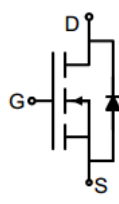



N-Channel Enhancement Mode Power MOSFET

| | |
|---|---|
| <p>Description</p> <p>The GT060N10 uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge. It can be used in a wide variety of applications.</p> <p>General Features</p> <ul style="list-style-type: none"> ● V_{DS} 100V ● I_D (at $V_{GS} = 10V$) 120A ● $R_{DS(ON)}$ (at $V_{GS} = 10V$) < 5.2mΩ ● $R_{DS(ON)}$ (at $V_{GS} = 4.5V$) < 7mΩ ● 100% Avalanche Tested ● RoHS Compliant <p>Application</p> <ul style="list-style-type: none"> ● Synchronous Rectification in SMPS or LED Driver ● UPS ● Motor Control ● BMS ● High Frequency Circuit |  <p style="text-align: center;">Schematic Diagram</p>  <p style="text-align: center;">TO-220 TO-263</p> |
|---|---|

| Device | Package | Marking | Packaging |
|-----------|---------|----------|-------------|
| GT060N10T | TO-220 | GT060N10 | 50pcs/Tube |
| GT060N10M | TO-263 | GT060N10 | 800pcs/Reel |

Absolute Maximum Ratings $T_C = 25^\circ C$, unless otherwise noted

| Parameter | Symbol | Value | Unit |
|--|----------------|------------|------------|
| Drain-Source Voltage | V_{DS} | 100 | V |
| Continuous Drain Current | I_D | 120 | A |
| Pulsed Drain Current (note1) | I_{DM} | 480 | A |
| Gate-Source Voltage | V_{GS} | ± 20 | V |
| Power Dissipation | P_D | 214 | W |
| Single pulse avalanche energy (note3) | E_{AS} | 81 | mJ |
| Operating Junction and Storage Temperature Range | T_J, T_{stg} | -55 To 150 | $^\circ C$ |

Thermal Resistance

| Parameter | Symbol | Value | Unit |
|---|------------|-------|--------------|
| Thermal Resistance, Junction-to-Case | R_{thJC} | 0.7 | $^\circ C/W$ |
| Thermal Resistance, Junction-to-Ambient | R_{thJA} | 50 | $^\circ C/W$ |

| Specifications $T_J = 25^\circ\text{C}$, unless otherwise noted | | | | | | |
|--|---------------|---|-------|------|-----------|------------|
| Parameter | Symbol | Test Conditions | Value | | | Unit |
| | | | Min. | Typ. | Max. | |
| Static Parameters | | | | | | |
| Drain-Source Breakdown Voltage | $V_{(BR)DSS}$ | $V_{GS} = 0V, I_D = 250\mu A$ | 100 | -- | -- | V |
| Zero Gate Voltage Drain Current | I_{DSS} | $V_{DS} = 100V, V_{GS} = 0V$ | -- | -- | 1 | μA |
| Gate-Source Leakage | I_{GSS} | $V_{GS} = \pm 20V$ | -- | -- | ± 100 | nA |
| Gate-Source Threshold Voltage | $V_{GS(th)}$ | $V_{DS} = V_{GS}, I_D = 250\mu A$ | 1 | 1.9 | 3 | V |
| Drain-Source On-Resistance | $R_{DS(on)}$ | $V_{GS} = 10V, I_D = 20A$ | -- | 4.5 | 5.2 | m Ω |
| | | $V_{GS} = 4.5V, I_D = 20A$ | -- | 6.5 | 7 | |
| Forward Transconductance | g_{FS} | $V_{DS}=5V, I_D=20A$ | -- | 70 | -- | S |
| Dynamic Parameters | | | | | | |
| Input Capacitance | C_{iss} | $V_{GS} = 0V,$ $V_{DS} = 50V,$ $f = 1.0MHz$ | -- | 4351 | -- | pF |
| Output Capacitance | C_{oss} | | -- | 323 | -- | |
| Reverse Transfer Capacitance | C_{rss} | | -- | 12 | -- | |
| Total Gate Charge | Q_g | $V_{DS} = 50V,$ $I_D = 20A,$ $V_{GS} = 10V$ | -- | 60 | -- | nC |
| Gate-Source Charge | Q_{gs} | | -- | 8 | -- | |
| Gate-Drain Charge | Q_{gd} | | -- | 10 | -- | |
| Turn-on Delay Time | $t_{d(on)}$ | $V_{DD} = 50V,$ $I_D = 20A,$ $R_G = 10\Omega$ | -- | 15 | -- | ns |
| Turn-on Rise Time | t_r | | -- | 6 | -- | |
| Turn-off Delay Time | $t_{d(off)}$ | | -- | 42 | -- | |
| Turn-off Fall Time | t_f | | -- | 8 | -- | |
| Drain-Source Body Diode Characteristics | | | | | | |
| Continuous Body Diode Current | I_S | $T_C = 25^\circ\text{C}$ | -- | -- | 120 | A |
| Body Diode Voltage | V_{SD} | $T_J = 25^\circ\text{C}, I_{SD} = 20A, V_{GS} = 0V$ | -- | -- | 1.2 | V |

