

## N-Channel Enhancement Mode MOSFET

### 1. Product Information

#### 1.1 Features

- Surface-mounted package
- Advanced trench cell design
- Super Trench
- MSL1
- $T_J$  max 175°C

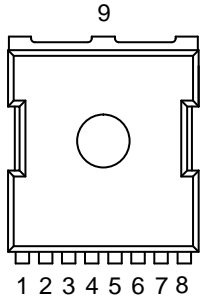
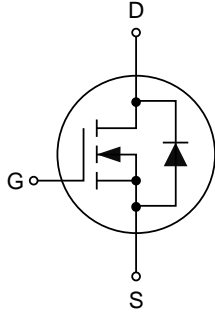
#### 1.2 Applications

- Power tool appliances
- High power inverter system
- BMS appliances

#### 1.3 Quick reference

- $BV \geq 100\text{ V}$
- $R_{DS(ON)} \leq 1.4\text{ m}\Omega @V_{GS} = 10\text{ V}$
- $P_D \leq 500\text{ W}$
- $R_{DS(ON)} \leq 2.0\text{ m}\Omega @V_{GS} = 6\text{ V}$
- $I_D \leq 380\text{ A}$

### 2. Pin Description

Pin	Description	Simplified Outline	Symbol
1	Gate		
2,3,4,5,6,7,8	Source		
9	Drain		

**Top View**  
**TOLL-8L**


## 2. Limiting Values

Symbol	Parameter	Conditions	Min	Max	Unit
V <sub>DS</sub>	Drain-Source Voltage	T <sub>C</sub> =25°C	100	-	V
V <sub>GS</sub>	Gate-Source Voltage	T <sub>C</sub> =25°C	-	±20	V
I <sub>D</sub>	Drain Current (DC)	T <sub>C</sub> =25°C, V <sub>GS</sub> =10 V	-	380	A
		T <sub>C</sub> =100°C, V <sub>GS</sub> =10 V	-	270	A
I <sub>DM</sub> *	Drain Current (Pulsed)	T <sub>C</sub> =25°C, V <sub>GS</sub> =10 V	-	1200	A
P <sub>D</sub>	Drain Power Dissipation	T <sub>C</sub> =25°C	-	500	W
I <sub>S</sub>	Continuous-Source Current	T <sub>C</sub> =25°C	-	380	A
E <sub>AS</sub>	Single Pulsed Avalanche Energy	V <sub>DD</sub> =20 V, L=0.5 mH	-	2800	mJ
T <sub>J</sub> , T <sub>stg</sub>	Operating Junction and Storage Temperature Range		-55	175	°C
R <sub>θJA</sub> **	Thermal Resistance-Junction to Ambient		-	40	°C/W
R <sub>θJC</sub>	Thermal Resistance-Junction to Case		-	0.3	

Notes:

- \* Pulse width ≤ 300 μs, duty cycle ≤ 2%.
- \*\* Surface mounted on minimum footprint pad area.
- \*\*\* Limited by bonding wire.

## 4. Marking Information

Product Name	Marking
KJ01N10T	

## 5. Ordering Code

Product Name	Package	Reel size	Tape width	Quantity (pcs)
KJ01N10T	TOLL-8L	13"	24 mm	2000

Note: KUIJIEXIN 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).

