

Product Summary

| $V_{(BR)DSS}$ | $R_{DS(on)TYP}$ | I_D |
|---------------|-----------------|-------|
| 270V | 100mΩ@10V | 30A |

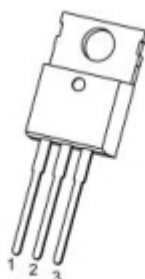
Feature

- Fast Switching
- Low Gate Charge and Rdson
- 100% Single Pulse avalanche energy Test

Application

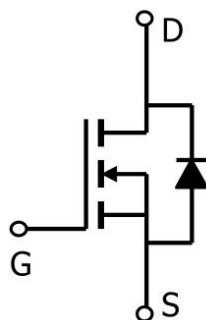
- DC-DC Converter
- Ideal for high-frequency switching and synchronous rectification

Package

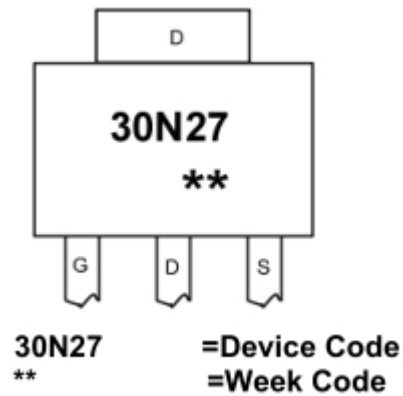


TO-220-3L-C(1:G 2:D 3:S)

Circuit diagram



Marking



Absolute maximum ratings

(T_a=25°C unless otherwise noted)

| Parameter | Symbol | Value | Unit |
|--|------------------|------------|------|
| Drain-Source Voltage | V _{DS} | 270 | V |
| Gate-Source Voltage | V _{GS} | ±20 | V |
| Continuous Drain Current ¹ (T _C =25°C) | I _D | 30 | A |
| Pulsed Drain Current ² | I _{DM} | 120 | A |
| Single Pulse Avalanche Energy ³ | E _{AS} | 949 | mJ |
| Total Power Dissipation(T _C =25°C) | P _D | 150 | W |
| Thermal Resistance Junction-Case ¹ | R _{θJC} | 0.83 | °C/W |
| Storage Temperature Range | T _{STG} | -55 to 150 | °C |
| Operating Junction Temperature Range | T _J | -55 to 150 | °C |

Electrical characteristics

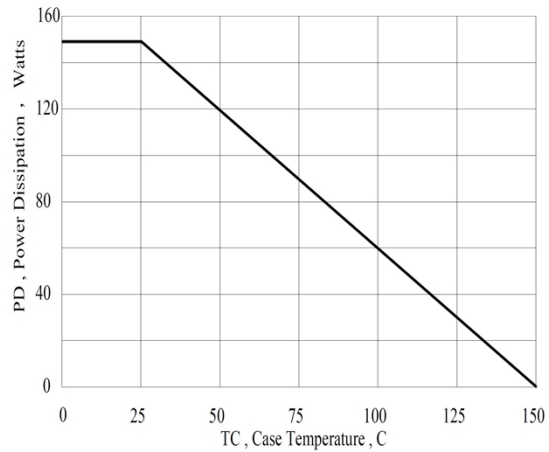
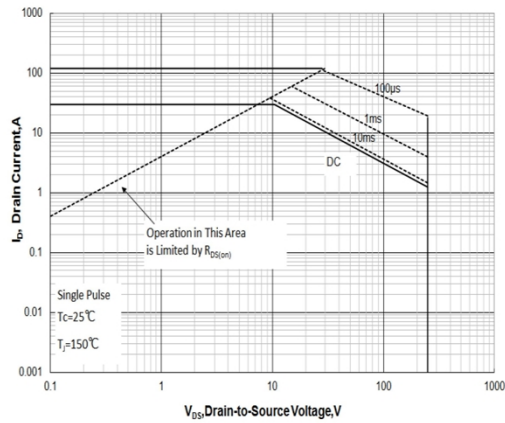
($T_A=25^{\circ}\text{C}$, unless otherwise noted)

