



SPN8910

N-Channel Enhancement Mode MOSFET

DESCRIPTION

The SPN8910 is the N-Channel logic enhancement mode power field effect transistor which is produced using super high cell density DMOS trench technology. The SPN8910 has been designed specifically to improve the overall efficiency of DC/DC converters using either synchronous or conventional switching PWM controllers. It has been optimized for low gate charge, low $R_{DS(ON)}$ and fast switching speed.

FEATURES

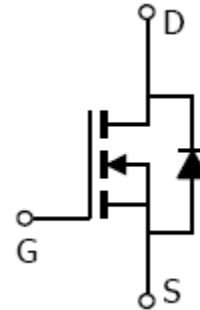
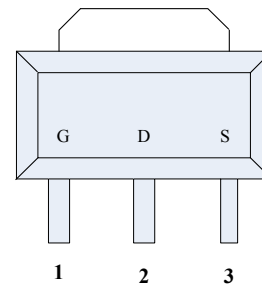
- ◆ 100V/2A, $R_{DS(ON)} = 320m\Omega @ V_{GS} = 10V$
- ◆ High density cell design for extremely low $R_{DS(ON)}$
- ◆ Exceptional on-resistance and maximum DC current capability
- ◆ SOT-89 package design

APPLICATIONS

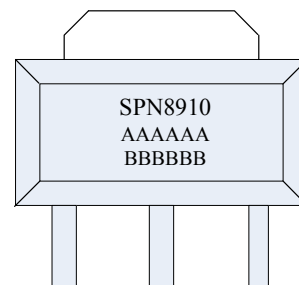
- High Frequency Small Power Switching for MB/NB/VGA
- Network DC/DC Power System
- Load Switch

PIN CONFIGURATION

SOT-89



PART MARKING





SPN8910

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PIN DESCRIPTION

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

ORDERING INFORMATION

| Part Number | Package | Part Marking |
|---------------|---------|--------------|
| SPN8910S89RGB | SOT-89 | SPN8910 |
| SPN8910S89TGB | SOT-89 | SPN8910 |

※ SPN8910S89RGB : Tape Reel ; Pb – Free ; Halogen - Free

※ SPN8910S89TGB : Tube ; Pb – Free ; Halogen - Free

ABSOLUTE MAXIMUM RATINGS

(TA=25°C Unless otherwise noted)

| Parameter | Symbol | Typical | Unit | |
|---|------------------|---------|------|---|
| Drain-Source Voltage | V _{DSS} | 100 | V | |
| Gate –Source Voltage | V _{GSS} | ±20 | V | |
| Continuous Drain Current(T _J =150°C) | I _D | TA=25°C | 2.2 | A |
| | | TA=70°C | 1.7 | |
| Pulsed Drain Current | I _{DM} | 5.5 | A | |
| Power Dissipation | P _D | 1.5 | W | |
| Operating Junction Temperature | T _J | -55/150 | °C | |
| Storage Temperature Range | T _{STG} | -55/150 | °C | |
| Thermal Resistance-Junction to Ambient | R _{θJA} | 85 | °C/W | |



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ELECTRICAL CHARACTERISTICS

($T_A=25^{\circ}\text{C}$ Unless otherwise noted)

