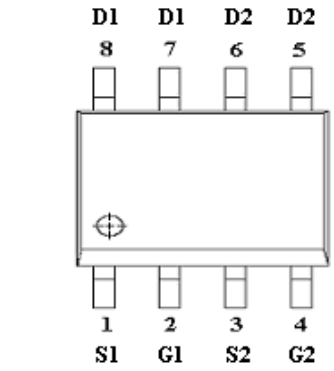
# SPN4920W
## N-Channel Enhancement Mode MOSFET

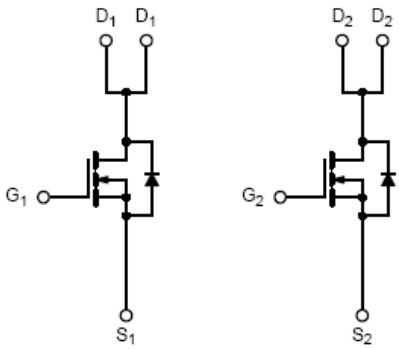
### DESCRIPTION
The SPN4920W is the N-Channel logic enhancement mode power field effect transistors are produced using high cell density , DMOS trench technology.
This high density process is especially tailored to minimize on-state resistance.
These devices are particularly suited for low voltage application , notebook computer power management and other battery powered circuits where high-side switching .

### FEATURES
- 30V/6.8A,$R_{DS(ON)}$=35mΩ@$V_{GS}$=10V
- 30V/5.6A,$R_{DS(ON)}$=46mΩ@$V_{GS}$=4.5V
- Super high density cell design for extremely low $R_{DS\ (ON)}$
- Exceptional on-resistance and maximum DC current capability
- SOP–8 package design

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

### PIN CONFIGURATION(SOP–8)




### PART MARKING


A : Lot Code
B : Date Code

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**PIN DESCRIPTION**

| Pin | Symbol | Description |
|---|---|---|
| 1 | S1 | Source 1 |
| 2 | G1 | Gate 1 |
| 3 | S2 | Source 2 |
| 4 | G2 | Gate 2 |
| 5 | D2 | Drain 2 |
| 6 | D2 | Drain 2 |
| 7 | D1 | Drain 1 |
| 8 | D1 | Drain 1 |

**ORDERING INFORMATION**

| Part Number | Package | Part Marking |
|---|---|---|
| SPN4920WS8RGB | SOP-8 | SPN4920W |

※ SPN4920WS8RGB : 13" Tape Reel ; Pb – Free ; Halogen – Free

**ABSOULTE MAXIMUM RATINGS**

($T_A$=25℃ 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℃) | $T_A$=25℃ | $I_D$ | 7.2 | A |
| | $T_A$=70℃ | | 5.8 | |
| Pulsed Drain Current | | $I_{DM}$ | 30 | A |
| Continuous Source Current(Diode Conduction) | | $I_S$ | 2.3 | A |
| Power Dissipation | $T_A$=25℃ | $P_D$ | 2.5 | W |
| | $T_A$=70℃ | | 1.6 | |
| Operating Junction Temperature | | $T_J$ | -55/150 | ℃ |
| Storage Temperature Range | | $T_{STG}$ | -55/150 | ℃ |
| Thermal Resistance-Junction to Ambient | | $R_{\theta JA}$ | 80 | ℃/W |

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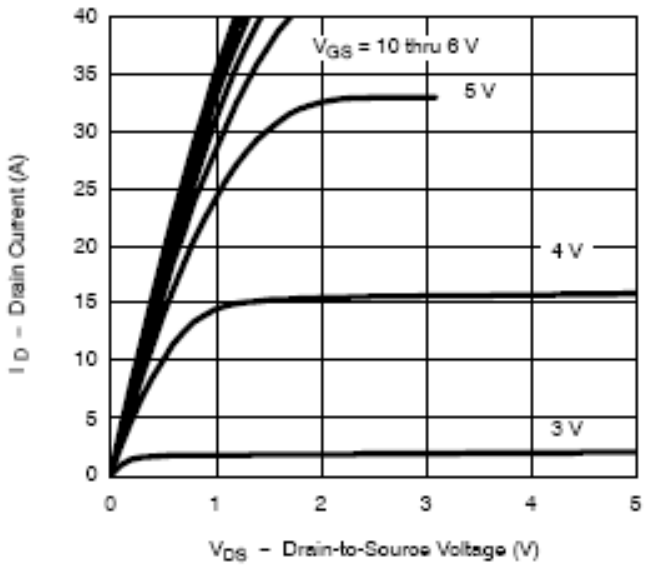
**ELECTRICAL CHARACTERISTICS**

