

Product Summary

| $V_{(BR)DSS}$ | $R_{DS(on)TYP}$ | I_D |
|---------------|-----------------|-------|
| 700V | 0.5Ω@10V | 18A |

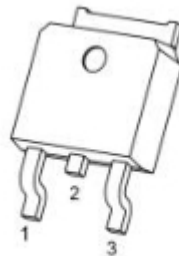
Feature

- Fast Switching
- Improved dv/dt capability
- 100% Single Pulse avalanche energy Test

Applications

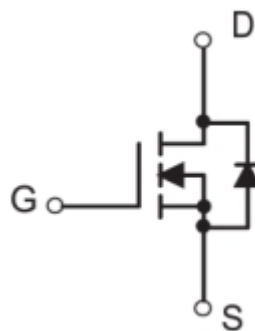
- DC Motor Control and Class D Amplifier
- Uninterruptible Power Supply (UPS)

Package

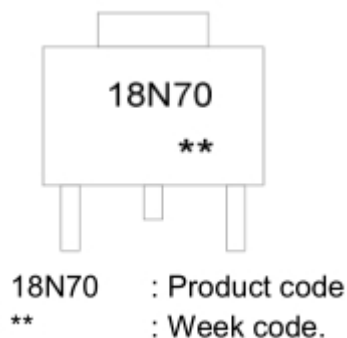


TO-252-2L(G:1 D:2 S:3)

Circuit diagram



Marking



Absolute maximum ratings

(T_a=25°C unless otherwise noted)

| Parameter | Symbol | Value | Unit |
|---|-----------------------------------|-----------|-------|
| Drain-Source Voltage | V _{DS} | 700 | V |
| Gate-Source Voltage | V _{GS} | ±30 | V |
| Continuous Drain Current(TC = 25°C) | I _D | 18 | W |
| Pulsed Drain Current | I _{DM} | 72 | A |
| Single Pulse Avalanche Energy | E _{AS} | 500 | mJ |
| Power Dissipation (T _C = 25°C) | P _D | 40 | W |
| Thermal Resistance Junction- Case | R _{θJC} | 3.13 | °C/ W |
| Operating and Storage Temperature Range | T _J , T _{STG} | -55~ +150 | °C |

Electrical characteristics

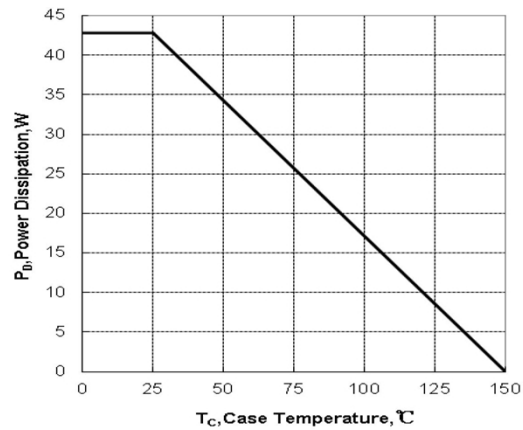
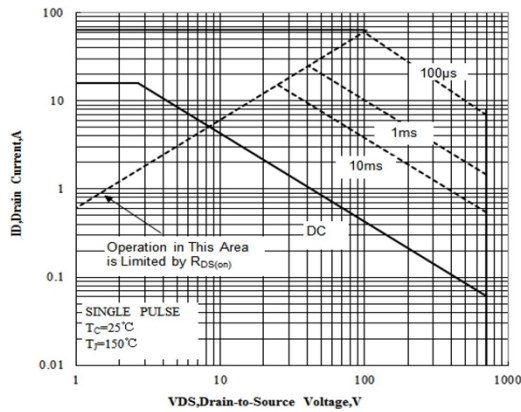
(T_A=25°C, unless otherwise noted)

