

40V N-Channel Enhancement Mode MOSFET

1. Product Information

1.1 Features

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

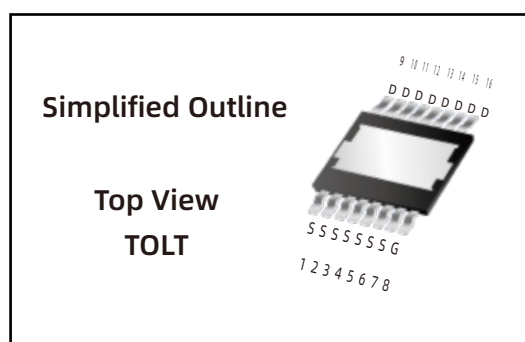
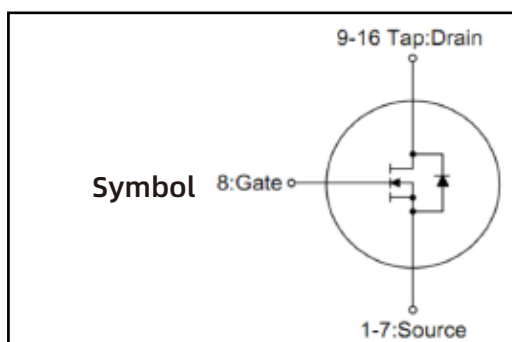
1.2 Applications

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

1.3 Quick reference

- ◇ $BV \cong 40\text{ V}$
- ◇ $P_{\text{tot}} \cong 192\text{ W}$
- ◇ $I_D \cong 250\text{ A}$
- ◇ $R_{\text{DS(ON)}} \cong 0.7\text{ m}\Omega @ V_{\text{GS}} = 10\text{ V}$
- ◇ $R_{\text{DS(ON)}} \cong 1.0\text{ m}\Omega @ V_{\text{GS}} = 4.5\text{ V}$

2. Pin Description



3. Marking Information

Product Name	Marking
LN005N040LT	LN005N040LT CYWWZZ XXXXXX

4.Limiting Values

Symbol	Parameter	Rating	Unit	
V_{DS}	Drain-Source Voltage	40	V	
V_{GS}	Gate-Source Voltage	± 20	V	
$I_{D\text{Note3}}$	Drain Current	$T_c = 25\text{ }^\circ\text{C}$	250	A
		$T_c = 100\text{ }^\circ\text{C}$	250	A
I_{DM}	Pulsed Source Current	$T_c = 25\text{ }^\circ\text{C}$	1000	A
I_S	Diode Forward Current	$T_c = 25\text{ }^\circ\text{C}$	250	A
E_{AS}	Single Pulsed Avalanche Energy	$L = 1.0\text{ mH}$	1275	mJ
P_{tot}	Total Power Dissipation	$T_c = 25\text{ }^\circ\text{C}$	192	W
$R_{\theta JA\text{Note1}}$	Thermal Resistance- Junction to Ambient		51	$^\circ\text{C/W}$
$R_{\theta JC}$	Thermal Resistance- Junction to Case		0.78	$^\circ\text{C/W}$
T_{stg}	Storage Temperature		-55~175	$^\circ\text{C}$
T_J	Junction Temperature		175	$^\circ\text{C}$

Note1 : Surface Mounted on 1 in² 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
LN005N040LT	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)

