



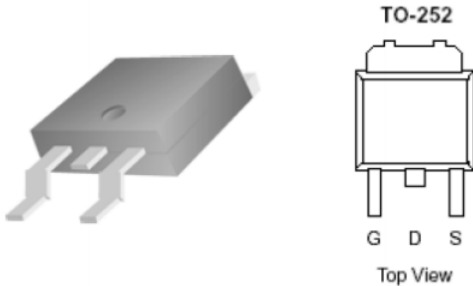
Product Summary

| Product Summary | | |
|---------------------|------------------------------|--------------------|
| V _{DS} (V) | r _{DS(on)} (mΩ) typ | I _D (A) |
| -60 | 37 @ V _{GS} = -10V | -25 |
| | 45 @ V _{GS} = -4.5V | -22 |

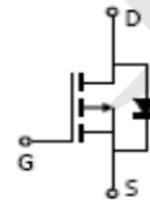
Application

- Load/Power Switching
- Interfacing Switching
- Logic Level Shift

Package and Pin Configuration



Circuit diagram



Absolute Maximum Ratings (T_A=25°C unless otherwise noted)

| Parameter | Symbol | Limit | Units |
|---|-----------------|-----------------------------------|-------|
| Drain-Source Voltage | V _{DS} | -60 | V |
| Gate-Source Voltage | V _{GS} | ±20 | |
| Continuous Drain Current ^a | I _D | T _C =25°C | A |
| Pulsed Drain Current ^b | | I _{DM} | |
| Continuous Source Current (Diode Conduction) ^a | I _S | -40 | A |
| Power Dissipation ^a | P _D | T _C =25°C | W |
| Operating Junction and Storage Temperature Range | | T _J , T _{stg} | |

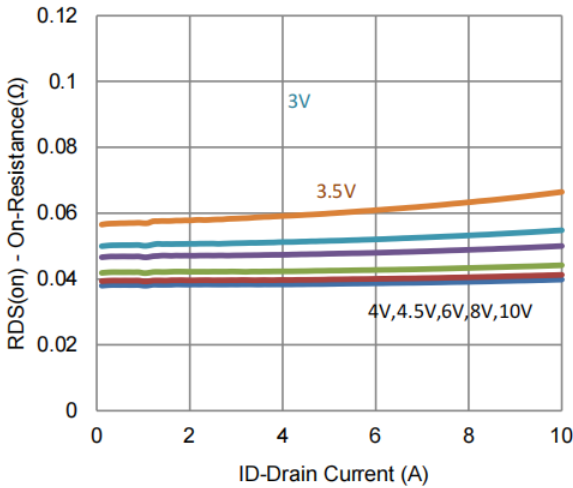
Thermal Resistance Rating

| Parameter | Symbol | Maximum | Units |
|--|------------------|---------|-------|
| Maximum Junction-to-Ambient ^a | R _{θJA} | 40 | °C/W |
| Maximum Junction-to-Case | R _{θJC} | 3 | |

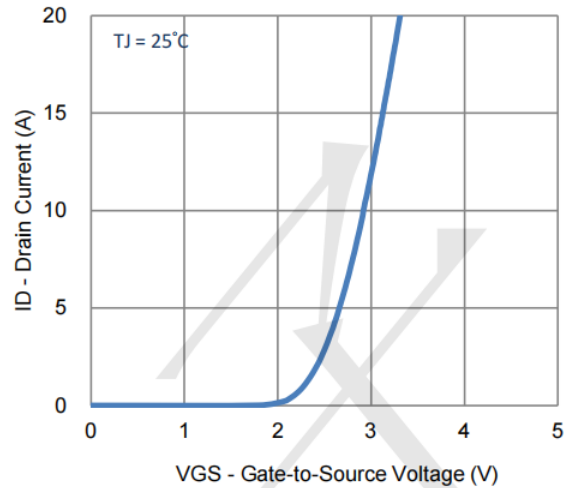


Electrical Characteristics ($T_A = 25^\circ\text{C}$ unless otherwise noted)

