



General Description

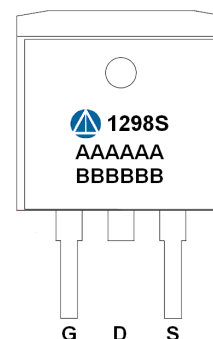
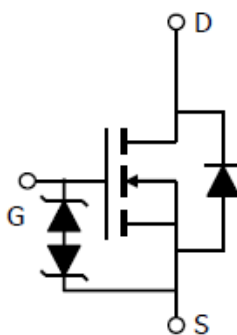
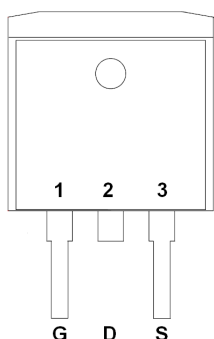
AFN1298S, N-Channel enhancement mode MOSFET, uses Advanced Trench Technology to provide excellent $R_{DS(ON)}$, low gate charge.

These devices are particularly suited for low voltage power management, and low in-line power loss are needed in commercial industrial surface mount applications.

Features

- 100V/30A, $R_{DS(ON)} = 12m\Omega @ V_{GS} = 10V$
- 100V/15A, $R_{DS(ON)} = 18m\Omega @ V_{GS} = 6V$
- Super high density cell design for extremely low $R_{DS(ON)}$
- TO-263-2L package design

Pin Description (TO-263-2L)



Application

- DC/DC Primary Side Switch
- POL Synchronous buck converter
- LED Backlight for LCD TV industrial

Pin Define

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

Ordering Information

| Part Ordering No. | Part Marking | Package | Unit | Quantity |
|-------------------|---------------------------|-----------|-------------|----------|
| AFN1298ST263RG | 1298S AAAAAA BBBBBB | TO-263-2L | Tape & Reel | 800 EA |

※ A Lot code

※ B Date code

※ AFN1298ST263RG : Tube ; Pb- Free ; Halogen -Free



Absolute Maximum Ratings

(T_A=25°C Unless otherwise noted)

| Parameter | Symbol | Value | Unit |
|---|------------------|----------------------|------|
| Drain-Source Voltage | V _{DSS} | 100 | V |
| Gate –Source Voltage | V _{GSS} | ±20 | V |
| Continuous Drain Current(T _J =150°C) | I _D | T _C =25°C | 60 |
| | | T _C =70°C | 40 |
| Pulsed Drain Current | I _{DM} | 100 | A |
| Continuous Source Current(Diode Conduction) | I _S | 50 | |
| Single Pulse Avalanche Current | I _{AS} | 40 | |
| Power Dissipation | P _D | T _C =25°C | 100 |
| | | T _A =25°C | 3.1 |
| Operating Junction Temperature | T _J | 150 | °C |
| Storage Temperature Range | T _{STG} | -55/150 | °C |
| Thermal Resistance-Junction to Ambient | R _{θJA} | 62.5 | °C/W |

