



General Description

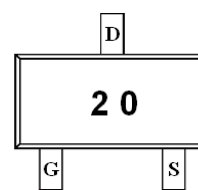
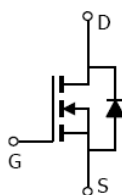
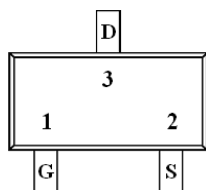
AFN1072, N-Channel enhancement mode MOSFET, uses Advanced Trench Technology to provide excellent $R_{DS(ON)}$, low gate charge.

These devices are particularly suited for low voltage power management, such as smart phone and notebook computer, and low in-line power loss are needed in commercial industrial surface mount applications.

Features

- 20V/0.8A, $R_{DS(ON)}=360m\Omega@V_{GS}=4.5V$
- 20V/0.7A, $R_{DS(ON)}=420m\Omega@V_{GS}=2.5V$
- 20V/0.6A, $R_{DS(ON)}=560m\Omega@V_{GS}=1.8V$
- Low Offset (Error) Voltage
- Low-Voltage Operation
- High-Speed Circuits
- Low Battery Voltage Operation
- SOT-723 package design

Pin Description (SOT-723)



Application

- Drivers: Relays, Solenoids, Lamps, Hammers, Displays, Memories
- Battery Operated Systems
- Power Supply Converter Circuits
- Load/Power Switching Smart Phones, Pagers

Pin Define

| Pin | Symbol | Description |
|-----|--------|-------------|
| 1 | G | Gate |
| 2 | S | Source |
| 3 | D | Drain |

Ordering Information

| Part Ordering No. | Part Marking | Package | Unit | Quantity |
|-------------------|--------------|---------|-------------|----------|
| AFN1072S72RG | 20 | SOT-723 | Tape & Reel | 8000 EA |

※ AFN1072S72RG : 7" Tape & Reel ; Pb- Free ; Halogen- Free



Absolute Maximum Ratings

(T_A=25°C Unless otherwise noted)

| Parameter | Symbol | Typical | Unit |
|---|------------------|----------------------|------|
| Drain-Source Voltage | V _{DSS} | 20 | V |
| Gate –Source Voltage | V _{GSS} | ±12 | V |
| Continuous Drain Current(T _J =150°C) | I _D | T _A =25°C | 0.7 |
| | | T _A =70°C | 0.4 |
| Pulsed Drain Current | I _{DM} | 1.0 | A |
| Continuous Source Current(Diode Conduction) | I _S | 0.3 | A |
| Power Dissipation | P _D | T _A =25°C | 0.27 |
| | | T _A =70°C | 0.16 |
| Operating Junction Temperature | T _J | -55/150 | °C |
| Storage Temperature Range | T _{STG} | -55/150 | °C |

