



SPP9433W P-Channel Enhancement Mode MOSFET

DESCRIPTION

The SPP9433W is the P-Channel logic enhancement mode power field effect transistors are produced using high cell density, DMOS trench technology.

This high density process is especially tailored to minimize on-state resistance.

These devices are particularly suited for low voltage application such as cellular phone and notebook computer power management and other battery powered circuits, and low in-line power loss are needed in a very small outline surface mount package.

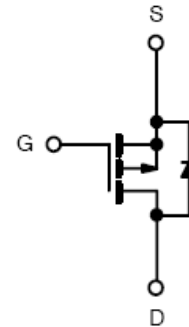
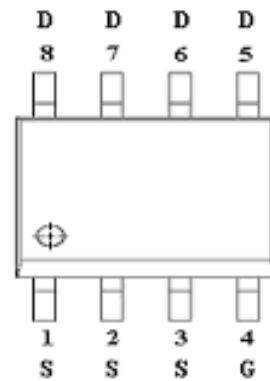
FEATURES

- ◆ -30V/-6A, $R_{DS(ON)} = 42m\Omega @ V_{GS} = -10V$
- ◆ -30V/-3 A, $R_{DS(ON)} = 78m\Omega @ V_{GS} = -4.5V$
- ◆ Super high density cell design for extremely low $R_{DS(ON)}$
- ◆ Exceptional on-resistance and maximum DC current capability
- ◆ SOP-8P package design

APPLICATIONS

- Power Management in Note book
- Portable Equipment
- Battery Powered System
- DC/DC Converter
- Load Switch
- LCD Display inverter

PIN CONFIGURATION(SOP – 8P)



PART MARKING



A : Lot Code
B : Date Code



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PIN DESCRIPTION

| Pin | Symbol | Description |
|-----|--------|-------------|
| 1 | S | Source |
| 2 | S | Source |
| 3 | S | Source |
| 4 | G | Gate |
| 5 | D | Drain |
| 6 | D | Drain |
| 7 | D | Drain |
| 8 | D | Drain |

ORDERING INFORMATION

| Part Number | Package | Part Marking |
|---------------|---------|--------------|
| SPP9433WS8RGB | SOP- 8P | SPP9433W |

※ SPP9433WS8RGB : 13" Tape Reel ; Pb – Free ; Halogen - Free

ABSOLUTE MAXIMUM RATINGS

(TA=25°C Unless otherwise noted)

| Parameter | Symbol | Typical | Unit | |
|---|------------------|---------|------|---|
| Drain-Source Voltage | V _{DSS} | -30 | V | |
| Gate –Source Voltage | V _{GSS} | ±20 | V | |
| Continuous Drain Current(T _J =150°C) | I _D | TA=25°C | -6 | A |
| | | TA=70°C | -4 | |
| Pulsed Drain Current | I _{DM} | -12 | A | |
| Continuous Source Current(Diode Conduction) | I _S | -6 | A | |
| Power Dissipation | P _D | 2.08 | W | |
| Operating Junction Temperature | T _J | -55/150 | °C | |
| Storage Temperature Range | T _{STG} | -55/150 | °C | |
| Thermal Resistance-Junction to Ambient | R _{θJA} | 60 | °C/W | |



