# 100V/5A N-Channel MOSFET

## Features

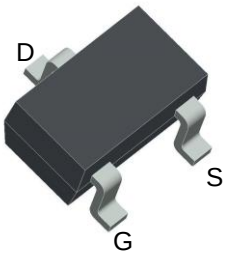
- Low $R_{DS(on)}$ & FOM
- Extremely low switching loss
- Excellent stability and uniformity
- Fast switching and soft recovery

## Product Summary

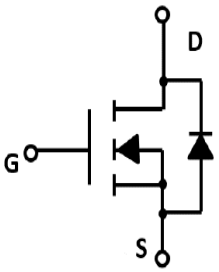
| $V_{DS}$ | $R_{DS(ON)}$ MAX | $I_D$ MAX |
|---|---|---|
| 100V | 140mΩ@10V | 5A |
| | 170mΩ@4.5V | |

## Application

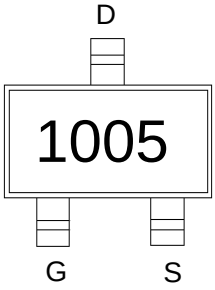
- Consumer electronic power supply
- Motor control
- Synchronous-rectification
- Isolated DC/DC convertor




SOT-23-3L top view




Schematic diagram




1005: Device code

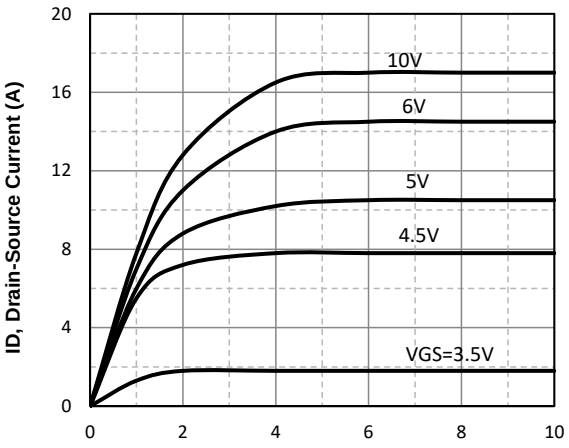
Marking and pin assignment

Pb-Free RoHS Halogen-Free

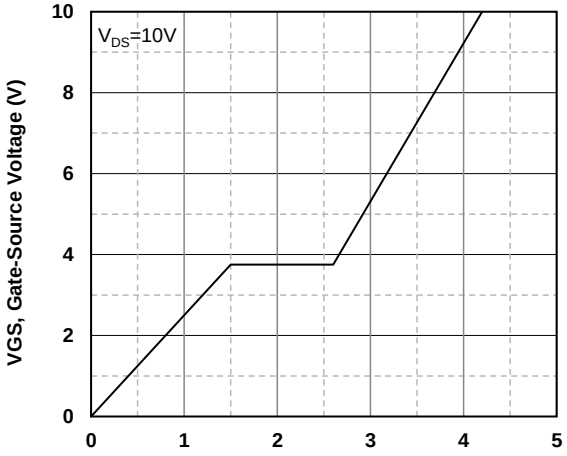
| Absolute Maximum Ratings (TA=25℃unless otherwise noted) | | | | |
|---|---|---|---|---|
| **Symbol** | **Parameter** | | **Rating** | **Unit** |
| **Common Ratings (TC=25°C Unless Otherwise Noted)** | | | | |
| $V_{DS}$ | Drain-Source Breakdown Voltage | | 100 | V |
| $V_{GS}$ | Gate-Source Voltage | | ±20 | V |
| $T_J$ | Maximum Junction Temperature | | 150 | °C |
| $T_{STG}$ | Storage Temperature Range | | -50 to 155 | °C |
| $I_S$ | Diode Continuous Forward Current | Tc=25°C | 5 | A |
| **Mounted on Large Heat Sink** | | | | |
| $I_{DM}$ | Pulse Drain Current Tested | Tc=25°C | 19.6 | A |
| $I_D$ | Continuous Drain Current | Tc=25°C | 5 | A |
| $P_D$ | Maximum Power Dissipation | Tc=25°C | 5 | W |
| $R_{\theta JA}$ | Thermal Resistance Junction-Ambient | | 85 | °C/W |