| Parameter | Symbol | Test Condition | Min. | Typ. | Max. | Unit |
|-----------------------------------|---------------------|--|------|------|------|------|
| Static Characteristics | | | | | | |
| Drain-Source Breakdown Voltage | BV (BR)DSS | V _{GS} = 0V, I _D =250μA | 270 | | | V |
| Drain-Source Leakage Current | I _{DSS} | V _{DS} =200V, V _{GS} = 0V | | | 10 | uA |
| Gate-Source Leakage | I _{GSS} | V _{GS} = ±20V, V _{DS} =0V | | | ±100 | uA |
| Gate-Source Threshold Voltage | V _{GS(th)} | V _{DS} =V _{GS} , I _D =250μA | 2 | 3 | 4 | V |
| Static Drain-Source on-Resistance | R _{DS(on)} | V _{GS} =10V, I _D =15A | | 100 | 120 | mΩ |
| Dynamic Characteristics | | | | | | |
| Input Capacitance | C _{iss} | V _{DS} =25V, V _{GS} =0V, f=1MHz | | 1916 | | pF |
| Output Capacitance | C _{oss} | | | 238 | | |
| Reverse Transfer Capacitance | C _{rss} | | | 23 | | |
| Switching Characteristics | | | | | | |
| Total Gate Charge | Q _g | V _{DD} =200V , V _{GS} =10V , I _D =30A | | 36 | | nC |
| Gate-Source Charge | Q _{gs} | | | 12 | | |
| Gate-Drain Charge | Q _{gd} | | | 15 | | |
| Turn-on Delay Time | T _{d(on)} | V _{GS} =10V, V _{DD} =125V, R _G =10Ω, I _D =30A | | 31 | | nS |
| Turn-on Rise Time | T _r | | | 82 | | |
| Turn-off Delay Time | T _{d(off)} | | | 49 | | |
| Turn-off Fall Time | T _f | | | 20 | | |

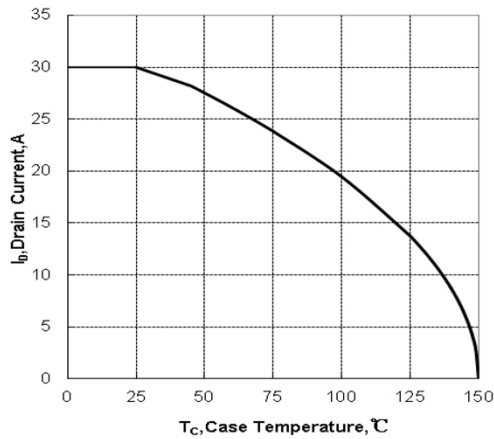
Note:

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 $\leq 300\mu s$, duty cycle $\leq 2\%$
3. The E_{AS} data shows Max. rating . The test condition is $R_G = 30\Omega, L=10mH$