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ELECTRICAL CHARACTERISTICS

(TA=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 | -30 | | | V | |
| Gate Threshold Voltage | V _{GS(th)} | V _{DS} =V _{GS} , I _D =-250uA | -1.0 | | -2.5 | | |
| Gate Leakage Current | I _{GSS} | V _{DS} =0V, V _{GS} =±20V | | | ±100 | nA | |
| Zero Gate Voltage Drain Current | I _{DSS} | V _{DS} =-24V, V _{GS} =0V | | | -1 | uA | |
| | | V _{DS} =-24V, V _{GS} =0V T _J =55°C | | | -5 | | |
| On-State Drain Current | I _{D(on)} | V _{DS} ≤ -5V, V _{GS} =-10V | -6 | | | A | |
| Drain-Source On-Resistance | R _{DS(on)} | V _{GS} =-10V, I _D =-6A | | 0.035 | 0.042 | Ω | |
| | | V _{GS} =-4.5V, I _D =-3A | | 0.065 | 0.078 | | |
| Forward Transconductance | g _{fs} | V _{DS} =-10.0V, I _D =-6A | | 6 | | S | |
| Diode Forward Voltage | V _{SD} | I _S =-6A, V _{GS} =0V | | | -1.2 | V | |
| Dynamic | | | | | | | |
| Total Gate Charge | Q _g | V _{DS} =-20V, V _{GS} =-4.5V I _D =-6A | | 6.4 | | nC | |
| Gate-Source Charge | Q _{gs} | | | 2.7 | | | |
| Gate-Drain Charge | Q _{gd} | | | 3.1 | | | |
| Input Capacitance | C _{iss} | V _{DS} =-24V, V _{GS} =0V f=1MHz | | 650 | | pF | |
| Output Capacitance | C _{oss} | | | 270 | | | |
| Reverse Transfer Capacitance | C _{rss} | | | 104 | | | |
| Turn-On Time | t _{d(on)} | V _{DD} =-12V, I _D =-5.0A, V _{GEN} =-10V R _G =3.3Ω | | 9 | | ns | |
| | t _r | | | 16 | | | |
| Turn-Off Time | t _{d(off)} | | | | 21 | | |
| | t _f | | | | 22 | | |