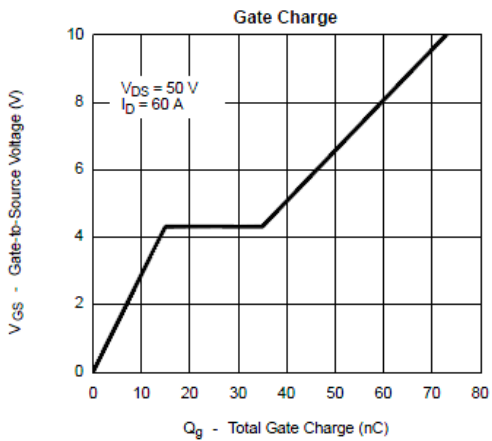
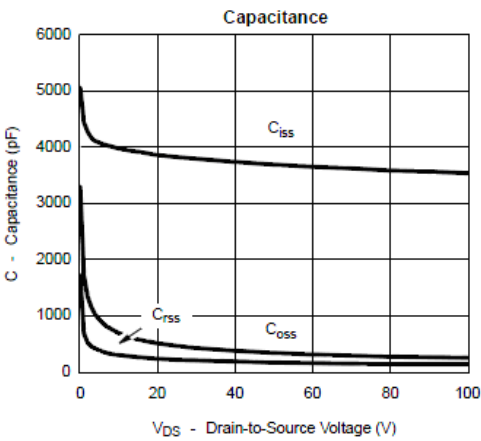
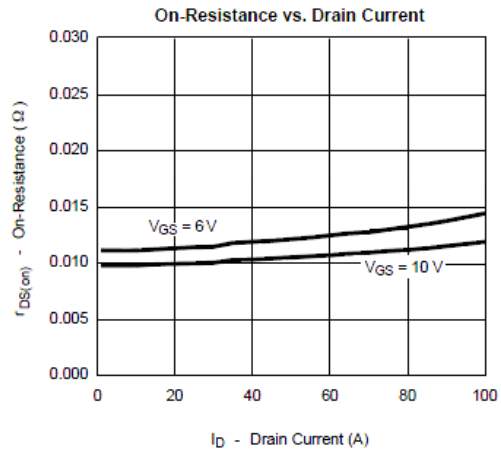
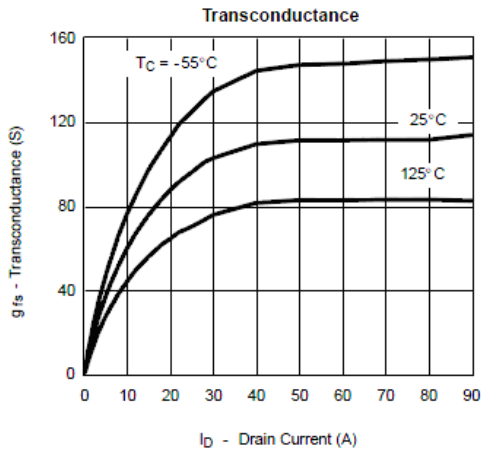
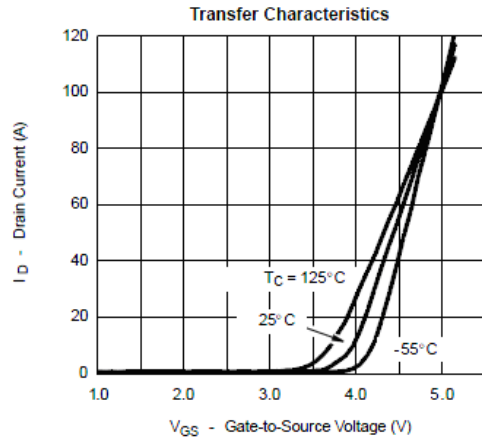
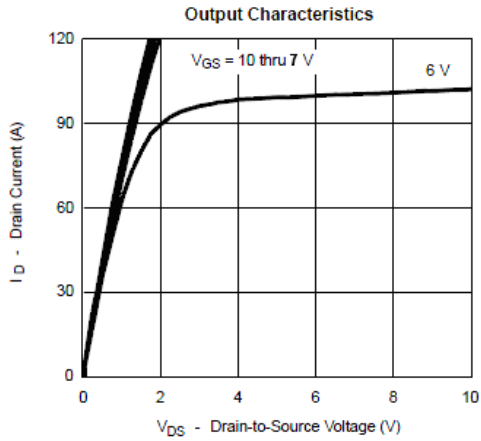
Electrical Characteristics

