

Product Summary

| $V_{(BR)DSS}$ | $R_{DS(on)TYP}$ | I_D |
|---------------|--------------------|-------|
| 100V | 18m Ω @10V | 35A |
| | 22m Ω @4.5V | |



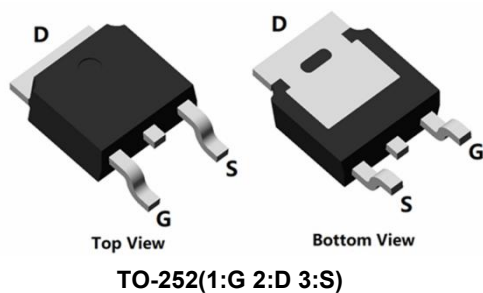
Feature

- Fast Switching
- Low Gate Charge and Rdson
- Advanced Split Gate Trench Technology
- 100% Single Pulse avalanche energy Test

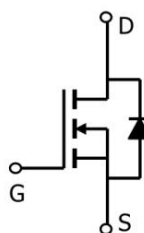
Applications

- Power switching application
- Battery management
- Uninterruptible power supply

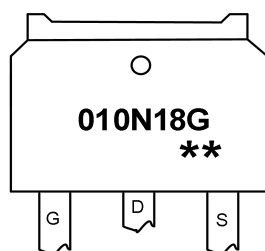
Package



Circuit diagram



Marking



010N18G : Product code
** : Week code

Order Information

| Device | Package | Unit/Tube |
|-------------|---------|-----------|
| SP010N18GTH | TO-252 | 2500 |

Absolute maximum ratings (Ta=25°C unless otherwise noted)

| Parameter | Symbol | Rating | Unit |
|--|-----------------|-----------|------|
| Drain-Source Voltage | V_{DS} | 100 | V |
| Gate-Source Voltage | V_{GS} | ± 20 | V |
| Continuous Drain Current (Tc=25°C) | I_D | 35 | A |
| Continuous Drain Current (Tc=100°C) | I_D | 25 | A |
| Pulsed Drain Current | I_{DM} | 140 | A |
| Single Pulse Avalanche Energy ¹ | E_{AS} | 81 | mJ |
| Power Dissipation (Tc=25°C) | P_D | 55 | W |
| Thermal Resistance Junction-to-Case | $R_{\theta JC}$ | 2.27 | °C/W |
| Storage Temperature Range | T_{STG} | 55 to 150 | °C |
| Operating Junction Temperature Range | T_J | 55 to 150 | °C |

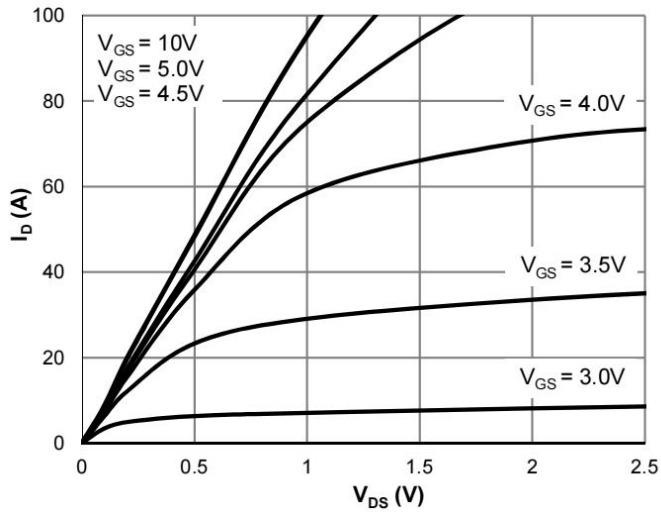
Electrical characteristics (Ta=25°C, unless otherwise noted)