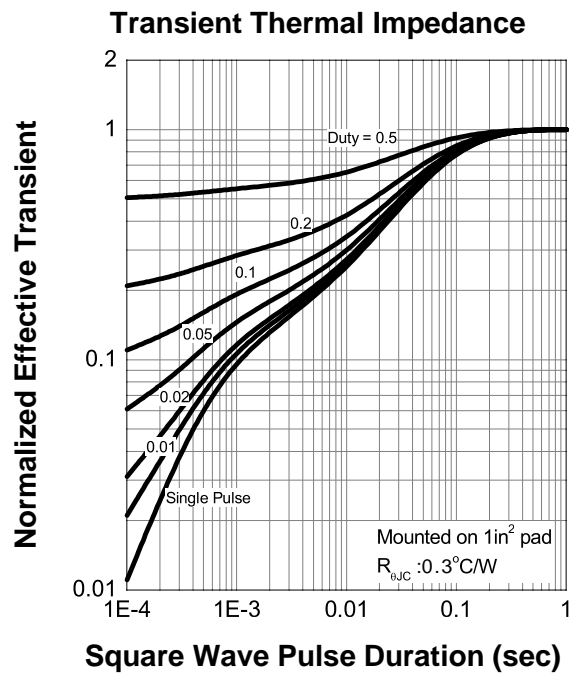
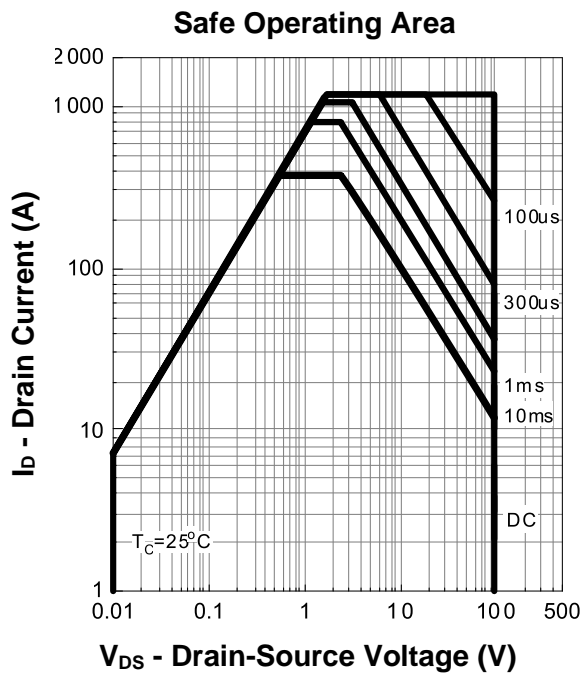
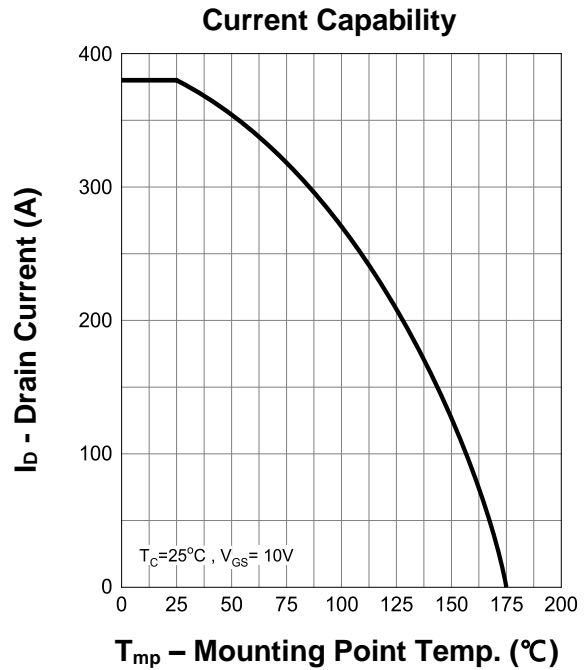
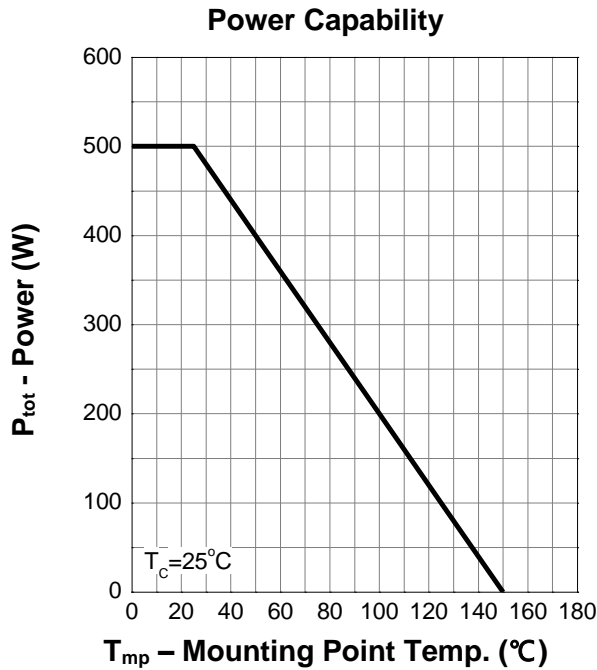
## 6. Electrical Characteristics (T<sub>A</sub>=25°C unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
<b>Static Characteristics</b>						
BV <sub>DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0 V, I <sub>DS</sub> =250 μA	100	-	-	V
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>DS</sub> =250 μA	2	-	4	V
I <sub>DSS</sub>	Drain Leakage Current	V <sub>DS</sub> =80 V, V <sub>GS</sub> =0 V	-	-	1	μA
I <sub>GSS</sub>	Gate Leakage Current	V <sub>DS</sub> =0 V, V <sub>GS</sub> =±20 V	-	-	±100	nA
R <sub>DS(ON)</sub> <sup>a</sup>	On-State Resistance	V <sub>GS</sub> =10 V, I <sub>DS</sub> =50 A	-	1.2	1.4	mΩ
		V <sub>GS</sub> =6 V, I <sub>DS</sub> =25 A	-	1.6	2	
<b>Diode Characteristics</b>						
V <sub>SD</sub> <sup>a</sup>	Diode Forward Voltage	V <sub>GS</sub> =0 V, I <sub>SD</sub> =50 A	-	-	1.3	V