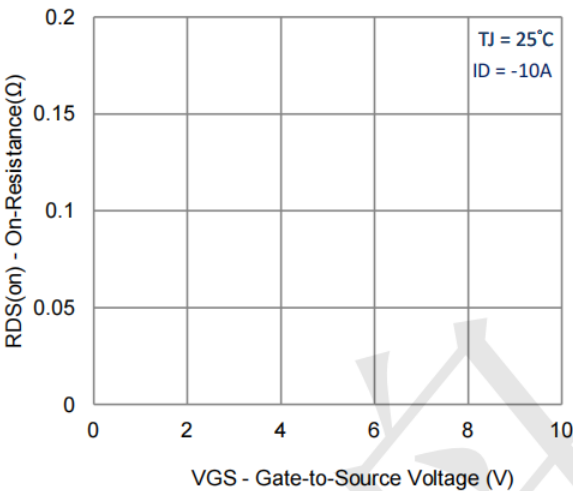
| Parameter | Symbol | Test Condition | Min. | Typ. | Max | Units |
|---|--------------|--|------|-------|-----------|-------|
| Gate-Source Threshold Voltage | $V_{GS(th)}$ | $V_{DS} = V_{GS}, I_D = -250 \mu\text{A}$ | -1 | | | V |
| Gate-Body Leakage | I_{GSS} | $V_{DS} = 0 \text{ V}, V_{GS} = \pm 20 \text{ V}$ | | | ± 100 | nA |
| Zero Gate Voltage Drain Current | I_{DSS} | $V_{DS} = -48 \text{ V}, V_{GS} = 0 \text{ V}$ | | | -1 | uA |
| | | $V_{DS} = -48 \text{ V}, V_{GS} = 0 \text{ V}, T_J = 55^\circ\text{C}$ | | | -25 | |
| On-State Drain Current ^a | $I_{D(on)}$ | $V_{DS} = -5 \text{ V}, V_{GS} = -10 \text{ V}$ | -40 | | | A |
| Drain-Source On-Resistance ^a | $r_{DS(on)}$ | $V_{GS} = -10 \text{ V}, I_D = -10 \text{ A}$ | | 37 | 50 | mΩ |
| | | $V_{GS} = -4.5 \text{ V}, I_D = -8 \text{ A}$ | | 45 | 62 | |
| Forward Transconductance ^a | g_{fs} | $V_{DS} = -15 \text{ V}, I_D = -10 \text{ A}$ | | 22 | | S |
| Diode Forward Voltage ^a | V_{SD} | $I_S = -20 \text{ A}, V_{GS} = 0 \text{ V}$ | | -1.03 | | V |
| Dynamic ^b | | | | | | |
| Total Gate Charge | Q_g | $V_{DS} = -30 \text{ V}, V_{GS} = -4.5 \text{ V}, I_D = -10 \text{ A}$ | | 20 | | nC |
| Gate-Source Charge | Q_{gs} | | | 5.2 | | |
| Gate-Drain Charge | Q_{gd} | | | 8.1 | | |
| Turn-On Delay Time | $t_{d(on)}$ | $V_{DS} = -30 \text{ V}, R_L = 3 \Omega, I_D = -10 \text{ A}, V_{GEN} = -10 \text{ V}, R_{GEN} = 6 \Omega$ | | 10 | | ns |
| Rise Time | t_r | | | 19 | | |
| Turn-Off Delay Time | $t_{d(off)}$ | | | 62 | | |
| Fall Time | t_f | | | 20 | | |
| Input Capacitance | C_{iss} | $V_{DS} = -15 \text{ V}, V_{GS} = 0 \text{ V}, f = 1 \text{ Mhz}$ | | 1816 | | pF |
| Output Capacitance | C_{oss} | | | 128 | | |
| Reverse Transfer Capacitance | C_{rss} | | | 111 | | |



