TECH PUBLIC
台舟电子

# TP78L09T3
## Three-Terminal Voltage Regulator

www.sot23.com.tw

■ Features

**Maximum output current**

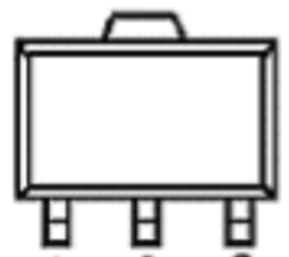
**$I_{OM}$: 0.1 A**

**Output voltage**

**$V_o$: 9 V**

**Continuous total dissipation**

**$P_D$: 0.5W**



1.OUT
2.GND
3.IN

1 2 3

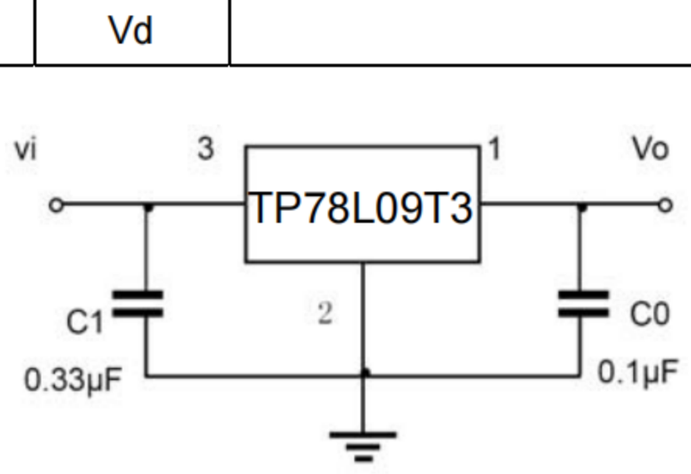
■ Absolute Maximum Ratings Ta = 25℃

| Parameter | Symbol | Value | Units |
|---|---|---|---|
| Input Voltage | $V_I$ | 30 | V |
| Operating Junction Temperature Range | $T_{OPR}$ | 0~+150 | ℃ |
| Storage Temperature Range | $T_{STG}$ | -55~+150 | ℃ |

■ Electrical Characteristics (VI=10V,Io=40mA,0℃<Tj<125℃,C1=0.33μF,Co=0.1μF,unless otherwise specified)

| Pa rameter | Symbol | Test conditions | | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|---|
| Output voltage | Vo | | 25℃ | 8.64 | 9.0 | 9.36 | V |
| | | 12V≤$V_I$≤24V, Io=1mA-40mA | 0-125℃ | 8.55 | 9.0 | 9.45 | V |
| | | Io=1mA-70mA | | 8.55 | 9.0 | 9.45 | V |
| Load Regulation | △Vo | Io=1mA-100mA | 25℃ | | 19 | 90 | mV |
| | | Io=1mA-40mA | 25℃ | | 11 | 40 | mV |
| Line regulation | △Vo | 12V≤$V_I$≤24V | 25℃ | | 45 | 175 | mV |
| | | 13V≤$V_I$≤24V | 25℃ | | 40 | 125 | mV |
| Quiescent Current | Iq | | 25℃ | | 4.1 | 6.0 | mA |
| Quiescent Current Change | △Iq | 13V≤$V_I$≤24V | 0-125℃ | | | 1.5 | mA |
| | △Iq | 1mA≤$I_O$≤40mA | 0-125℃ | | | 0.1 | mA |
| Output Noise Voltage | $V_N$ | 10Hz≤f≤100KHz | 25℃ | | 58 | | uV |
| Ripple Rejection | RR | 15V≤$V_I$≤25V,f=120Hz | 0-125℃ | | 45 | | dB |
| Dropout Voltage | Vd | | 25℃ | | 1.7 | | V |