(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 | 100 | | | V |
| Gate Threshold Voltage | V _{GS(th)} | V _{DS} =V _{GS} , I _D =250uA | 2.0 | | 4.0 | |
| Gate Leakage Current | I _{GSS} | V _{DS} =0V, V _{GS} =±20V | | | ±5 | uA |
| Zero Gate Voltage Drain Current | I _{DSS} | V _{DS} =80V, V _{GS} =0V | | | 1 | uA |
| | | V _{DS} =80V, V _{GS} =0V T _J =85°C | | | 30 | |
| On-State Drain Current | I _{D(on)} | V _{DS} ≥ 10V, V _{GS} =10V | 130 | | | A |
| Drain-Source On-Resistance | R _{DS(on)} | V _{GS} =10V, I _D =30A | | 9.05 | 12 | mΩ |
| | | V _{GS} =6V, I _D =15A | | 11.05 | 18 | |
| Forward Transconductance | g _{FS} | V _{DS} =5V, I _D =20A | | 30 | | S |
| Diode Forward Voltage | V _{SD} | I _S =20A, V _{GS} =0V | | 0.8 | 1.3 | V |
| Dynamic | | | | | | |
| Total Gate Charge | Q _g | V _{DS} =50V, V _{GS} =10V I _D =60A | | 75 | 150 | nC |
| Gate-Source Charge | Q _{gs} | | | 15 | | |
| Gate-Drain Charge | Q _{gd} | | | 20 | | |
| Input Capacitance | C _{iss} | V _{DS} =25V, V _{GS} =0V f=1MHz | | 3800 | | pF |
| Output Capacitance | C _{oss} | | | 450 | | |
| Reverse Transfer Capacitance | C _{rss} | | | 210 | | |
| Turn-On Time | t _{d(on)} | V _{DD} =50V, R _L =0.8Ω I _D =60A, V _{GEN} =10V R _G =2.5Ω | | 15 | 30 | ns |
| | t _r | | | 80 | 150 | |
| Turn-Off Time | t _{d(off)} | | | 50 | 100 | |
| | t _f | | | 130 | 250 | |