t <sub>rr</sub>	Reverse Recovery Time	V <sub>GS</sub> =0 V, I <sub>DS</sub> =50 A, dI <sub>SD</sub> /dt=100 A/μs	-	137	-	ns
Q <sub>rr</sub>	Reverse Recovery Charge		-	347	-	nC
<b>Dynamic Characteristics<sup>b</sup></b>						
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> =50 V, V <sub>GS</sub> =0 V, f=1 MHz	-	13574	-	pF
C <sub>oss</sub>	Output Capacitance		-	2036	-	
C <sub>rss</sub>	Reverse Transfer Capacitance		-	196	-	
t <sub>d(on)</sub>	Turn-on Delay Time	V <sub>DS</sub> =50 V, V <sub>GEN</sub> =10 V, R <sub>G</sub> =4.5 Ω, R <sub>L</sub> =1 Ω, I <sub>DS</sub> =50 A	-	44	-	ns
t <sub>r</sub>	Turn-on Rise Time		-	132	-	
t <sub>d(off)</sub>	Turn-off Delay Time		-	154	-	
t <sub>f</sub>	Turn-off Fall Time		-	137	-	
<b>Gate Charge Characteristics<sup>b</sup></b>						
Q <sub>g</sub>	Total Gate Charge	V <sub>DS</sub> =50 V, V <sub>GS</sub> =10 V, I <sub>DS</sub> =50 A	-	167	-	nC
Q <sub>gs</sub>	Gate-Source Charge		-	71	-	
Q <sub>gd</sub>	Gate-Drain Charge		-	58	-	