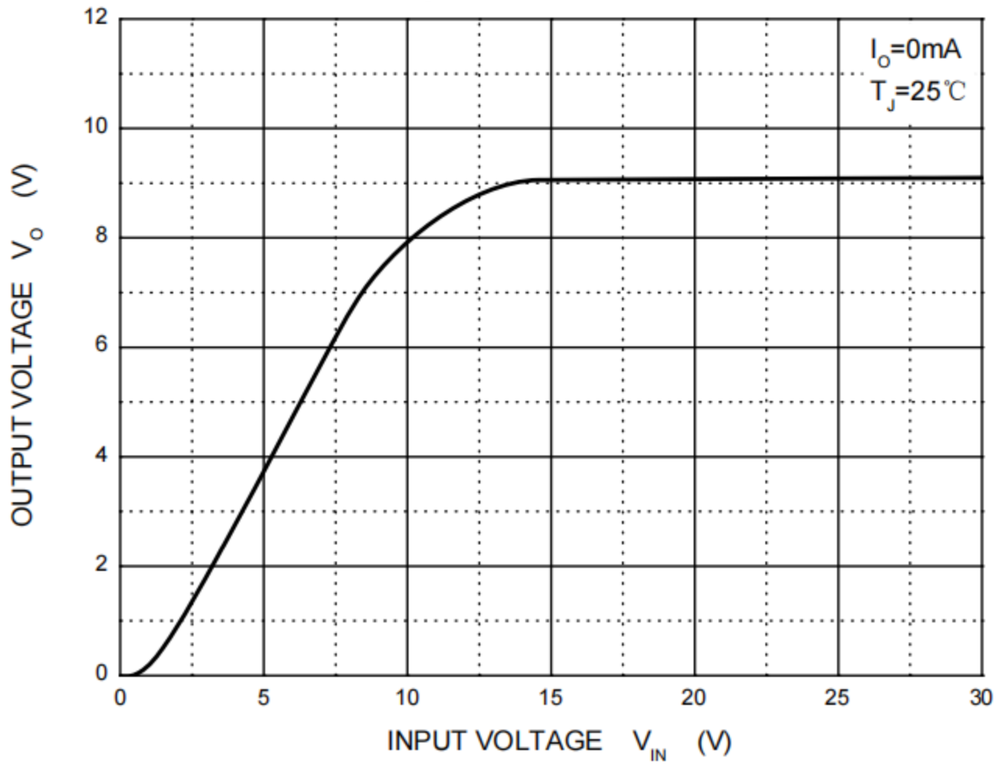
■ Typical application.