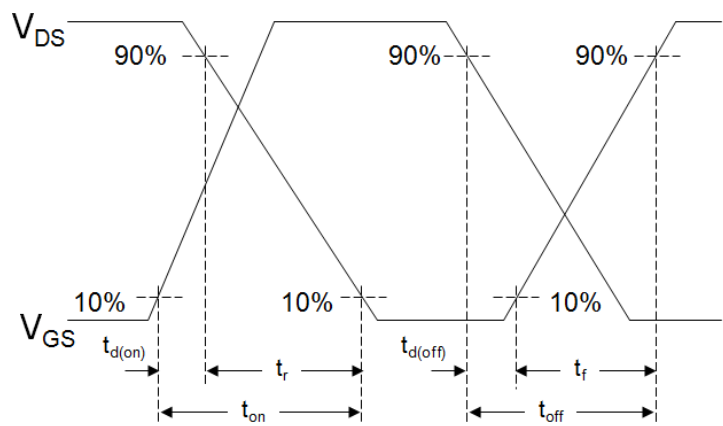
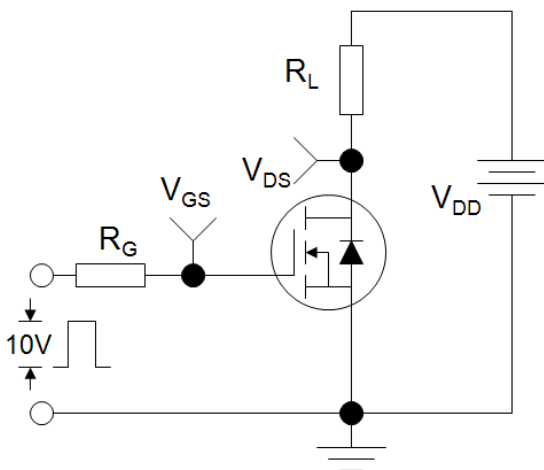
Notes

1. Repetitive Rating: Pulse width limited by maximum junction temperature
2. Identical low side and high side switch with identical R_G
3. EAS condition : $T_J=25^\circ\text{C}$, $V_{DD}=50V, V_{GS}=10V, L=0.5mH, R_g=25\Omega$