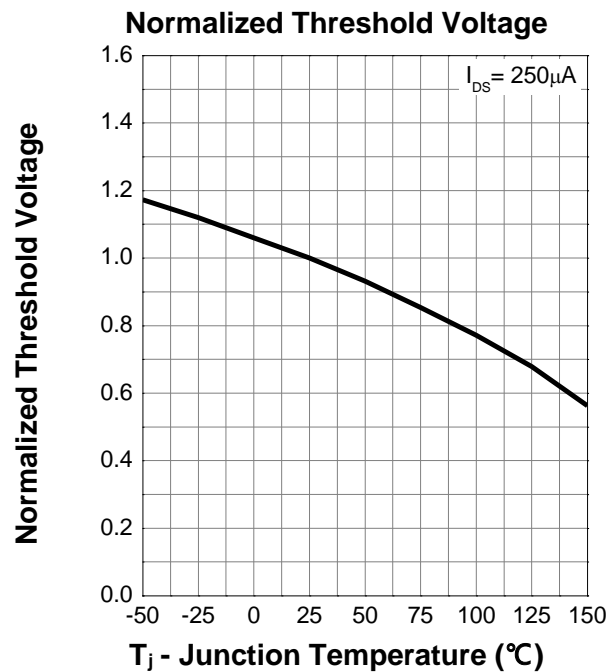
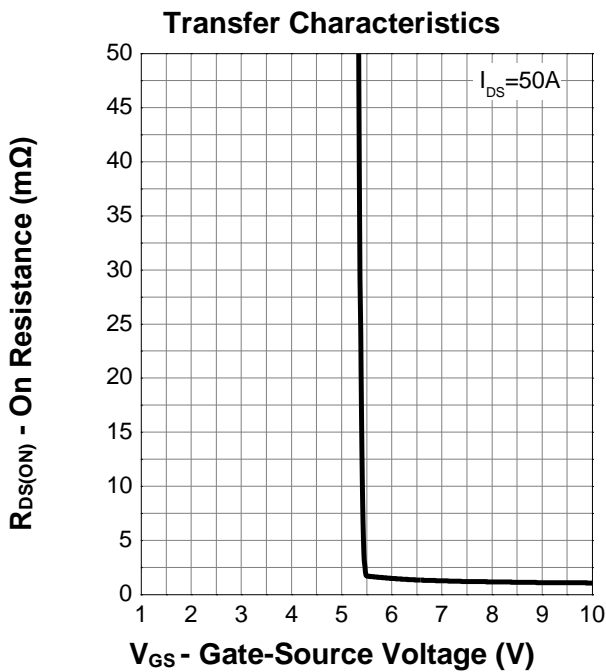
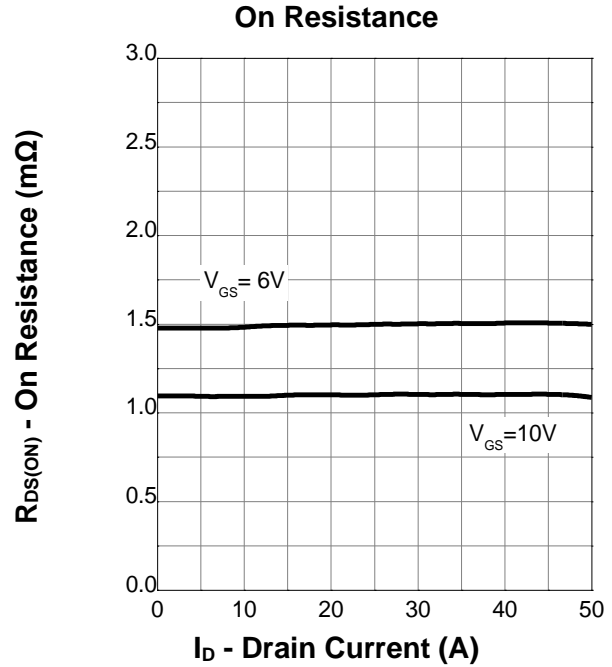
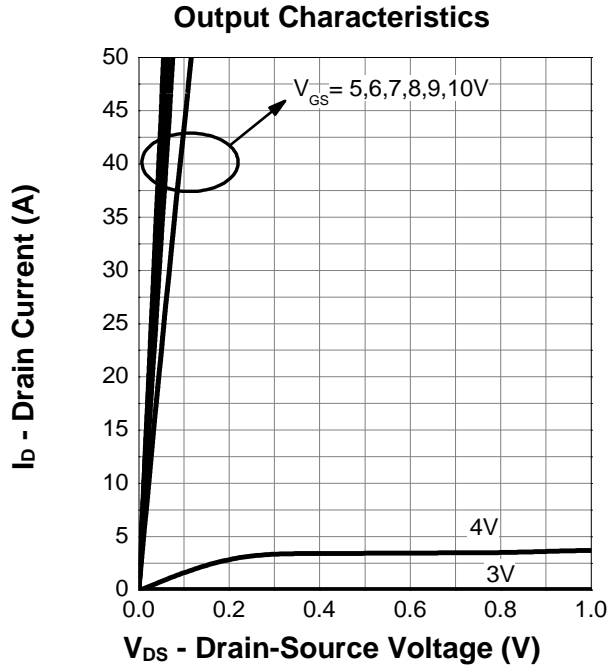
Notes:

