

Package Marking and Ordering Information

| Device Marking | Device | Package | Reel Size | Tape Width | Quantity |
|----------------|----------------|---------|-----------|------------|----------|
| FQA11N90C | FQA11N90C | TO-3P | -- | -- | 30 |
| FQA11N90C | FQA11N90C_F109 | TO-3PN | -- | -- | 30 |

Electrical Characteristics T_C = 25°C unless otherwise noted

| Symbol | Parameter | Test Conditions | Min | Typ | Max | Units |
|--|---|---|-----|------|------|-------|
| Off Characteristics | | | | | | |
| BV _{DSS} | Drain-Source Breakdown Voltage | V _{GS} = 0 V, I _D = 250 μA | 900 | -- | -- | V |
| ΔBV _{DSS} / ΔT _J | Breakdown Voltage Temperature Coefficient | I _D = 250 μA, Referenced to 25°C | -- | 1.02 | -- | V/°C |
| I _{DSS} | Zero Gate Voltage Drain Current | V _{DS} = 900 V, V _{GS} = 0 V | -- | -- | 10 | μA |
| | | V _{DS} = 720 V, T _C = 125°C | -- | -- | 100 | μA |
| I _{GSSF} | Gate-Body Leakage Current, Forward | V _{GS} = 30 V, V _{DS} = 0 V | -- | -- | 100 | nA |
| I _{GSSR} | Gate-Body Leakage Current, Reverse | V _{GS} = -30 V, V _{DS} = 0 V | -- | -- | -100 | nA |
| On Characteristics | | | | | | |
| V _{GS(th)} | Gate Threshold Voltage | V _{DS} = V _{GS} , I _D = 250 μA | 3.0 | -- | 5.0 | V |
| R _{DS(on)} | Static Drain-Source On-Resistance | V _{GS} = 10 V, I _D = 5.5 A | -- | 1.12 | 1.4 | Ω |
| g _{FS} | Forward Transconductance | V _{DS} = 50 V, I _D = 5.5 A (Note 4) | -- | 9.0 | -- | S |
| Dynamic Characteristics | | | | | | |
| C _{iss} | Input Capacitance | V _{DS} = 25 V, V _{GS} = 0 V, f = 1.0 MHz | -- | 2530 | 3290 | pF |
| C _{oss} | Output Capacitance | | -- | 215 | 280 | pF |
| C _{rss} | Reverse Transfer Capacitance | | -- | 23 | 30 | pF |
| Switching Characteristics | | | | | | |
| t _{d(on)} | Turn-On Delay Time | V _{DD} = 450 V, I _D = 11.0A, R _G = 25 Ω (Note 4, 5) | -- | 60 | 130 | ns |
| t _r | Turn-On Rise Time | | -- | 130 | 270 | ns |
| t _{d(off)} | Turn-Off Delay Time | | -- | 130 | 270 | ns |
| t _f | Turn-Off Fall Time | | -- | 85 | 180 | ns |
| Q _g | Total Gate Charge | V _{DS} = 720 V, I _D = 11.0A, V _{GS} = 10 V (Note 4, 5) | -- | 60 | 80 | nC |
| Q _{gs} | Gate-Source Charge | | -- | 13 | -- | nC |
| Q _{gd} | Gate-Drain Charge | | -- | 25 | -- | nC |
| Drain-Source Diode Characteristics and Maximum Ratings | | | | | | |
| I _S | Maximum Continuous Drain-Source Diode Forward Current | | -- | -- | 11.0 | A |
| I _{SM} | Maximum Pulsed Drain-Source Diode Forward Current | | -- | -- | 44.0 | A |
| V _{SD} | Drain-Source Diode Forward Voltage | V _{GS} = 0 V, I _S =11.0 A | -- | -- | 1.4 | V |
| t _{rr} | Reverse Recovery Time | V _{GS} = 0 V, I _S = 11.0 A, dI _F / dt = 100 A/μs (Note 4) | -- | 1000 | -- | ns |
| Q _{rr} | Reverse Recovery Charge | | -- | 17.0 | -- | μC |

NOTES:

