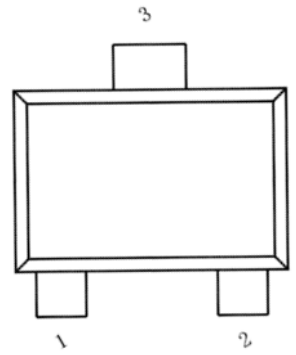
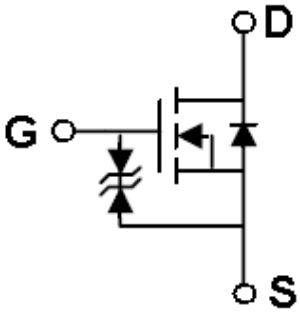
# SPN1306
## N-Channel Enhancement Mode MOSFET

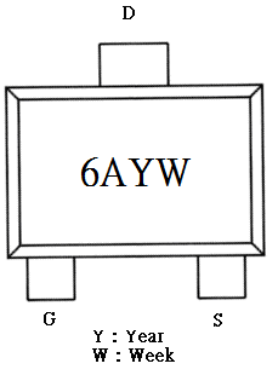
### DESCRIPTION
The SPN1306 is the N-Channel enhancement mode power field effect transistors are produced using high cell density , DMOS trench technology. This high density process is especially tailored to minimize on-state resistance and provide superior switching performance. These devices are particularly suited for low voltage applications such as notebook computer power management and other battery powered circuits where high-side switching , low in-line power loss, and resistance to transients are needed.

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

### FEATURES
- N-Channel
  30V/0.95A,$R_{DS(ON)}$=550mΩ@$V_{GS}$=4.5V
  30V/0.75A,$R_{DS(ON)}$=650mΩ@$V_{GS}$=2.5V
  30V/0.65A,$R_{DS(ON)}$=850mΩ@$V_{GS}$=1.8V
- Super high density cell design for extremely low RDS (ON)
- Exceptional on-resistance and maximum DC current capability
- SOT-323 package design

### PIN CONFIGURATION( SOT-323 )



### PART MARKING


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**PIN DESCRIPTION**

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

**ORDERING INFORMATION**

| Part Number | Package | Part Marking |
|---|---|---|
| SPN1306S32RGB | SOT-323 | 6A |

※ SPN1306S32RGB : 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 | | $V_{GSS}$ | ±12 | V |
| Continuous Drain Current($T_J$=150℃) | $T_A$=25℃ | $I_D$ | 0.65 | A |
| Pulsed Drain Current | | $I_{DM}$ | 0.45 | A |
| Continuous Source Current(Diode Conduction) | | $I_S$ | 0.3 | A |
| Power Dissipation | $T_A$=25℃ | $P_D$ | 0.15 | W |
| Operating Junction Temperature | | $T_J$ | -55/150 | ℃ |
| Storage Temperature Range | | $T_{STG}$ | -55/150 | ℃ |