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

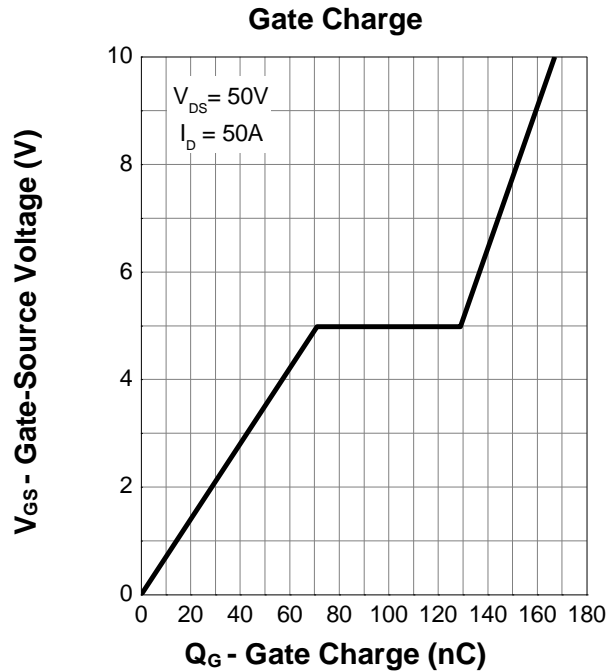
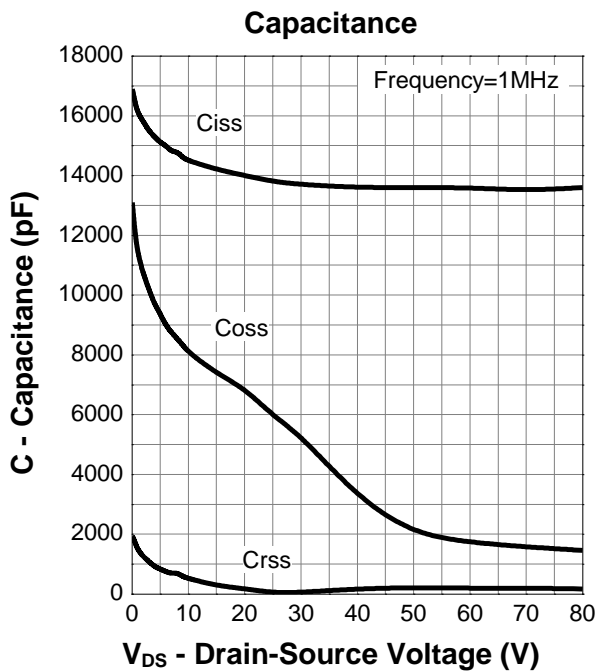
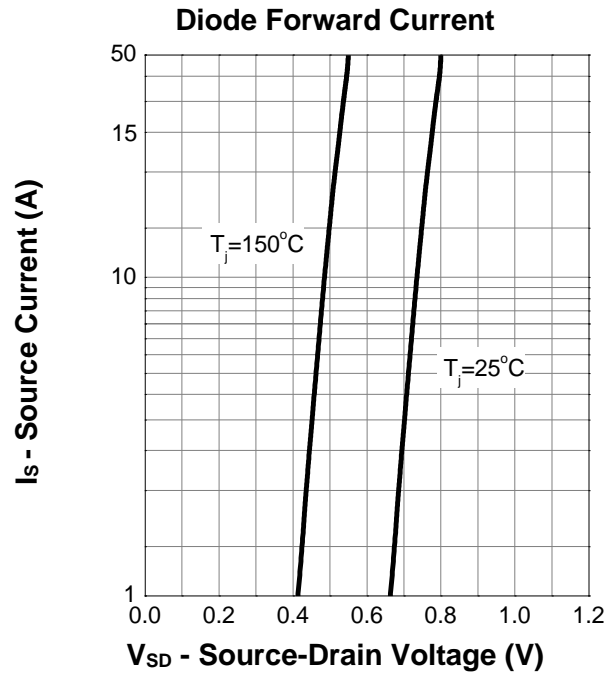
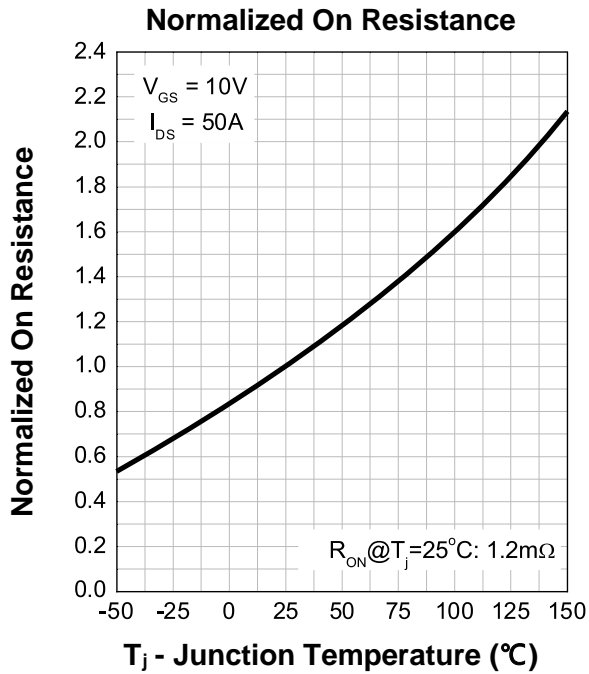
## 7. Typical Characteristics