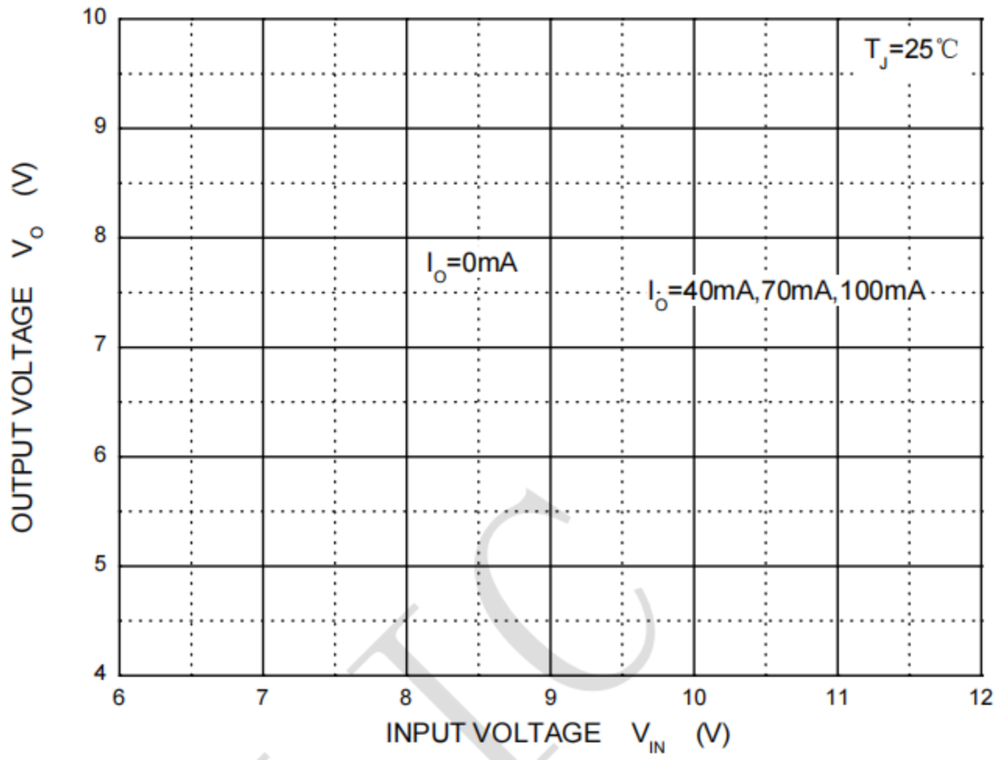

TECHPUBLIC

## ■ RATING AND CHARACTERISTIC CURVES

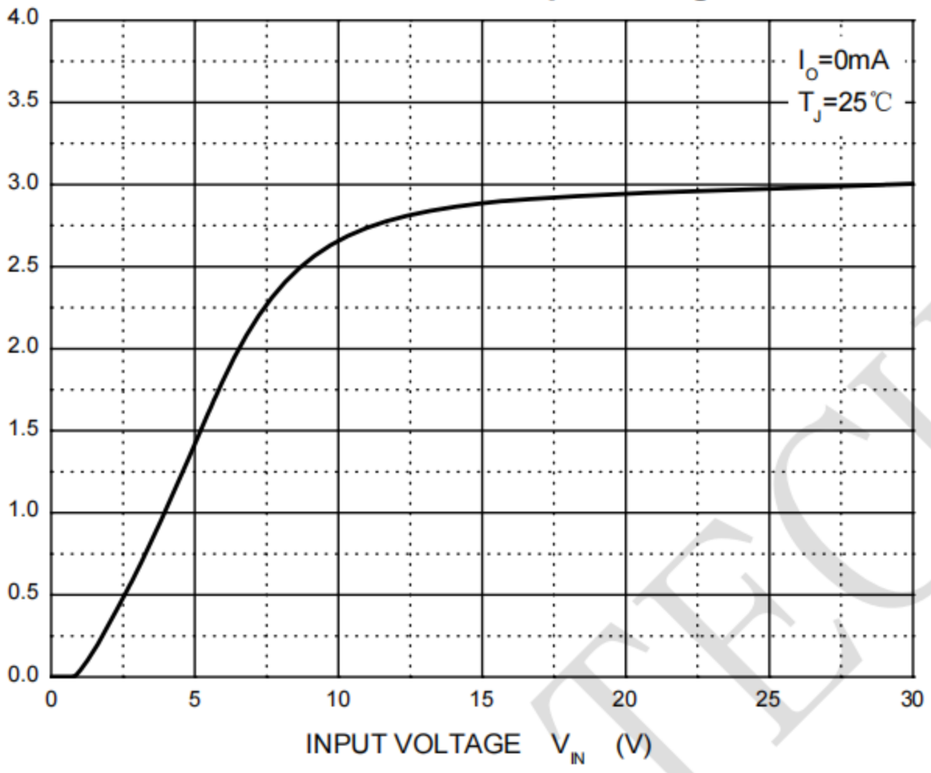
**Output Characteristics**



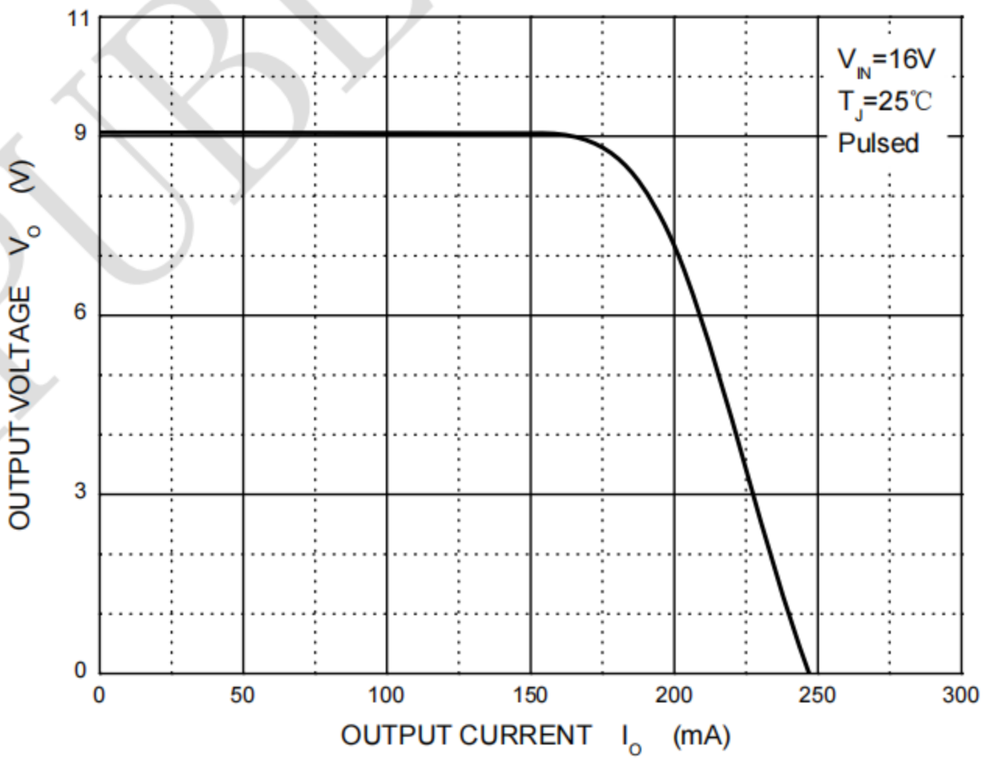

**Dropout Characteristics**



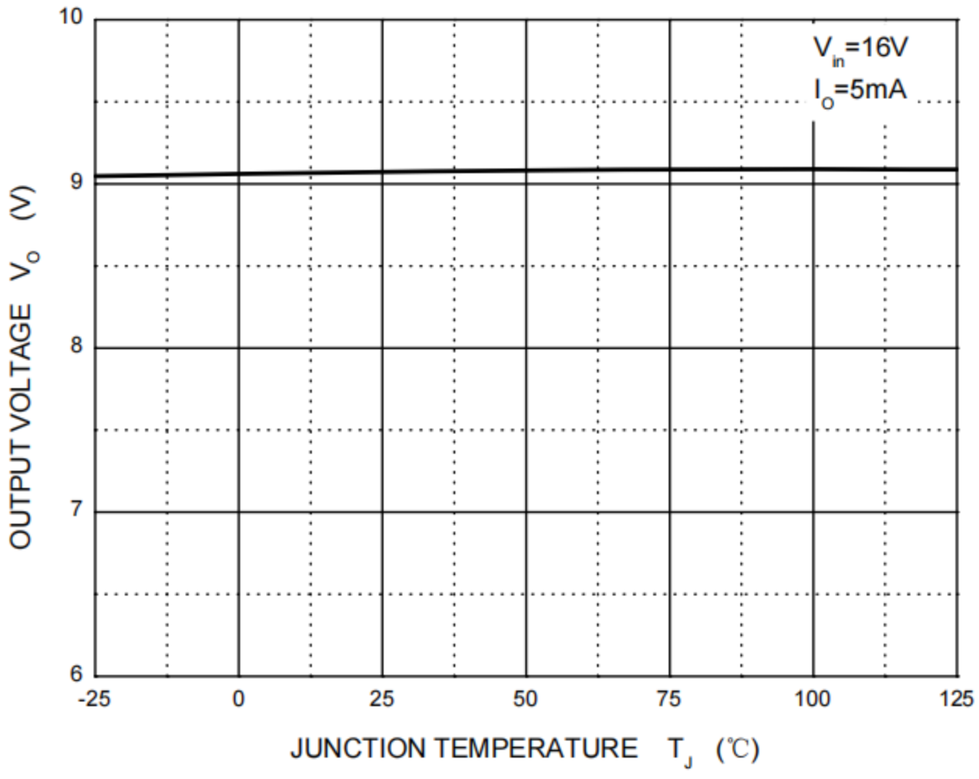