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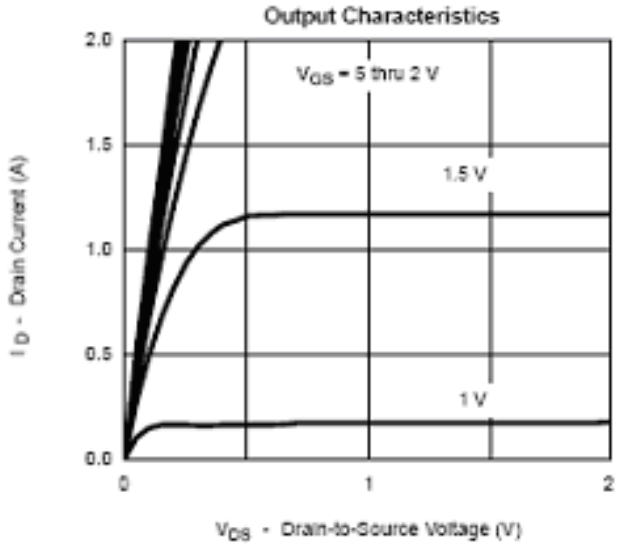
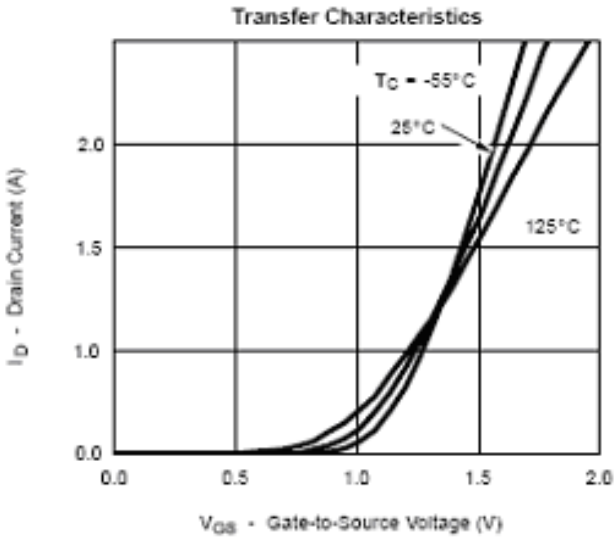
**ELECTRICAL CHARACTERISTICS**

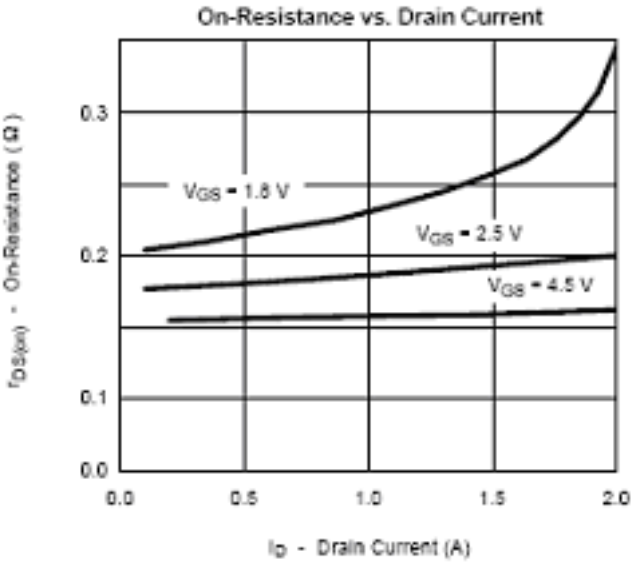
($T_A$=25℃ Unless otherwise noted)