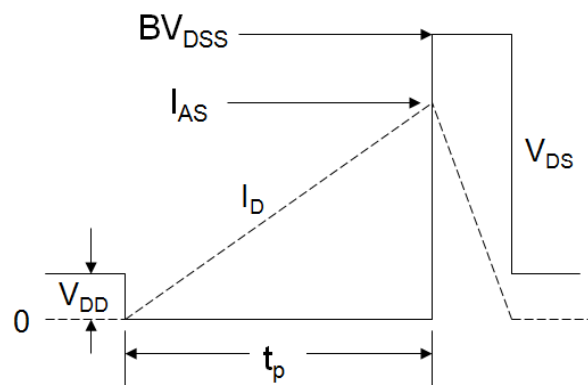
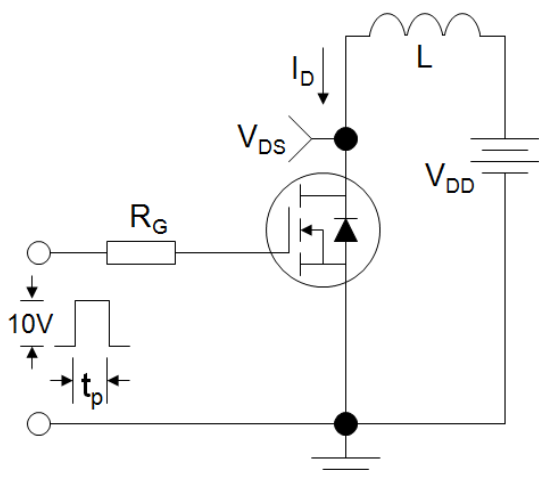
Gate Charge Test Circuit



