

Product Summary

- V_{DS} 60 V
- I_{DS} 80A
- $R_{DS(ON)}$ (at $V_{GS}=10$) $\leq 5.8m\Omega$ (Typ)
- Low Gate Charge Minimize Switching Loss

Application

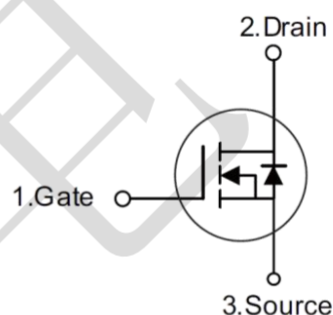
- Adaptor
- Charger
- Power management
- SMPS Standby Power

Package and Pin Configuration



TO-252

Circuit diagram



Absolute Maximum Ratings

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

| PARAMETER | SYMBOL | Value | UNIT |
|--|-----------------|-------------|--------------------|
| Drain-Source Voltage | V_{DS} | 60 | V |
| Gate-Source Voltage | V_{GS} | ± 20 | V |
| Continuous Drain Current | I_D | 80 | A |
| Continuous Drain Current ($T_C=100^\circ\text{C}$) | I_D | 42 | A |
| Pulsed Drain Current (Note 1) | I_{DM} | 270 | A |
| Maximum Power Dissipation @ $T_A=25^\circ\text{C}$ | P_D | 100 | W |
| Operating Junction Temperature Range | T_J | +150 | $^\circ\text{C}$ |
| Storage Temperature Range | T_{stg} | -55 to +150 | $^\circ\text{C}$ |
| Thermal Resistance, Junction to Case | $R_{\theta JC}$ | 2.1 | $^\circ\text{C/W}$ |

Note : When mounted on 1" square PCB (FR4 material).

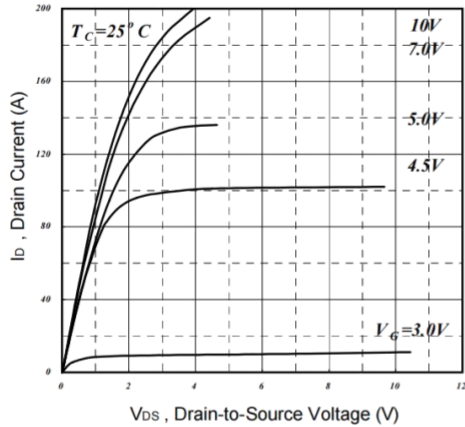
Electrical Characteristics (T_A=25°C unless otherwise noted)

| PARAMETER | CONDITIONS | SYMBOL | MIN | TYP | MAX | UNIT |
|--|---|---------------------|-----|------|------|------|
| Static | | | | | | |
| Drain-Source Breakdown Voltage | V _{GS} =0V, I _D =250μA | BV _{DSS} | 60 | -- | -- | V |
| Gate-Source Threshold Voltage | V _{DS} =V _{GS} , I _D =250μA | V _{GS(th)} | 1.5 | 3.0 | 4.5 | V |
| Gate-Source Leakage | V _{DS} =0V, V _{GS} = ±20V | I _{GSS} | -- | -- | ±100 | nA |
| Zero Gate Voltage Drain Current | V _{DS} = 60V, V _{GS} =0V | I _{DSS} | -- | -- | 10 | μA |
| Drain-Source On-State Resistance | V _{GS} = 10V, I _D = 40A | R _{DS(on)} | -- | 5.8 | 6.8 | mΩ |
| | V _{GS} = 4.5V, I _D = 20A | | -- | 7.5 | 9.6 | mΩ |
| Forward Trans conductance | V _{DS} =10V, I _D =30A | g _{FS} | -- | 70 | -- | S |
| Dynamic (Note 2) | | | | | | |
| Total Gate Charge (Note 3) | V _{DS} = 48V, I _D = 30A, V _{GS} = 4.5V | Q _g | -- | 33 | -- | nC |
| Gate-Source Charge (Note 3) | | Q _{gs} | -- | 5.0 | -- | |
| Gate-Drain Charge (Note 3) | | Q _{gd} | -- | 21 | -- | |
| Input Capacitance | V _{DS} = 25V, V _{GS} = 0V, F= 1.0MHz | C _{iss} | -- | 2660 | -- | pF |
| Output Capacitance | | C _{oss} | -- | 280 | -- | |
| Reverse Transfer Capacitance | | C _{rss} | -- | 200 | -- | |
| Switching | | | | | | |
| Turn-On Delay Time (Note 3) | V _{DD} = 30V, I _D = 30A, V _{GS} = 10V, R _G = 3.3Ω | t _{d(on)} | -- | 10 | -- | nS |
| Rise Time (Note 3) | | t _r | -- | 42 | -- | |
| Turn-Off Delay Time (Note 3) | | t _{d(off)} | -- | 46 | -- | |
| Fall Time (Note 3) | | t _f | -- | 80 | -- | |
| Source-Drain Diode Ratings and Characteristics (Note 2) | | | | | | |
| Forward Voltage | V _{GS} = 0V, I _S = 10A | V _{SD} | -- | 0.8 | 1.2 | V |
| Continuous Source Current | Integral reverse diode in the MOSFET | I _S | -- | -- | 80 | A |
| Pulsed Current (Note 1) | | I _{SM} | -- | -- | 270 | A |
| Reverse recovery time | V _{GS} =0V, I _F =20A, | t _{rr} | -- | 25 | -- | nS |
| Reverse recovery charge | diF/dt=-100A/μs | Q _{rr} | -- | 24 | -- | nC |