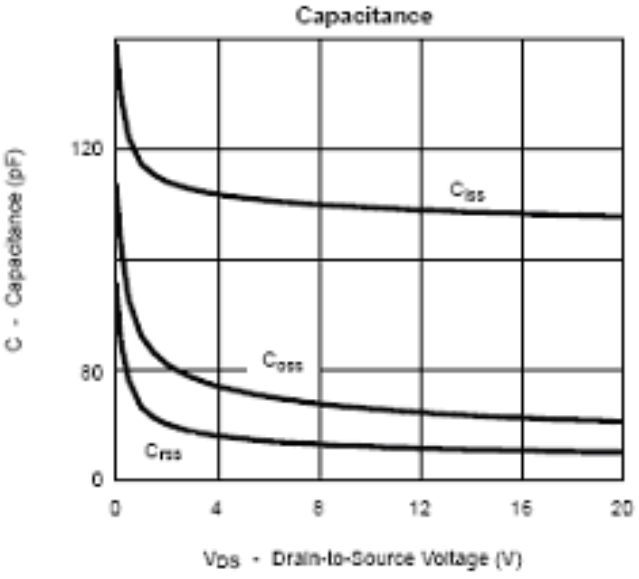
| Parameter | Symbol | Conditions | Min. | Typ | Max. | Unit |
|---|---|---|---|---|---|---|
| **Static** | | | | | | |
| Drain-Source Breakdown Voltage | $V_{(BR)DSS}$ | $V_{GS}$=0V,$I_D$= 250uA | 30 | | | V |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS}$=$V_{GS}$,$I_D$=250uA | 0.35 | | 1.0 | |
| Gate Leakage Current | $I_{GSS}$ | $V_{DS}$=0V,$V_{GS}$=±12V | | | 30 | uA |
| 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 | $I_{D(on)}$ | $V_{DS}$≥ 4.5V,$V_{GS}$ =5V | 0.7 | | | A |
| Drain-Source On-Resistance | $R_{DS(on)}$ | $V_{GS}$=4.5V,$I_D$=0.95A | | 0.45 | 0.55 | Ω |
| | | $V_{GS}$=2.5V,$I_D$=0.75A | | 0.50 | 0.65 | |
| | | $V_{GS}$=1.8V,$I_D$=0.65A | | 0.75 | 0.85 | |
| Forward Transconductance | gfs | $V_{DS}$=10V,$I_D$=0.4A | | 1.0 | | S |
| Diode Forward Voltage | $V_{SD}$ | $I_S$=0.15A,$V_{GS}$=0V | | 0.8 | 1.2 | V |
| **Dynamic** | | | | | | |
| Total Gate Charge | $Q_g$ | $V_{DS}$=10V,$V_{GS}$=4.5V, $I_D$≡0.6A | | 1.2 | 1.5 | nC |
| Gate-Source Charge | $Q_{gs}$ | | | 0.2 | | |
| Gate-Drain Charge | $Q_{gd}$ | | | 0.3 | | |
| Turn-On Time | $t_{d(on)}$ | $V_{DD}$=10V,$R_L$=10Ω , $I_D$≡0.5A $V_{GEN}$=4.5V ,$R_G$=6Ω | | 5 | 10 | ns |
| | $t_r$ | | | 8 | 15 | |
| Turn-Off Time | $t_{d(off)}$ | | | 10 | 18 | |
| | $t_f$ | | | 1.2 | 2.8 | |

**TYPICAL CHARACTERISTICS**



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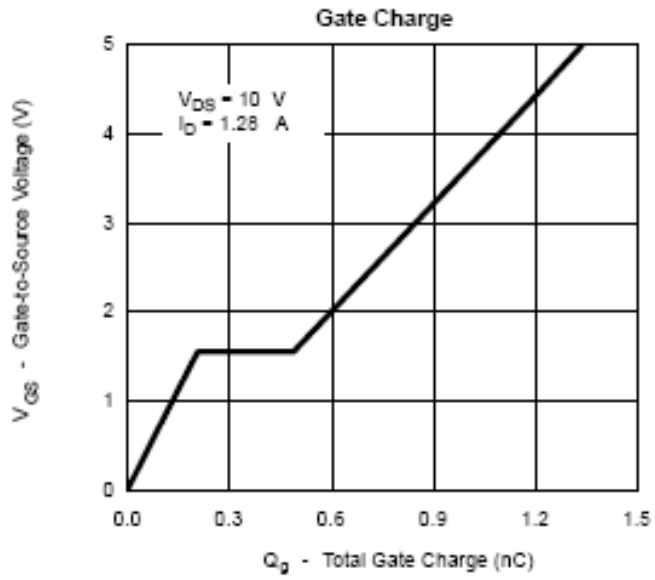