($T_A$=25℃ Unless otherwise noted)

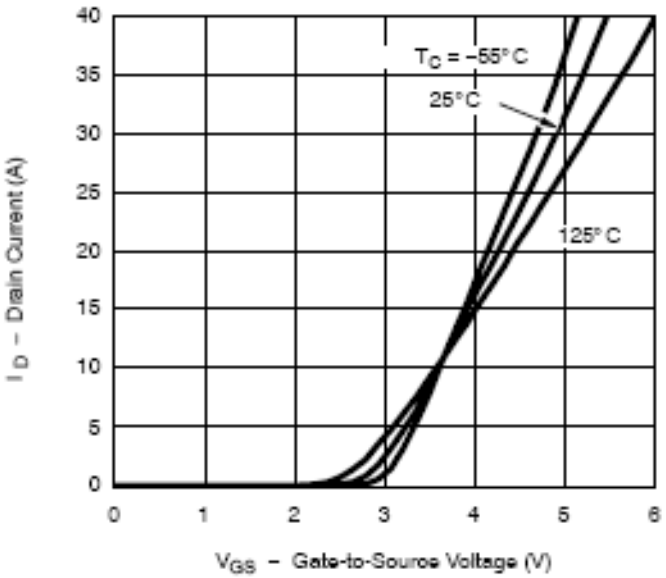
| Parameter | Symbol | Conditions | Min. | Typ | Max. | Unit |
|---|---|---|---|---|---|---|
| **Static** | | | | | | |
| Drain-Source Breakdown Voltage | $V_{(BR)DSS}$ | $V_{GS}$=0V,$I_D$=250uA | 30 | | | V |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS}$=$V_{GS}$,$I_D$=250uA | 0.6 | | 1.8 | |
| 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℃ | | | 5 | |
| On-State Drain Current | $I_{D(on)}$ | $V_{DS}$≥5V,$V_{GS}$ =10V | 25 | | | A |
| Drain-Source On-Resistance | $R_{DS(on)}$ | $V_{GS}$= 10V,$I_D$=6.8A | | 0.030 | 0.035 | Ω |
| | | $V_{GS}$=4.5V,$I_D$=5.6A | | 0.037 | 0.046 | |
| Forward Transconductance | gfs | $V_{DS}$=15V,$I_D$=6.2A | | 13 | | S |
| Diode Forward Voltage | $V_{SD}$ | $I_S$=2.3A,$V_{GS}$ =0V | | 0.8 | 1.2 | V |
| **Dynamic** | | | | | | |
| Total Gate Charge | $Q_g$ | $V_{DS}$=15V,$V_{GS}$=10V $I_D$= 2A | | 16 | 24 | nC |
| Gate-Source Charge | $Q_{gs}$ | | | 3 | | |
| Gate-Drain Charge | $Q_{gd}$ | | | 2.5 | | |
| Input Capacitance | $C_{iss}$ | $V_{DS}$=15$V_{GS}$=0V f=1MHz | | 450 | | pF |
| Output Capacitance | $C_{oss}$ | | | 240 | | |
| Reverse Transfer Capacitance | $C_{rss}$ | | | 38 | | |
| Turn-On Time | $t_{d(on)}$ | $V_{DD}$=15V,$R_L$=15Ω $I_D$≡1.0A,$V_{GEN}$=10V $R_G$=6Ω | | 15 | 20 | nS |
| | $t_r$ | | | 6 | 12 | |
| Turn-Off Time | $t_{d(off)}$ | | | 10 | 20 | |
| | $t_f$ | | | 40 | 80 | |