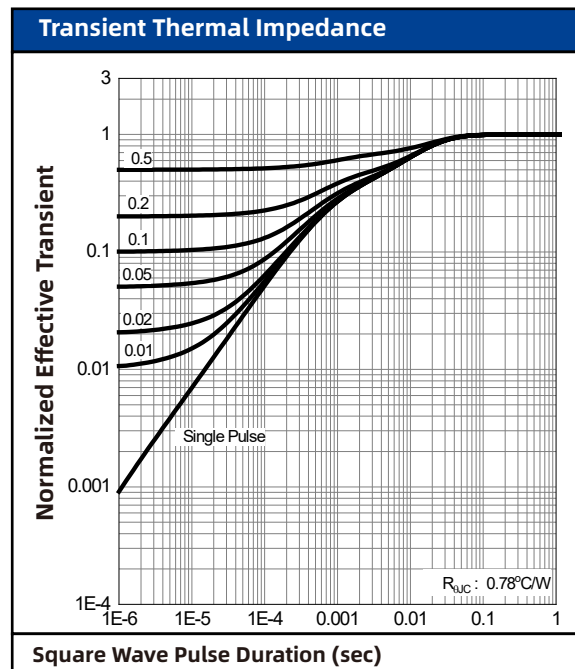
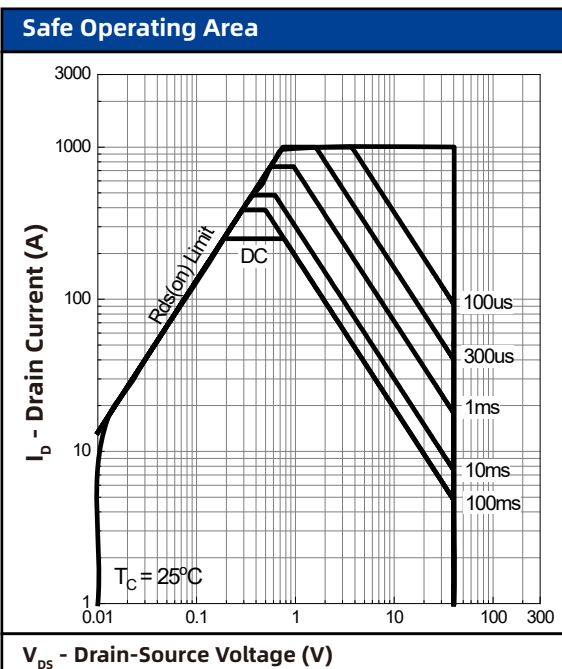
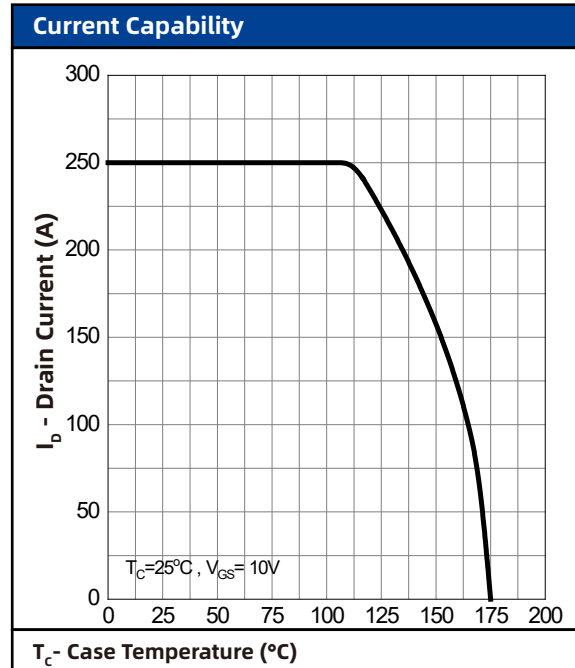
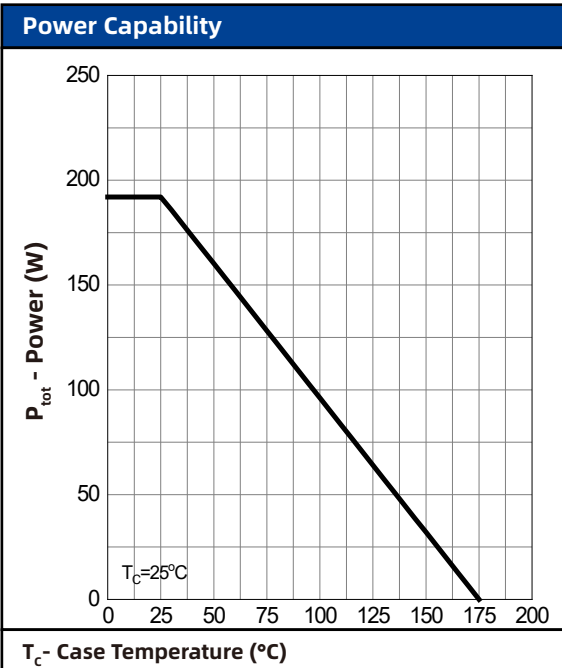
6. Electrical Characteristics ($T_A=25^\circ$ Unless Otherwise Noted)