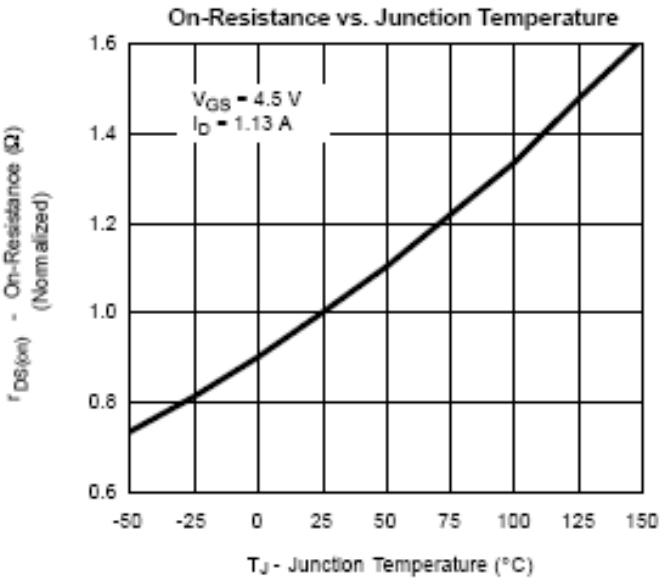


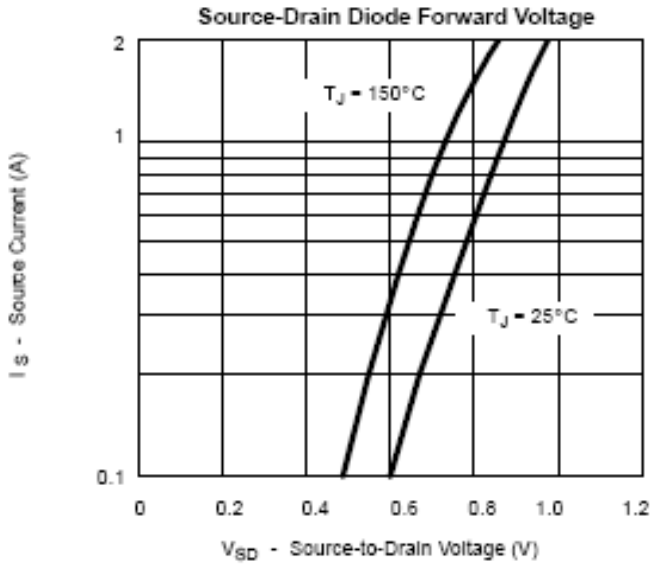


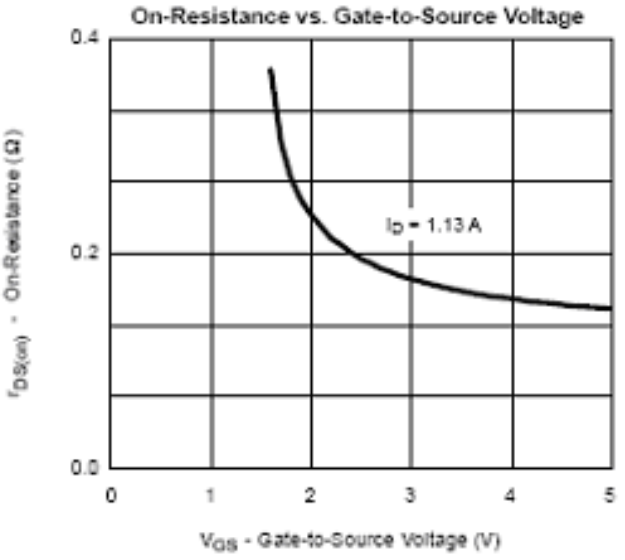