EAS Test Circuit



Switch Time Test Circuit



Typical Characteristics $T_J = 25^\circ\text{C}$, unless otherwise noted

Figure 1. Output Characteristics

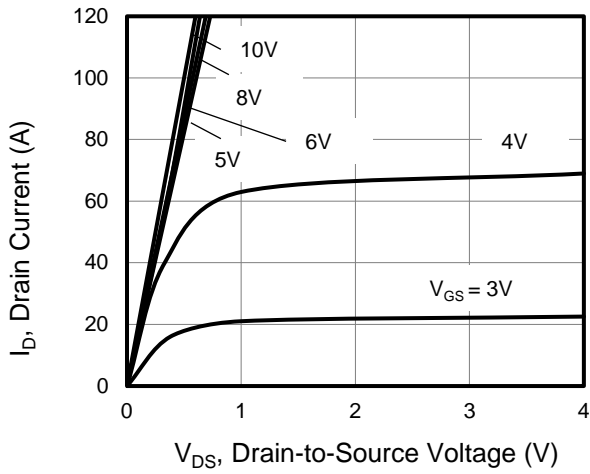


Figure 2. Transfer Characteristics

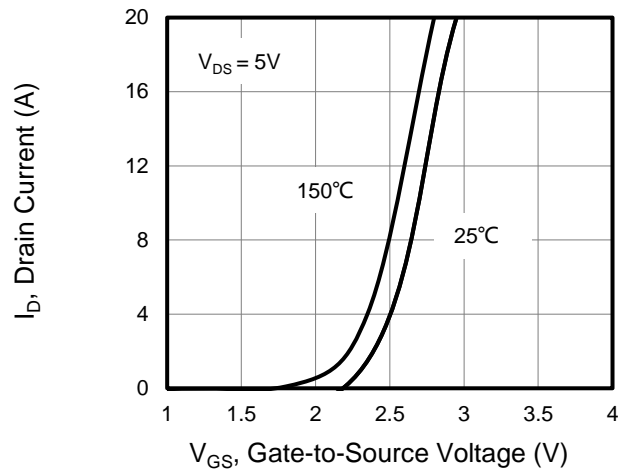


Figure 3. Gate Charge

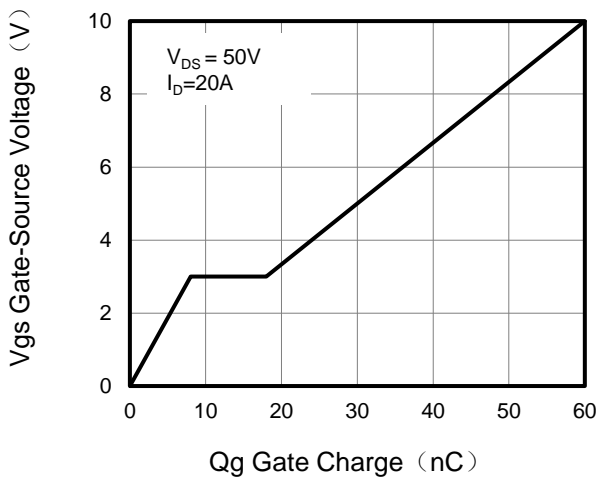


Figure 4. Drain Source On Resistance

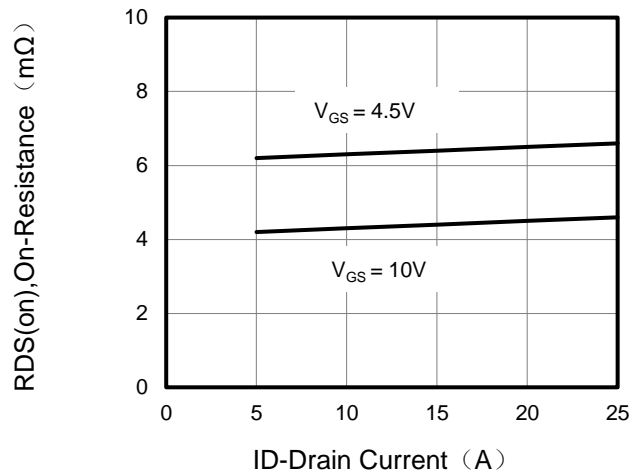


Figure 5. Capacitance vs Vds

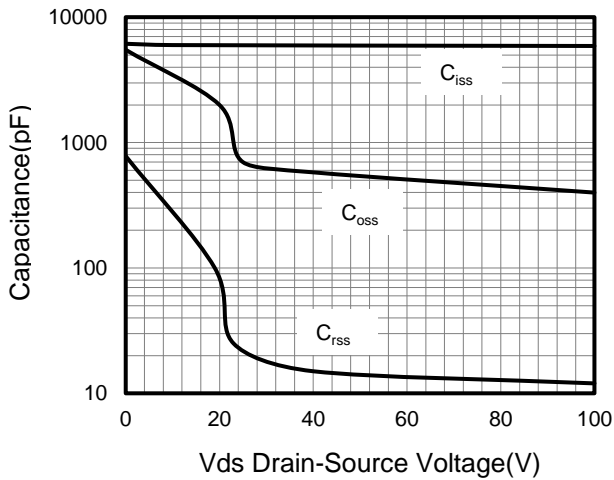
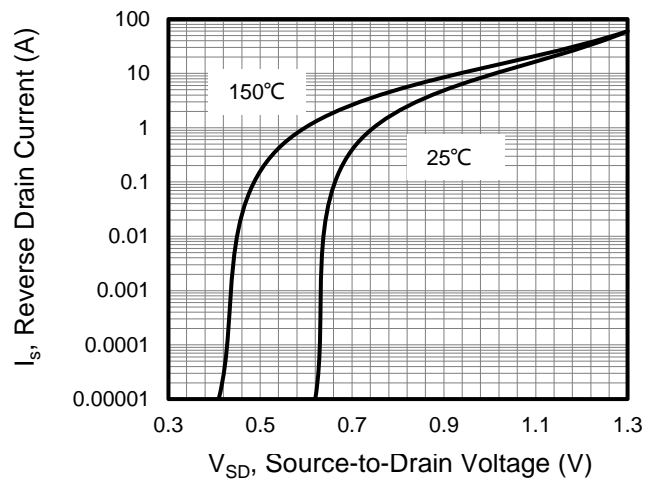


