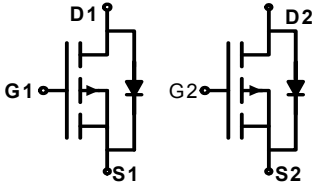
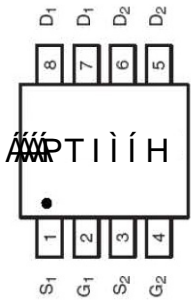
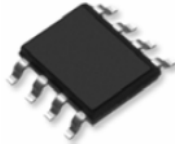


P-Channel Enhancement Mode Power MOSFET

| | |
|---|--|
| <p>Description</p> <p>The PTI11H uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 2.5V. This device is suitable for use as a load switch or in PWM applications.</p> <p>General Features</p> <ul style="list-style-type: none"> ● $V_{DS} = -20V, I_D = -9A$ ● $R_{DS(ON)} < 28m\Omega @ V_{GS} = -4.5V$ ● $R_{DS(ON)} < 40m\Omega @ V_{GS} = -2.5V$ ● High power and current handling capability ● Lead free product is acquired ● Surface Mount Package <p>Application</p> <ul style="list-style-type: none"> ● Motor drive ● Load switch ● Power management | <div style="text-align: center;">  <p>Schematic diagram</p>  <p>Marking and pin assignment</p>  <p>SOP-8 top view</p> </div> |
|---|--|

Package Marking And Ordering Information

| Device Marking | Device | Device Package | Reel Size | Tape width | Quantity |
|----------------|----------|----------------|-----------|------------|------------|
| PTI11H | AMPTI11H | SOP-8 | Ø330mm | 12mm | 2500 units |

Absolute Maximum Ratings ($T_A=25^\circ\text{C}$ unless otherwise noted)

| Parameter | Symbol | Limit | Unit |
|--|----------------|------------|------------------|
| Drain-Source Voltage | V_{DS} | -20 | V |
| Gate-Source Voltage | V_{GS} | ± 12 | V |
| Drain Current-Continuous | I_D | -9 | A |
| Drain Current-Pulsed ^(Note 1) | I_{DM} | -40 | A |
| Maximum Power Dissipation | P_D | 3.1 | W |
| Operating Junction and Storage Temperature Range | T_J, T_{STG} | -55 To 150 | $^\circ\text{C}$ |

Thermal Characteristic

| | | | |
|---|-----------------|----|--------------------|
| Thermal Resistance, Junction-to-Ambient ^(Note 2) | $R_{\theta JA}$ | 42 | $^\circ\text{C/W}$ |
|---|-----------------|----|--------------------|

Electrical Characteristics ($T_A=25^\circ\text{C}$ unless otherwise noted)

| Parameter | Symbol | Condition | Min | Typ | Max | Unit |
|--------------------------------|------------|----------------------------|-----|-----|-----|------|
| Off Characteristics | | | | | | |
| Drain-Source Breakdown Voltage | BV_{DSS} | $V_{GS}=0V, I_D=-250\mu A$ | -20 | - | - | V |

| | | | | | | |
|---|--------------|---|------|------|-----------|-----------|
| Zero Gate Voltage Drain Current | I_{DSS} | $V_{DS}=-20V, V_{GS}=0V$ | - | - | -1 | μA |
| Gate-Body Leakage Current | I_{GSS} | $V_{GS}=\pm 12V, V_{DS}=0V$ | - | - | ± 100 | nA |
| On Characteristics (Note 3) | | | | | | |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS}=V_{GS}, I_D=-250\mu A$ | -0.5 | -0.7 | -1.4 | V |
| Drain-Source On-State Resistance | $R_{DS(on)}$ | $V_{GS}=-4.5V, I_D=-6A$ | - | 22 | 28 | $m\Omega$ |
| | | $V_{GS}=-2.5V, I_D=-5A$ | | 32 | 40 | $m\Omega$ |
| Forward Transconductance | g_{FS} | $V_{DS}=-15V, I_D=-6A$ | - | 17 | - | S |
| Dynamic Characteristics (Note4) | | | | | | |
| Input Capacitance | C_{iss} | $V_{DS}=-10V, V_{GS}=0V,$ $F=1.0MHz$ | - | 2100 | - | PF |
| Output Capacitance | C_{oss} | | - | 498 | - | PF |
| Reverse Transfer Capacitance | C_{rss} | | - | 300 | - | PF |
| Switching Characteristics (Note 4) | | | | | | |
| Turn-on Delay Time | $t_{d(on)}$ | $V_{DD}=-10V, R_L=10\Omega,$ $V_{GS}=-4.5V, R_{GEN}=6\Omega$ | - | 25 | - | nS |
| Turn-on Rise Time | t_r | | - | 30 | - | nS |
| Turn-Off Delay Time | $t_{d(off)}$ | | - | 70 | - | nS |
| Turn-Off Fall Time | t_f | | - | 50 | - | nS |
| Total Gate Charge | Q_g | $V_{DS}=-10V, I_D=-6A, V_{GS}=-4.5V$ | - | 17 | - | nC |
| Gate-Source Charge | Q_{gs} | | - | 4.1 | - | nC |
| Gate-Drain Charge | Q_{gd} | | - | 4.3 | - | nC |
| Drain-Source Diode Characteristics | | | | | | |
| Diode Forward Voltage (Note 3) | V_{SD} | $V_{GS}=0V, I_S=-9A$ | - | - | -1.2 | V |

