

Product Summary

| $V_{(BR)DSS}$ | $R_{DS(on)TYP}$ | I_D |
|---------------|-----------------|-------|
| 60V | 32mΩ@10V | 5A |
| | 38mΩ@4.5V | |

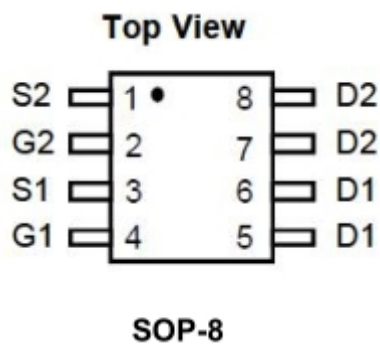
Feature

- High density cell design for ultra low Rdson
- Fully characterized avalanche voltage and current
- Good stability and uniformity with high EAS
- Excellent package for good heat dissipation
- Special process technology for high ESD capability

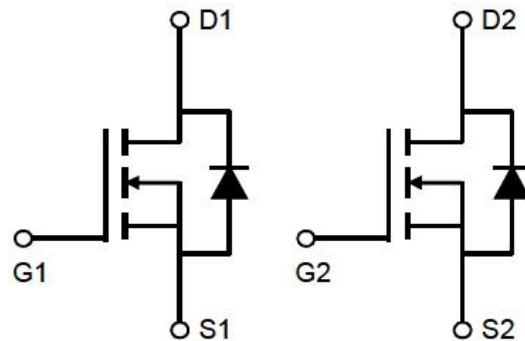
Applications

- Power switching application
- Hard switched and high frequency circuits
- Uninterruptible power supply

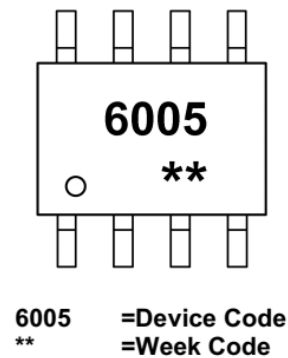
Package



Circuit diagram



Marking



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 | 5 | A |
| Pulsed Drain Current | I_{DM} | 20 | A |
| Power Dissipation | P_D | 2 | W |
| Thermal Resistance from Junction to Ambient ²⁾ | $R_{\theta JA}$ | 62.5 | $^{\circ}\text{C/W}$ |
| Junction Temperature | T_J | 150 | $^{\circ}\text{C}$ |
| Storage Temperature | T_{STG} | -55~ +150 | $^{\circ}\text{C}$ |

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 | 60 | | | V |
| Zero gate voltage drain current | I _{DSS} | V _{DS} =60V, V _{GS} = 0V | | | 1 | uA |
| Gate-body leakage current | I _{GSS} | V _{GS} = ±20V, V _{DS} = 0V | | | ±100 | uA |
| Gate threshold voltage ⁽¹⁾ | V _{GS(th)} | V _{DS} =V _{GS} , I _D =250μA | 1 | 1.5 | 2.5 | V |
| Drain-source on-resistance | R _{DS(on)} | V _{GS} =10V, I _D =5A | | 32 | 42 | mΩ |
| | | V _{GS} =4.5V, I _D =3A | | 38 | 50 | |
| Forward Transconductance | g _{FS} | V _{DS} =5V, I _D =5A | 11 | | | S |
| Dynamic Characteristics ⁴⁾ | | | | | | |
| Input Capacitance | C _{iss} | V _{DS} =30V, V _{GS} =0V, f=1MHz | | 590 | | pF |
| Output Capacitance | C _{oss} | | | 60 | | |
| Reverse Transfer Capacitance | C _{rss} | | | 25 | | |
| Switching Characteristics ⁴⁾ | | | | | | |
| Turn-on Delay Time | T _{d(on)} | V _{DD} =30V, I _D =2A, V _{GS} =10V, R _G =3Ω, R _L =6.7Ω | | 5 | | nS |
| Turn-on Rise Time | T _r | | | 2.6 | | |
| Turn-Off Delay Time | T _{d(off)} | | | 16.1 | | |
| Turn-Off Fall Time | t _f | | | 2.3 | | |
| Total Gate Charge | Q _g | V _{DS} =30V, I _D =4.5A, V _{GS} =10V | | 14 | | nC |
| Gate-Source Charge | Q _{gs} | | | 2.9 | | |
| Gate-Drain Charge | Q _{gd} | | | 5.2 | | |
| Source-Drain Diode Characteristics | | | | | | |
| Diode Forward Voltage | V _{SD} | I _S =20A, V _{GS} =0V | | | 1.2 | V |

Notes:

1. Repetitive rating: Pulse width limited by junction temperature.
2. Surface mounted on FR4 board, $t \leq 10s$.
3. Pulse Test: Pulse Width $\leq 80\mu s$, Duty Cycle $\leq 0.5\%$.
4. Guaranteed by design, not subject to producing.