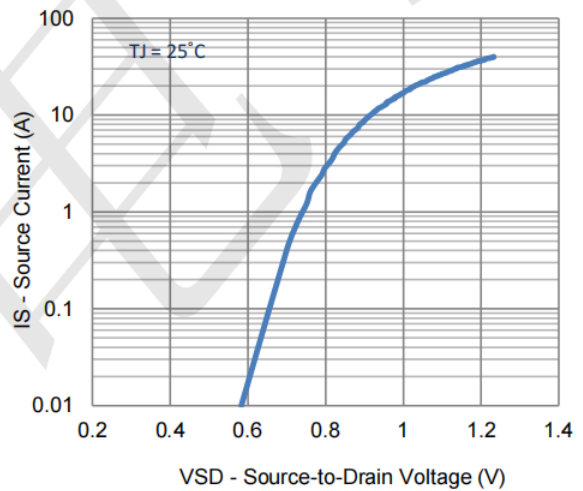
1. On-Resistance vs. Drain Current



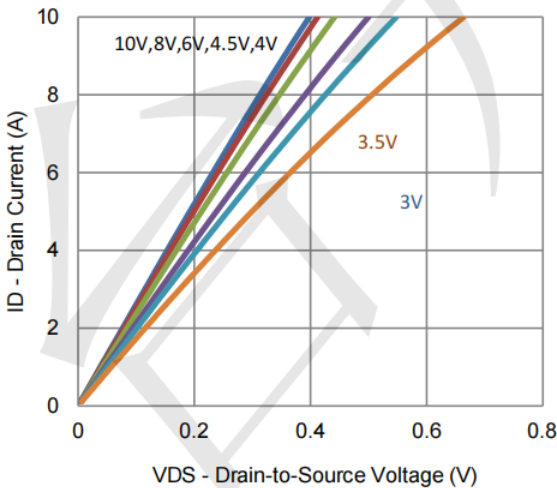
2. Transfer Characteristics



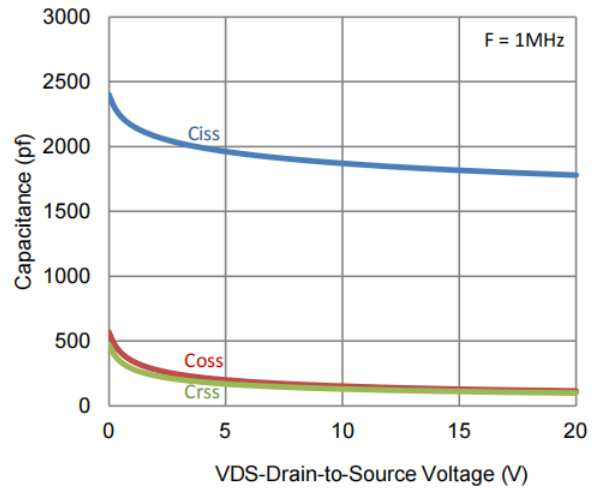
3. On-Resistance vs. Gate-to-Source Voltage