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, $t \leq 10$ sec.
3. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.
4. Guaranteed by design, not subject to production

Typical Electrical and Thermal Characteristics

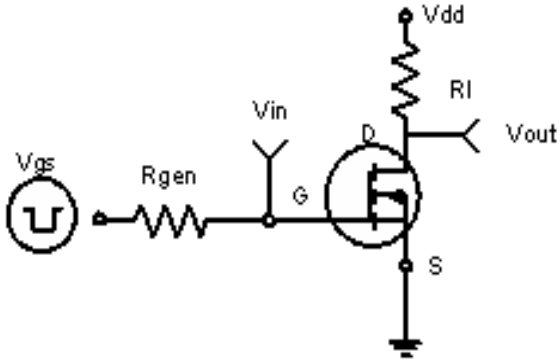


Figure 1 Switching Test Circuit

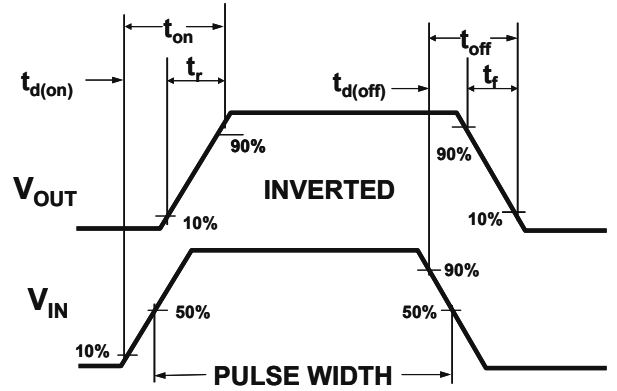


Figure 2 Switching Waveforms