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	$V_{DS} = V_{GS}, I_{DS} = 250\ \mu\text{A}$	1.0	-	2.5	V
I_{DSS}	Drain Leakage Current	$V_{DS} = 32\text{ V}, V_{GS} = 0\text{ V}$	-	-	1	μA
I_{GSS}	Gate Leakage Current	$V_{DS} = 0\text{ V}, V_{GS} = \pm 20\text{ V}$	-	-	± 100	nA
$R_{DS(on)}$ ^{Note1}	On-State Resistance	$V_{GS} = 10\text{ V}, I_{DS} = 50\text{ A}$	-	0.6	0.7	m Ω
		$V_{GS} = 4.5\text{ V}, I_{DS} = 40\text{ A}$	-	0.88	1.0	
Diode Characteristics						
V_{SD} ^{Note1}	Diode Forward Voltage	$I_{SD} = 50\text{ A}, V_{GS} = 0\text{ V}$	-	-	1.3	V
t_{rr}	Reverse Recovery Time	$I_{DS} = 50\text{ A}, V_{GS} = 0\text{ V}$	-	73	-	nS
Q_{rr}	Reverse Recovery Charge	$dI_{SD}/dt = 100\text{ A}/\mu\text{s}$	-	77	-	nC
Dynamic Characteristics ^{Note2}						
C_{ISS}	Input Capacitance	$V_{GS} = 0\text{ V}, V_{DS} = 20\text{ V}$ Frequency = 1 MHz	-	9933	-	pF
C_{OSS}	Output Capacitance		-	3575	-	
C_{rSS}	Reverse Transfer Capacitance		-	67	-	
$t_d(on)$	Turn-on Delay Time	$V_{DS} = 20\text{ V}, V_{GEN} = 10\text{ V},$ $R_G = 3.9\ \Omega, R_L = 0.4\ \Omega,$ $I_{DS} = 50\text{ A}$	-	16	-	nS
t_r	Turn-on Rise Time		-	165	-	
$t_d(off)$	Turn-off Delay Time		-	179	-	
t_f	Turn-off Fall Time		-	124	-	
Gate Charge Characteristics ^{Note2}						
Q_g	Total Gate Charge	$V_{DS} = 20\text{ V}, V_{GS} = 10\text{ V},$ $I_{DS} = 50\text{ A}$	-	186	-	nC
Q_{gs}	Gate-Source Charge		-	36	-	
Q_{gd}	Gate-Drain Charge		-	43	-	

