

Features

- Advanced high cell density Trench technology
- Super Low Gate Charge
- Excellent CdV/dt effect decline
- Green Device Available

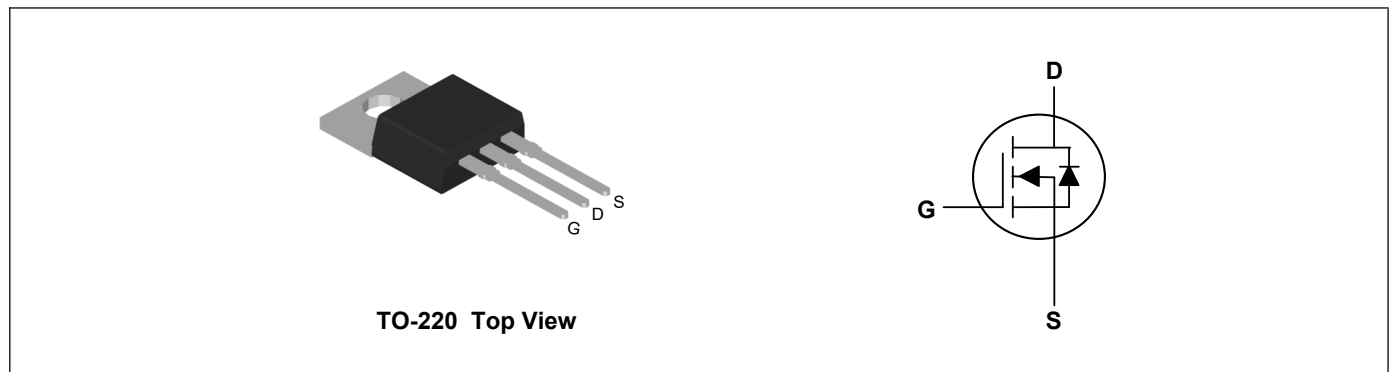
Product Summary



| | | |
|---------------------------------|-----|------------|
| V_{DS} | 200 | V |
| I_D | 9 | A |
| $R_{DS(ON)}$ (at $V_{GS}=10V$) | 300 | m Ω |

Applications

- High Frequency Point-of-Load, Synchronous Buck Converter
- Networking DC-DC Power System
- Load Switch



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

| Parameter | Symbol | Rating | Units |
|--|-----------|------------|-------------|
| Drain-Source Voltage | V_{DS} | 200 | V |
| Gate-Source Voltage | V_{GS} | ± 30 | V |
| Continuous Drain Current ¹ | I_D | 9 | A |
| Pulsed Drain Current ² | I_{DM} | 36 | A |
| Single Pulse Avalanche Energy ³ | E_{AS} | 320 | mJ |
| Total Power Dissipation ⁴ | P_D | 74 | W |
| Storage Temperature Range | T_{STG} | -55 to 150 | $^{\circ}C$ |
| Operating Junction Temperature Range | T_J | -55 to 150 | $^{\circ}C$ |

Thermal Characteristics

| Parameter | Symbol | Typ | Max | Unit |
|--|-----------------|-----|-----|---------------|
| Thermal Resistance Junction-Ambient ¹ | $R_{\theta JA}$ | --- | 60 | $^{\circ}C/W$ |
| Thermal Resistance Junction-Case ¹ | $R_{\theta JC}$ | --- | 1.7 | $^{\circ}C/W$ |