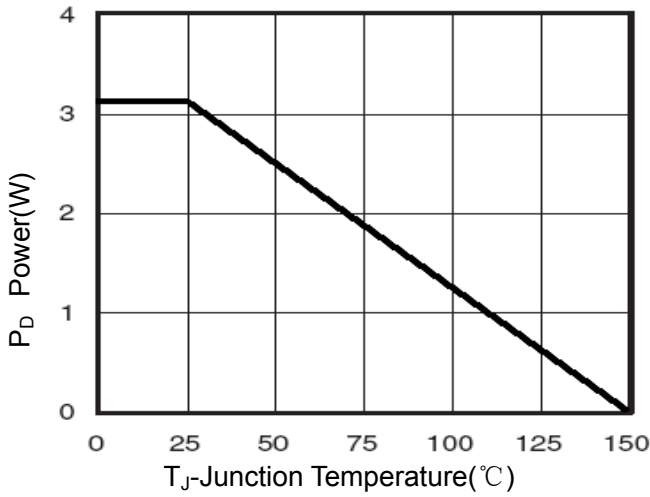


Figure 3 Power Dissipation

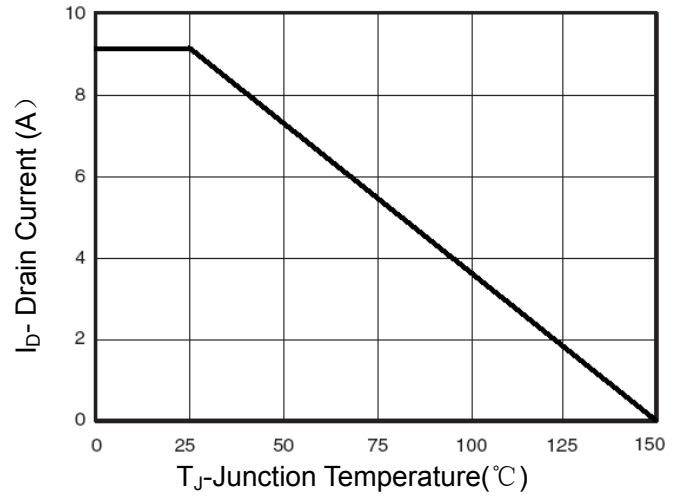


Figure 4 Drain Current

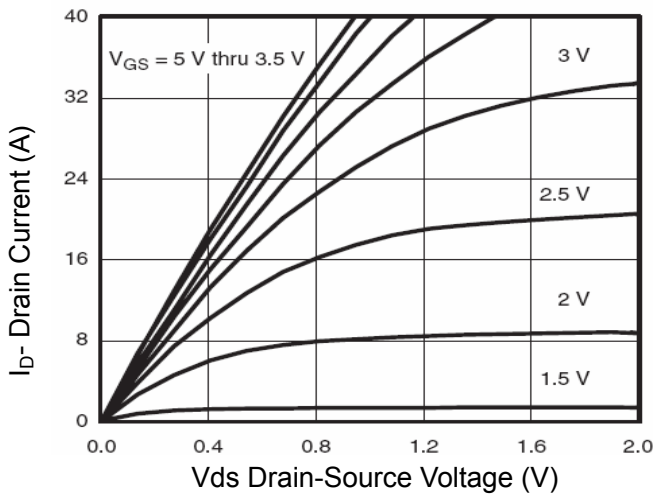


Figure 5 Output Characteristics

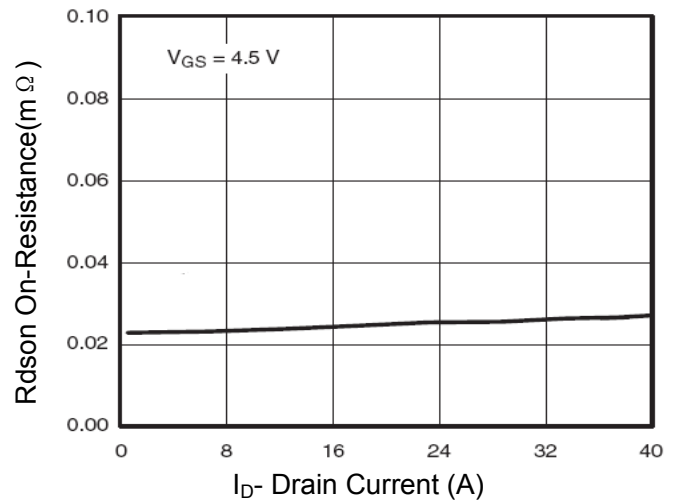


Figure 6 Drain-Source On-Resistance

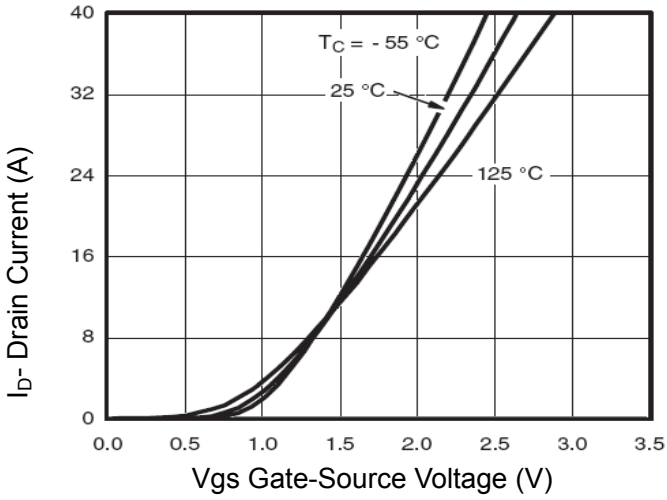


Figure 7 Transfer Characteristics

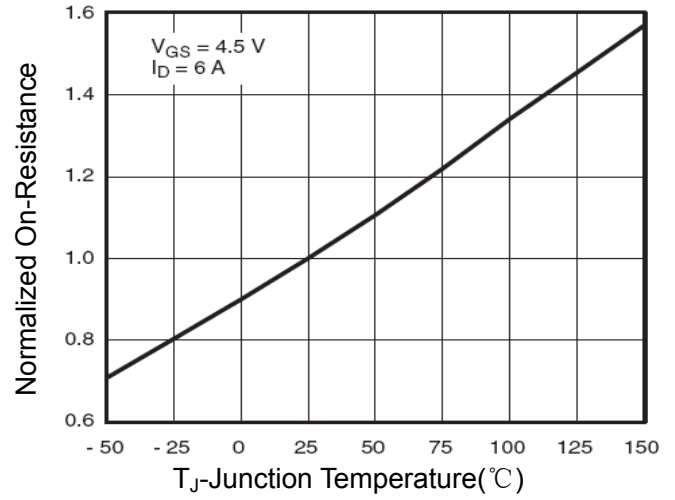