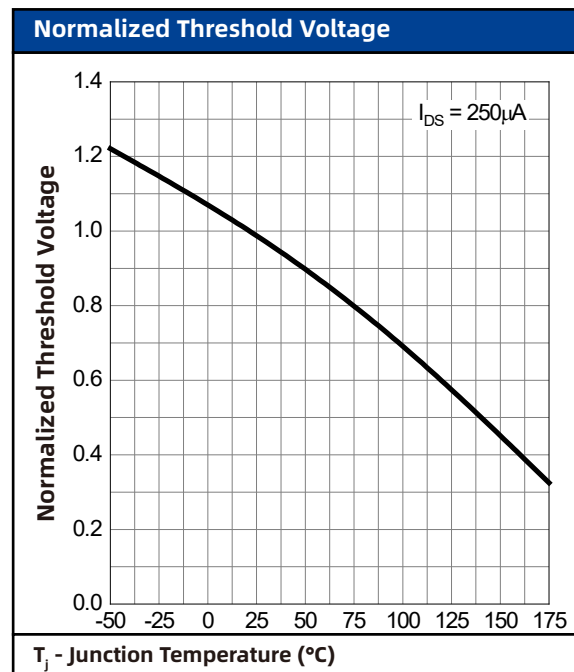
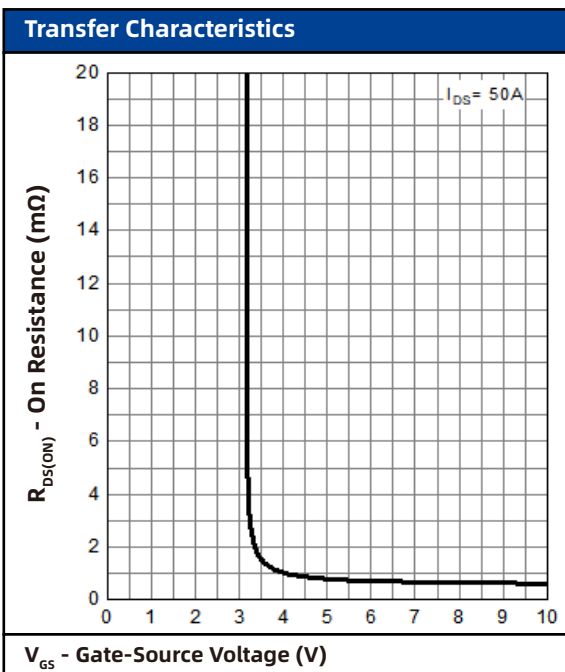
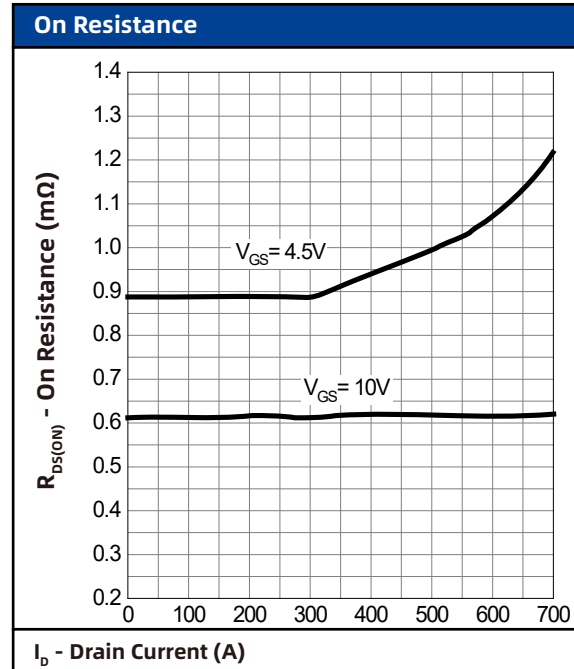
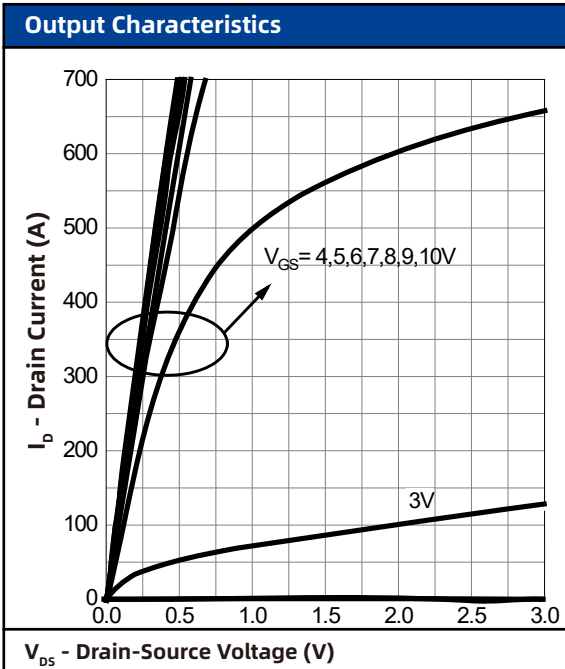
Note1: Pulse test ; pulse width $\leq 300\ \mu\text{s}$, duty cycle $\leq 2\%$