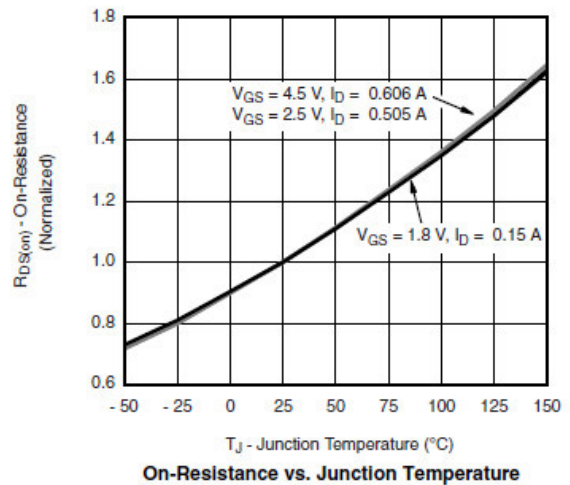
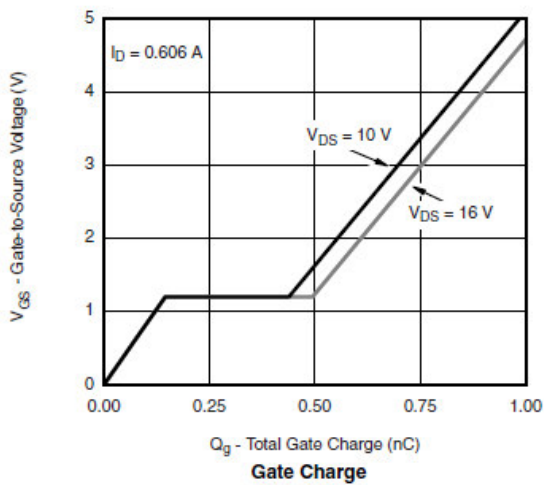
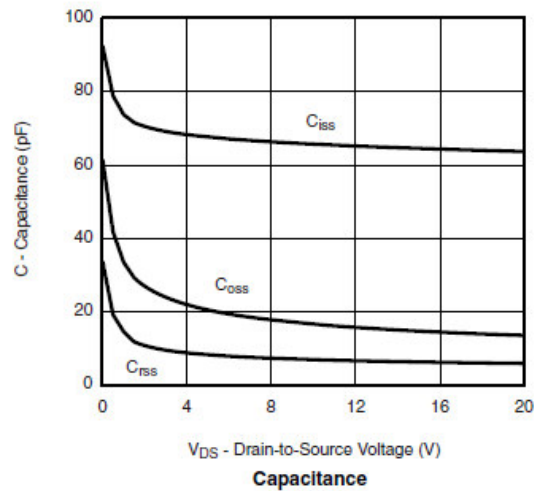
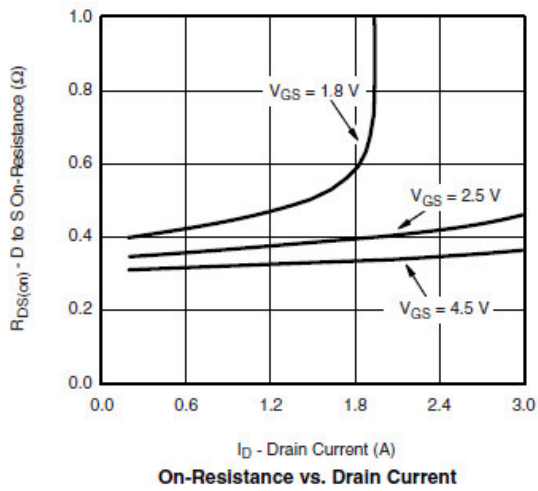
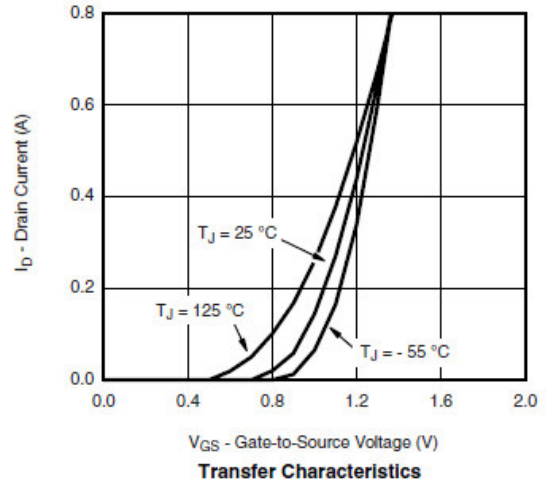
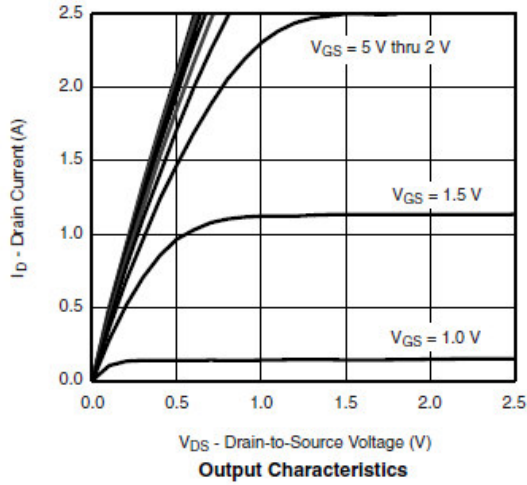
Electrical Characteristics