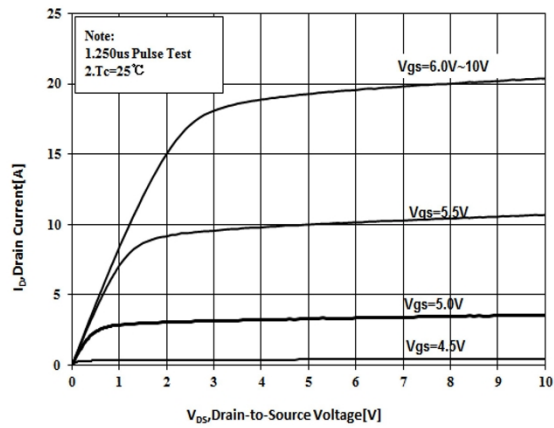
Typical Characteristics



Maximum Forward Bias Safe Operating Area

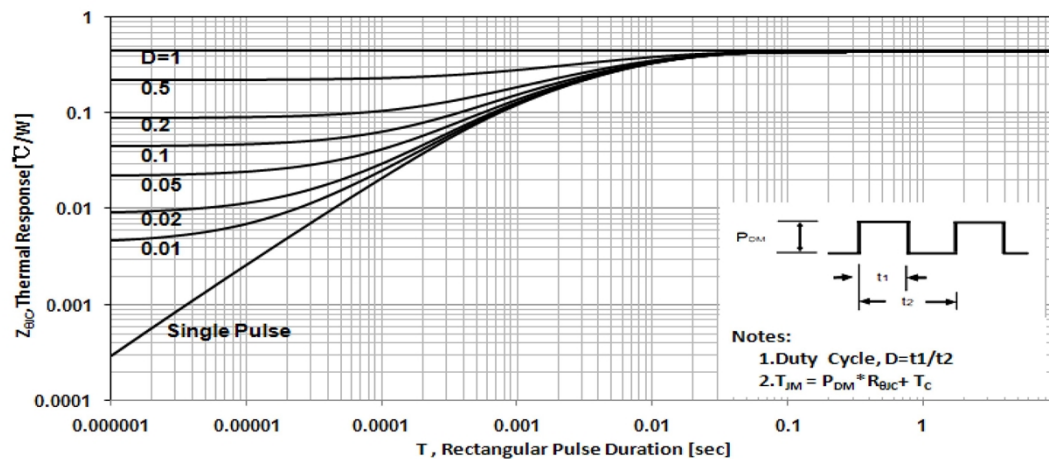


Maximum Power dissipation vs Case Temperature

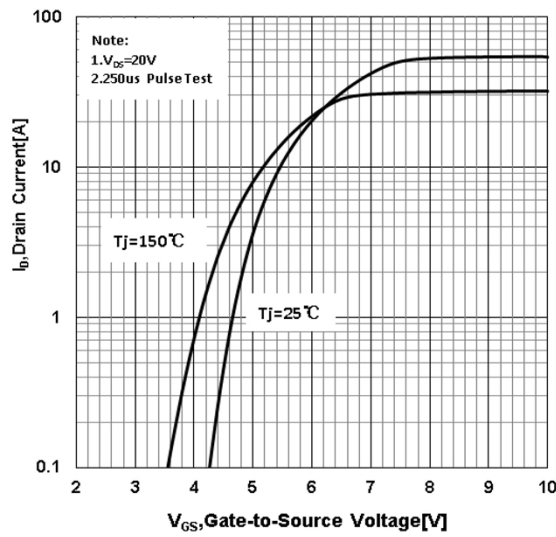


Maximum Continuous Drain Current vs Case Temperature

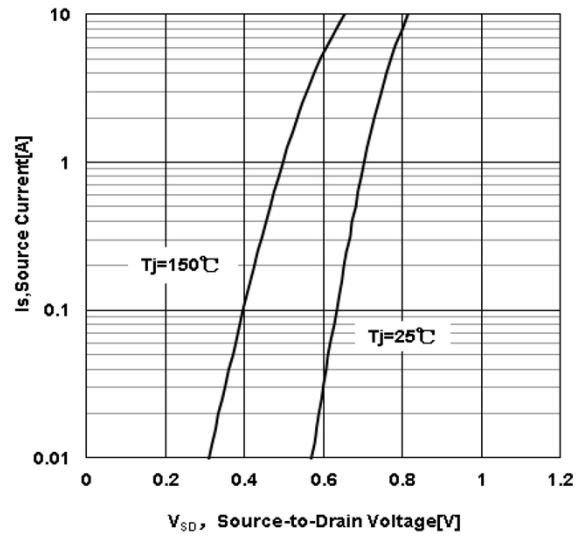
Typical Output Characteristics



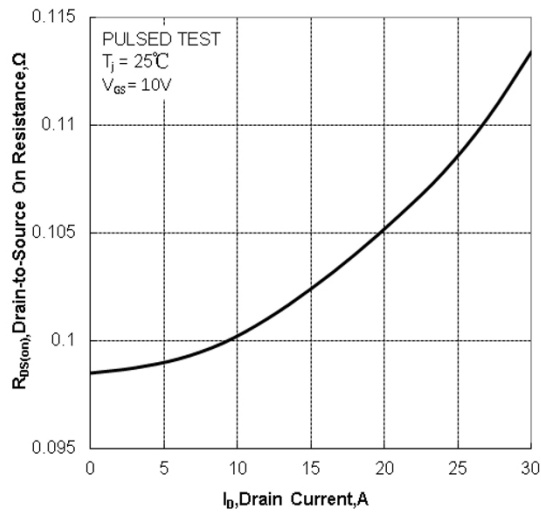
Maximum Effective Thermal Impedance , Junction to Case