1. Repetitive Rating : Pulse width limited by maximum junction temperature
2. L = 15mH, I_{AS} = 11.0A, V_{DD} = 50V, R_G = 25 Ω, Starting T_J = 25°C
3. I_{SD} ≤ 11.0A, di/dt ≤ 200A/μs, V_{DD} ≤ BV_{DSS}, Starting T_J = 25°C
4. Pulse Test : Pulse width ≤ 300μs, Duty cycle ≤ 2%
5. Essentially independent of operating temperature

Typical Performance Characteristics

Figure 1. On-Region Characteristics

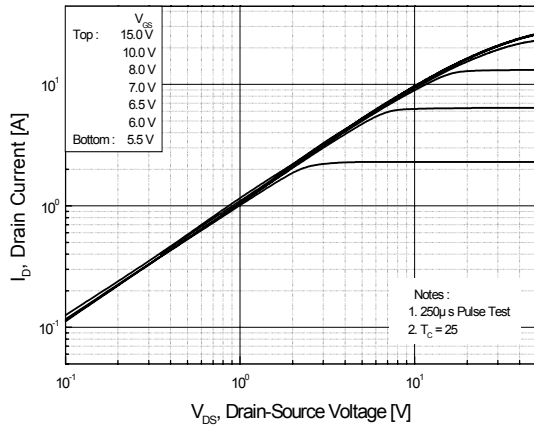


Figure 2. Transfer Characteristics

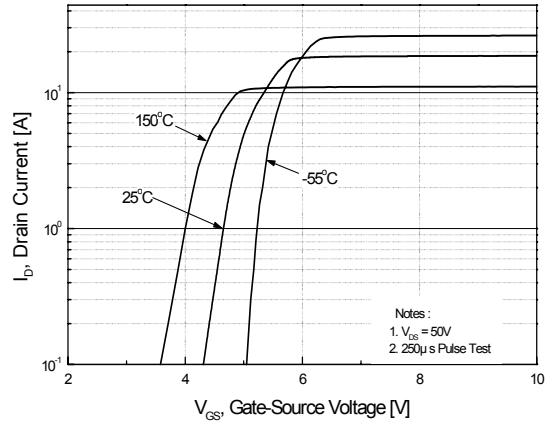


Figure 3. On-Resistance Variation vs. Drain Current and Gate Voltage

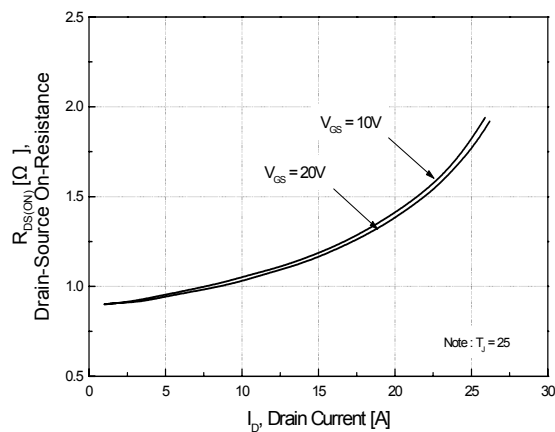


Figure 4. Body Diode Forward Voltage Variation vs. Source Current and Temperature