| Characteristics | Symbol | Test Condition | Min | Typ | Max | Unit |
|---|---------------------|---|-----|-----|------|------|
| Static Characteristics | | | | | | |
| Drain-Source Breakdown Voltage | B _V DSS | I _D = 250μA, V _{GS} = 0V | 100 | - | - | V |
| Drain Cut-Off Current | I _{DSS} | V _{DS} = 80V, V _{GS} = 0V | - | - | 1 | uA |
| Gate Leakage Current | I _{GSS} | V _{GS} = ±20V, V _{DS} = 0V | - | - | ±0.1 | nA |
| Gate Threshold Voltage | V _{GS(th)} | V _{DS} = V _{GS} , I _D = 250μA | 1.0 | 1.7 | 2.5 | V |
| Drain-Source ON Resistance | R _{DS(ON)} | V _{GS} = 10V, I _D = 20A | - | 18 | 23 | mΩ |
| | | V _{GS} = 4.5V, I _D = 10A | - | 22 | 29 | |
| Dynamic Characteristics | | | | | | |
| Input Capacitance | C _{iss} | V _{DS} =50V, V _{GS} = 0V, f = 1.0MHz | - | 950 | - | pF |
| Output Capacitance | C _{oss} | | - | 325 | - | |
| Reverse Transfer Capacitance | C _{rss} | | - | 18 | - | |
| Total Gate Charge | Q _g | V _{DS} =50V , V _{GS} =10V , I _D =20A | - | 14 | - | nC |
| Gate-Source Charge | Q _{gs} | | - | 5 | - | |
| Gate-Drain Charge | Q _{gd} | | - | 2.7 | - | |
| Switching Characteristics | | | | | | |
| Turn-On Delay Time | t _{d(on)} | V _{GS} = 10V, V _{DS} =50V, I _D =20A R _G = 2.2Ω | - | 38 | - | nS |
| Rise Time | t _r | | - | 12 | - | |
| Turn-Off Delay Time | t _{d(off)} | | - | 51 | - | |
| Fall Time | t _f | | - | 17 | - | |
| Drain-Source Body Diode Characteristics | | | | | | |
| Source-Drain Diode Forward Voltage | V _{SD} | V _{GS} =0V , I _S =1A , T _J =25℃ | - | - | 1.2 | V |
| Maximum Body-Diode Continuous Current | I _S | | - | - | 35 | A |
| Reverse Recovery Time | T _{rr} | I _S =20A, di/dt=100A/us, T _J =25℃ | - | 37 | - | nS |
| Reverse Recovery Charge | Q _{rr} | | - | 35 | - | nC |

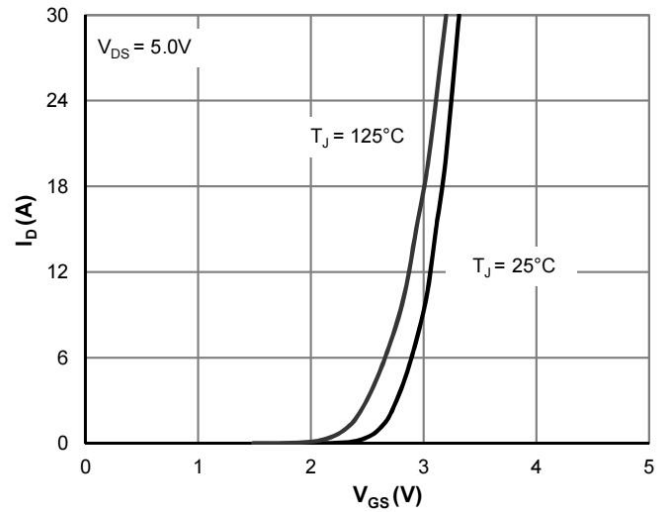
Note:

- The EAS test condition is $V_{DD} = 50V, V_{GS} = 10V, L = 0.5mH, R_G = 25\Omega$