Electrical Characteristics (T_J=25°C, unless otherwise noted)

| Parameter | Symbol | Conditions | Min | Typ | Max | Unit |
|--|---------------------|--|-----|-----|------|------|
| Drain-Source Breakdown Voltage | BV _{DSS} | V _{GS} =0V, I _D =250uA | 200 | --- | --- | V |
| Static Drain-Source On-Resistance ² | R _{DS(ON)} | V _{GS} =10V, I _D =4.5A | --- | 260 | 300 | mΩ |
| Gate Threshold Voltage | V _{GS(th)} | V _{GS} =V _{DS} , I _D =250uA | 2 | --- | 4 | V |
| Drain-Source Leakage Current | I _{DSS} | V _{DS} =200V, V _{GS} =0V, T _J =25°C | --- | --- | 1 | uA |
| Gate-Source Leakage Current | I _{GSS} | V _{GS} =±30V, V _{DS} =0V | --- | --- | ±100 | nA |
| Total Gate Charge | Q _g | V _{DS} =160V, V _{GS} =10V, I _D =5.9A | --- | 19 | --- | nC |
| Gate-Source Charge | Q _{gs} | | --- | 3 | --- | |
| Gate-Drain Charge | Q _{gd} | | --- | 5 | --- | |
| Turn-On Delay Time | T _{d(on)} | V _{DD} =100V, V _{GS} =10V, R _G =50Ω, I _D =5A | --- | 24 | --- | ns |
| Rise Time | T _r | | --- | 15 | --- | |
| Turn-Off Delay Time | T _{d(off)} | | --- | 115 | --- | |
| Fall Time | T _f | | --- | 25 | --- | |
| Input Capacitance | C _{iss} | V _{DS} =25V, V _{GS} =0V, f=1MHz | --- | 920 | --- | pF |
| Output Capacitance | C _{oss} | | --- | 125 | --- | |
| Reverse Transfer Capacitance | C _{rss} | | --- | 25 | --- | |

Drain-Source Diode Characteristics

| Parameter | Symbol | Conditions | Min | Typ | Max | Unit |
|------------------------------------|-----------------|--|-----|-----|-----|------|
| Diode Forward Voltage ² | V _{SD} | V _{GS} =0V, I _S =9A, T _J =25°C | --- | --- | 1.4 | V |
| Reverse Recovery Time | t _{rr} | I _F =9A, V _{GS} =0V di/dt=100A/μs, T _J =25°C | --- | 190 | --- | nS |
| Reverse Recovery Charge | Q _{rr} | | --- | 1.7 | --- | nC |

Note:

- 1.The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.
- 2.The data tested by pulsed , pulse width ≤ 300us , duty cycle ≤ 2%
- 3.The EAS data shows Max. rating . The test condition is V_{DD}=50V,V_{GS}=10V,L=10mH
- 4.The power dissipation is limited by 150°C junction temperature