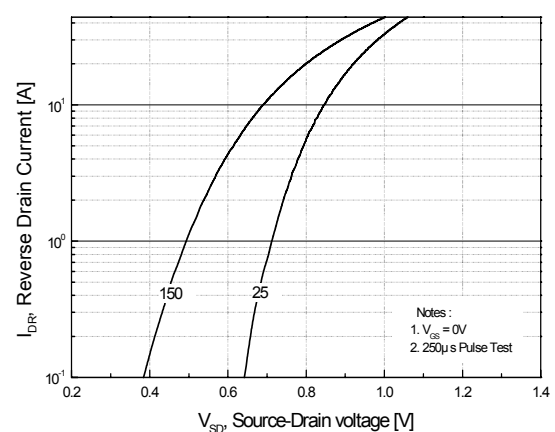


Figure 5. Capacitance Characteristics

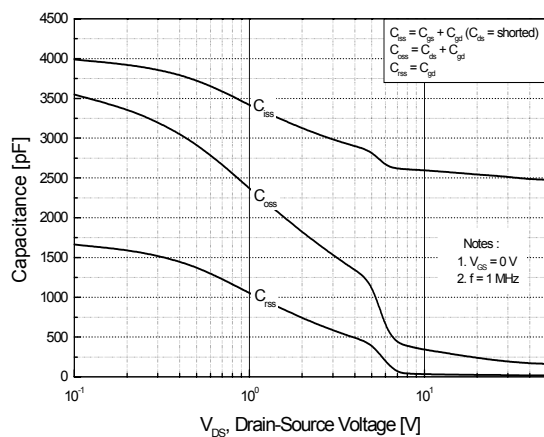
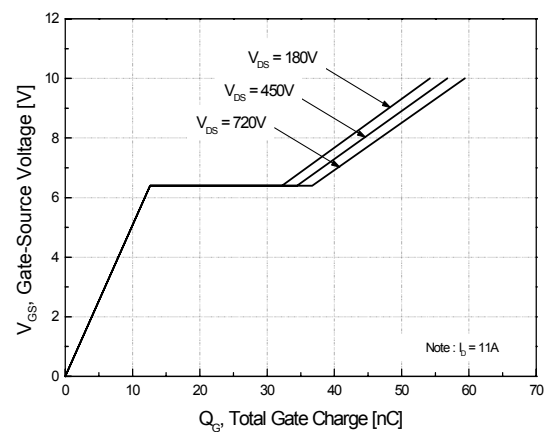


Figure 6. Gate Charge Characteristics



Typical Performance Characteristics (Continued)

