

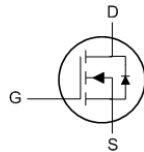
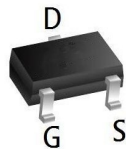
2N10

N-Ch 100V Fast Switching MOSFETs

Description

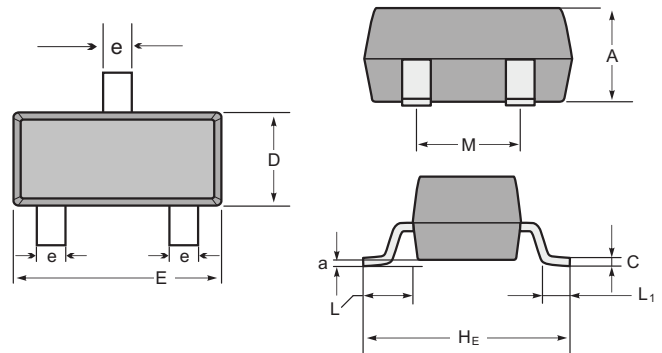
The 2N10 is the high cell density trenched N-ch MOSFETs, which provides excellent RDSON and efficiency for most of the small power switching and load switch applications. The 1002C meet the RoHS and Green Product requirement with full function reliability approved.

- Green Device Available
- Super Low Gate Charge
- Excellent Cdv/dt effect decline
- Advanced high cell density Trench technology



Product Summary

| BVDSS | RDSON | ID |
|-------|-------|----|
| 100V | 220mΩ | 2A |



SOT-23 mechanical data

| UNIT | | A | C | D | E | He | e | M | L | L1 | a |
|------|-----|-----|------|-----|-----|-----|-----|------|------------|------------|------|
| mm | max | 1.1 | 0.15 | 1.4 | 3.0 | 2.6 | 0.5 | 1.95 | 0.55 (ref) | 0.36 (ref) | 0.0 |
| | min | 0.9 | 0.08 | 1.2 | 2.8 | 2.2 | 0.3 | 1.7 | | | 0.15 |
| mil | max | 43 | 6 | 55 | 118 | 102 | 20 | 77 | 22 (ref) | 14 (ref) | 0.0 |
| | min | 35 | 3 | 47 | 110 | 87 | 12 | 67 | | | 6 |

Absolute Maximum Ratings (TA=25°C unless otherwise specified)

| Symbol | Parameter | Max. | Units |
|-----------------------------------|---|------------------------|-------|
| V _{DSS} | Drain-Source Voltage | 100 | V |
| V _{GSS} | Gate-Source Voltage | ±20 | V |
| I _D | Continuous Drain Current | T _A = 25°C | 2 |
| | | T _A = 100°C | 1.4 |
| I _{DM} | Pulsed Drain Current ^{note1} | 8.8 | A |
| P _D | Power Dissipation | 2.3 | W |
| R _{θJA} | Thermal Resistance, Junction to Ambient | 54 | °C/W |
| T _J , T _{STG} | Operating and Storage Temperature Range | -55 to +150 | °C |

2N10

Electrical Characteristics (T_J=25°C unless otherwise specified)