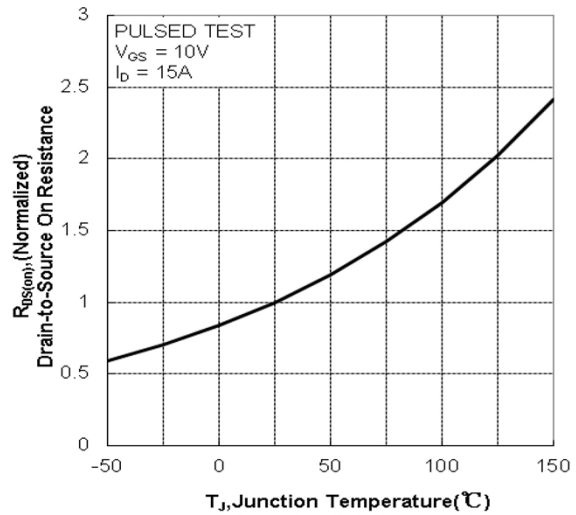
Typical Transfer Characteristics



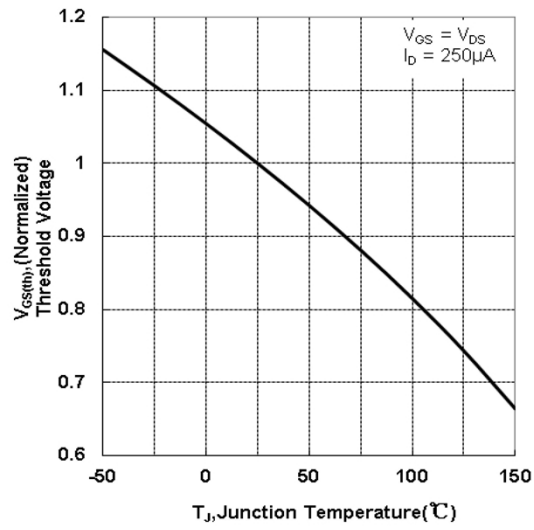
Typical Body Diode Transfer Characteristics



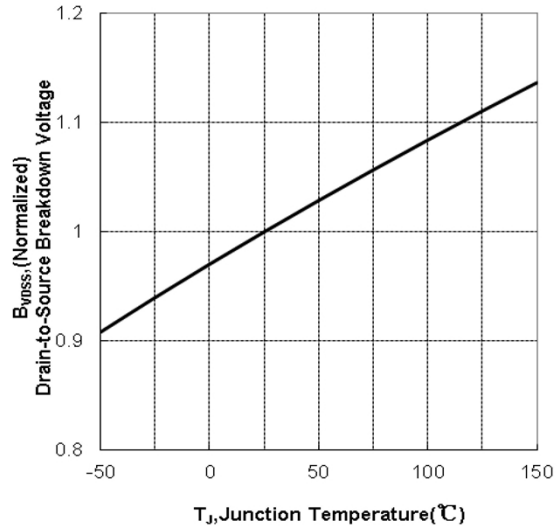
Typical Drain to Source ON Resistance
vs Drain Current



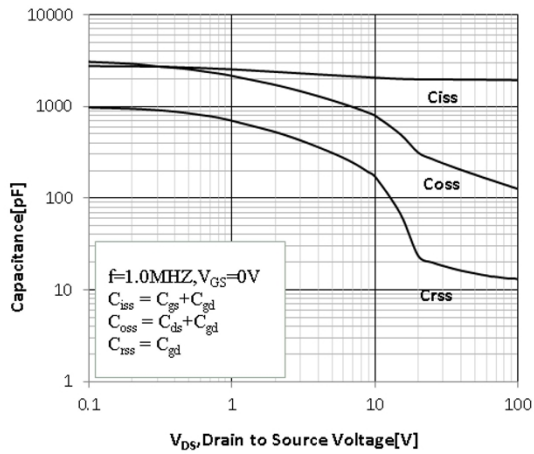
Typical Drain to Source on Resistance
vs Junction Temperature