**TYPICAL CHARACTERISTICS**

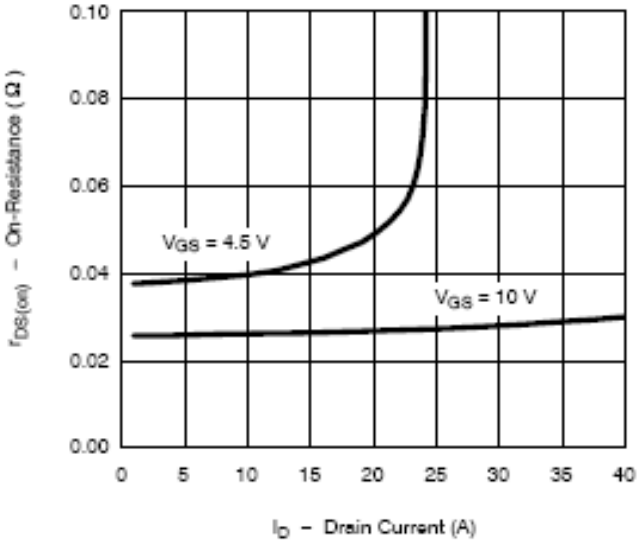
Output Characteristics



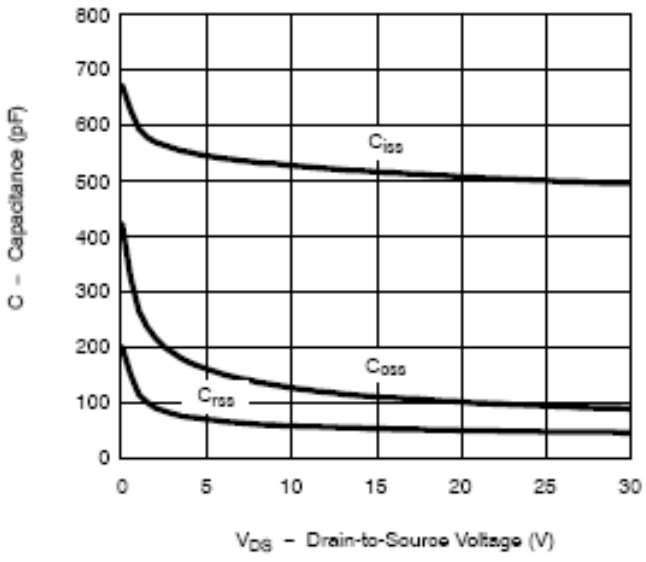

Transfer Characteristics




On-Resistance vs. Drain Current




Capacitance



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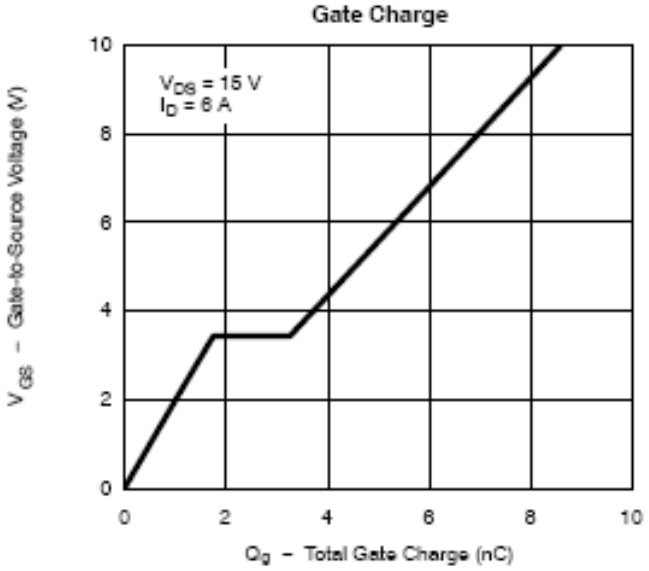