Figure 7. Breakdown Voltage Variation vs. Temperature

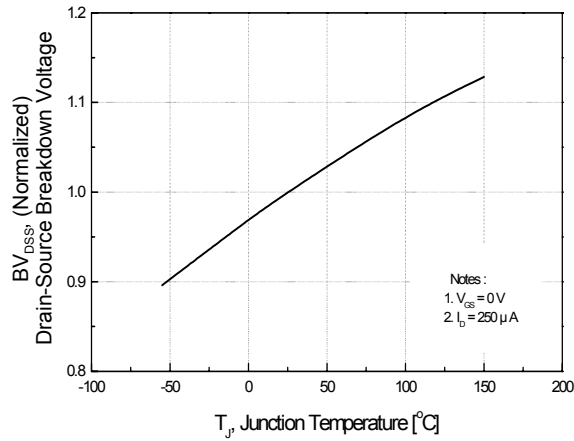


Figure 8. On-Resistance Variation vs. Temperature

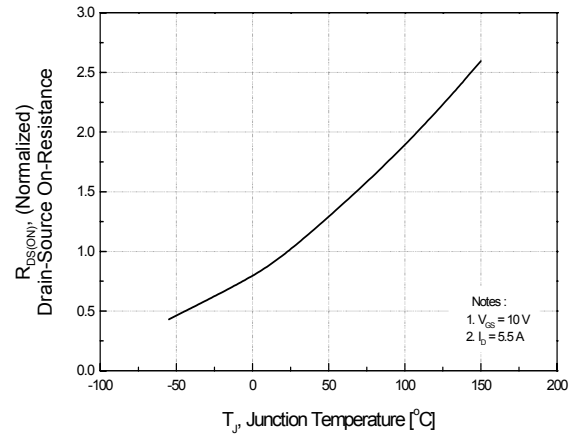


Figure 9. Maximum Safe Operating Area

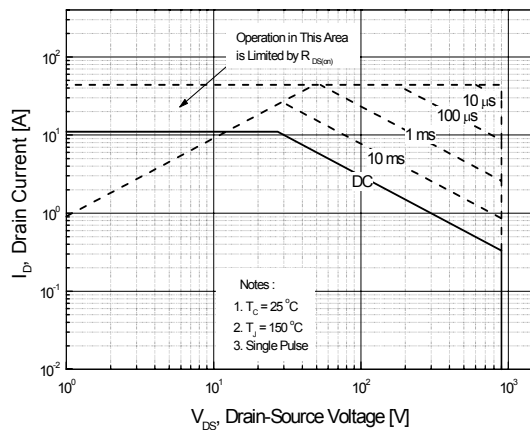


Figure 10. Maximum Drain Current vs. Case Temperature

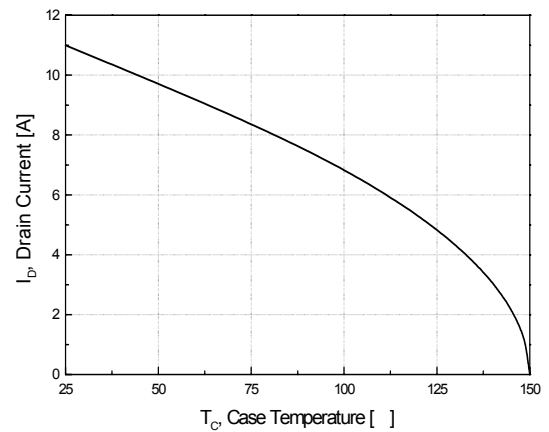
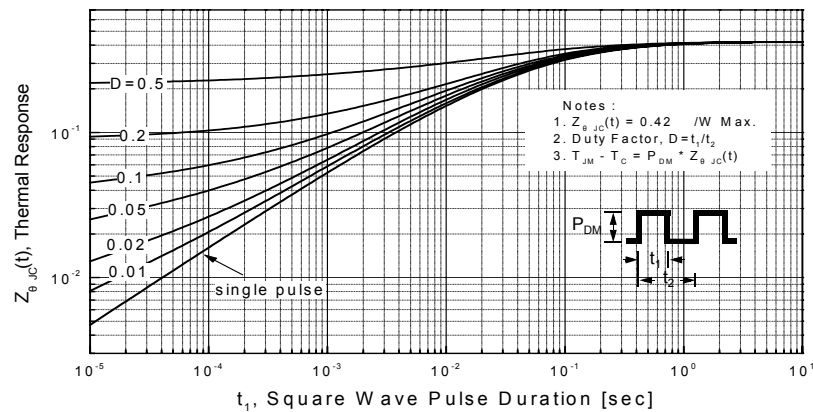
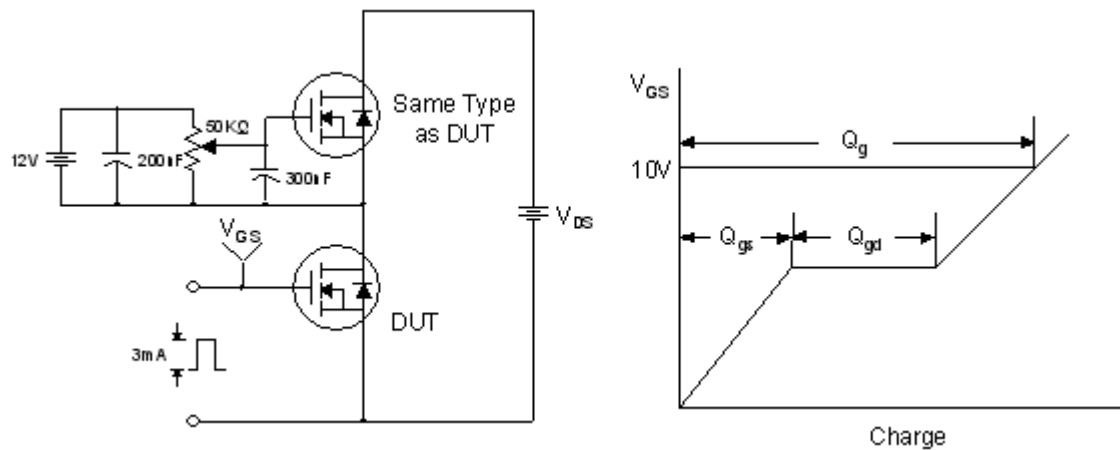