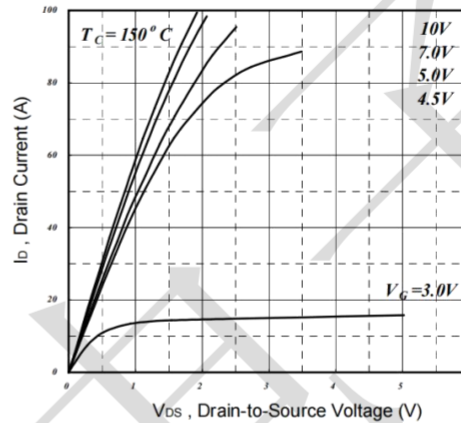
Notes:

1. Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 1%.
2. Guaranteed by design, not subject to production testing.
3. Independent of operating temperature

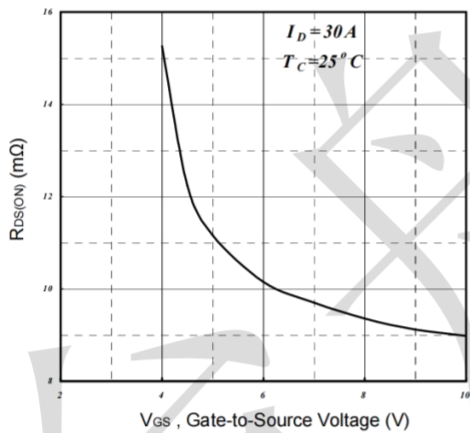
TYPICAL CHARACTERISTICS ($T_A=25^\circ\text{C}$ unless otherwise noted)