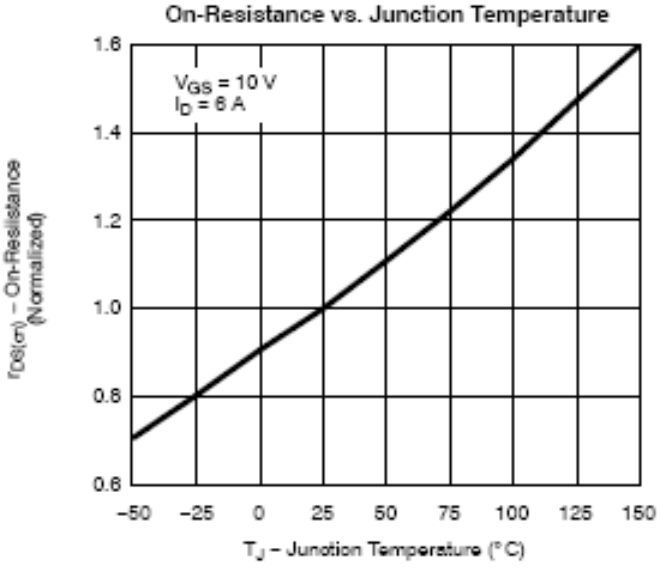


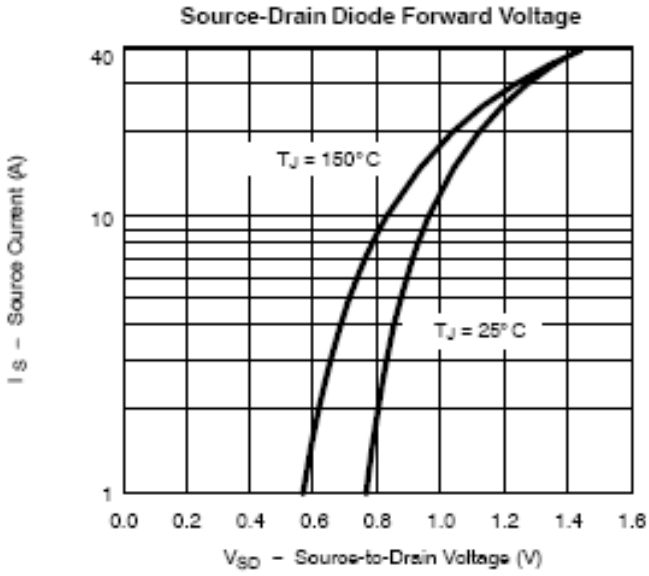


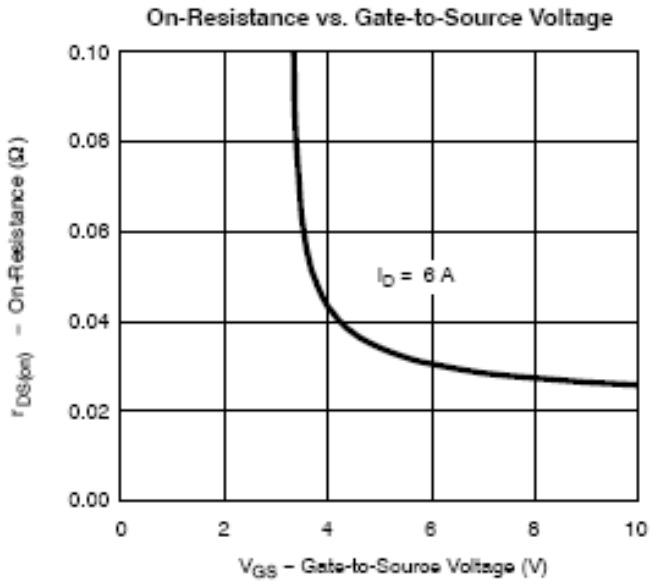

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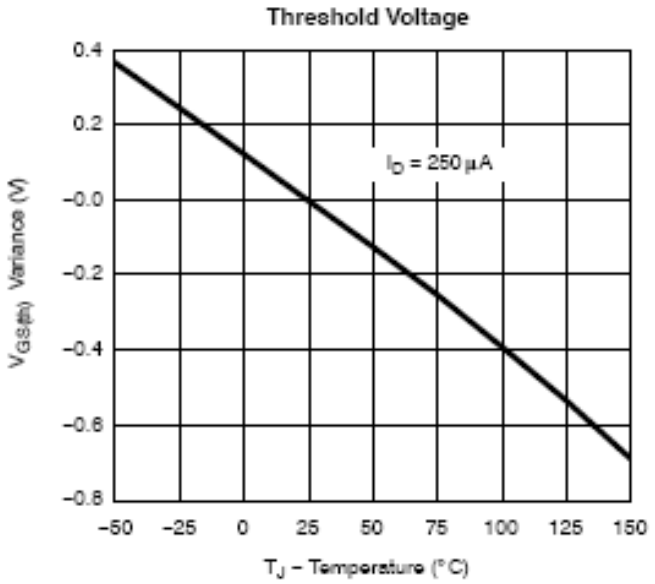