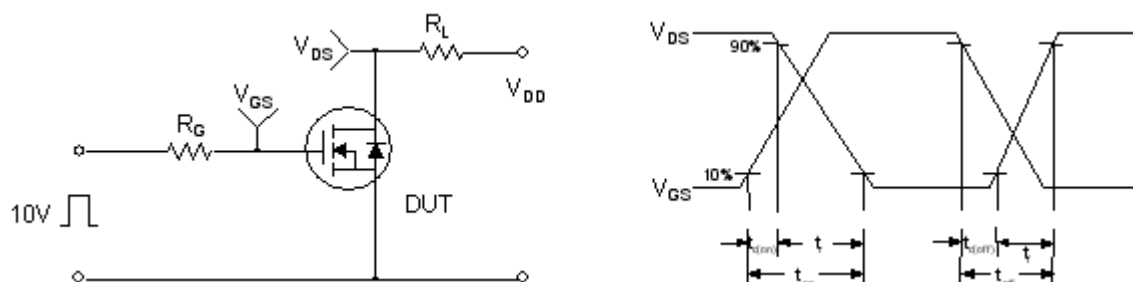
Figure 11. Transient Thermal Response Curve



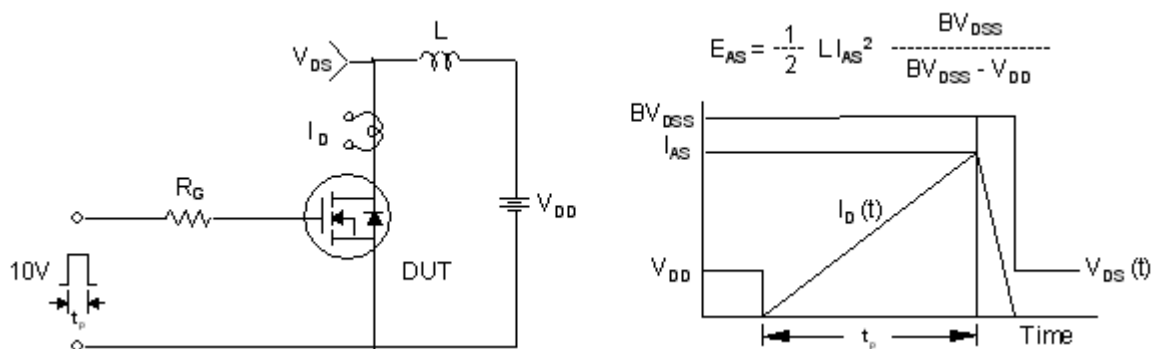
Gate Charge Test Circuit & Waveform



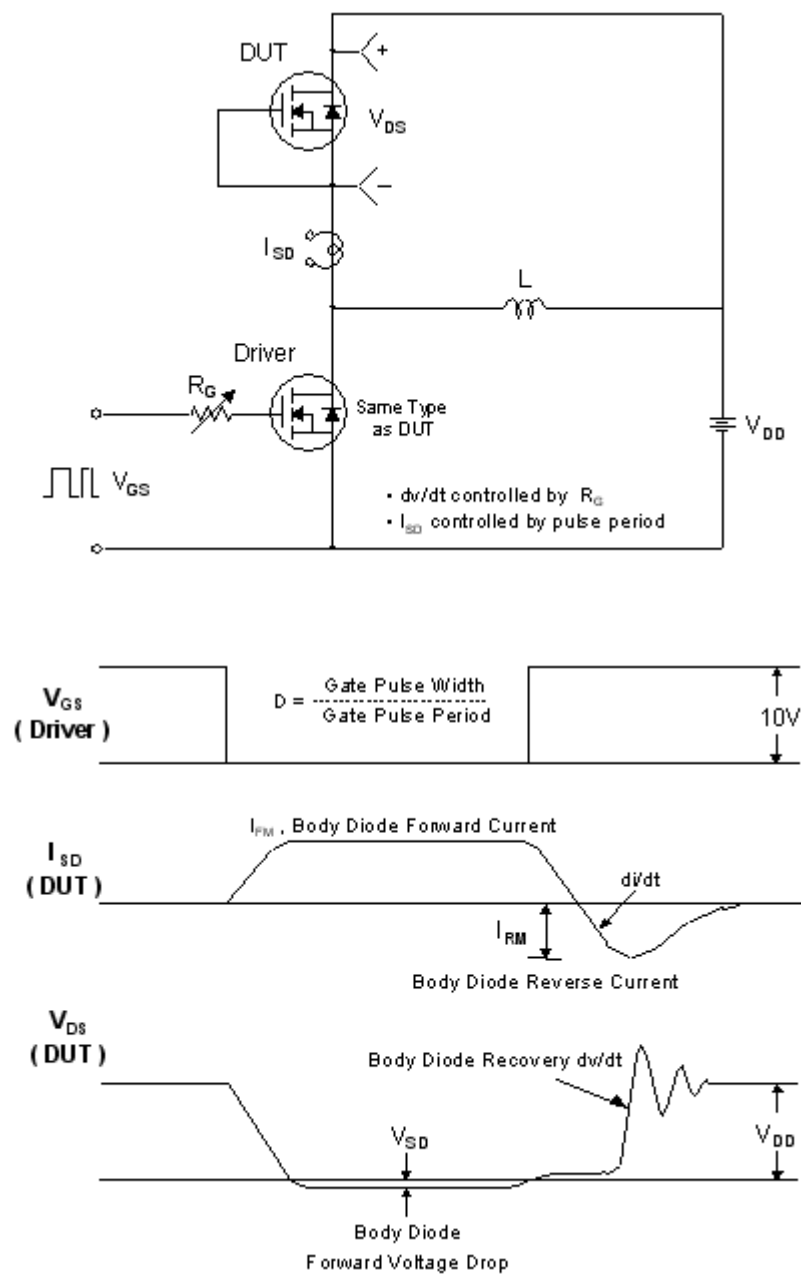
Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching Test Circuit & Waveforms