Figure 8 Drain-Source On-Resistance

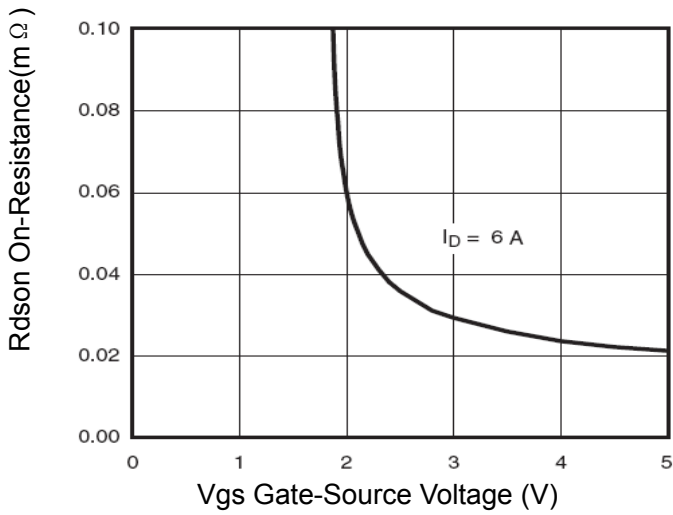


Figure 9 Rds(on) vs Vgs

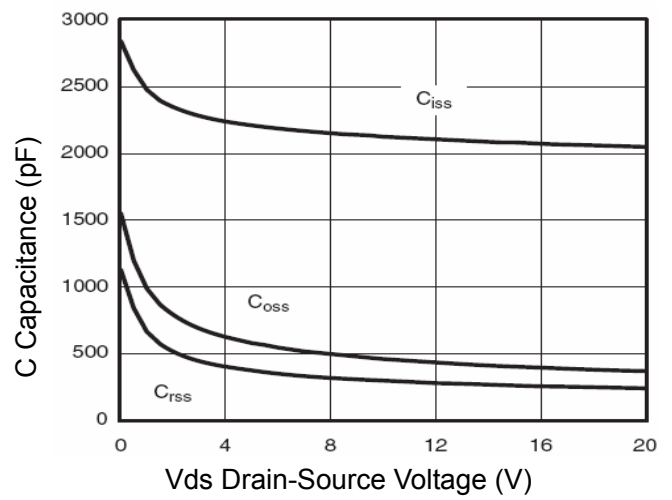


Figure 10 Capacitance vs Vds

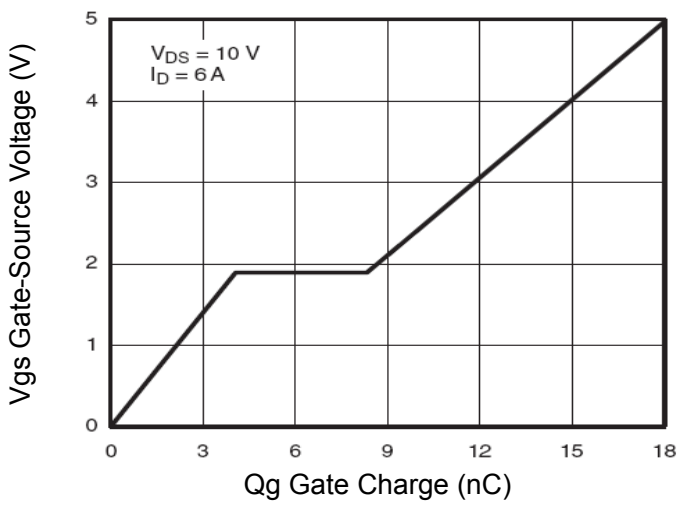


Figure 11 Gate Charge

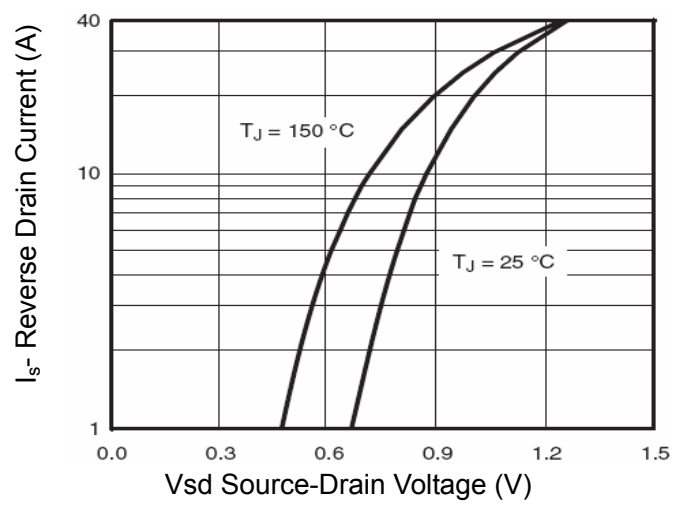


Figure 12 Source- Drain Diode Forward

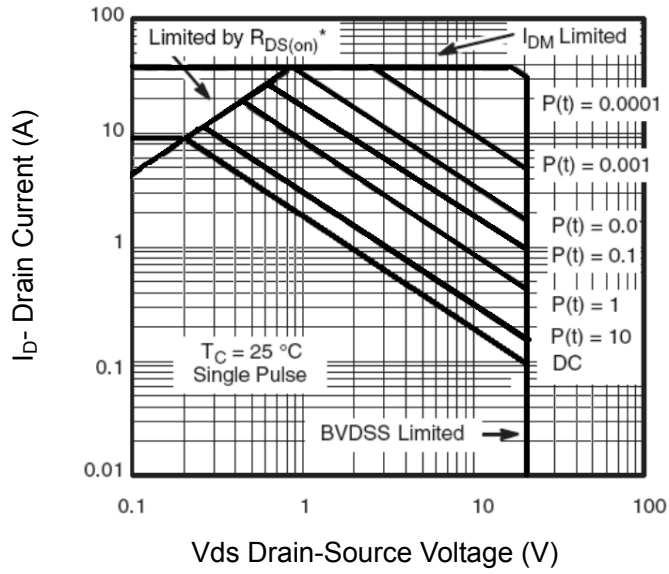