Typical Characteristics

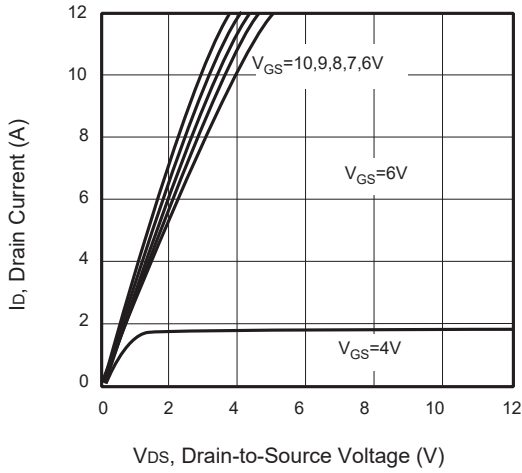


Figure1. Output Characteristics

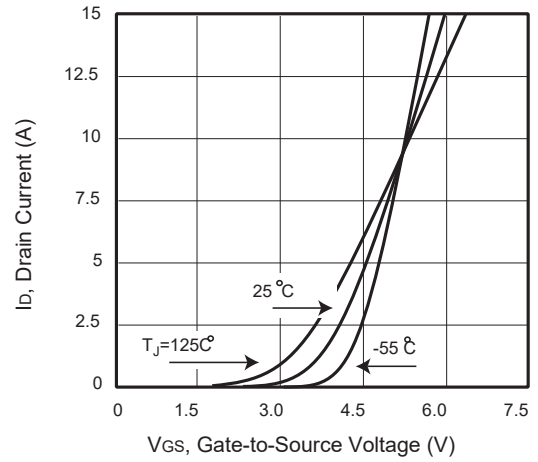


Figure 2. Transfer Characteristics

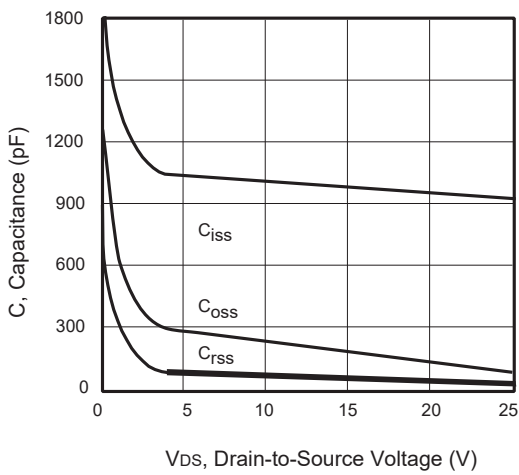


Figure 3. Capacitance

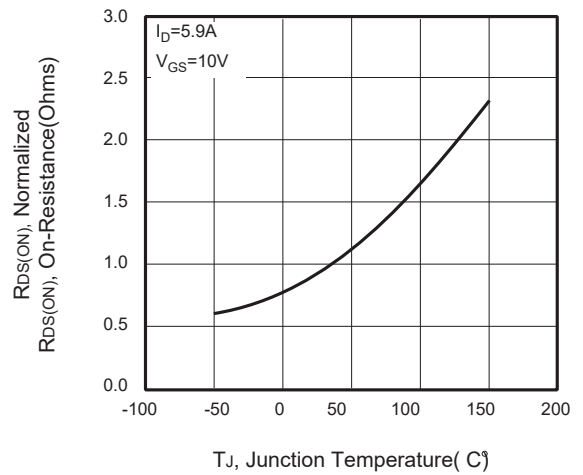


Figure 4. On-Resistance Variation with Temperature

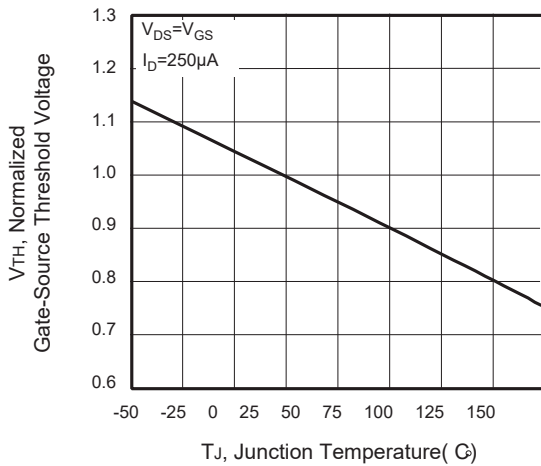


Figure 5. Gate Threshold Variation with Temperature

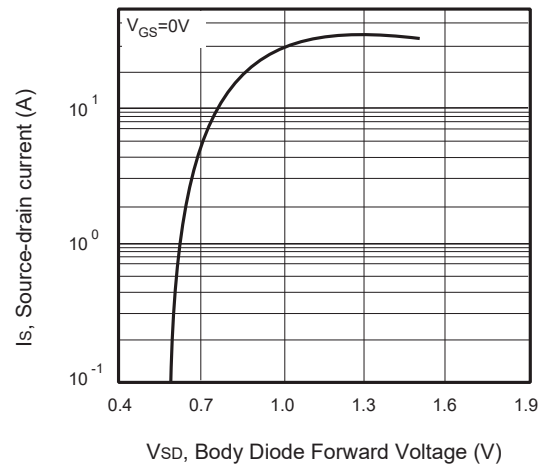


Figure 6. Body Diode Forward Voltage Variation with Source Current