| Parameter | Symbol | Test Condition | Min. | Typ. | Max. | Unit |
|--|---------------------|---|------|------|------|------|
| Static Characteristics | | | | | | |
| Drain-source breakdown voltage | BV _{DSS} | V _{GS} = 0V, I _D =250μA | 700 | | | V |
| Zero gate voltage drain current | I _{DSS} | V _{DS} =700V,V _{GS} = 0V , T _J =25°C | | | 10 | uA |
| Gate-body leakage current | I _{GSS} | V _{GS} = ±30V , V _{DS} =0V | | | ±100 | uA |
| Gate threshold voltage | V _{GS(th)} | V _{DS} =V _{GS} , I _D =250μA | 2 | | 4 | V |
| Static Drain-Source On-Resistance | R _{DS(on)} | V _{GS} =10V, I _D =8A | | 0.5 | 0.63 | Ω |
| Dynamic characteristics ⁴ | | | | | | |
| Input Capacitance | C _{iss} | V _{DS} =25V, V _{GS} =0V, f=1MHz | | 2852 | | pF |
| Output Capacitance | C _{oss} | | | 235 | | |
| Reverse Transfer Capacitance | C _{rss} | | | 28 | | |
| Total Gate Charge(4.5V) | Q _g | V _{DS} =520V, I _D =18A, V _{GS} =10V | | 48 | | nC |
| Gate-Source Charge | Q _{gs} | | | 16.2 | | |
| Gate-Drain Charge | Q _{gd} | | | 20.3 | | |
| Switching Characteristics | | | | | | |
| Turn-On Delay Time | T _{d(on)} | V _{DS} =15V, I _D =60A, R _{GEN} =1.8Ω, V _{GS} =4.5V | | 11 | | nS |
| Rise Time | T _r | | | 120 | | |
| Turn-Off Delay Time | T _{d(off)} | | | 25 | | |
| Fall Time | T _f | | | 60 | | |
| Drain-Source Diode Characteristics and Maximum Ratings | | | | | | |
| Maximum Continuous Drain to Source Diode Forward Current | I _S | | | | 130 | A |
| Maximum Pulsed Drain to Source Diode Forward Current | I _{SM} | | | | 360 | A |
| Drain to Source Diode Forward Voltage | V _{SD} | V _{GS} = 0V, I _S =20A | | | 1.2 | V |
| Body Diode Reverse Recovery Time | t _{rr} | I _F =60A,dl/dt=100A/μs | | 56 | | ns |
| Body Diode Reverse Recovery Time Charge | Q _{rr} | | | 110 | | nC |

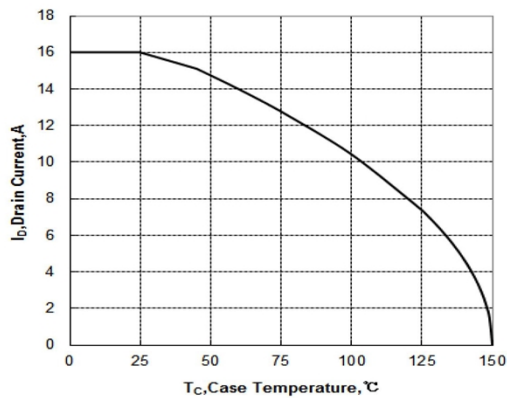
Note :

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
2. EAS condition: T_J=25°C, V_G=10V, L=30mH, R_g=25Ω, V_{DD}=100V