Note2: Guaranteed by design, not subject to production testing

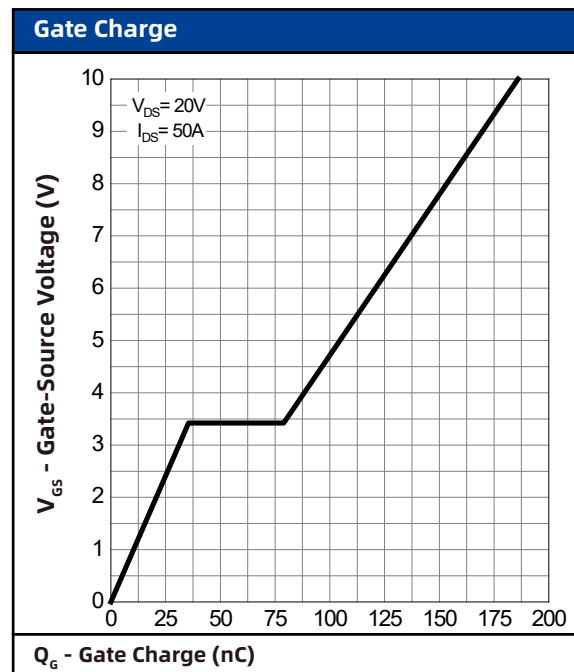
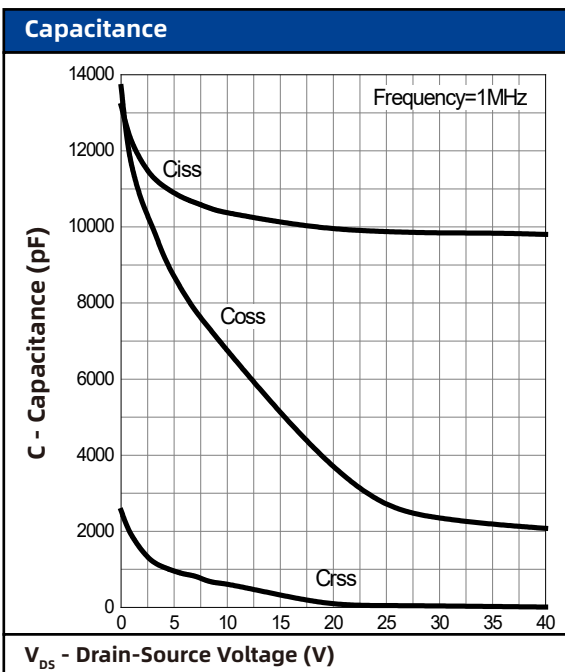
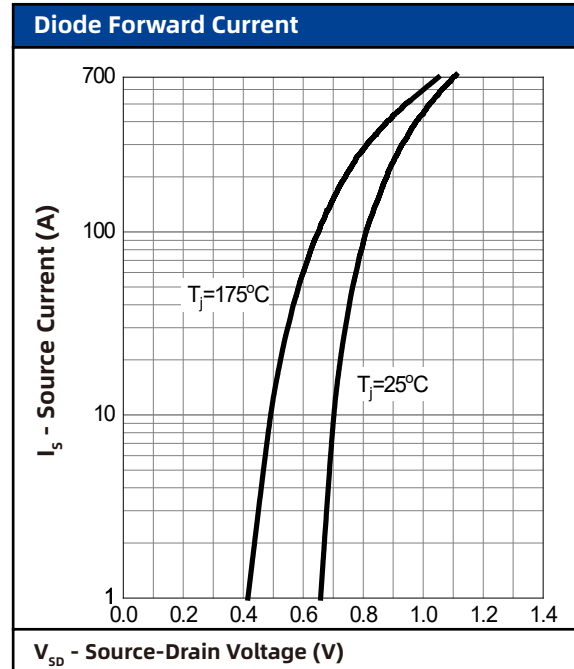
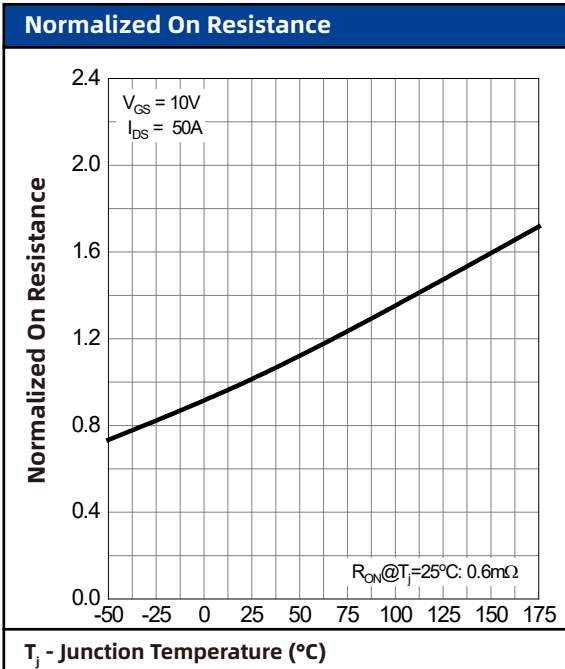
7. Typical Characteristics