Typical Characteristics

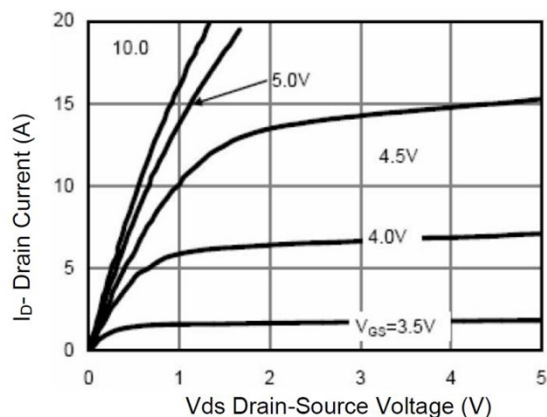


Figure 1 Output Characteristics

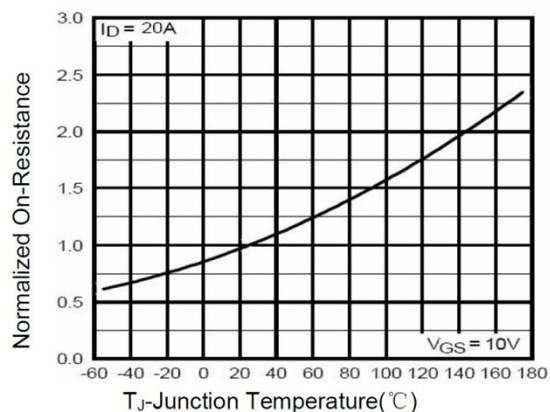


Figure 4 Rdson-Junction Temperature

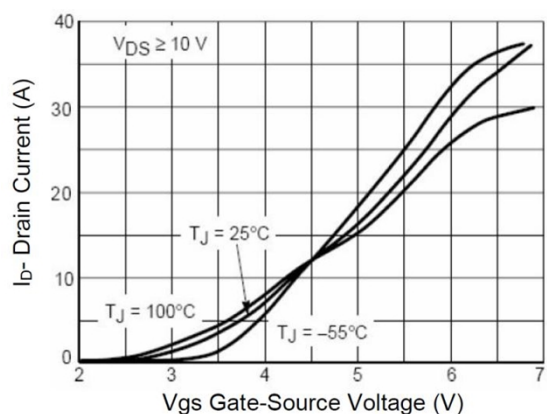


Figure 2 Transfer Characteristics

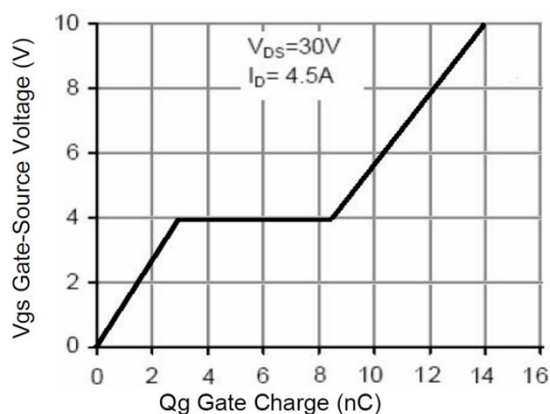


Figure 5 Gate Charge