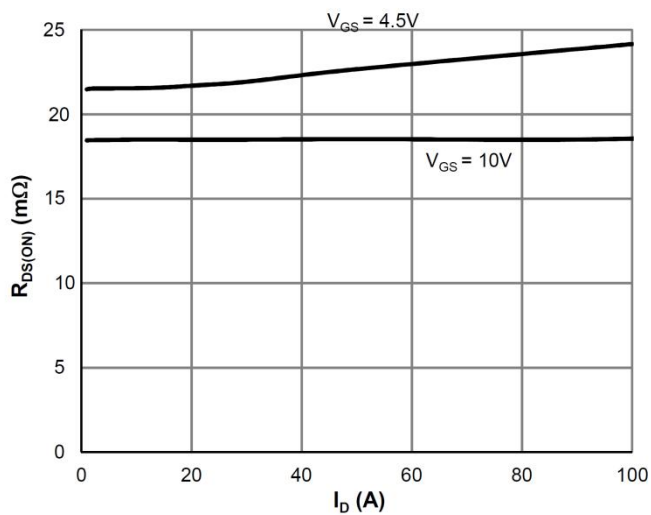
Typical Characteristics



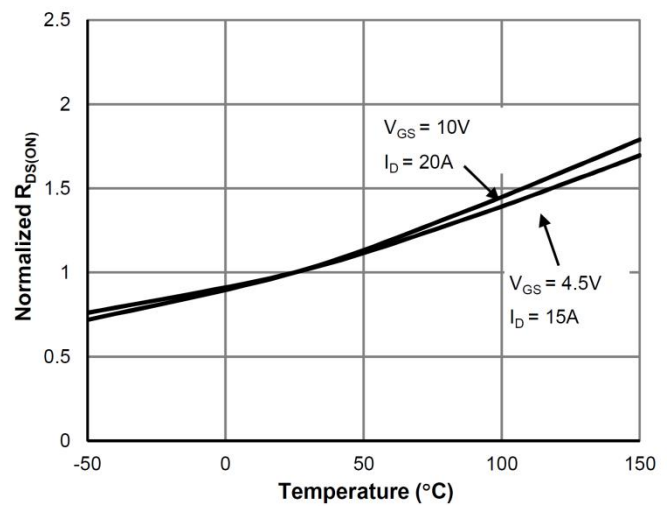
Typical Output Characteristics



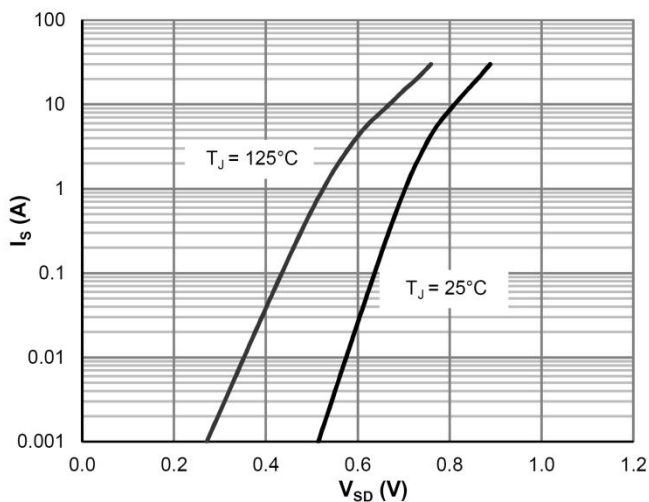
Transfer Characteristics



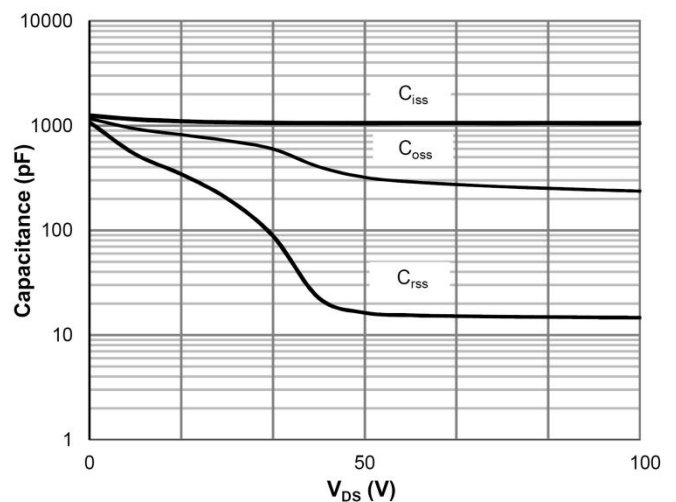
On-Resistance vs. Drain Current



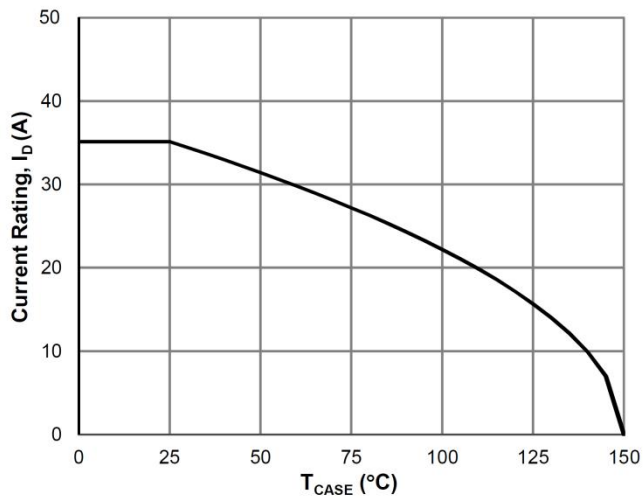
On-Resistance vs. Junction Temperature



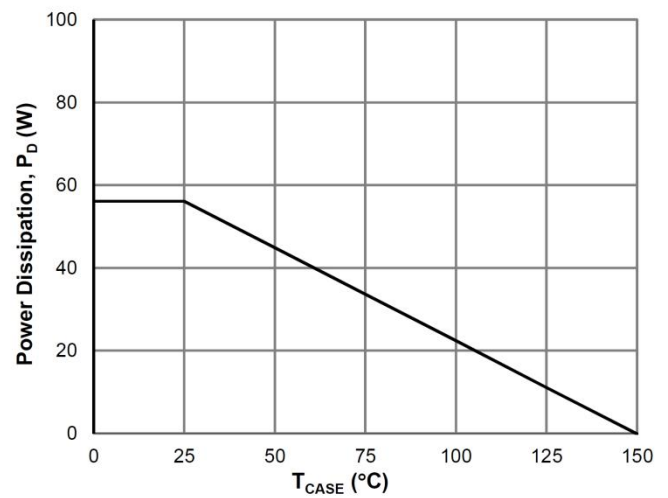