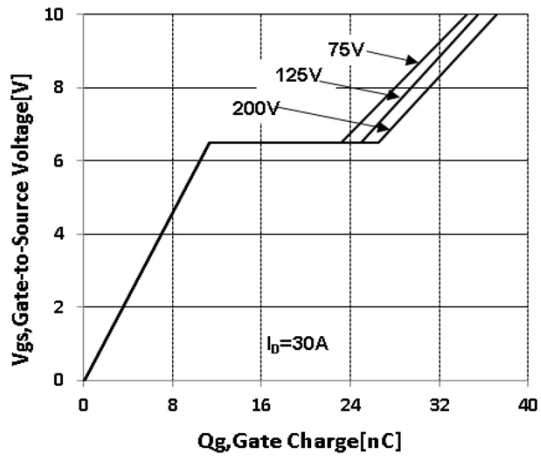
Typical Theshold Voltage vs Junction Temperature



Typical Breakdown Voltage vs Junction Temperature

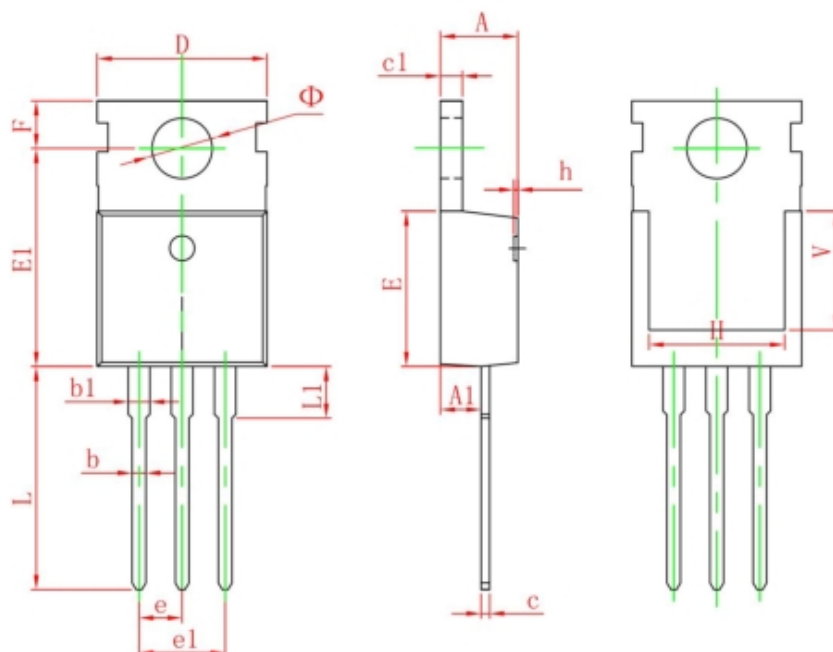


Typical Capacitance vs Drain to Source Voltage



Typical Gate Charge vs Gate to Source Voltage

TO-220-3L-C Package Information



| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|--------|---------------------------|--------|----------------------|-------|
| | Min. | Max. | Min. | Max. |
| A | 4.400 | 4.600 | 0.173 | 0.181 |
| A1 | 2.250 | 2.550 | 0.089 | 0.100 |
| b | 0.710 | 0.910 | 0.028 | 0.036 |
| b1 | 1.170 | 1.370 | 0.046 | 0.054 |
| c | 0.330 | 0.650 | 0.013 | 0.026 |
| c1 | 1.200 | 1.400 | 0.047 | 0.055 |
| D | 9.910 | 10.250 | 0.390 | 0.404 |
| E | 8.950 | 9.750 | 0.352 | 0.384 |
| E1 | 12.650 | 13.050 | 0.498 | 0.514 |
| e | 2.540 TYP. | | 0.100 TYP. | |
| e1 | 4.980 | 5.180 | 0.196 | 0.204 |
| F | 2.650 | 2.950 | 0.104 | 0.116 |
| H | 7.900 | 8.100 | 0.311 | 0.319 |
| h | 0.000 | 0.300 | 0.000 | 0.012 |
| L | 12.900 | 13.400 | 0.508 | 0.528 |
| L1 | 2.850 | 3.250 | 0.112 | 0.128 |
| V | 6.900 REF. | | 0.276 REF. | |
| Φ | 3.400 | 3.800 | 0.134 | 0.150 |