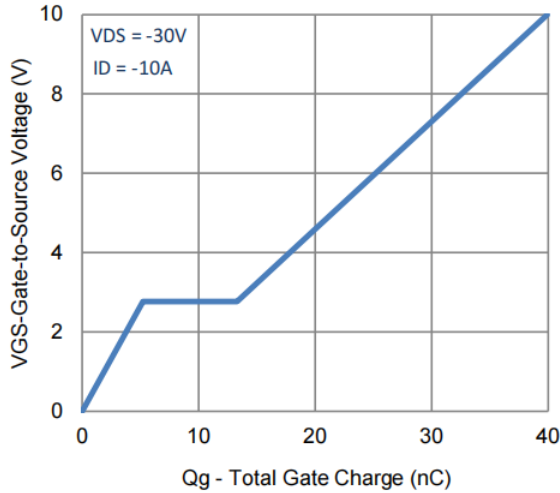
4. Drain-to-Source Forward Voltage



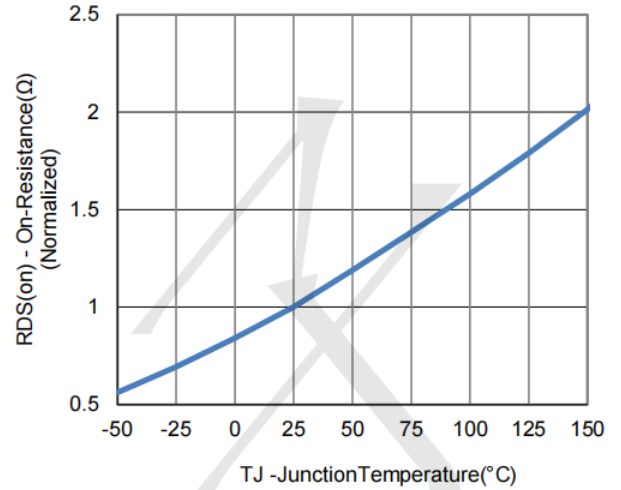
5. Output Characteristics



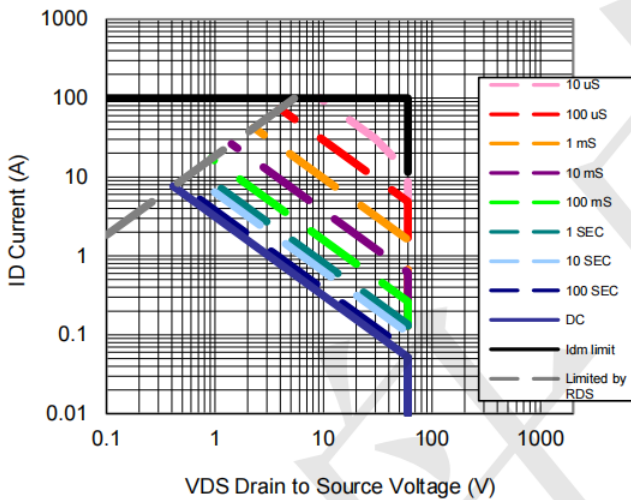
6. Capacitance



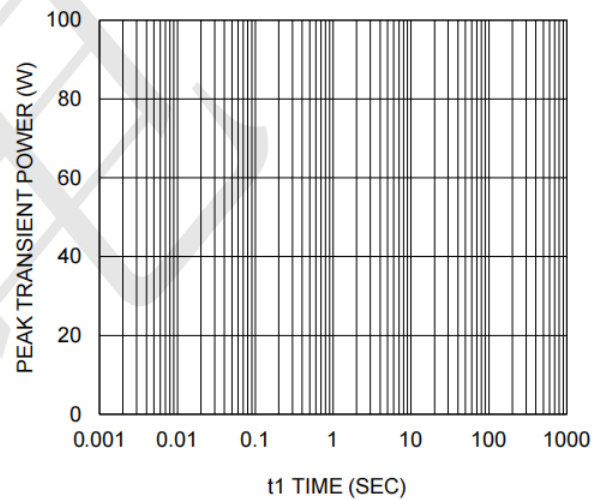
7. Gate Charge



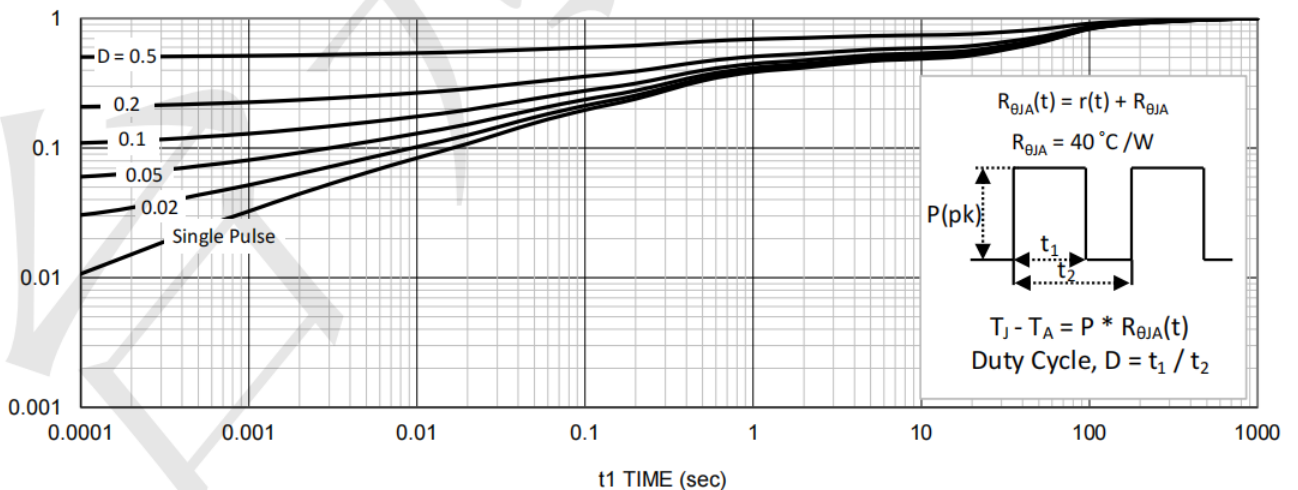
8. Normalized On-Resistance Vs Junction Temperature