**Quiescent Current vs Input Voltage**



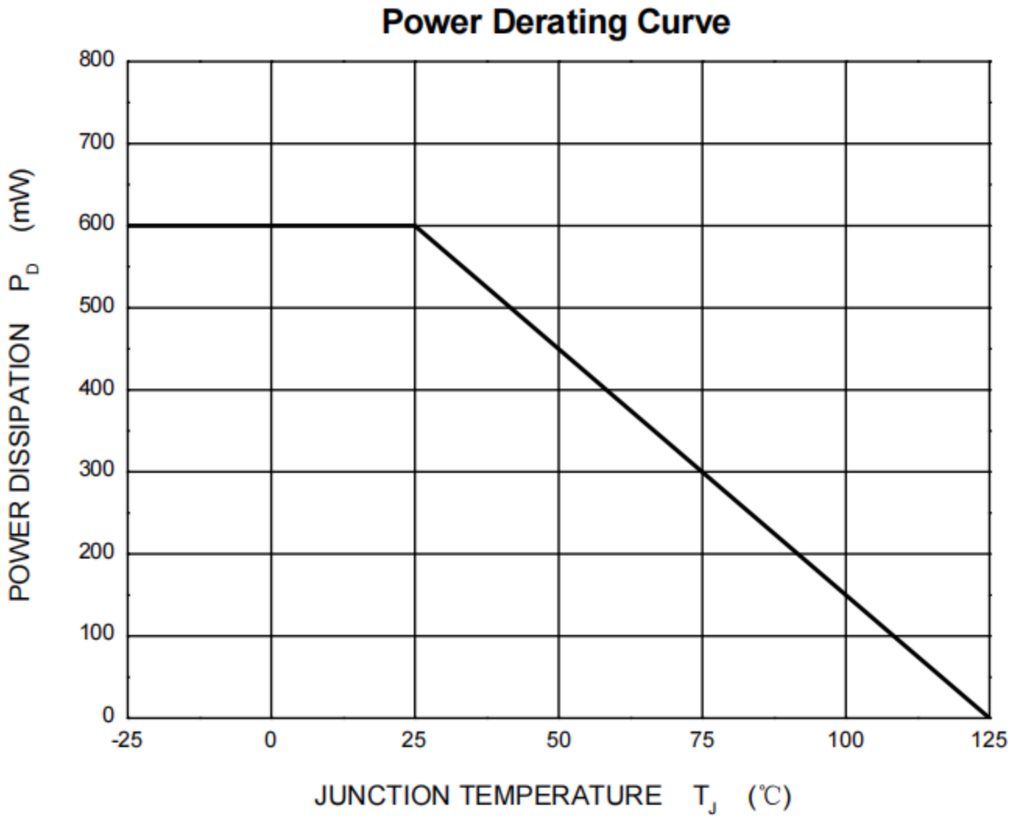

**Current Cut-off Grid Voltage**




**Output Voltage vs Junction Temperature**



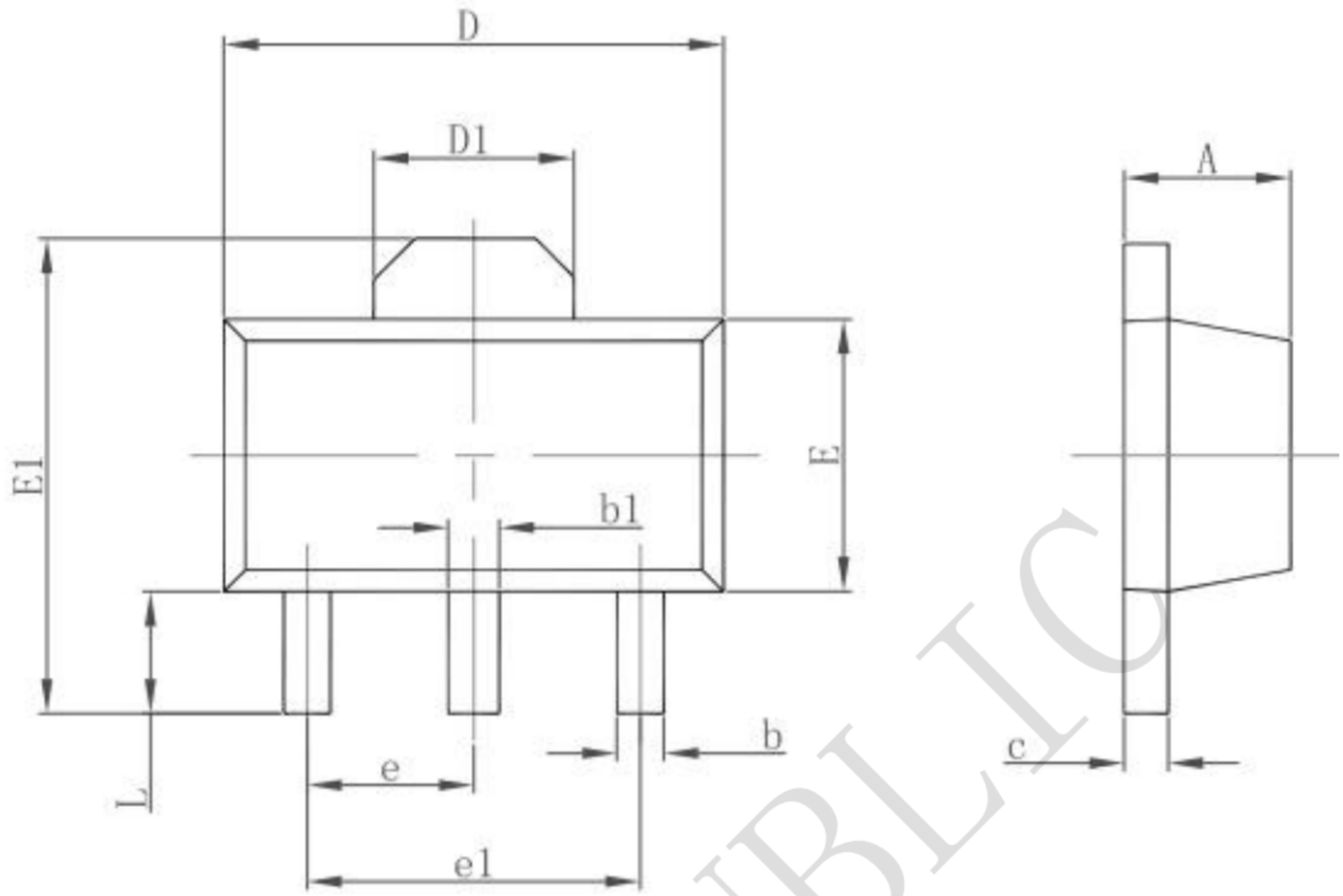

**Power Derating Curve**




TECH PUBLIC

## Package information

**SOT89-3**




| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|---|---|---|---|---|
| | Min. | Max. | Min. | Max. |
| A | 1.400 | 1.600 | 0.055 | 0.063 |
| b | 0.320 | 0.520 | 0.013 | 0.020 |
| b1 | 0.400 | 0.580 | 0.016 | 0.023 |
| c | 0.350 | 0.440 | 0.014 | 0.017 |
| D | 4.400 | 4.600 | 0.173 | 0.181 |
| D1 | 1.550 REF. | | 0.061 REF. | |
| E | 2.300 | 2.600 | 0.091 | 0.102 |
| E1 | 3.940 | 4.250 | 0.155 | 0.167 |
| e | 1.500 TYP. | | 0.060 TYP. | |
| e1 | 3.000 TYP. | | 0.118 TYP. | |
| L | 0.900 | 1.200 | 0.035 | 0.047 |

TECH PUBLIC