| Symbol | Parameter | Test Condition | Min. | Typ. | Max. | Units |
|---|--|--|------|------|------|-------|
| Off Characteristic | | | | | | |
| V _{(BR)DSS} | Drain-Source Breakdown Voltage | V _{GS} =0V, I _D =250μA | 100 | - | - | V |
| I _{DSS} | Zero Gate Voltage Drain Current | V _{DS} =100V, V _{GS} =0V | - | - | 1.0 | μA |
| I _{GSS} | Gate to Body Leakage Current | V _{DS} =0V, V _{GS} =±20V | - | - | ±100 | nA |
| On Characteristics | | | | | | |
| V _{GS(th)} | Gate Threshold Voltage | V _{DS} =V _{GS} , I _D =250μA | 1.0 | 1.5 | 2.2 | V |
| R _{DS(on)} | Static Drain-Source on-Resistance note2 | V _{GS} =10V, I _D =2A | - | 220 | 286 | mΩ |
| | | V _{GS} =4.5V, I _D =1A | - | 223 | 312 | |
| Dynamic Characteristics | | | | | | |
| C _{iss} | Input Capacitance | V _{DS} =25V, V _{GS} =0V, f=1.0MHz | - | 321 | - | pF |
| C _{oss} | Output Capacitance | | - | 21 | - | pF |
| C _{rss} | Reverse Transfer Capacitance | | - | 15 | - | pF |
| Q _g | Total Gate Charge | V _{DS} =30V, I _D =2A, V _{GS} =10V | - | 5.3 | - | nC |
| Q _{gs} | Gate-Source Charge | | - | 1.3 | - | nC |
| Q _{gd} | Gate-Drain("Miller") Charge | | - | 1.7 | - | nC |
| Switching Characteristics | | | | | | |
| t _{d(on)} | Turn-on Delay Time | V _{DS} =30V, I _D =1A, R _{GEN} =3Ω, V _{GS} =10V | - | 14 | - | ns |
| t _r | Turn-on Rise Time | | - | 54 | - | ns |
| t _{d(off)} | Turn-off Delay Time | | - | 18 | - | ns |
| t _f | Turn-off Fall Time | | - | 11 | - | ns |
| Drain-Source Diode Characteristics and Maximum Ratings | | | | | | |
| I _S | Maximum Continuous Drain to Source Diode Forward Current | | - | - | 2.2 | A |
| I _{SM} | Maximum Pulsed Drain to Source Diode Forward Current | | - | - | 8.8 | A |
| V _{SD} | Drain to Source Diode Forward Voltage | V _{GS} =0V, I _S =2.2A | - | - | 1.2 | V |

Notes:1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature

2. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%

RATING AND CHARACTERISTIC CURVES (2N10)