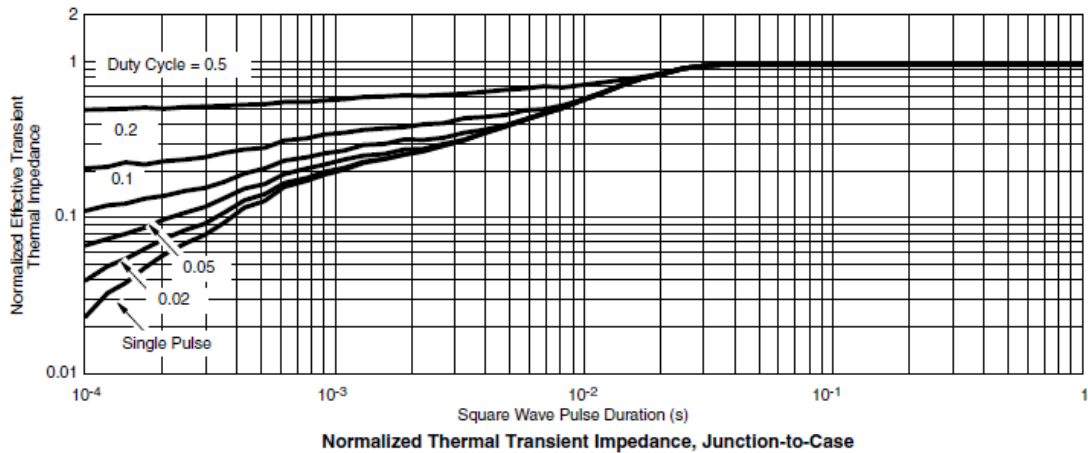
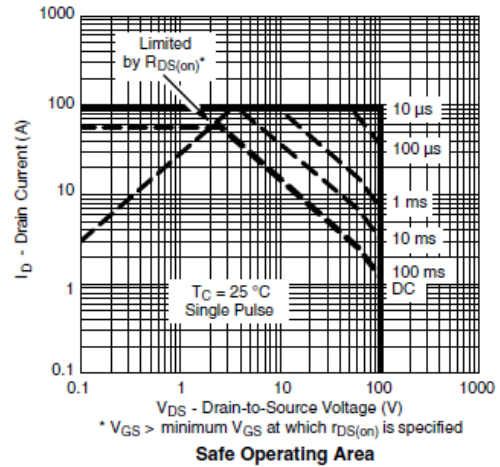
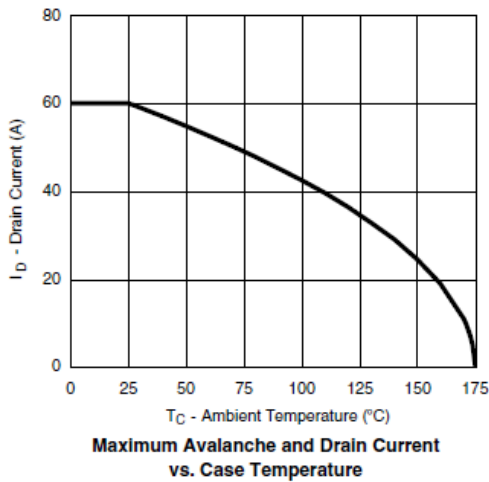
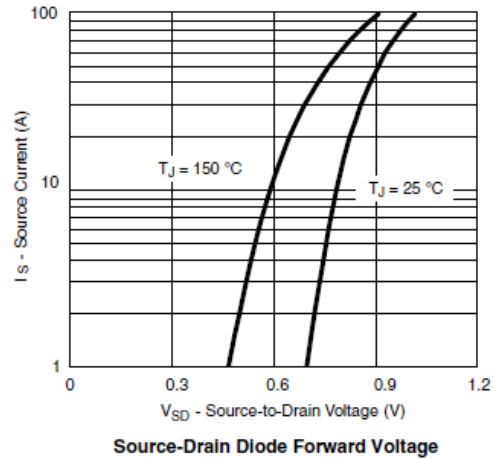
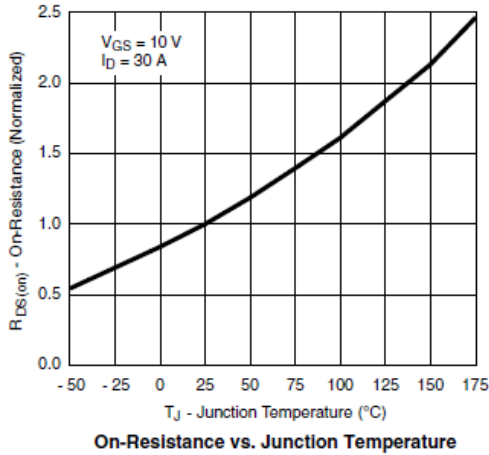


