0\text{ V}$	-	97	-	nS
Q_{rr}	Reverse Recovery Charge	$dI_{SD}/dt = 100\text{ A}/\mu\text{s}$	-	162	-	nC
Dynamic Characteristics^b						
C_{ISS}	Input Capacitance	$V_{GS} = 0\text{ V}, V_{DS} = 20\text{V}$ Frequency = 1 MHz	-	7275	-	pF
C_{OSS}	Output Capacitance		-	3183	-	
C_{rSS}	Reverse Transfer Capacitance		-	159	-	
$t_d(on)$	Turn-on Delay Time	$V_{DS} = 20\text{ V}, V_{GEN} = 10\text{ V},$ $R_G = 4.5\ \Omega, R_L = 0.4\ \Omega,$ $I_{DS} = 50\text{ A}$	-	24	-	nS
t_r	Turn-on Rise Time		-	93	-	
$t_d(off)$	Turn-off Delay Time		-	87	-	
t_f	Turn-off Fall Time		-	80	-	
Gate Charge Characteristics^b						
Q_g	Total Gate Charge	$V_{DS} = 20\text{ V}, V_{GS} = 10\text{ V},$ $I_{DS} = 50\text{ A}$	-	124	-	nC
Q_{gs}	Gate-Source Charge		-	38	-	
Q_{gd}	Gate-Drain Charge		-	31	-	

Notes :

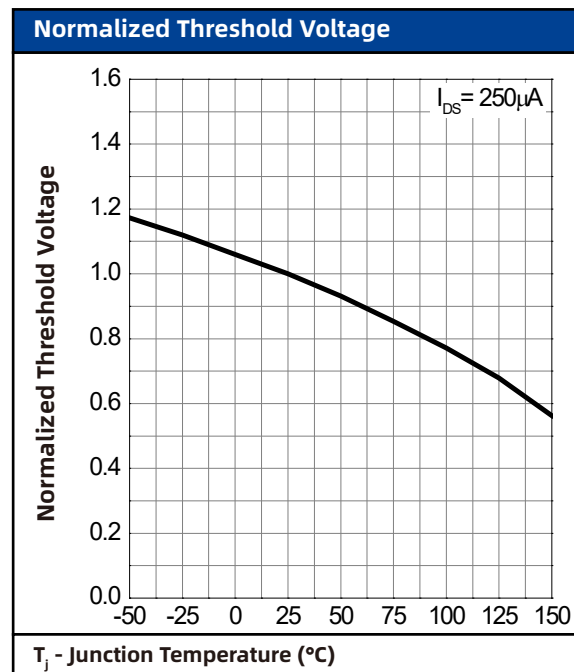
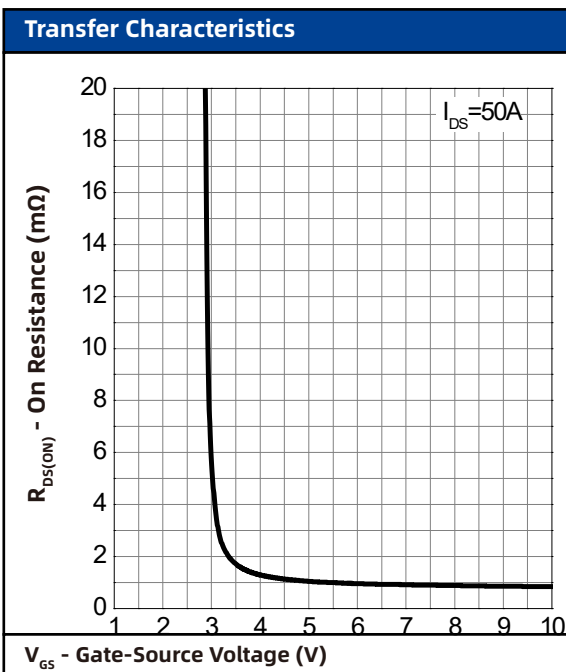
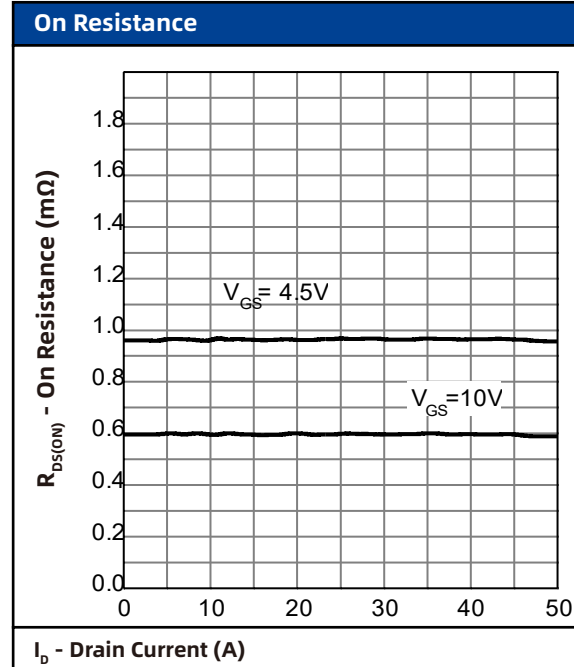
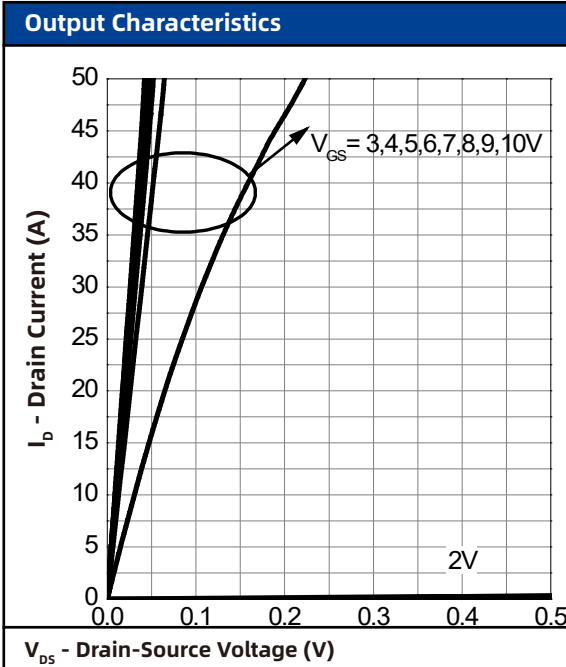
a : Pulse test ; pulse width $\leq 300\ \mu\text{s}$, duty cycle $\leq 2\%$