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TYPICAL CHARACTERISTICS

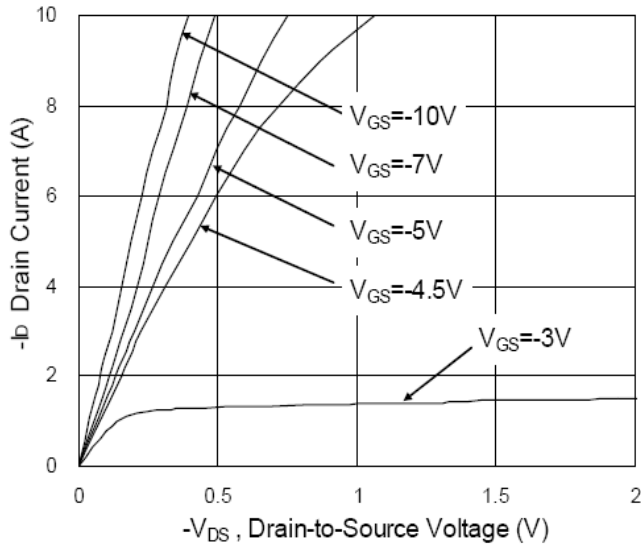


Fig. 1 Typical Output Characteristics

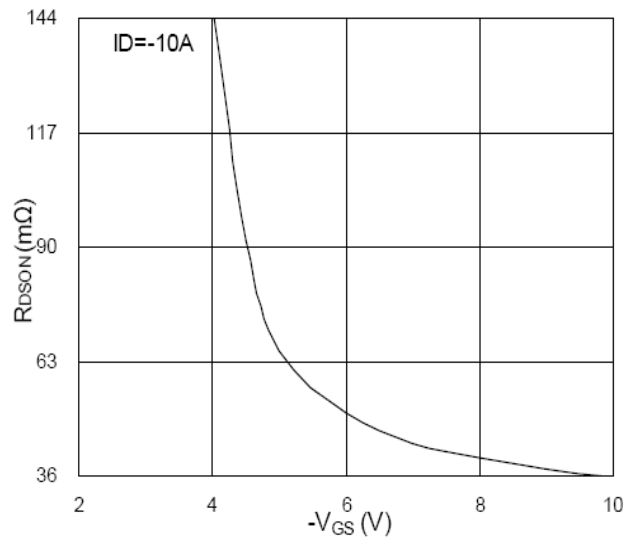


Fig. 2 On-Resistance vs. Gate Voltage

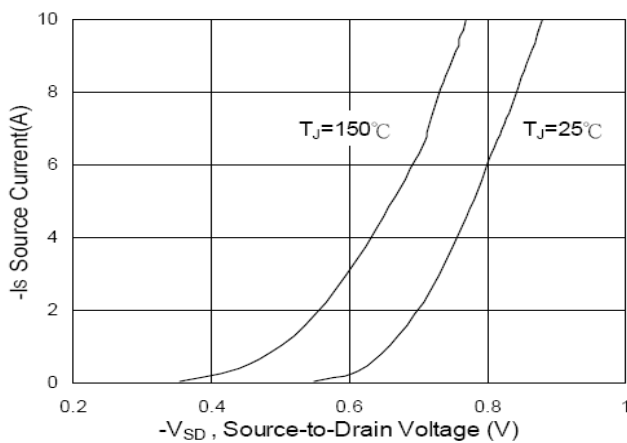


Fig. 3 Forward characteristics of Diodes

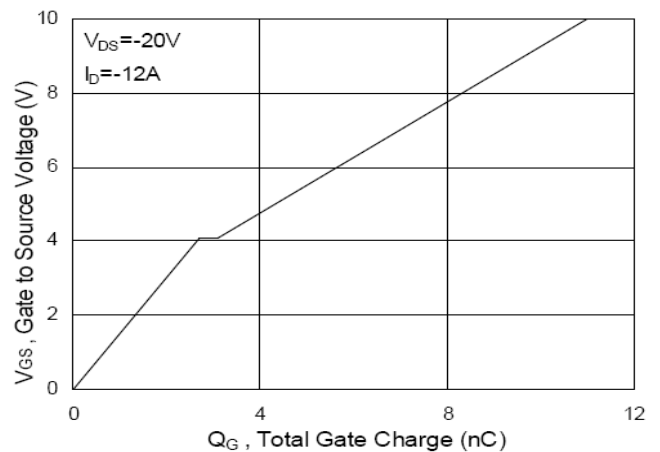


Fig. 4 Gate Charge Characteristics

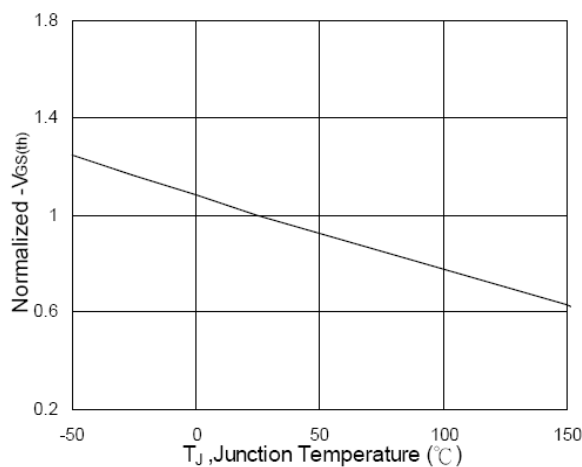


Fig. 5 V_{GS} vs. Junction Temperature

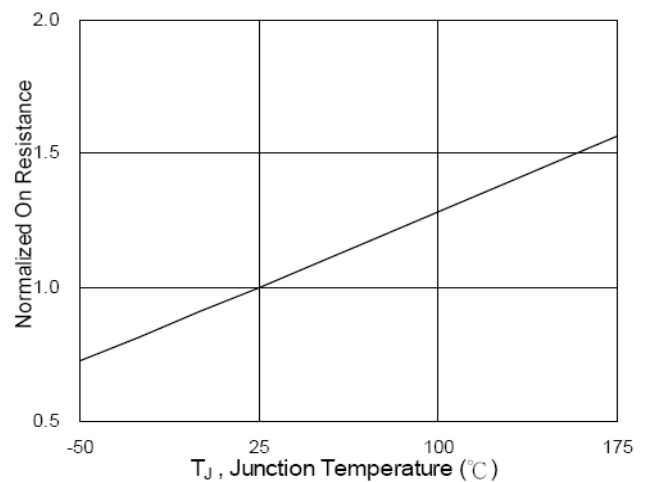


Fig. 6 On-Resistance vs Junction Temp