Body-Diode Characteristics



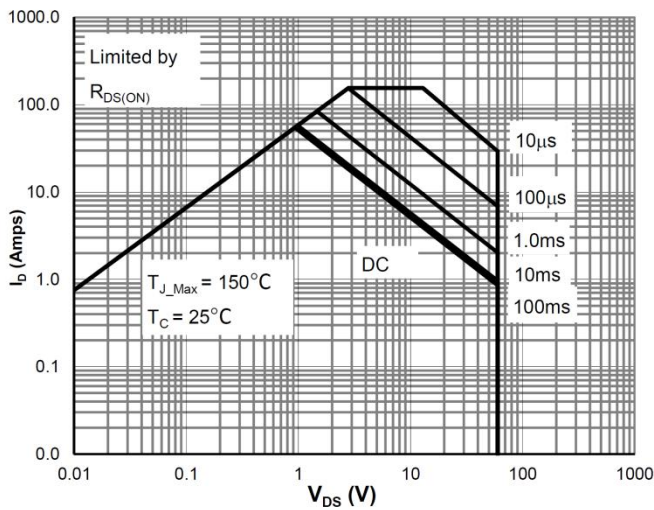
Capacitance Characteristics



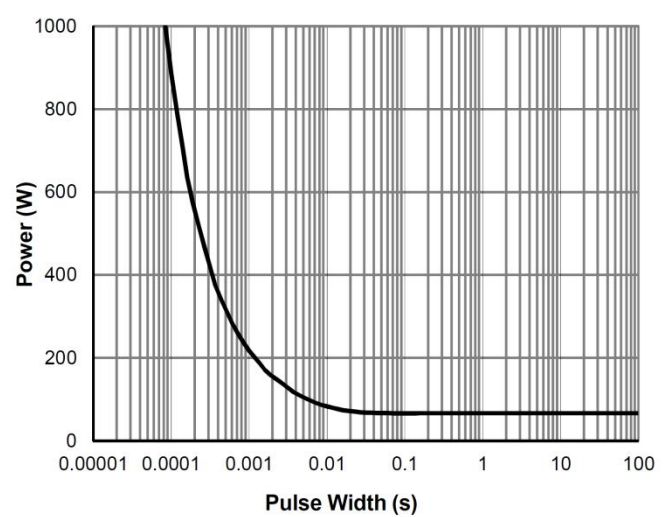
Current De-rating



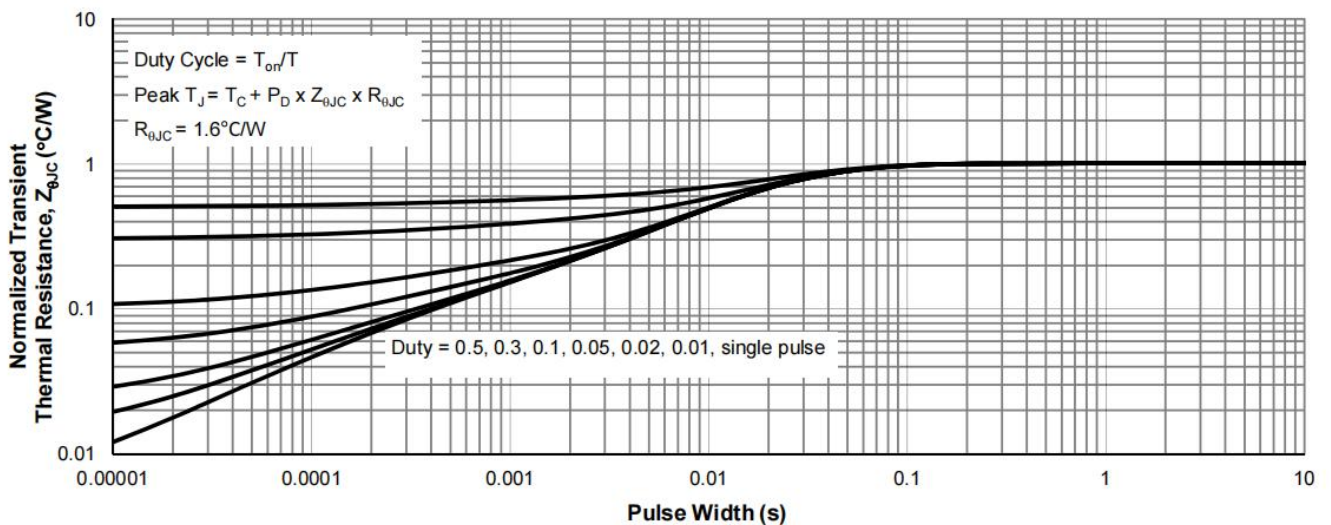
Power De-rating



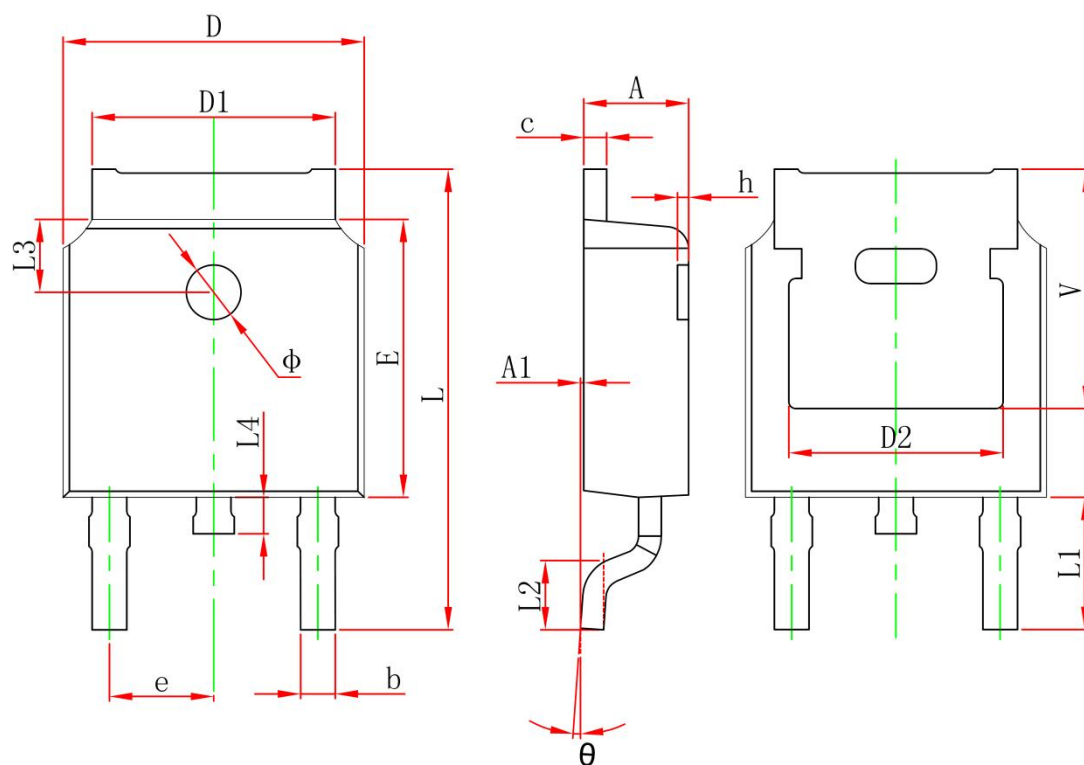
Maximum Safe Operating Area



Single Pulse Power Rating, Junction-to-Case



Normalized Maximum Transient Thermal Impedance

TO-252 Package Information


| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|----------|---------------------------|--------|----------------------|-------|
| | Min. | Max. | Min. | Max. |
| A | 2.200 | 2.400 | 0.087 | 0.094 |
| A1 | 0.000 | 0.127 | 0.000 | 0.005 |
| b | 0.660 | 0.860 | 0.026 | 0.034 |
| c | 0.460 | 0.580 | 0.018 | 0.023 |
| D | 6.500 | 6.700 | 0.256 | 0.264 |
| D1 | 5.100 | 5.460 | 0.201 | 0.215 |
| D2 | 4.830 REF. | | 0.190 REF. | |
| E | 6.000 | 6.200 | 0.236 | 0.244 |
| e | 2.186 | 2.386 | 0.086 | 0.094 |
| L | 9.800 | 10.400 | 0.386 | 0.409 |
| L1 | 2.900 REF. | | 0.114 REF. | |
| L2 | 1.400 | 1.700 | 0.055 | 0.067 |
| L3 | 1.600 REF. | | 0.063 REF. | |
| L4 | 0.600 | 1.000 | 0.024 | 0.039 |
| ϕ | 1.100 | 1.300 | 0.043 | 0.051 |
| θ | 0° | 8° | 0° | 8° |
| h | 0.000 | 0.300 | 0.000 | 0.012 |
| V | 5.350 REF. | | 0.211 REF. | |