b : Guaranteed by design, not subject to production testing

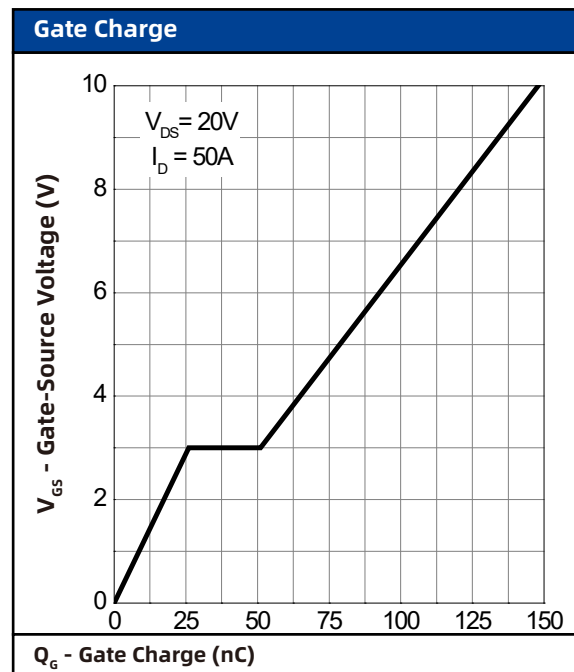
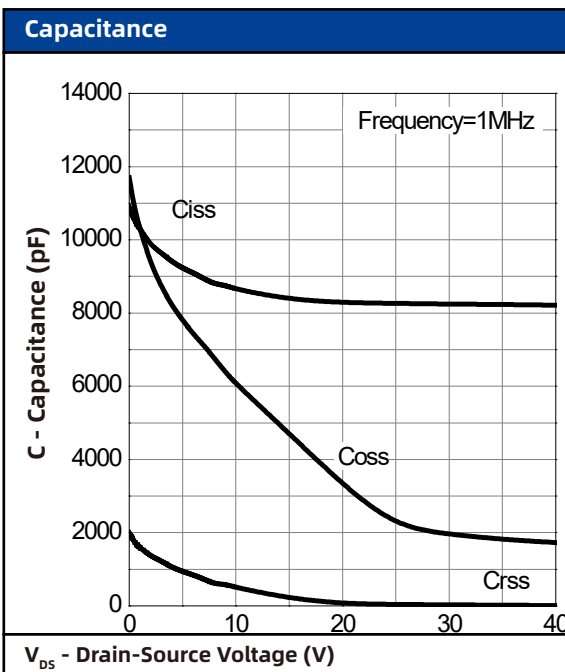
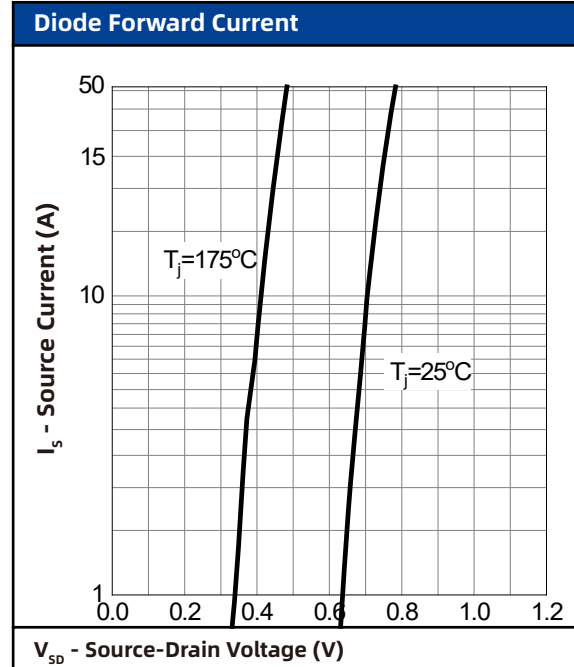
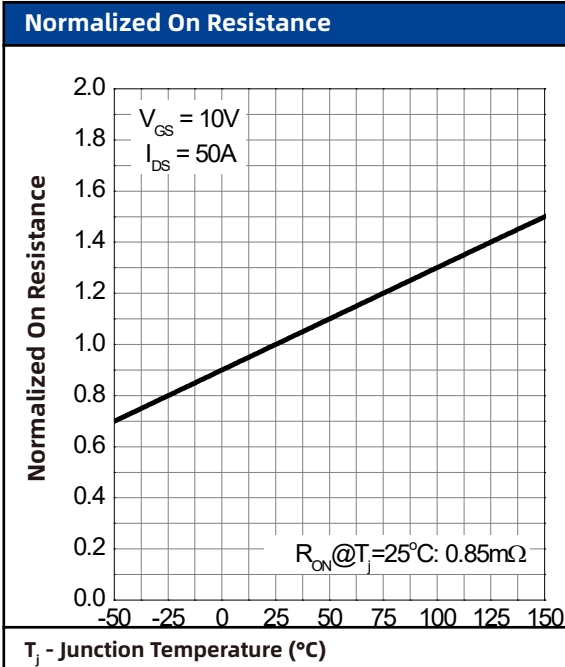
7. Typical Characteristics