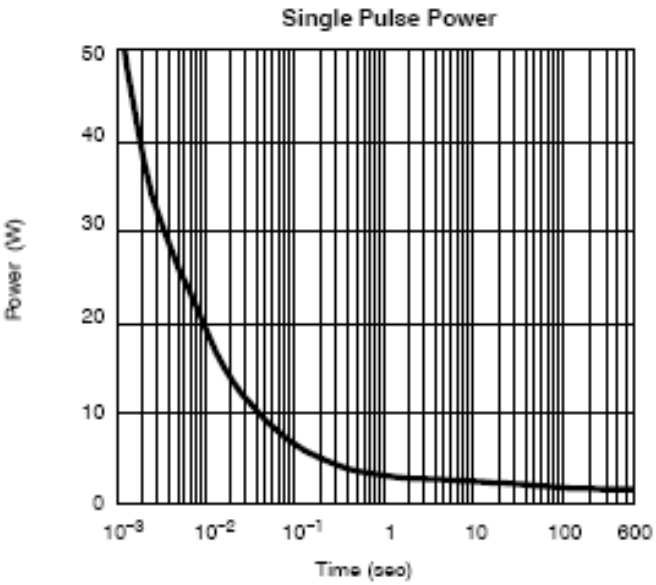


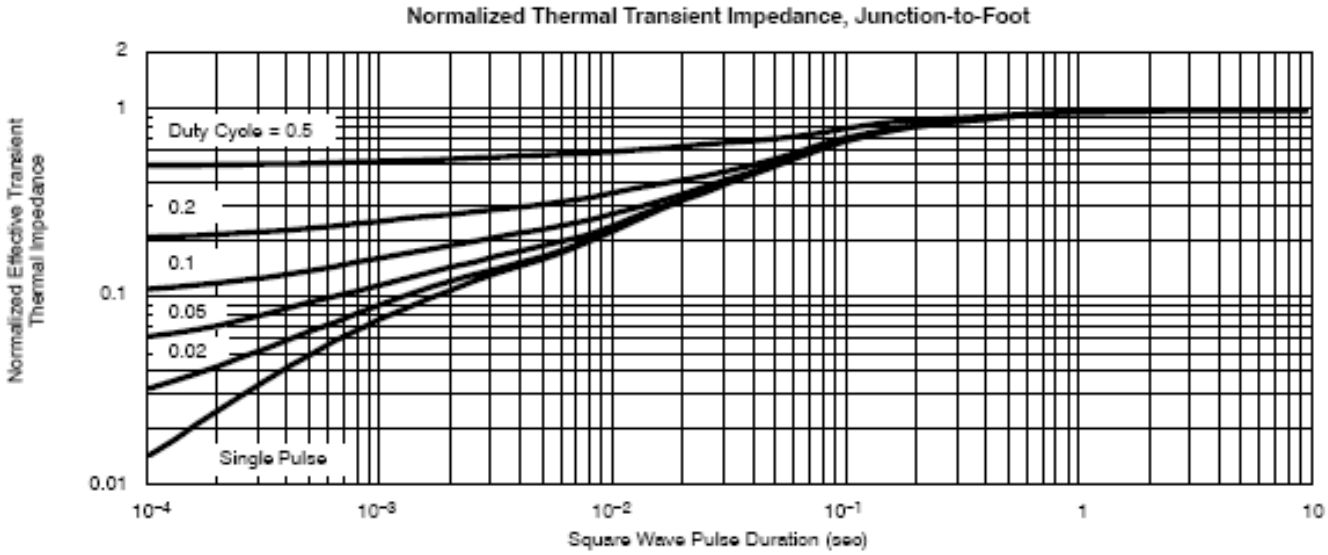

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