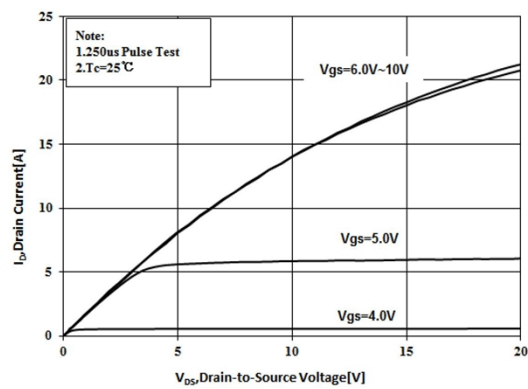
Typical Characteristics



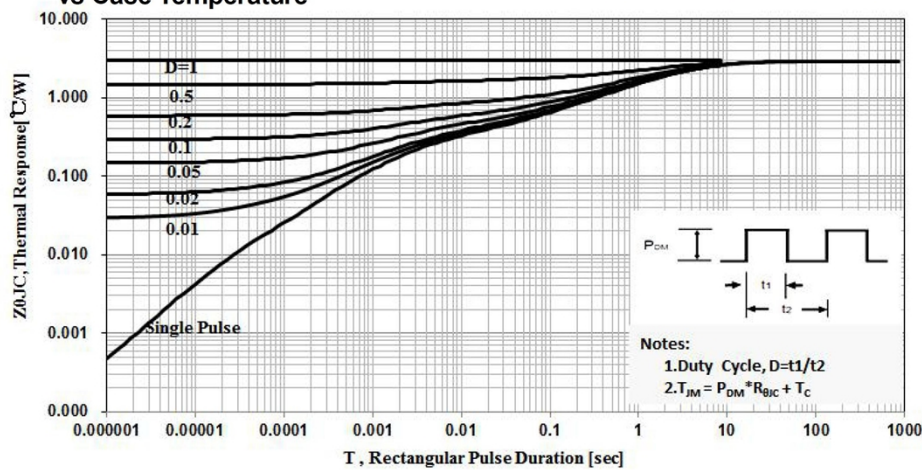
Maximum Forward Bias Safe Operating Area



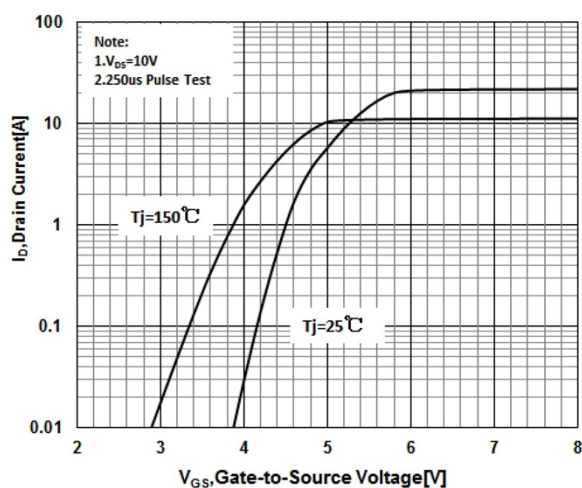
Maximum Power dissipation vs Case Temperature



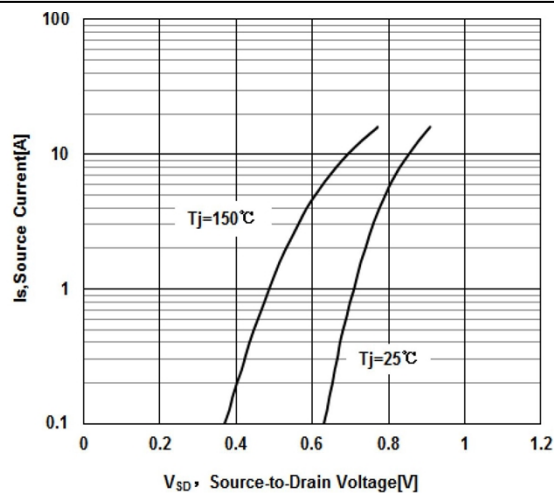
Maximum Continuous Drain Current vs Case Temperature