(T_A=25°C Unless otherwise noted)

| Parameter | Symbol | Conditions | Min. | Typ | Max. | Unit |
|---------------------------------|----------------------|---|------|------|------|------|
| Static | | | | | | |
| Drain-Source Breakdown Voltage | V _{(BR)DSS} | V _{GS} =0V, I _D =250uA | 20 | | | V |
| Gate Threshold Voltage | V _{GS(th)} | V _{DS} =V _{GS} , I _D =250uA | 0.4 | | 1.0 | |
| Gate Leakage Current | I _{GSS} | V _{DS} =0V, V _{GS} =±12V | | | ±100 | nA |
| Zero Gate Voltage Drain Current | I _{DSS} | V _{DS} =20V, V _{GS} =0V | | | 1 | uA |
| | | V _{DS} =20V, V _{GS} =0V T _J =85°C | | | 5 | |
| On-State Drain Current | I _{D(on)} | V _{DS} ≥ 5V, V _{GS} =4.5V | 0.7 | | | A |
| Drain-Source On-Resistance | R _{DS(on)} | V _{GS} =4.5V, I _D =0.8A | | 300 | 360 | mΩ |
| | | V _{GS} =2.5V, I _D =0.7A | | 340 | 420 | |
| | | V _{GS} =1.8V, I _D =0.6A | | 420 | 560 | |
| Forward Transconductance | g _{FS} | V _{DS} =10V, I _D =0.4A | | 1 | | S |
| Diode Forward Voltage | V _{SD} | I _S =0.15A, V _{GS} =0V | | 0.65 | 1.2 | V |
| Dynamic | | | | | | |
| Input Capacitance | C _{iss} | V _{DS} =10V, V _{GS} =0V f=1MHz | | 70 | | pF |
| Output Capacitance | C _{oss} | | | 20 | | |
| Reverse Transfer Capacitance | C _{rss} | | | 8 | | |
| Total Gate Charge | Q _g | V _{DS} =10V, V _{GS} =4.5V I _D ≅0.6A | | 1.06 | 1.38 | nC |
| Gate-Source Charge | Q _{gs} | | | 0.18 | | |
| Gate-Drain Charge | Q _{gd} | | | 0.32 | | |
| Turn-On Time | t _{d(on)} | V _{DD} =10V, R _L =20Ω I _D ≅0.5A, V _{GEN} =4.5V R _G =1Ω | | 18 | 26 | ns |
| | t _r | | | 20 | 28 | |
| Turn-Off Time | t _{d(off)} | | | 70 | 110 | |
| | t _f | | | 25 | 40 | |