Figure 6. Source-Drain Diode Forward



Typical Characteristics $T_J = 25^\circ\text{C}$, unless otherwise noted

Figure 7. Drain-Source On-Resistance

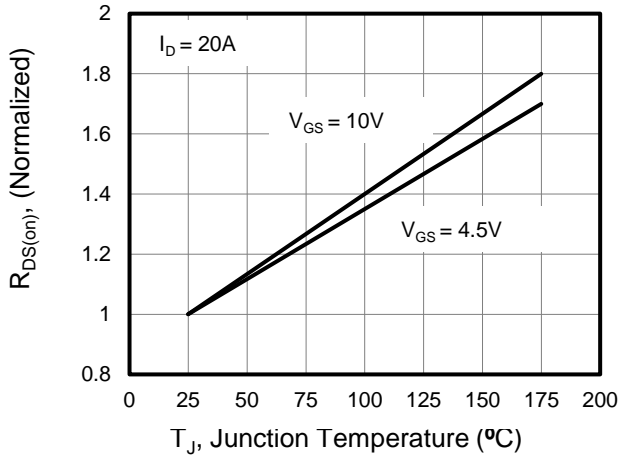


Figure 8. Safe Operation Area

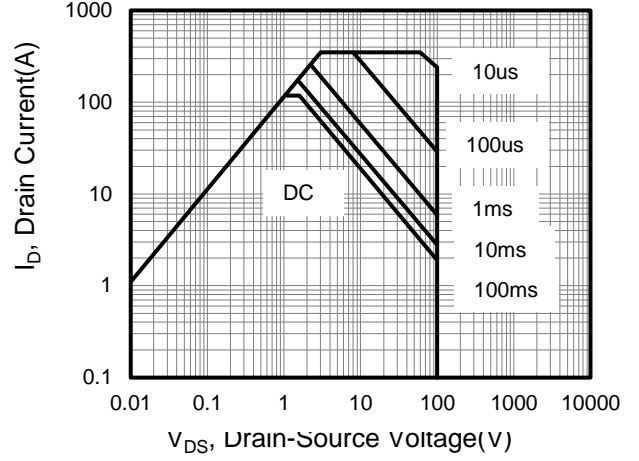
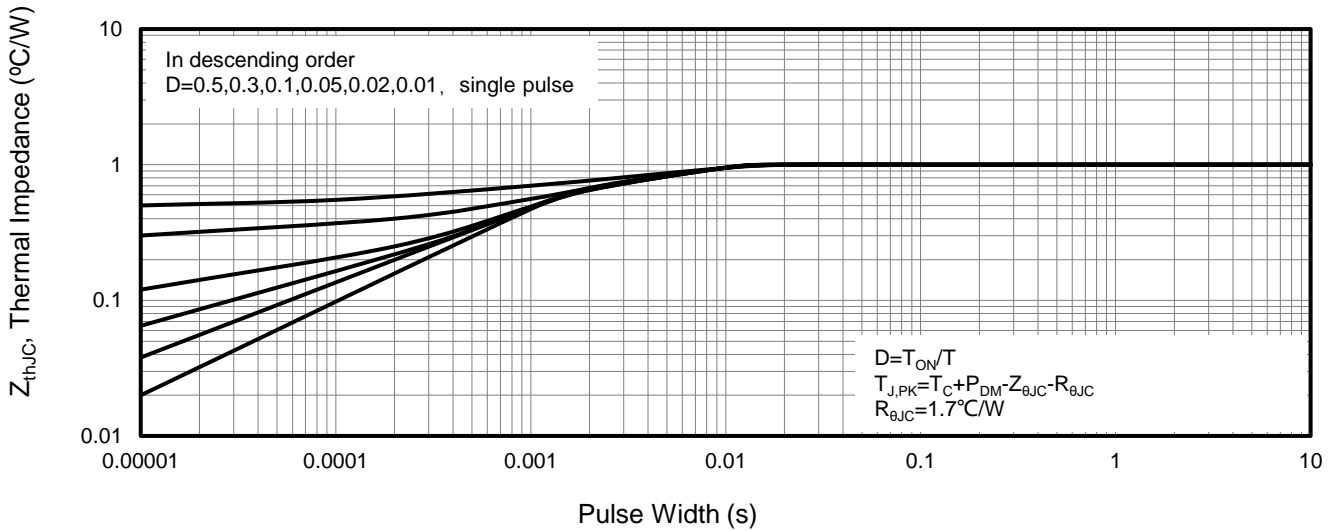
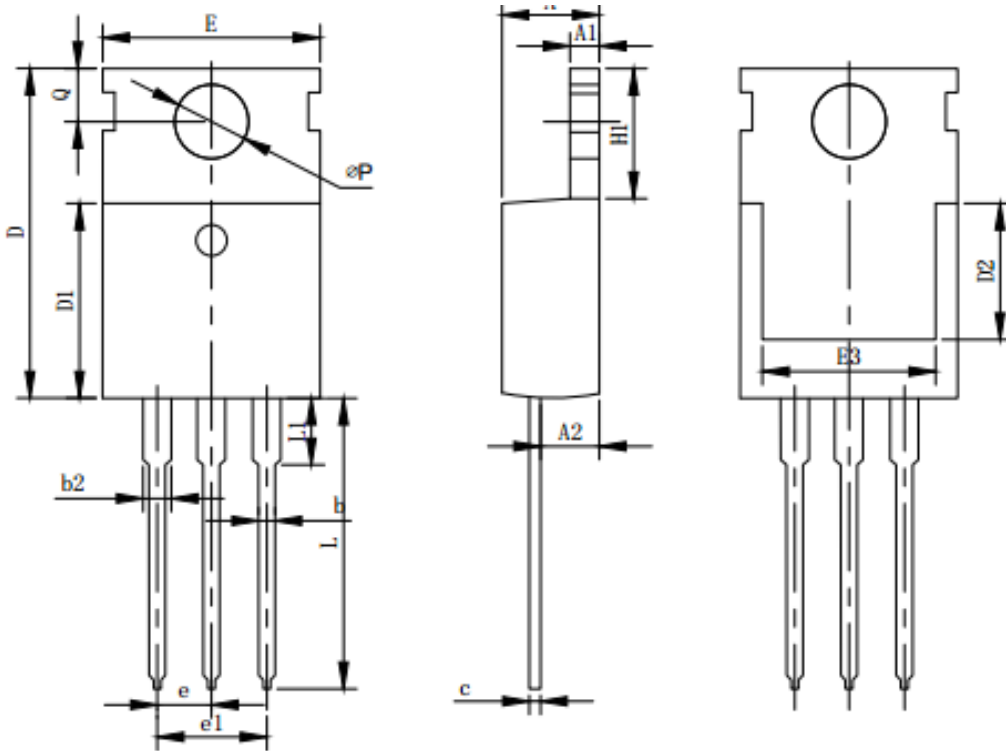