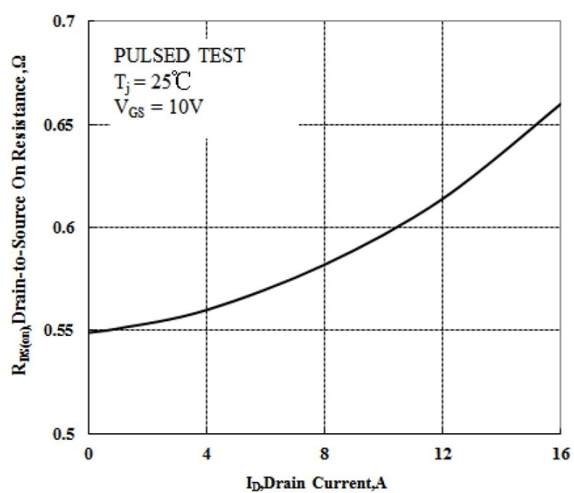
Typical Output Characteristics



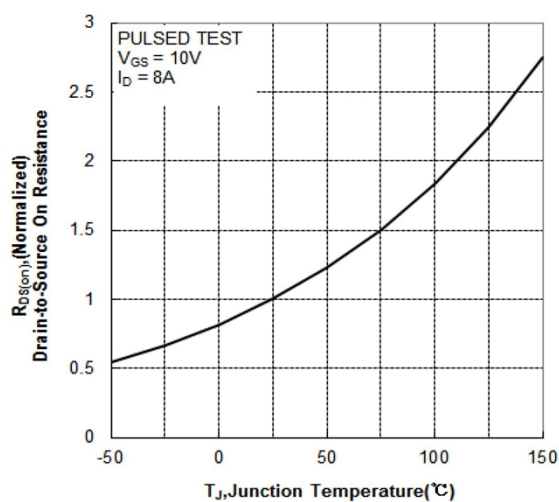
Typical Transfer Characteristics



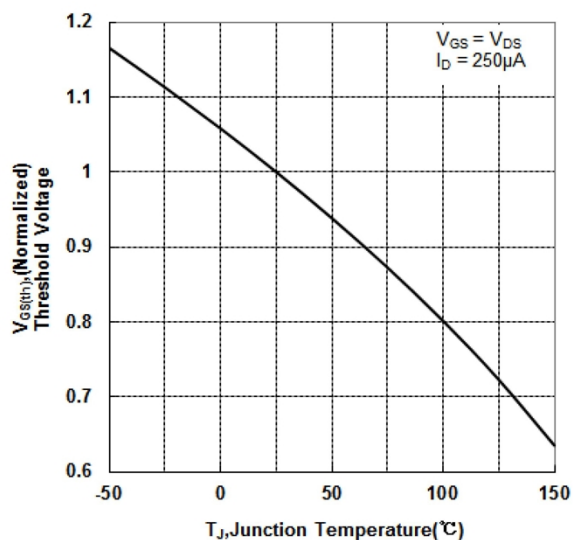
Typical Body Diode Transfer Characteristics



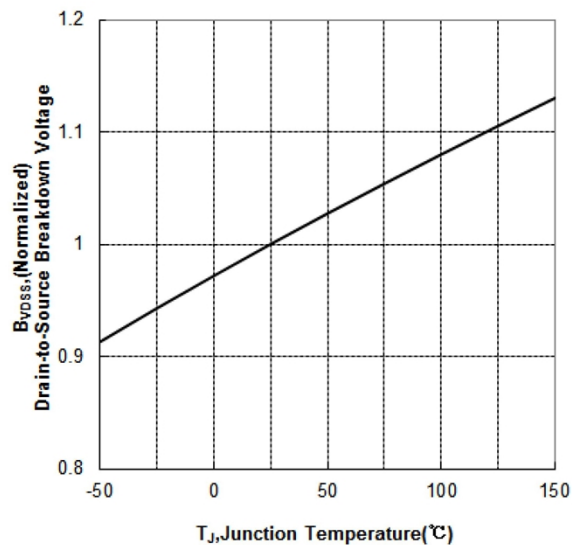
Typical Drain to Source ON Resistance vs Drain Current



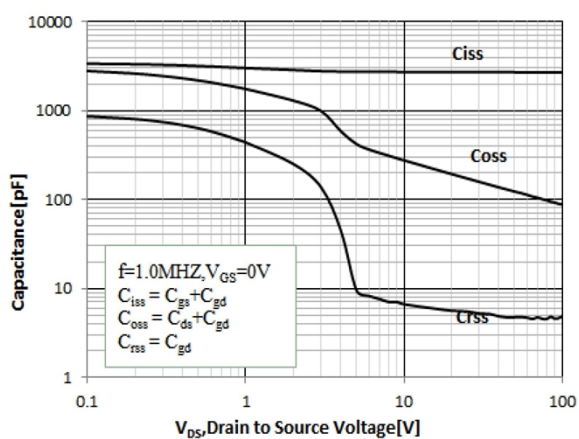
Typical Drain to Source on Resistance vs Junction Temperature