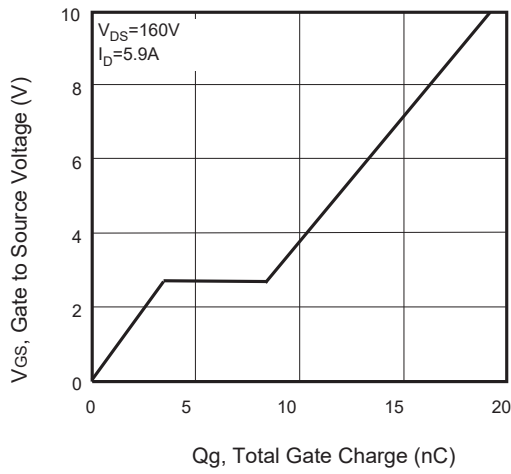


Figure 7. Gate Charge

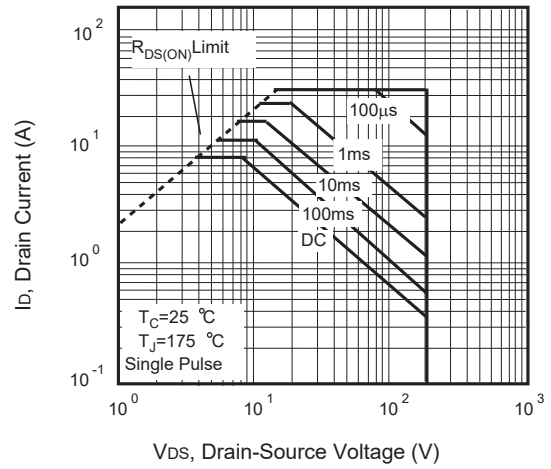


Figure 8. Maximum Safe Operating Area

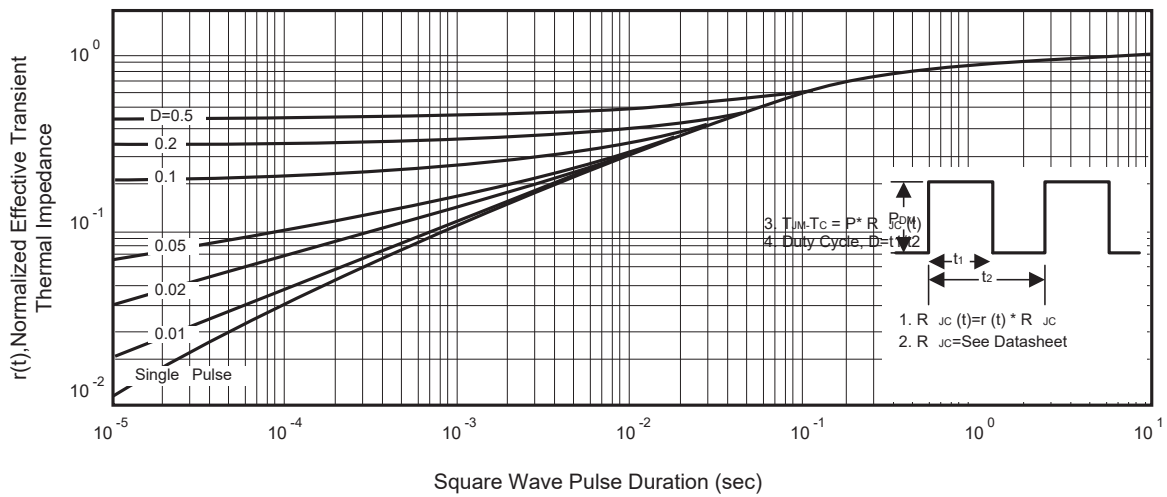
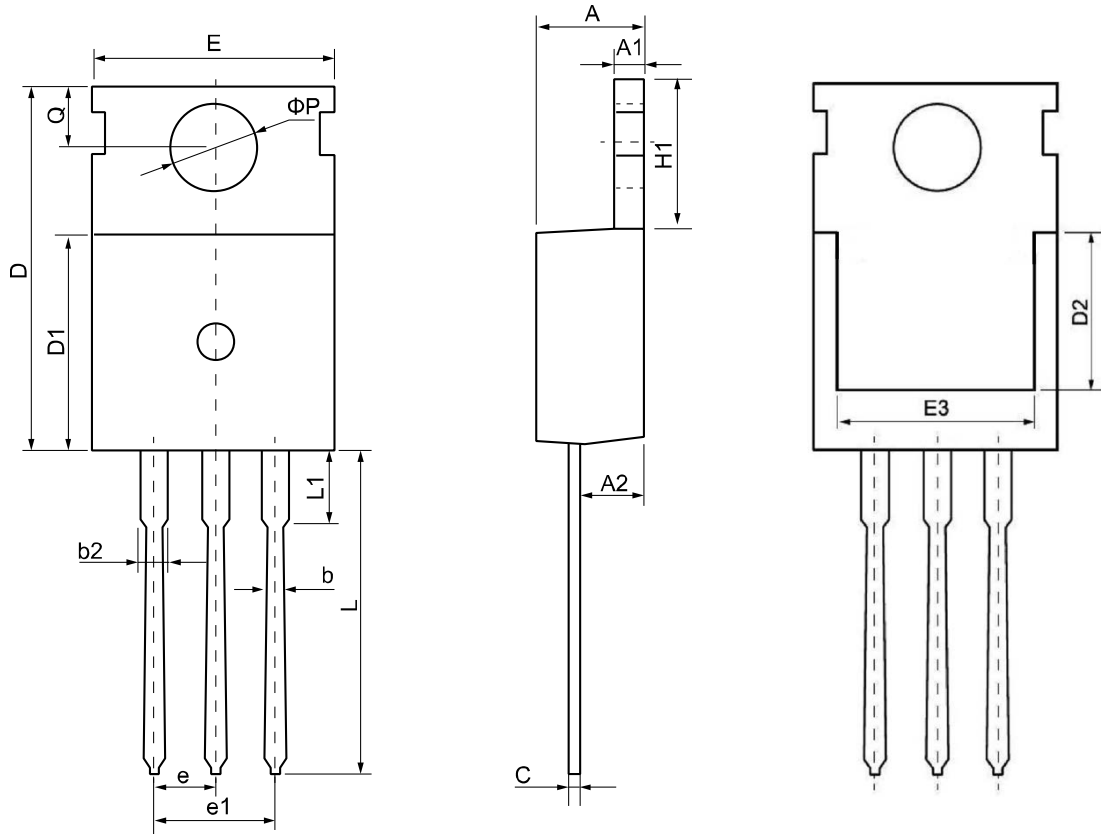


Figure 9. Normalized Thermal Transient Impedance Curve

TO-220 Package Outline Dimensions



| Symbol | Dimensions (unit:mm) | | | Symbol | Dimensions (unit:mm) | | |
|-----------|----------------------|-------|-------|----------------------------|----------------------|-------|-------|
| | Min | Typ | Max | | Min | Typ | Max |
| A | 4.30 | 4.55 | 4.75 | E | 9.65 | 10.00 | 10.25 |
| A1 | 1.15 | 1.30 | 1.45 | E3 | 7.00 | -- | -- |
| A2 | 2.20 | 2.40 | 2.60 | e | 2.54 BSC | | |
| b | 0.70 | 0.80 | 0.95 | e1 | 5.08 BSC | | |
| b2 | 1.17 | 1.27 | 1.47 | H1 | 6.30 | 6.50 | 6.80 |
| c | 0.40 | 0.50 | 0.65 | L | 12.70 | 13.50 | 14.10 |
| D | 15.30 | 15.60 | 15.90 | L1 | -- | 3.20 | 3.95 |
| D1 | 8.90 | 9.10 | 9.35 | ϕP | 3.40 | 3.60 | 3.80 |
| D2 | 5.50 | -- | -- | Q | 2.60 | 2.80 | 3.00 |