Figure 9. Normalized Maximum Transient Thermal Impedance

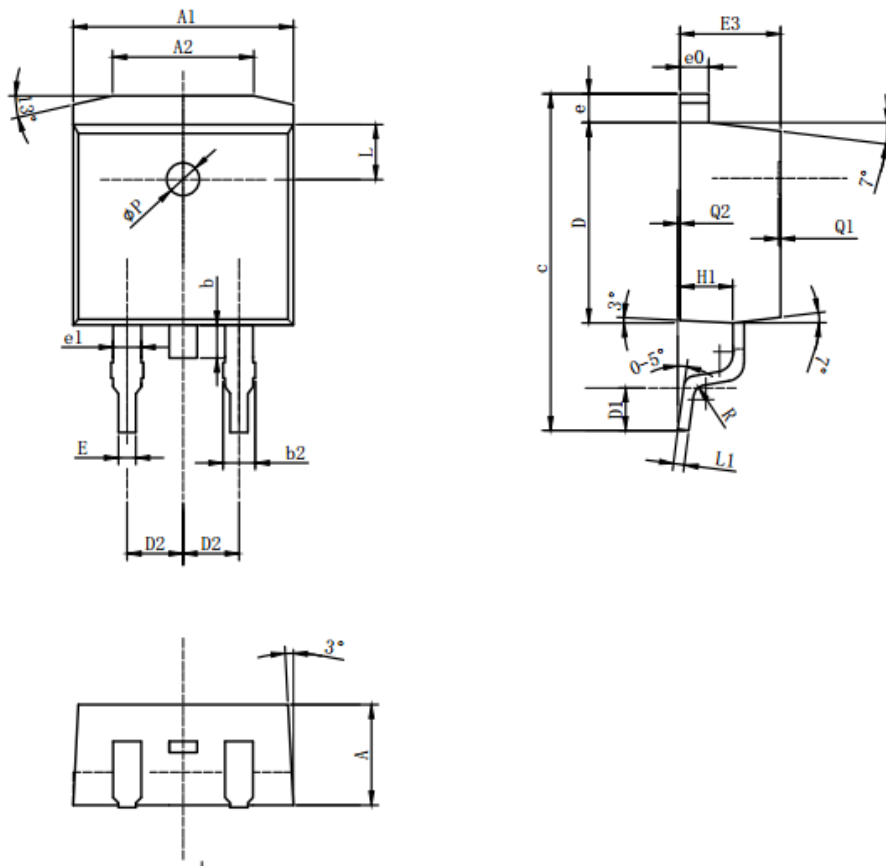


TO-220 Package Information



| Symbol | Dimensions in Millimeters | | |
|--------|---------------------------|------|------|
| | MIN. | NOM. | MAX. |
| A | 4.37 | 4.57 | 4.7 |
| A1 | 1.25 | 1.3 | 1.4 |
| A2 | 2.2 | 2.4 | 2.6 |
| b | 0.7 | 0.8 | 0.95 |
| b2 | 1.7 | 1.27 | 1.47 |
| c | 0.45 | 0.5 | 0.6 |
| D | 15.1 | 15.6 | 16.1 |
| D1 | 8.8 | 9.1 | 9.4 |
| D2 | 5.5 | | |
| E | 9.7 | 10 | 10.3 |
| e | 2.54BSC | | |
| e1 | 5.08BSC | | |
| H1 | 6.25 | 6.5 | 6.85 |
| L | 12.75 | 13.5 | 13.8 |
| L1 | | 3.1 | 3.4 |
| øP | 3.4 | 3.6 | 3.8 |
| Q | 2.6 | 2.8 | 3 |

TO-263 Package Information



COMMON DIMENSIONS

| SYMBOL | mm | | |
|----------|-------|-------|-------|
| | MIN | NOM | MAX |
| A | 4.52 | 4.57 | 4.62 |
| A1 | 9.95 | 10.00 | 10.05 |
| A2 | 6.30 | 6.40 | 6.50 |
| b | 1.30 | 1.50 | 1.70 |
| b2 | 1.17 | 1.27 | 1.37 |
| c | 14.80 | 15.00 | 15.20 |
| D | 9.05 | 9.10 | 9.15 |
| D1 | 1.90 | 2.10 | 2.30 |
| D2 | - | 2.54 | - |
| E | - | 0.80 | - |
| E3 | - | 4.57 | - |
| e | - | 1.30 | - |
| e0 | - | 1.30 | - |
| e1 | 1.73 | 3 | - |
| H1 | - | 2.40 | - |
| L | - | 2.50 | - |
| L1 | - | 0.50 | - |
| ϕP | - | 1.50 | - |
| R | - | 0.50 | - |
| Q1 | 0.10 | - | 0.15 |
| Q2 | 0 | - | 0.02 |

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