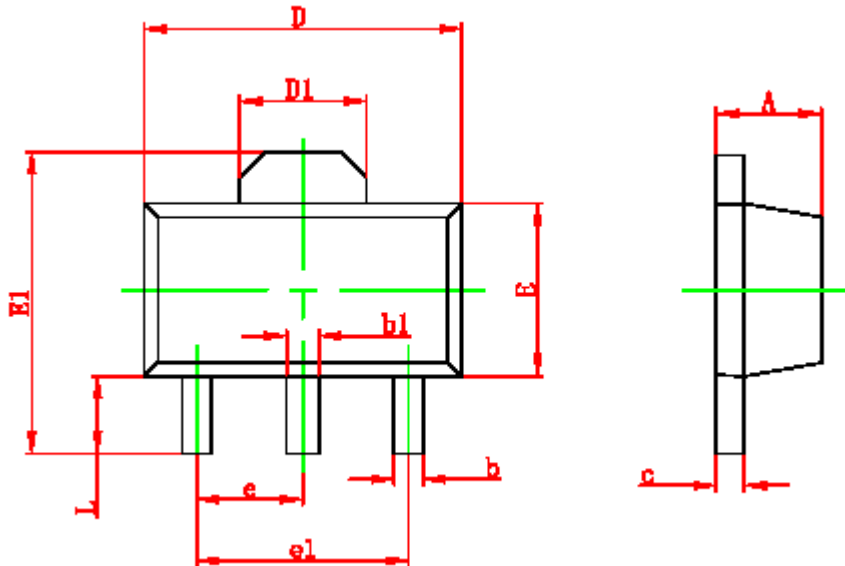
| Parameter | Symbol | Conditions | Min. | Typ | Max. | Unit |
|---------------------------------|---------------|---|------|------|-----------|----------|
| Static | | | | | | |
| Drain-Source Breakdown Voltage | $V_{(BR)DSS}$ | $V_{GS}=0V, I_D=250\mu A$ | 100 | | | V |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS}=V_{GS}, I_D=250\mu A$ | 1 | 2.0 | 2.5 | |
| Gate Leakage Current | I_{GSS} | $V_{DS}=0V, V_{GS}=\pm 20V$ | | | ± 100 | nA |
| Zero Gate Voltage Drain Current | I_{DSS} | $V_{DS}=80V, V_{GS}=0V$ | | | 1 | uA |
| | | $V_{DS}=80V, V_{GS}=0V$ $T_J=55^{\circ}\text{C}$ | | | 5 | |
| On-State Drain Current | $I_{D(on)}$ | $V_{DS}\geq 5V, V_{GS}=10V$ | 2.2 | | | A |
| Drain-Source On-Resistance | $R_{DS(on)}$ | $V_{GS}=10V, I_D=2A$ | | 0.30 | 0.32 | Ω |
| | | $V_{GS}=4.5V, I_D=1A$ | | 0.31 | 0.34 | Ω |
| Forward Transconductance | g_{fs} | $V_{DS}=5V, I_D=2A$ | | 2.4 | | S |
| Diode Forward Voltage | V_{SD} | $I_S=1A, V_{GS}=0V$ | | | 1.2 | V |
| Dynamic | | | | | | |
| Total Gate Charge | Q_g | $V_{DS}=50V, V_{GS}=10V$ $I_D=2A$ | | 9 | 13 | nC |
| Gate-Source Charge | Q_{gs} | | | 2 | | |
| Gate-Drain Charge | Q_{gd} | | | 1.4 | | |
| Input Capacitance | C_{iss} | $V_{DS}=15V, V_{GS}=0V$ $f=1\text{MHz}$ | | 508 | | pF |
| Output Capacitance | C_{oss} | | | 29 | | |
| Reverse Transfer Capacitance | C_{rss} | | | 16.5 | | |
| Turn-On Time | $t_{d(on)}$ | $V_{DD}=50V, I_D=2A,$ $V_{GEN}=10V, R_G=3.3\Omega$ | | 2 | | nS |
| | t_r | | | 21.5 | | |
| Turn-Off Time | $t_{d(off)}$ | | | 11.2 | | |
| | t_f | | | 18.8 | | |



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SOT-89 PACKAGE OUTLINE



| Symbol | Dimensions in Millimeters | | Dimensions in Inches | |
|--------|---------------------------|-------|----------------------|-------|
| | Min | Max | Min | Max |
| A | 1.400 | 1.600 | 0.055 | 0.063 |
| b | 0.320 | 0.520 | 0.013 | 0.020 |
| b1 | 0.400 | 0.580 | 0.016 | 0.023 |
| c | 0.350 | 0.440 | 0.014 | 0.017 |
| D | 4.400 | 4.600 | 0.173 | 0.181 |
| D1 | 1.550 REF. | | 0.061 REF. | |
| E | 2.300 | 2.600 | 0.091 | 0.102 |
| E1 | 3.940 | 4.250 | 0.155 | 0.167 |
| e | 1.500 TYP. | | 0.060 TYP. | |
| e1 | 3.000 TYP. | | 0.118 TYP. | |
| L | 0.900 | 1.200 | 0.035 | 0.047 |



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