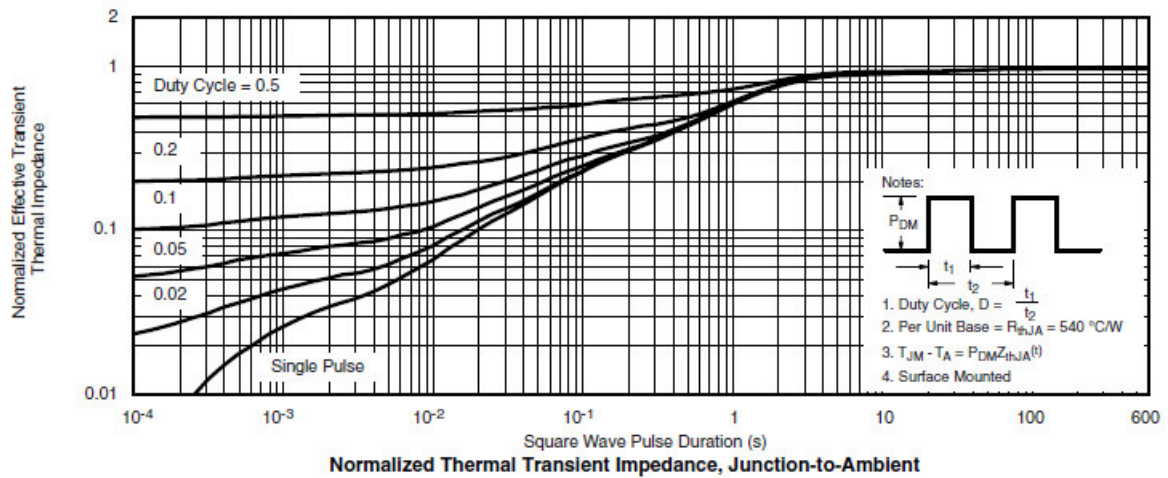
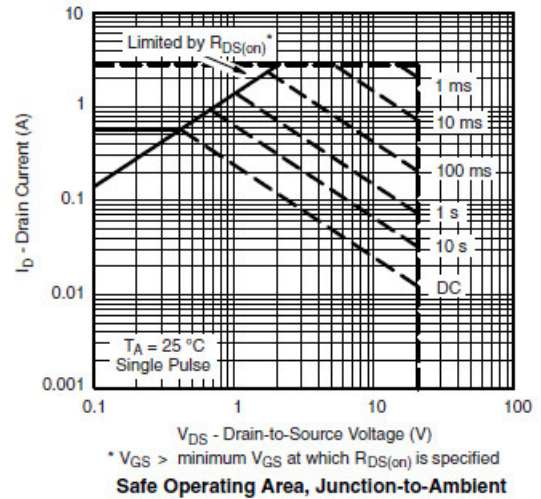
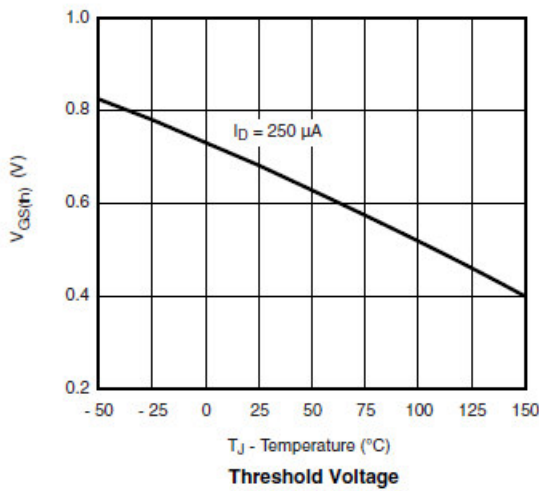
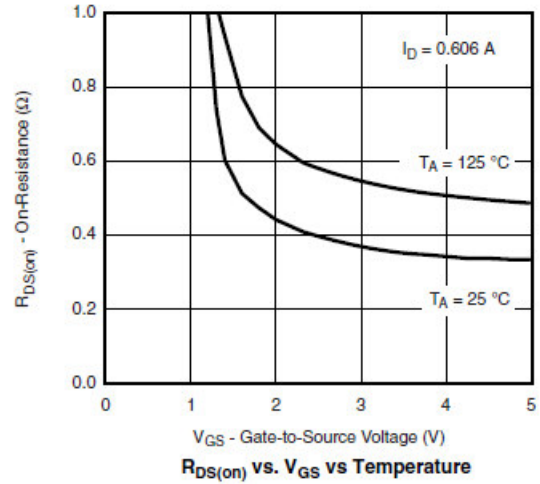
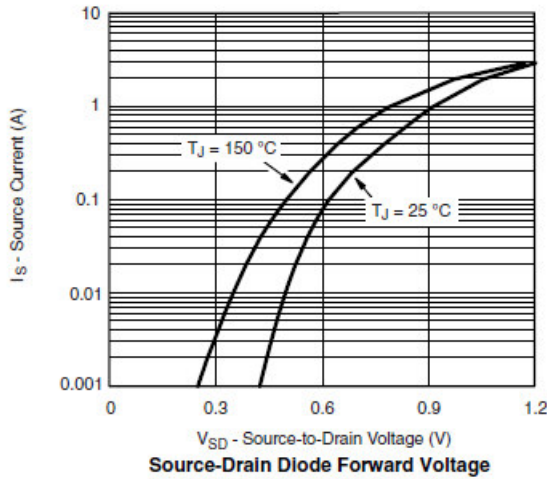