Figure 13 Safe Operation Area

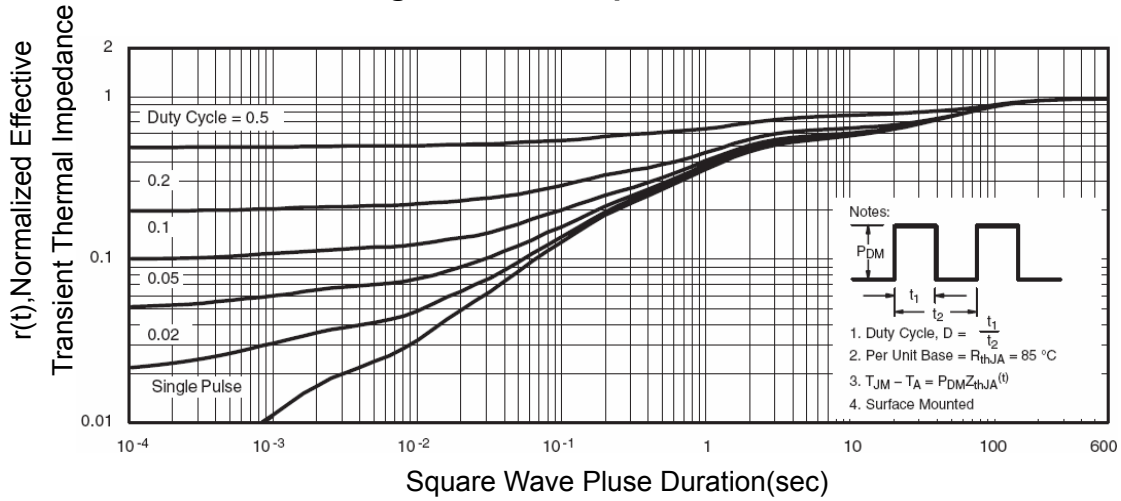
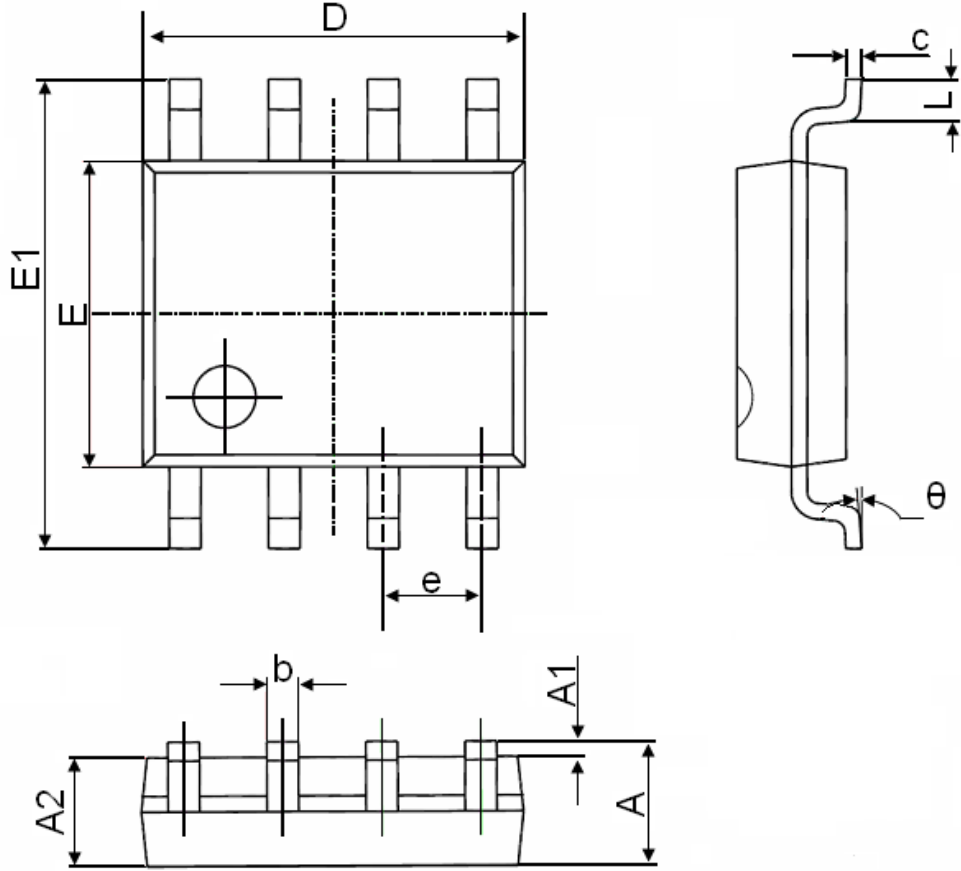


Figure 14 Normalized Maximum Transient Thermal Impedance



SOP-8 Package Information



| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|----------|---------------------------|-------|----------------------|-------|
| | Min. | Max. | Min. | Max. |
| A | 1.350 | 1.750 | 0.053 | 0.069 |
| A1 | 0.100 | 0.250 | 0.004 | 0.010 |
| A2 | 1.350 | 1.550 | 0.053 | 0.061 |
| b | 0.330 | 0.510 | 0.013 | 0.020 |
| c | 0.170 | 0.250 | 0.006 | 0.010 |
| D | 4.700 | 5.100 | 0.185 | 0.200 |
| E | 3.800 | 4.000 | 0.150 | 0.157 |
| E1 | 5.800 | 6.200 | 0.228 | 0.244 |
| e | 1.270(BSC) | | 0.050(BSC) | |
| L | 0.400 | 1.270 | 0.016 | 0.050 |
| θ | 0° | 8° | 0° | 8° |