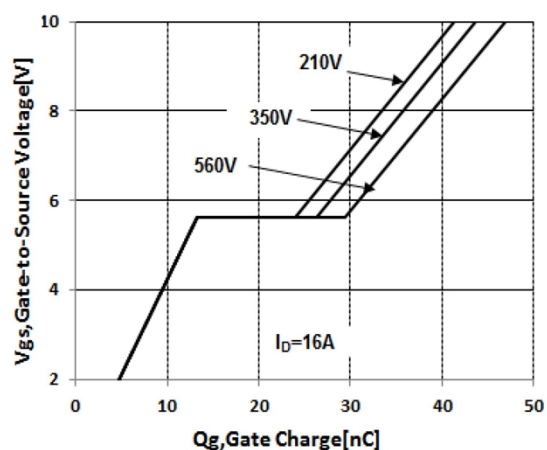
Typical Theshold Voltage
vs Junction Temperature



Typical Breakdown Voltage
vs Junction Temperature

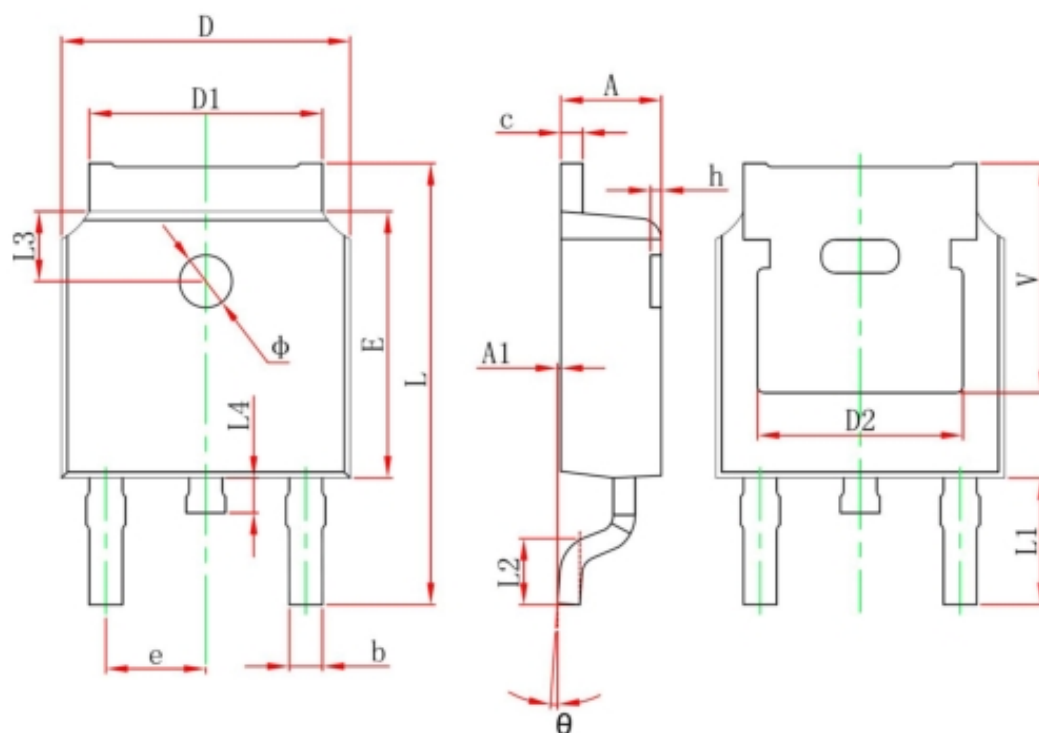


Typical Capacitance vs Drain to Source
Voltage



Typical Gate Charge vs Gate to Source
Voltage

TO-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. | |