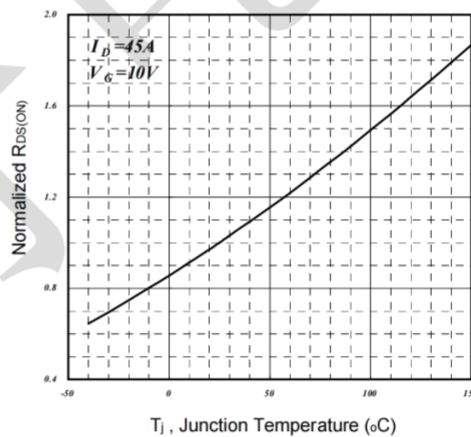
Typical Output Characteristics



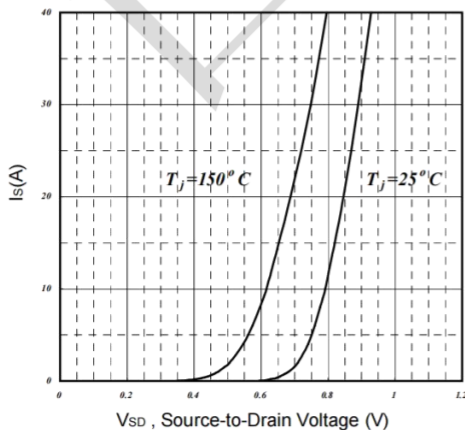
Typical Output Characteristics



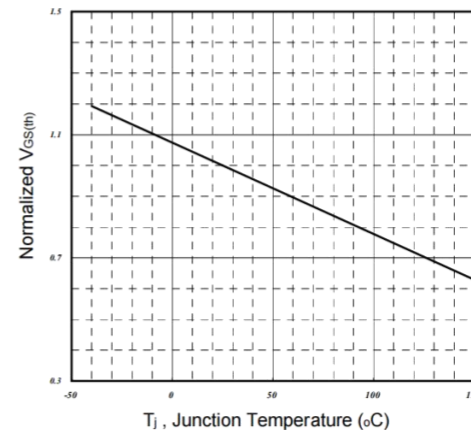
On-Resistance v.s. Gate Voltage



Normalized On-Resistance v.s. Junction Temperature



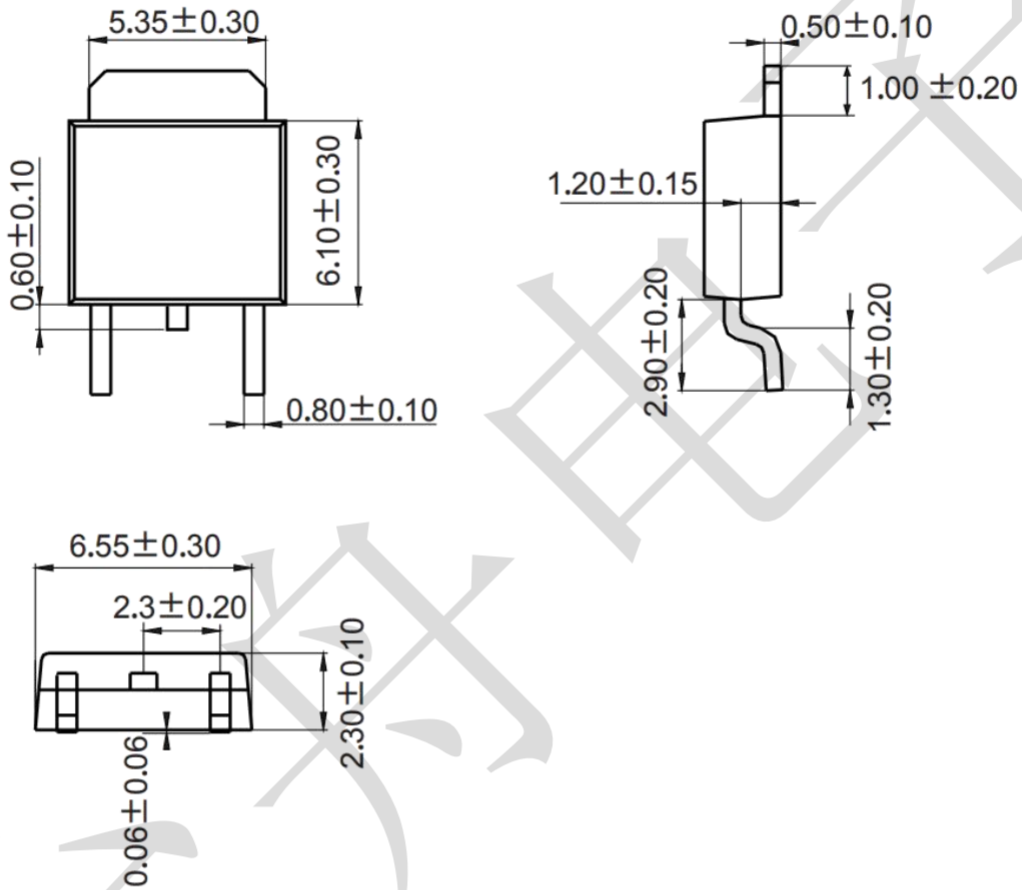
Forward Characteristic of Reverse Diode



Gate Threshold Voltage v.s. Junction Temperature

Package Outline Dimensions (unit: mm)

TO-252



Mounting Pad Layout (unit: mm)