| Electrical Characteristics (TJ=25℃ unless otherwise noted) | | | | | | |
|---|---|---|---|---|---|---|
| **Symbol** | **Parameter** | **Condition** | **Min** | **Typ** | **Max** | **Unit** |
| **Static Electrical Characteristics @ TJ = 25°C (unless otherwise stated)** | | | | | | |
| $BV_{(BR)DSS}$ | Drain-Source Breakdown Voltage | VGS=0V，ID=250μA | 100 | -- | -- | V |
| $I_{DSS}$ | Zero Gate Voltage Drain Current | VDS=100V，VGS=0V | -- | -- | 1 | uA |
| $I_{GSS}$ | Gate-Body Leakage Current | VGS=±20V，VDS=0V | -- | -- | ±100 | nA |
| $V_{GS(th)}$ | Gate Threshold Voltage | VDS=VGS，ID=250μA | 1 | 1.8 | 2.5 | V |
| $R_{DS(on)}$ | Drain-Source On-State Resistance | VGS=10V， ID=3A | -- | 105 | 140 | mΩ |
| | | VGS=4.5V，ID=2A | -- | 140 | 170 | mΩ |
| **Dynamic Electrical Characteristics @ TJ = 25°C (unless otherwise stated)** | | | | | | |
| $C_{ISS}$ | Input Capacitance | VDS=50V，VGS=0V， f=1MHz | -- | 212 | -- | pF |
| $C_{OSS}$ | Output Capacitance | | -- | 27.5 | -- | pF |
| $C_{RSS}$ | Reverse Transfer Capacitance | | -- | 1.6 | -- | pF |
| **Switching Characteristics** | | | | | | |
| $Q_g$ | Total Gate Charge | VDS=50V，ID=3A，VGS=10V | -- | 3.3 | -- | nC |
| $Q_{gs}$ | Gate Source Charge | | -- | 0.35 | -- | nC |
| $Q_{gd}$ | Gate Drain Charge | | -- | 0.87 | -- | nC |
| $t_{d(on)}$ | Turn-on Delay Time | VDS=50V，ID=3A，VGS=10V，RG=2Ω | -- | 13.2 | -- | nS |
| $t_r$ | Turn-on Rise Time | | -- | 2.2 | -- | nS |
| $t_{d(off)}$ | Turn-Off Delay Time | | -- | 11 | -- | nS |
| $t_f$ | Turn-Off Fall Time | | -- | 1.1 | -- | nS |
| **Source- Drain Diode Characteristics** | | | | | | |
| $V_{SD}$ | Forward on voltage | Tj=25℃，Is=3A， | -- | -- | 1.2 | V |

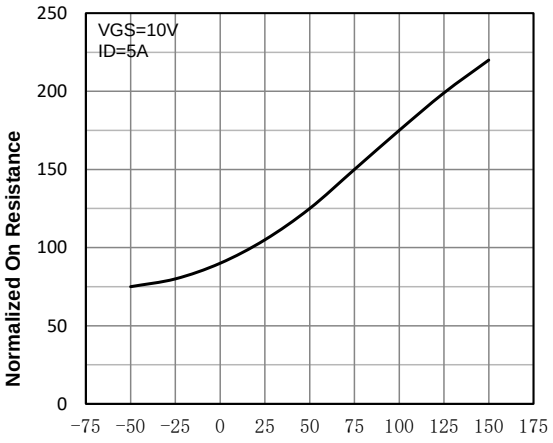
## Typical Operating Characteristics



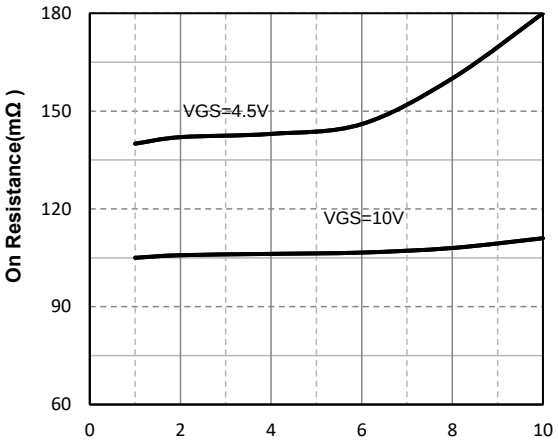

VDS, Drain -Source Voltage (V)
**Fig1. Typical Output Characteristics**



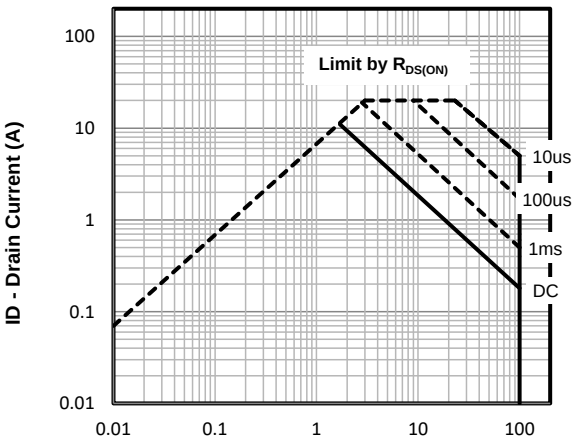

Qg -Total Gate Charge (nC)
**Fig2. Typical Gate Charge Vs.Gate-Source Voltage**



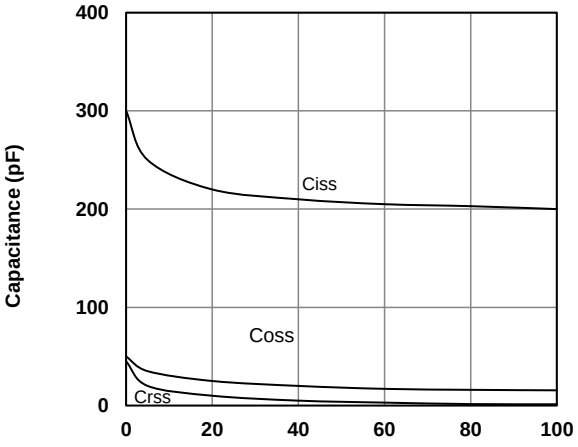

Tj - Junction Temperature (°C)
**Fig3. Normalized On-Resistance Vs. Temperature**