7. Typical Characteristics (cont.)

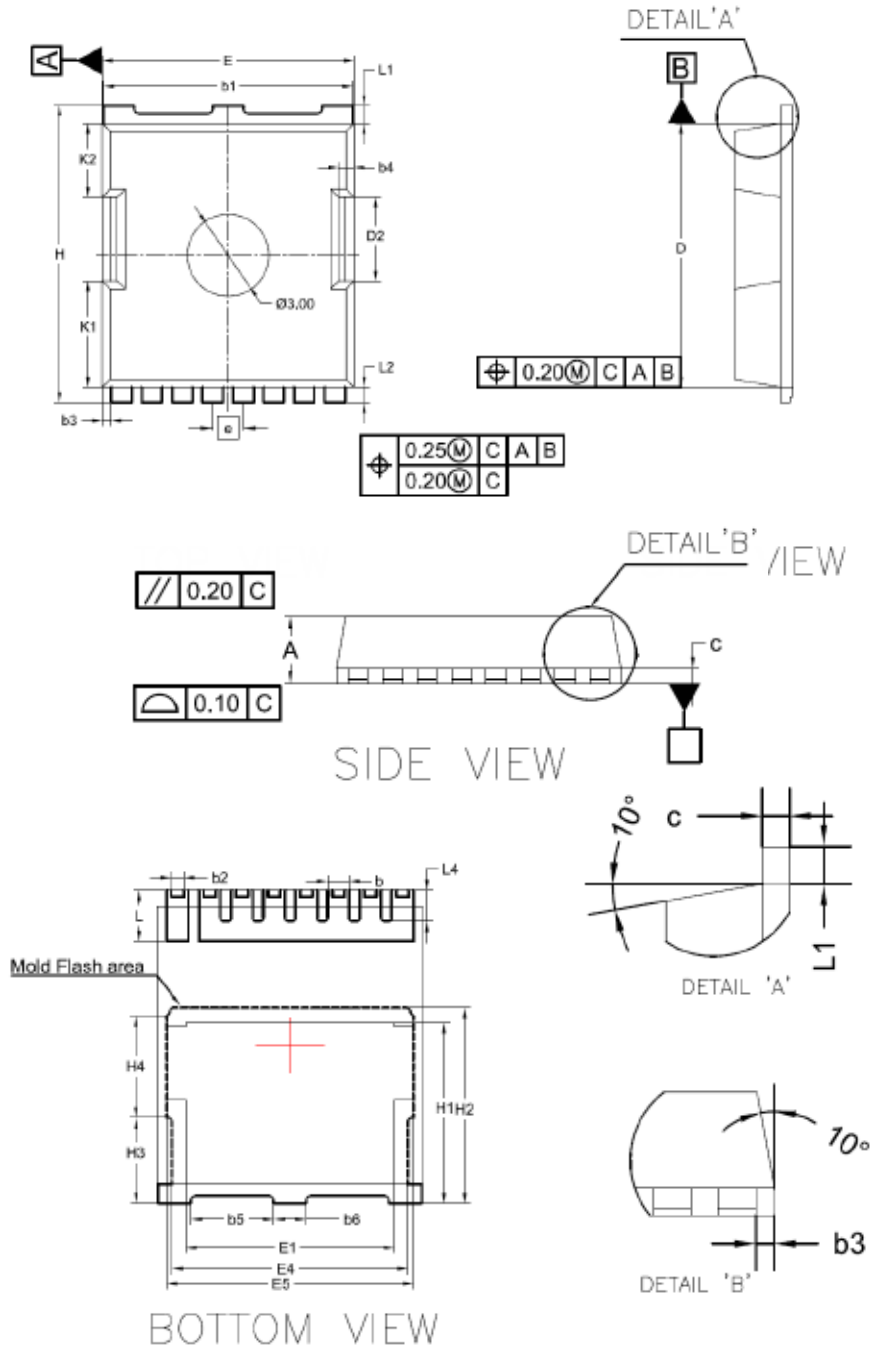


7. Typical Characteristics (cont.)



8. Package Dimensions

TOLL-8 Package



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TOLL-8 Package

Symbol	Dimensions In Millimeters			Dimensions In Millimeters		
	Min.	NOM.	MAX.	Min.	NOM.	MAX.
A	2.200	2.300	2.400	0.087	0.091	0.094
c	0.492	0.500	0.508	0.019	0.020	0.021
D	10.280	10.380	10.480	0.405	0.409	0.413
e	9.800	9.900	10.000	0.386	0.390	0.394
H	1.20 BSC			0.047 BSC		
H1	11.580	11.680	11.780	0.456	0.460	0.464
H2	6.650	6.750	6.850	0.262	0.266	0.270
H3	7.300			0.287		
H4	3.200			0.126		
K1	3.800			0.150		
K2	4.180			0.165		
D2	2.900			0.114		
b	3.300			0.130		
b1	0.700	0.800	0.900	0.028	0.031	0.035
b2	9.700	9.800	9.900	0.382	0.386	0.390
b3	0.420	0.460	0.500	0.017	0.018	0.020
b4	0.350			0.014		
b5	0.600			0.024		
b6	3.100			0.122		
L	1.200			0.047		
L1	1.700	1.900	2.100	0.067	0.075	0.083
L2	0.700			0.028		
L3	0.600			0.024		
L4	1.050	1.150	1.250	0.041	0.045	0.049
L5	0.500	0.600	0.700	0.020	0.024	0.028
E1	7.800			0.310		
E4	8.800			0.350		
E5	9.200			0.360		