Figure 1: Output Characteristics

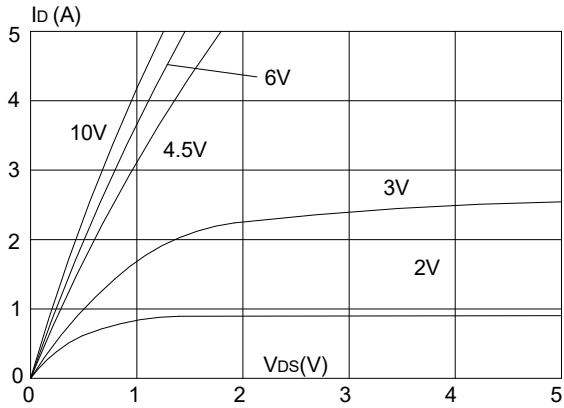


Figure 2: Typical Transfer Characteristics

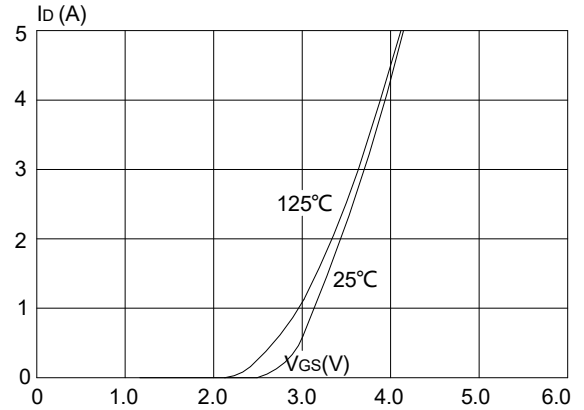


Figure 3: On-resistance vs. Drain Current

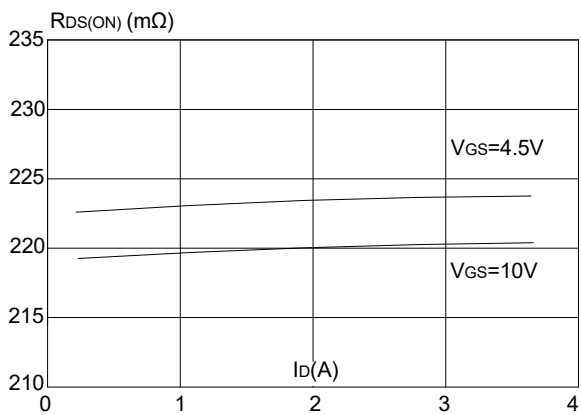


Figure 4: Body Diode Characteristics

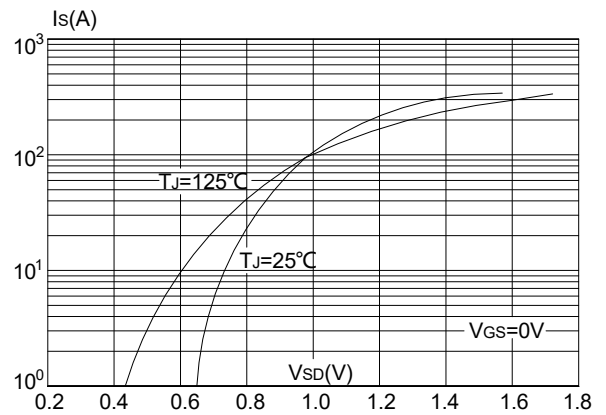


Figure 5: Gate Charge Characteristics

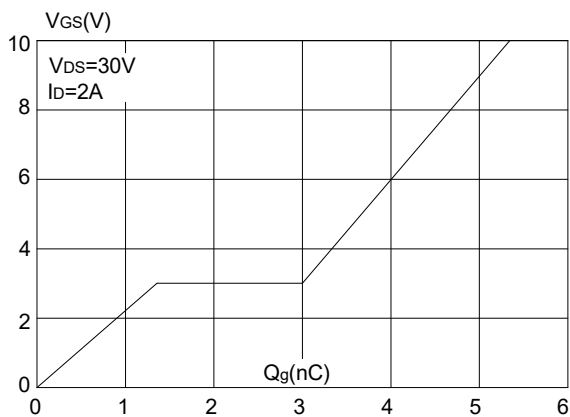
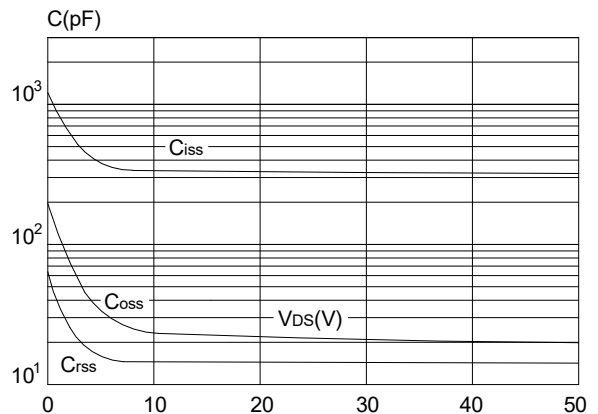


Figure 6: Capacitance Characteristics



RATING AND CHARACTERISTIC CURVES (2N10)

Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

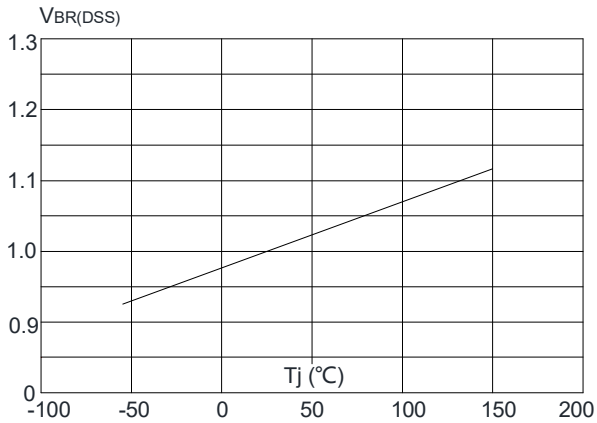


Figure 8: Normalized on Resistance vs. Junction Temperature

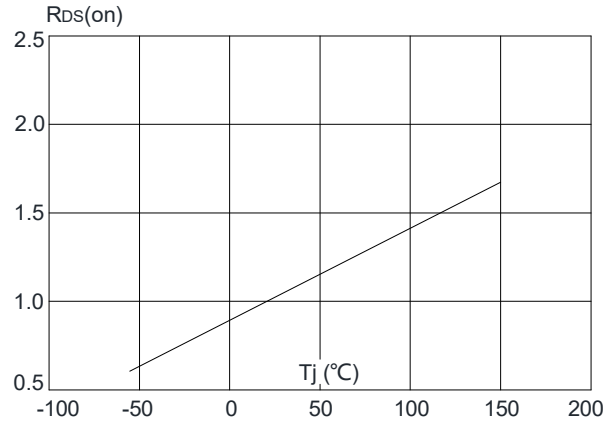


Figure 9: Maximum Safe Operating Area

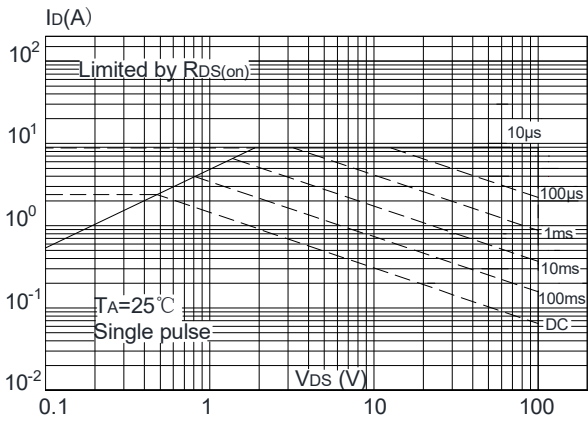


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

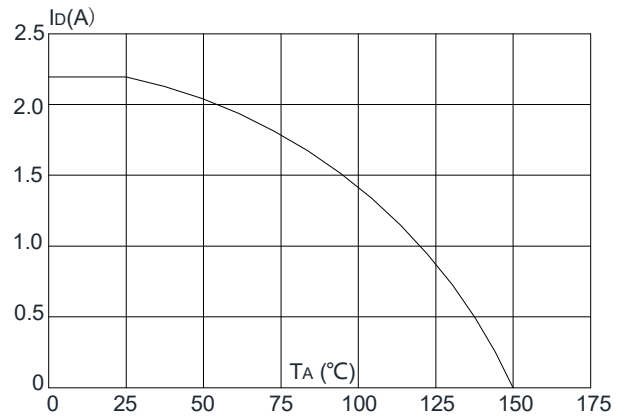
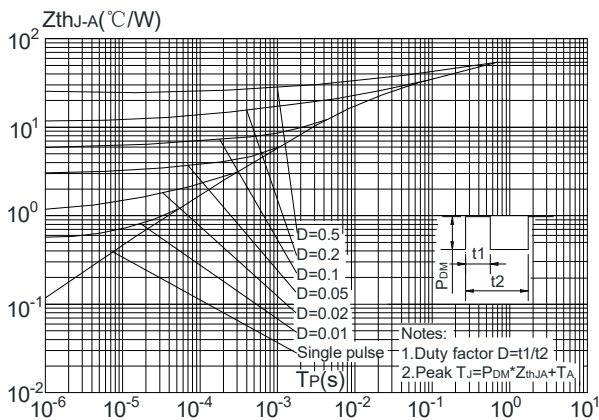


Figure 11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient



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