ID, Drain-Source Current (A)
**Fig4. On-Resistance Vs. Drain-Source Current**

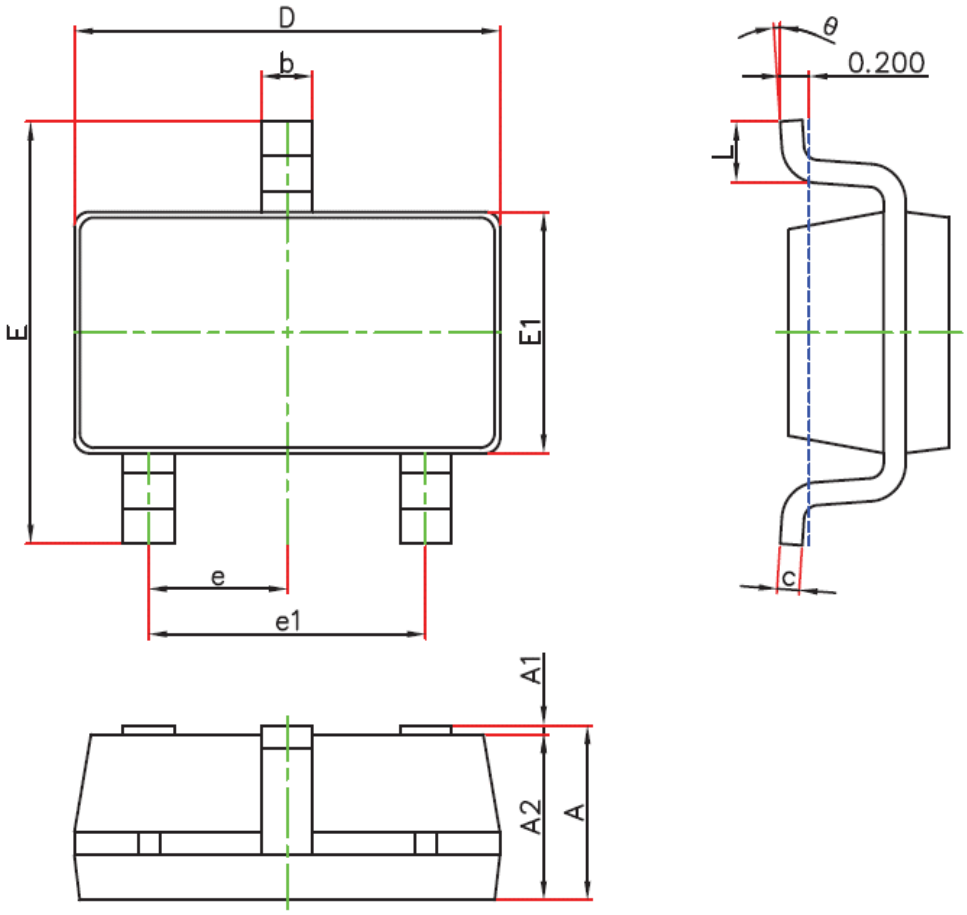



VDS, Drain -Source Voltage (V)
**Fig5. Maximum Safe Operating Area**




VDS , Drain-Source Voltage (V)
**Fig6 Typical Capacitance Vs.Drain-Source Voltage**

## SOT-23-3L Package information




| Symbol | Dimensions in Millimeters(mm) | | Dimensions In Inches | |
|---|---|---|---|---|
| | Min | Max | Min | Max |
| A | 1.050 | 1.250 | 0.041 | 0.049 |
| A1 | 0.000 | 0.100 | 0.000 | 0.004 |
| A2 | 1.050 | 1.150 | 0.041 | 0.045 |
| b | 0.300 | 0.500 | 0.012 | 0.020 |
| c | 0.100 | 0.200 | 0.004 | 0.008 |
| D | 2.820 | 3.020 | 0.111 | 0.119 |
| E1 | 1.500 | 1.700 | 0.059 | 0.067 |
| E | 2.650 | 2.950 | 0.104 | 0.116 |
| e | 0.950TYP | | 0.037TYP | |
| e1 | 1.800 | 2.000 | 0.071 | 0.079 |
| L | 0.300 | 0.600 | 0.012 | 0.024 |
| θ | 0° | 8° | 0° | 8° |