7. Typical Characteristics (cont.)

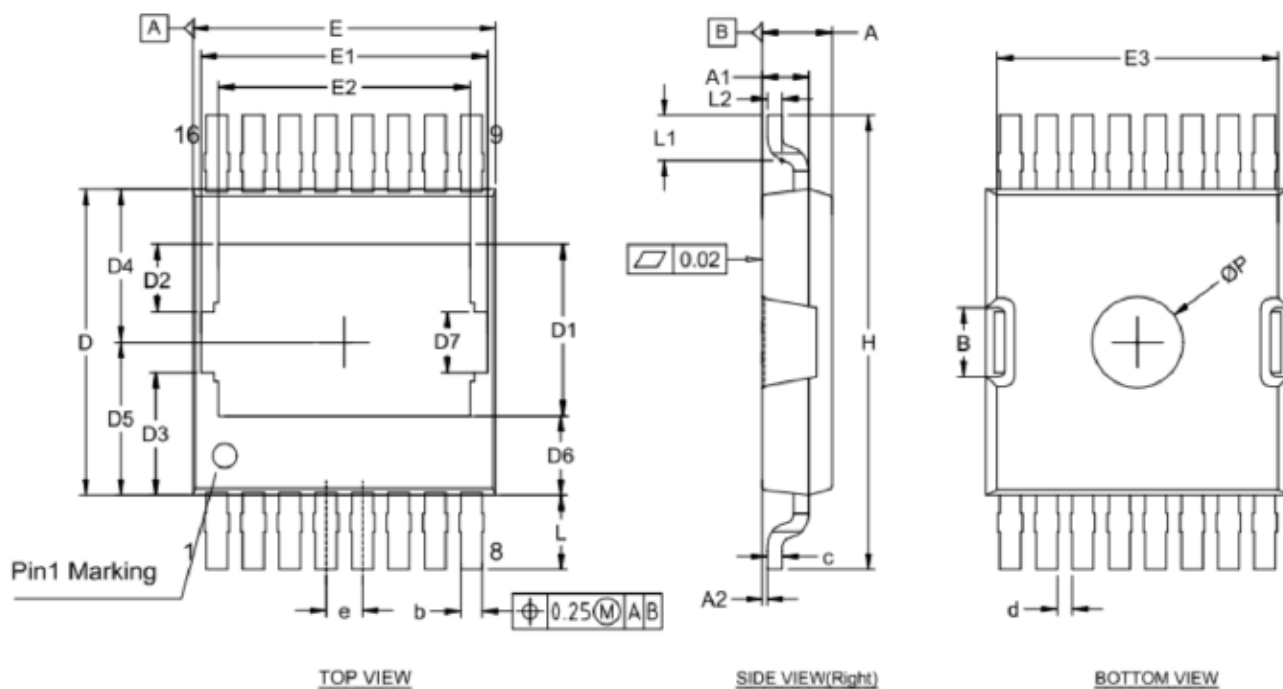


7. Typical Characteristics (cont.)



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		
øp	2.900	3.000	3.100
B	0.812	2.280	1.212
θ	1°	3°	5°
θ1	6°	7°	8°