Typical Characteristics





Typical Characteristics



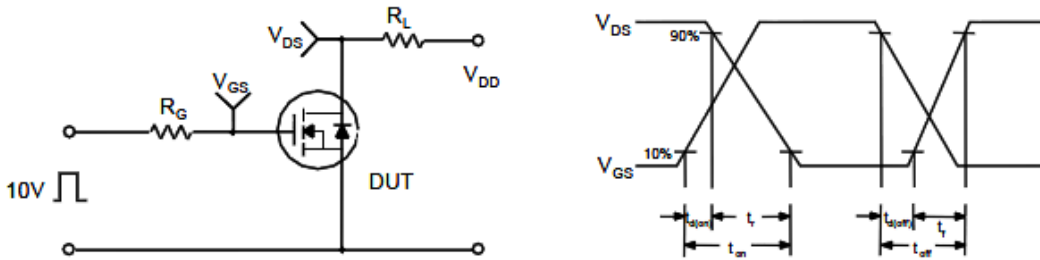


Typical Characteristics

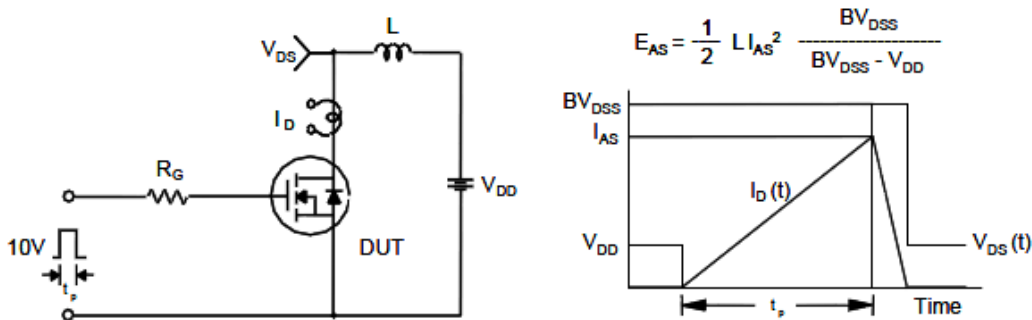
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

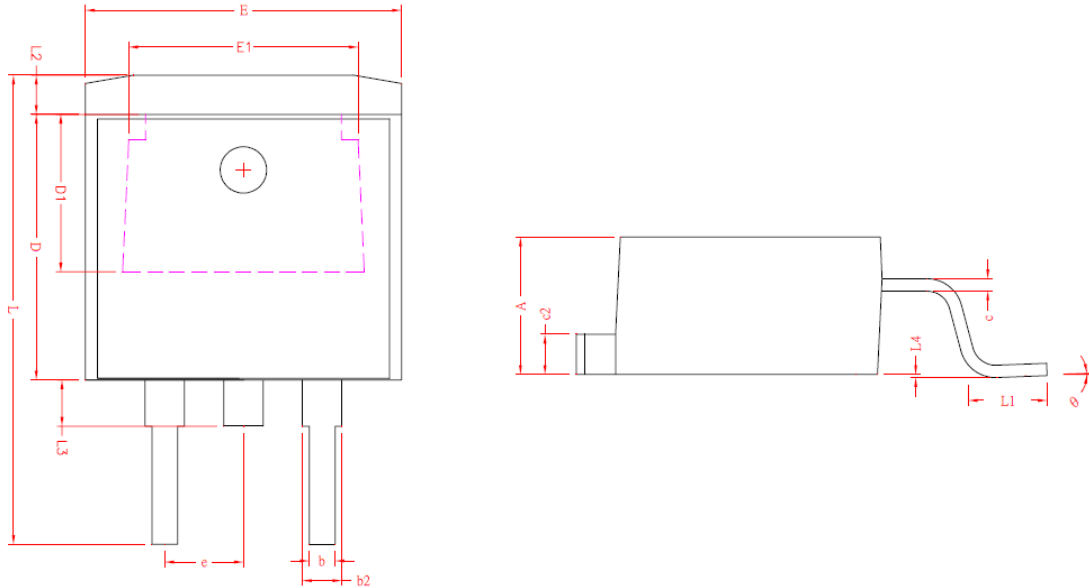


Unclamped Inductive Switching Test Circuit & Waveforms





Package Information (TO-263-2L)



| REF. | Millimeter | | REF. | Millimeter | |
|------|------------|-------|----------|-----------------------|------|
| | Min. | Max. | | Min. | Max. |
| A | 4.40 | 4.80 | c2 | 1.25 | 1.45 |
| b | 0.76 | 1.0 | b2 | 1.17 | 1.47 |
| L4 | 0.00 | 0.254 | D | 8.6 | 9.0 |
| c | 0.36 | 0.50 | D1 | 5.10 REF. | |
| L3 | 1.50 REF. | | e | 2.54 REF. | |
| L1 | 2.29 | 2.79 | L | 14.6 | 15.8 |
| E | 9.80 | 10.4 | θ | $0^\circ \pm 3^\circ$ | |
| E1 | 7.40 REF. | | L2 | 1.27 REF. | |

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