## 7. Typical Characteristics (cont.)

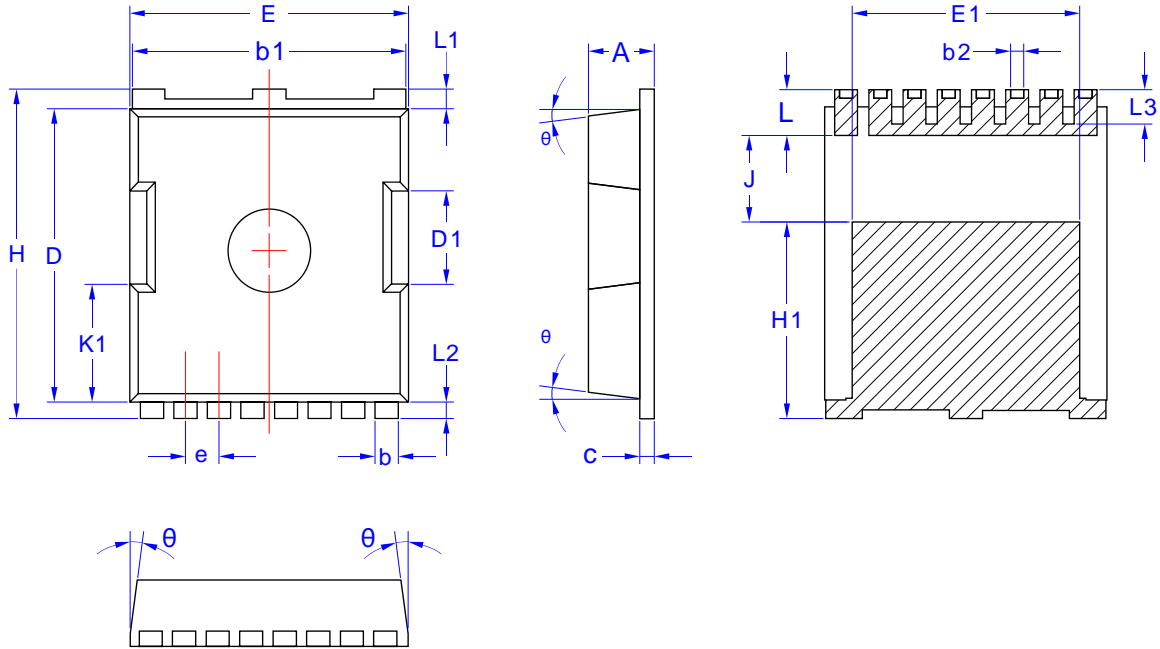


## 7. Typical Characteristics (cont.)



## 8. Package Dimensions

TOLL-8L Package



Symbol	Dimensions in Millimeters	
	MIN.	MAX.
A	2.20	2.40
b	0.70	0.90
b1	9.70	9.90
b2	0.42	0.50
c	0.40	0.60
D	10.28	10.58
D1	3.10	3.50
E	9.70	10.10
E1	7.90	8.30
e	1.20 BSC	

Symbol	Dimensions in Millimeters	
	MIN.	MAX.
H	11.48	11.88
H1	6.75	7.15
J	3.00	3.30
K1	3.98	4.38
L	1.40	1.80
L1	0.60	0.80
L2	0.50	0.70
L3	1.00	1.30
$\theta$	4°	10°