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TYPICAL CHARACTERISTICS

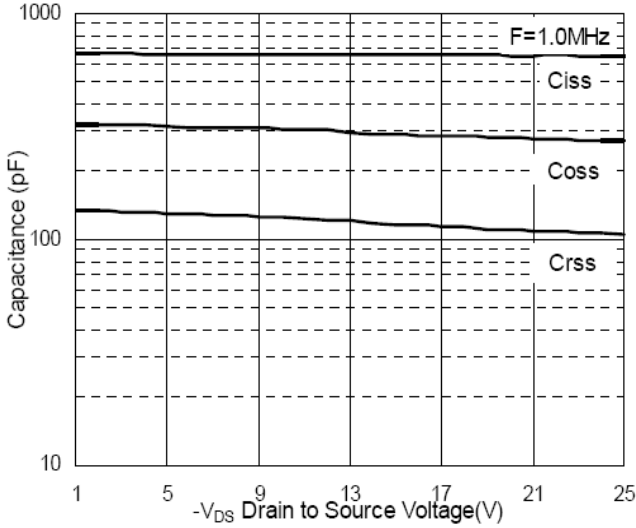


Fig. 7 Typical Capacitance Characteristics

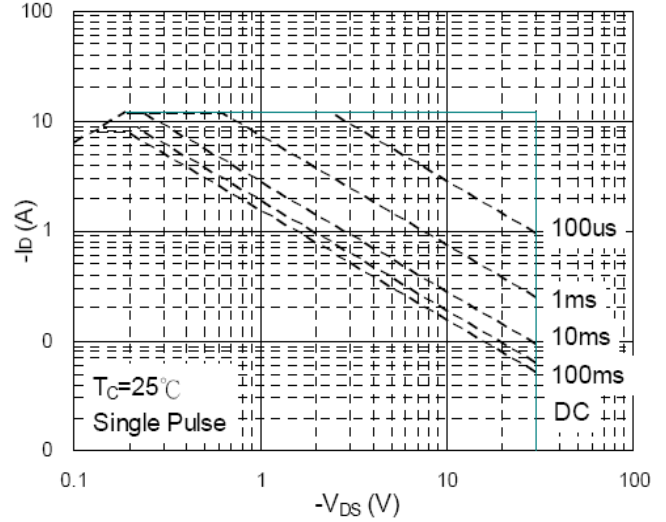


Fig. 8 Maximum Safe Operation Area

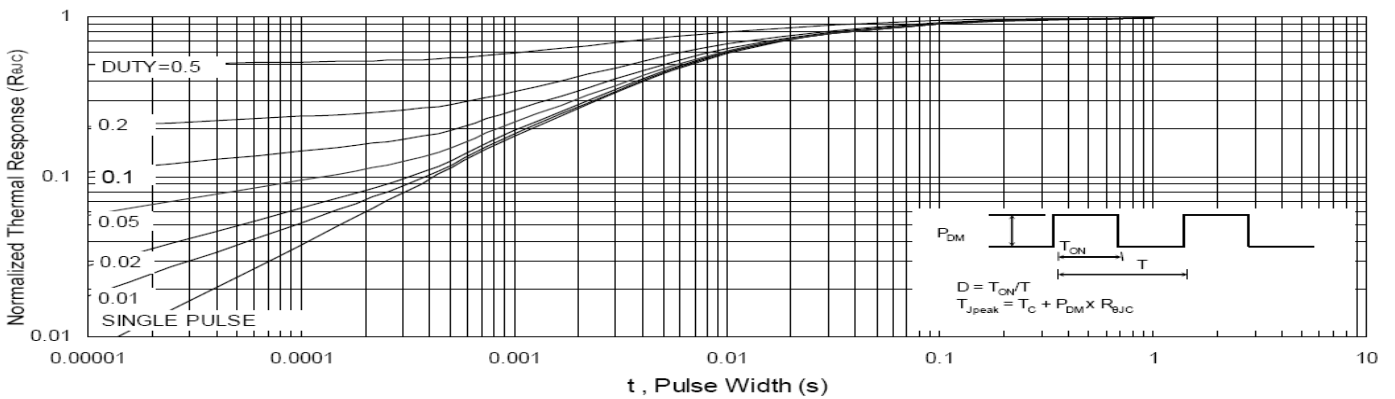


Fig. 9 Effective Transient Thermal Impedance

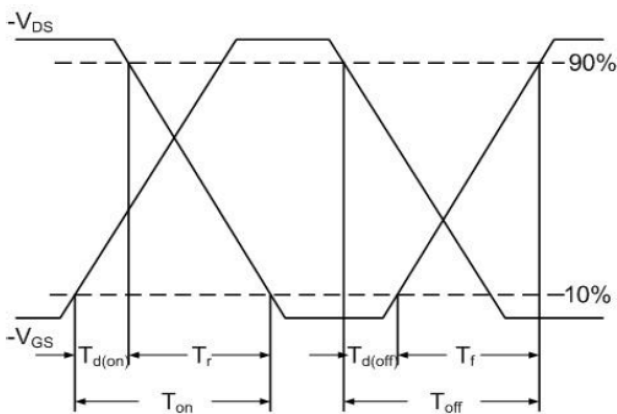


Fig. 10 Switching Time Waveform

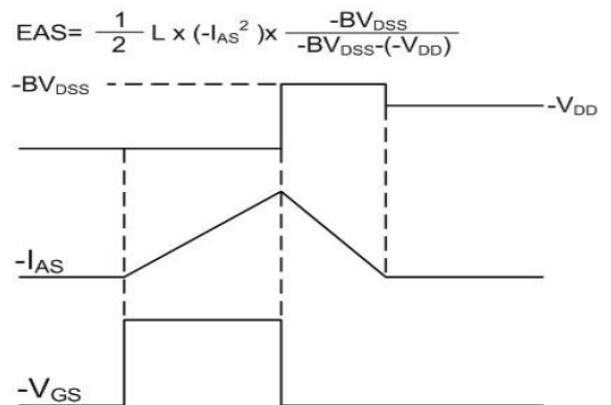


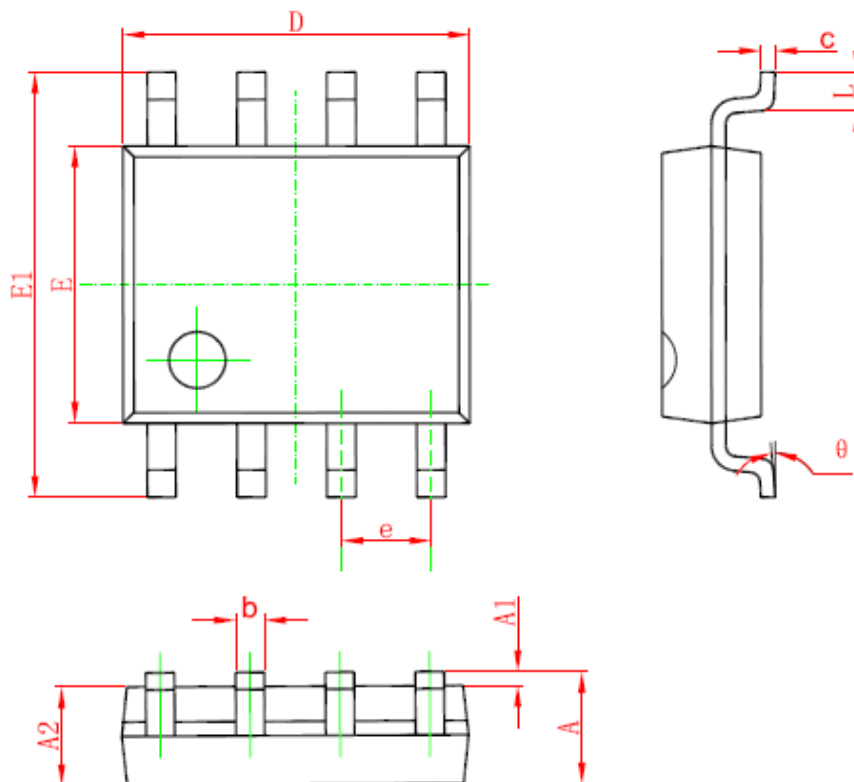
Fig. 11 Unclamped Inductive Waveform



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SOP-8 PACKAGE OUTLINE



| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|--------|---------------------------|-------|----------------------|-------|
| | Min | Max | Min | Max |
| A | 1.350 | 1.750 | 0.053 | 0.069 |
| A1 | 0.100 | 0.250 | 0.004 | 0.010 |
| A2 | 1.350 | 1.550 | 0.053 | 0.061 |
| b | 0.330 | 0.510 | 0.013 | 0.020 |
| c | 0.170 | 0.250 | 0.006 | 0.010 |
| D | 4.700 | 5.100 | 0.185 | 0.200 |
| E | 3.800 | 4.000 | 0.150 | 0.157 |
| E1 | 5.800 | 6.200 | 0.228 | 0.244 |
| e | 1.270 (BSC) | | 0.050 (BSC) | |
| L | 0.400 | 1.270 | 0.016 | 0.050 |
| θ | 0° | 8° | 0° | 8° |



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