9. Safe Operating Area



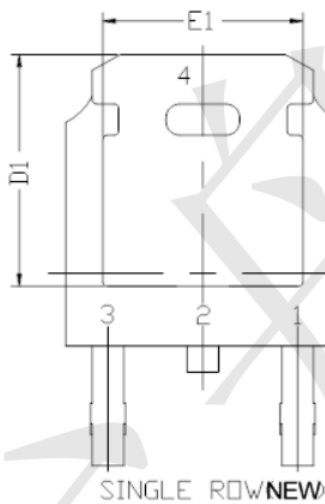
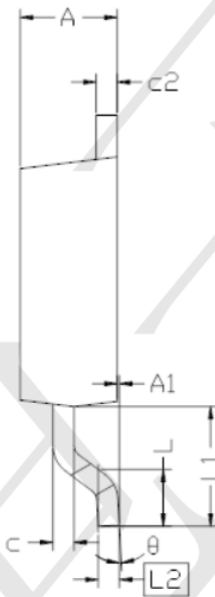
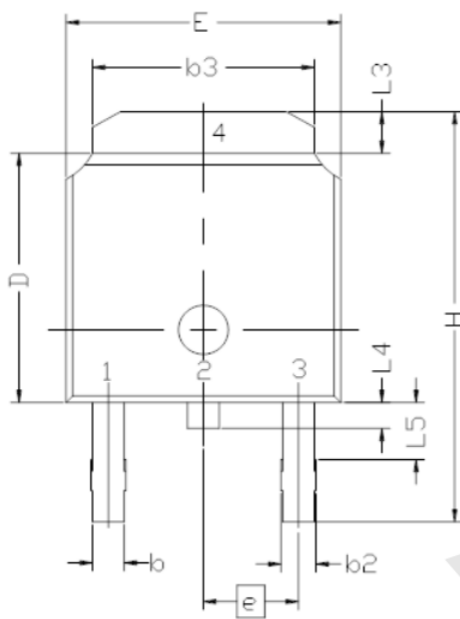
10. Single Pulse Maximum Power Dissipation



11. Normalized Thermal Transient Junction to Ambient



TO252 Package Information



| SYMBOL | DIMENSIONAL REQMTS | | |
|--------|--------------------|-------|-------|
| | MIN | NOM | MAX |
| E | 6.40 | 6.60 | 6.731 |
| L | 1.40 | 1.52 | 1.77 |
| L1 | 2.743 REF | | |
| L2 | 0.508 BSC | | |
| L3 | 0.89 | -- | 1.27 |
| L4 | 0.64 | -- | 1.01 |
| L5 | -- | -- | -- |
| D | 6.00 | 6.10 | 6.223 |
| H | 9.40 | 10.00 | 10.40 |
| b | 0.64 | 0.76 | 0.88 |
| b2 | 0.77 | 0.84 | 1.14 |
| b3 | 5.21 | 5.34 | 5.46 |
| e | 2.286 BSC | | |
| A | 2.20 | 2.30 | 2.38 |
| A1 | 0 | -- | 0.127 |
| c | 0.45 | 0.50 | 0.60 |
| c2 | 0.45 | 0.50 | 0.58 |
| D1 | 5.30 | -- | -- |
| E1 | 4.40 | -- | -- |
| θ | 0° | -- | 10° |