Typical Characteristics





Typical Characteristics



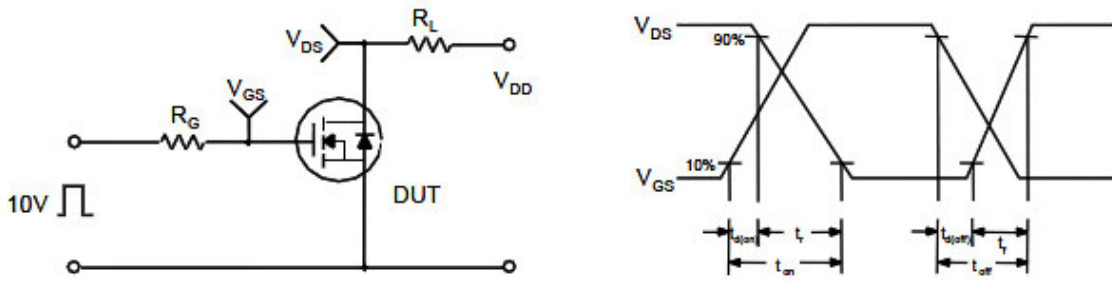


Typical Characteristics

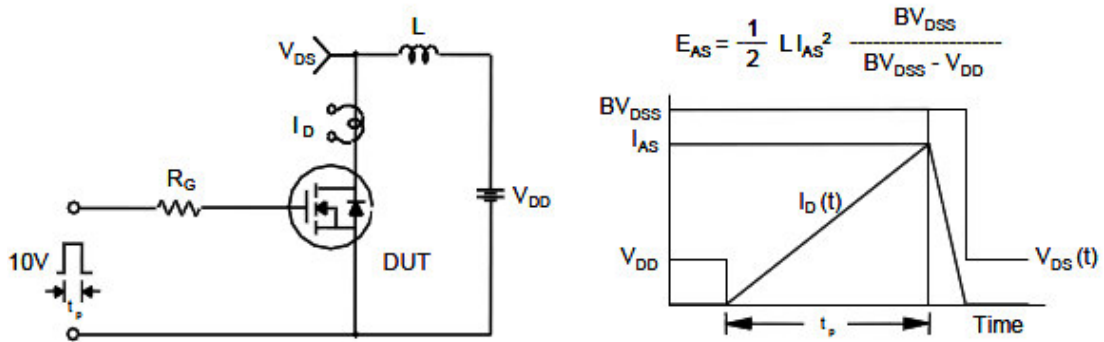
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

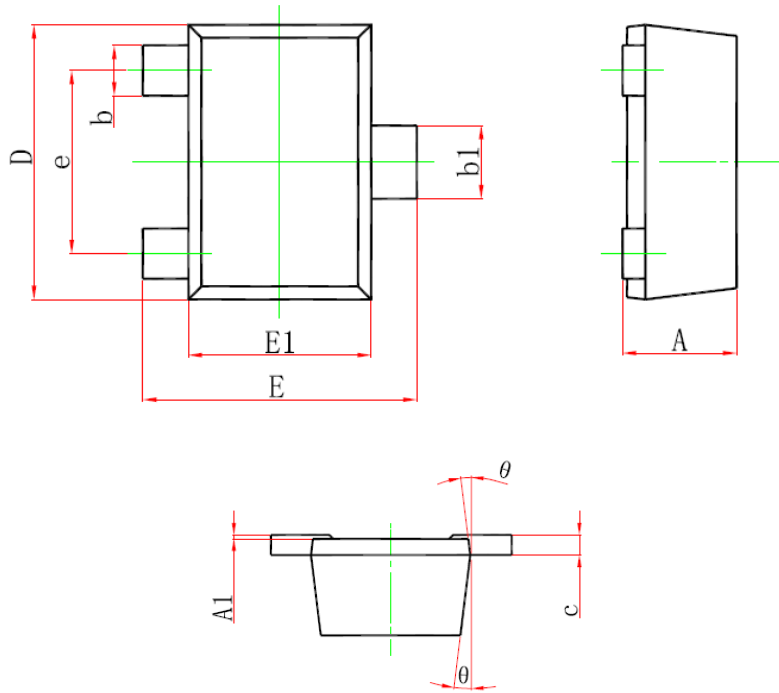


Unclamped Inductive Switching Test Circuit & Waveforms





Package Information (SOT-723)



| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|--------|---------------------------|-------|----------------------|-------|
| | Min. | Max. | Min. | Max. |
| A | | 0.500 | | 0.020 |
| A1 | 0.000 | 0.050 | 0.000 | 0.002 |
| b | 0.170 | 0.270 | 0.007 | 0.011 |
| b1 | 0.270 | 0.370 | 0.011 | 0.015 |
| c | | 0.150 | | 0.006 |
| D | 1.150 | 1.250 | 0.045 | 0.049 |
| E | 1.150 | 1.250 | 0.045 | 0.049 |
| E1 | 0.750 | 0.850 | 0.030 | 0.033 |
| e | 0.800TYP. | | 0.031TYP. | |
| θ | 7° REF. | | 7° REF. | |

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