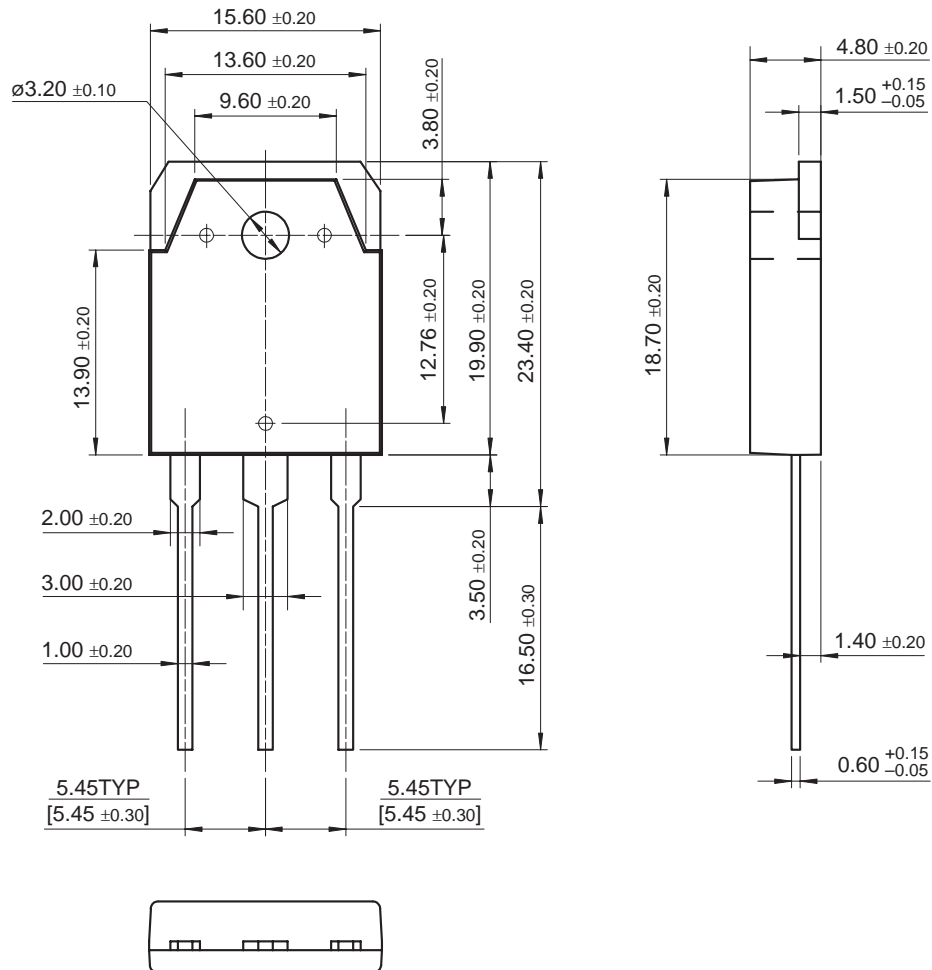


Peak Diode Recovery dv/dt Test Circuit & Waveforms



Mechanical Dimensions

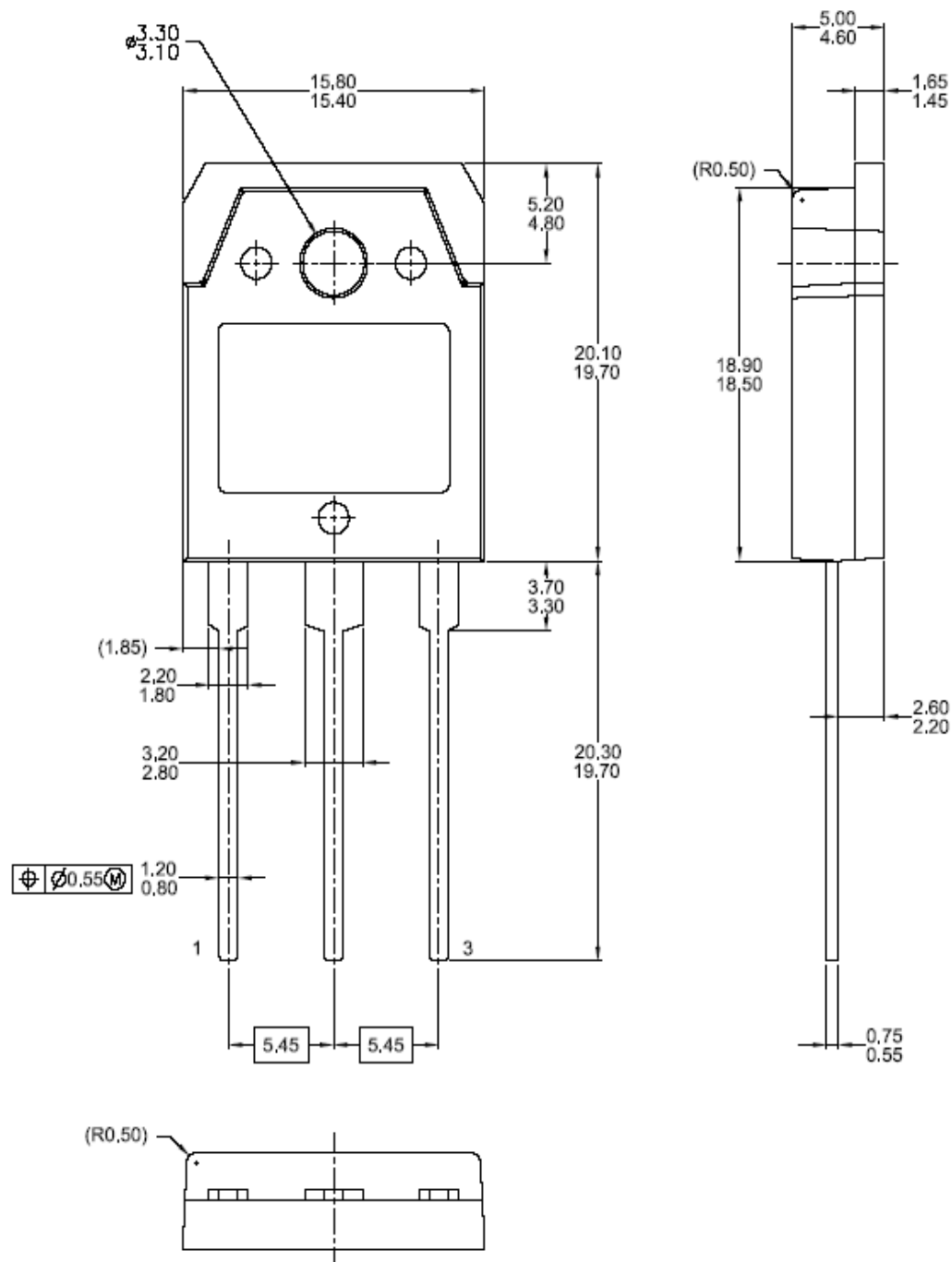
TO-3P



Dimensions in Millimeters

Mechanical Dimensions (Continued)

TO-3PN



Dimensions in Millimeters

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