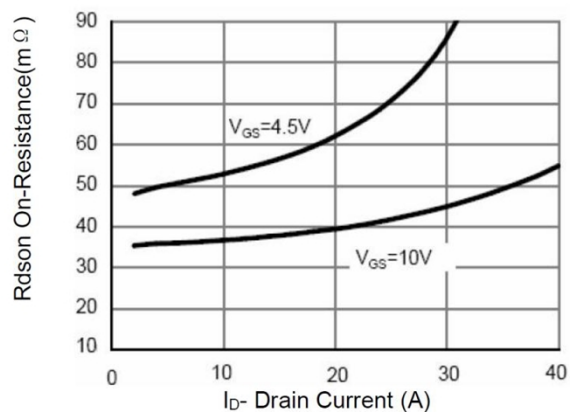


Figure 3 Rdson- Drain Current

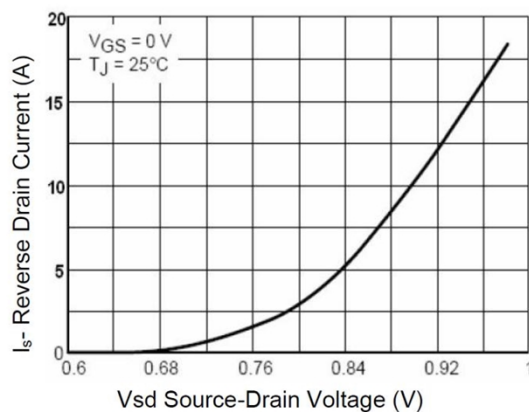


Figure 6 Source- Drain Diode Forward

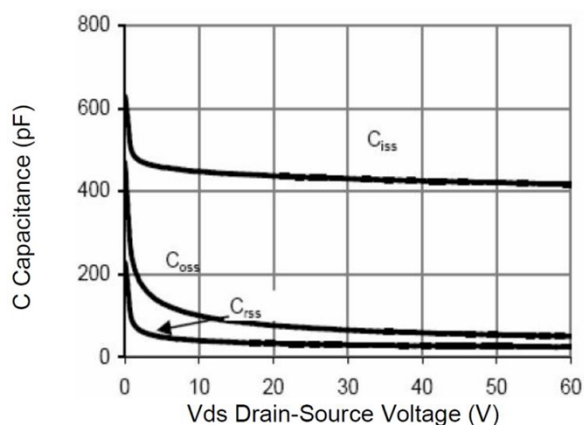


Figure 7 Capacitance vs Vds

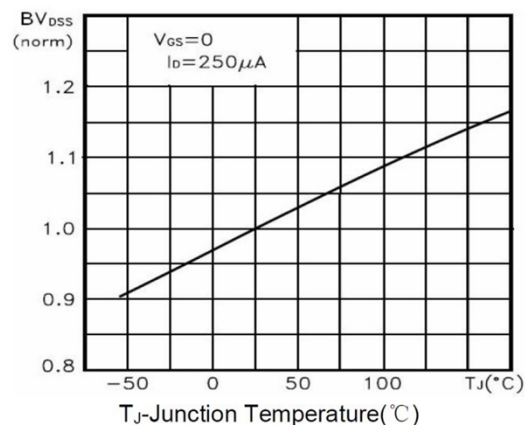
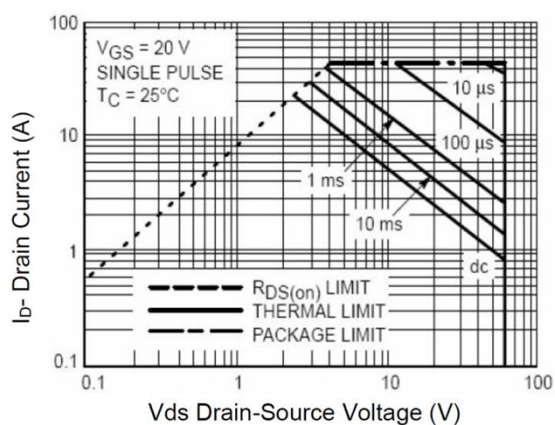

Figure 9 BV_{DSS} vs Junction Temperature


Figure 8 Safe Operation Area

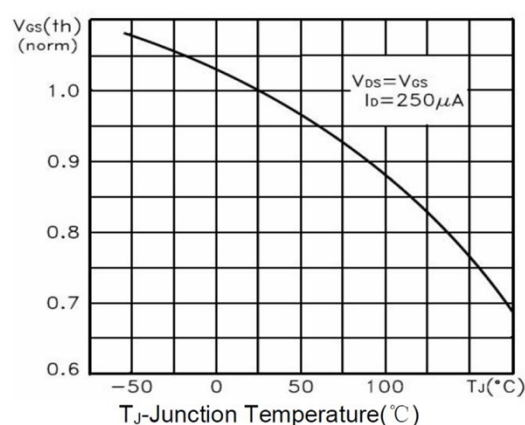
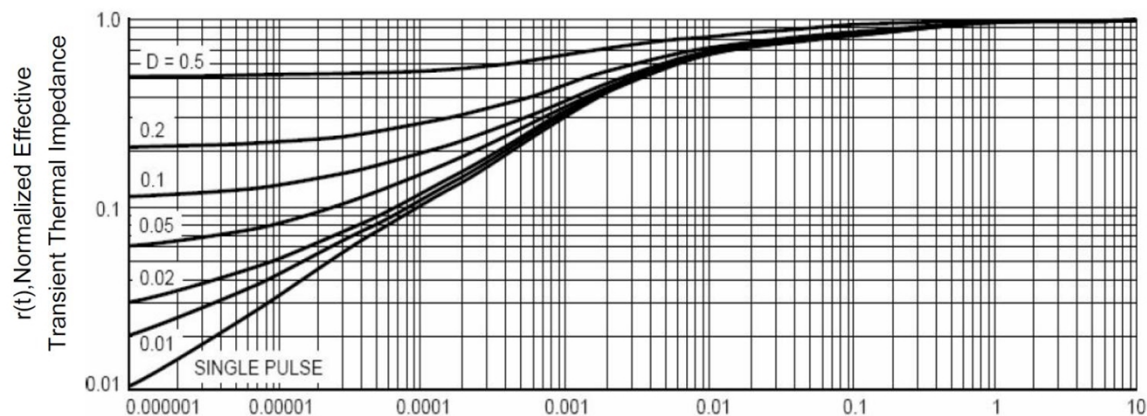
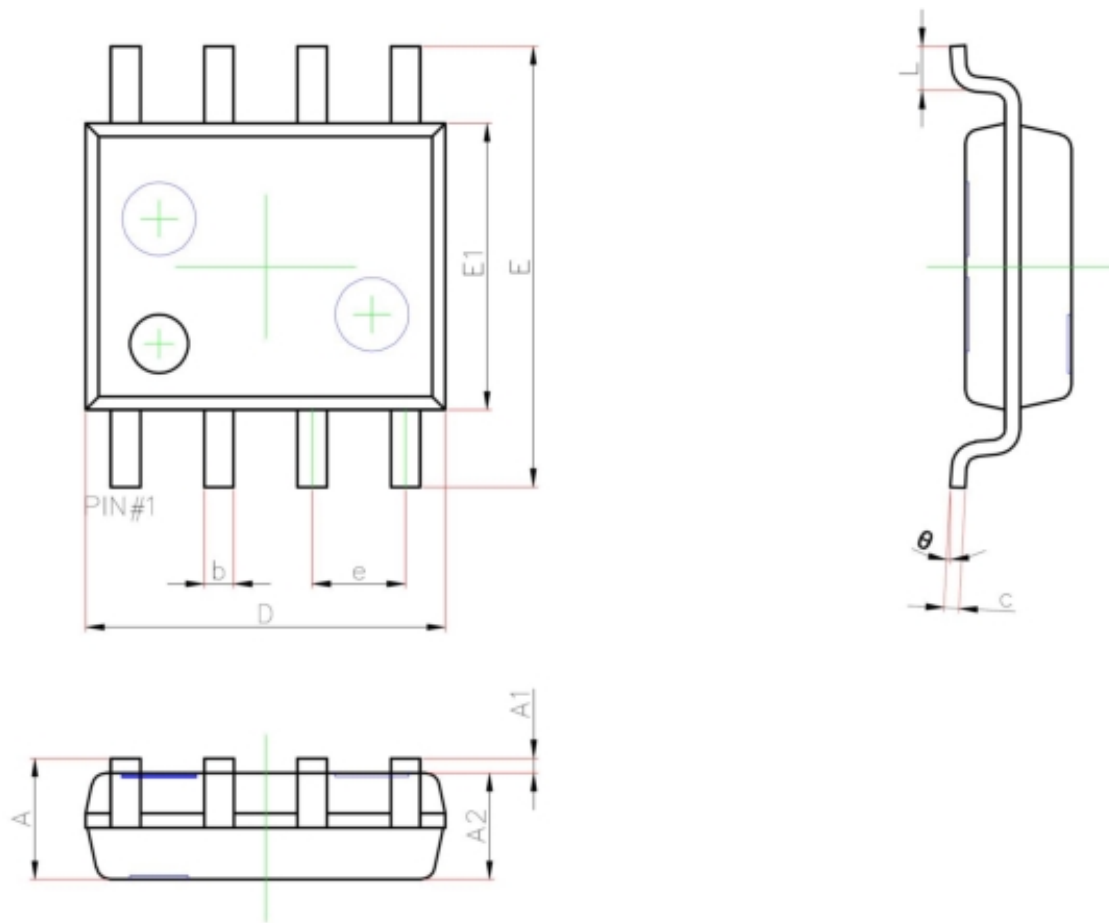

Figure 10 $V_{GS(th)}$ vs Junction Temperature


Figure 11 Normalized Maximum Transient Thermal Impedance

SOT-8 Package Information



| Symbol | Dimensions In Millimeters | |
|----------|---------------------------|------|
| | Min. | Max. |
| A | 1.35 | 1.75 |
| A1 | 0.10 | 0.25 |
| A2 | 1.35 | 1.55 |
| b | 0.33 | 0.51 |
| c | 0.17 | 0.25 |
| D | 4.80 | 5.00 |
| e | 1.27 REF. | |
| E | 5.80 | 6.20 |
| E1 | 3.80 | 4.00 |
| L | 0.40 | 1.27 |
| θ | 0° | 8° |