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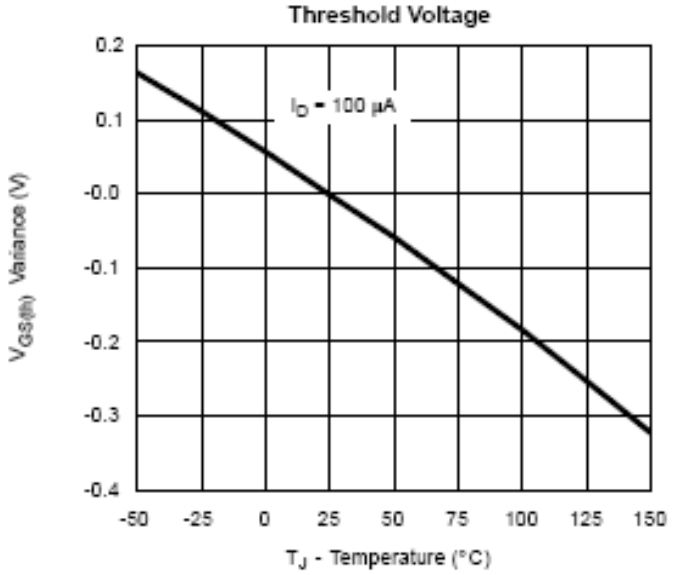
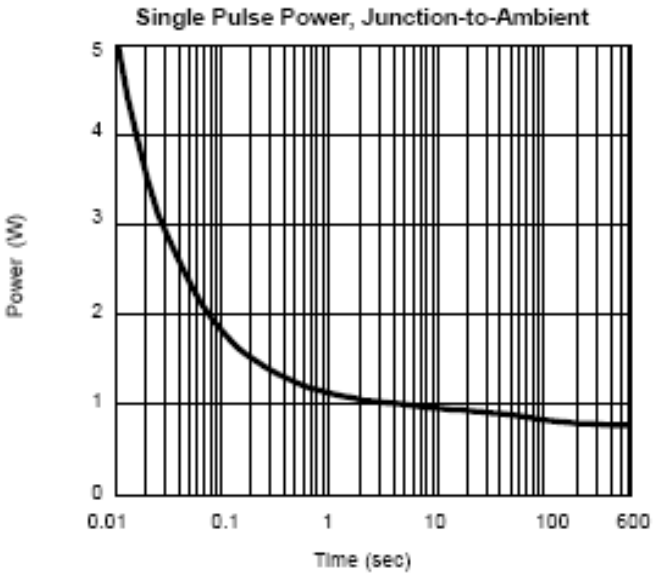
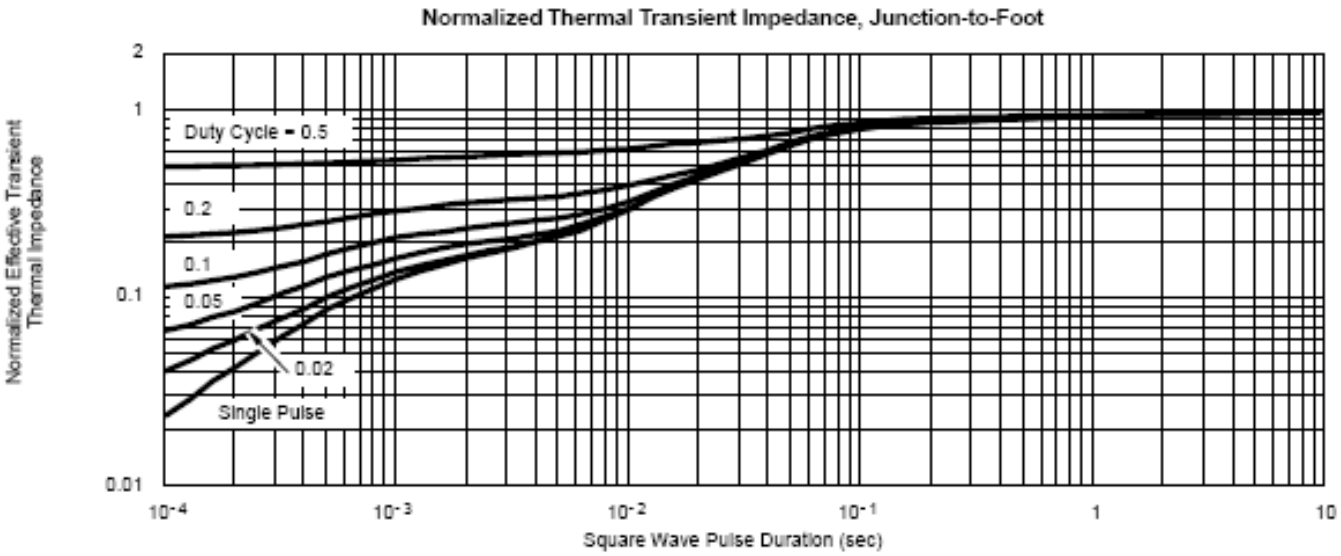
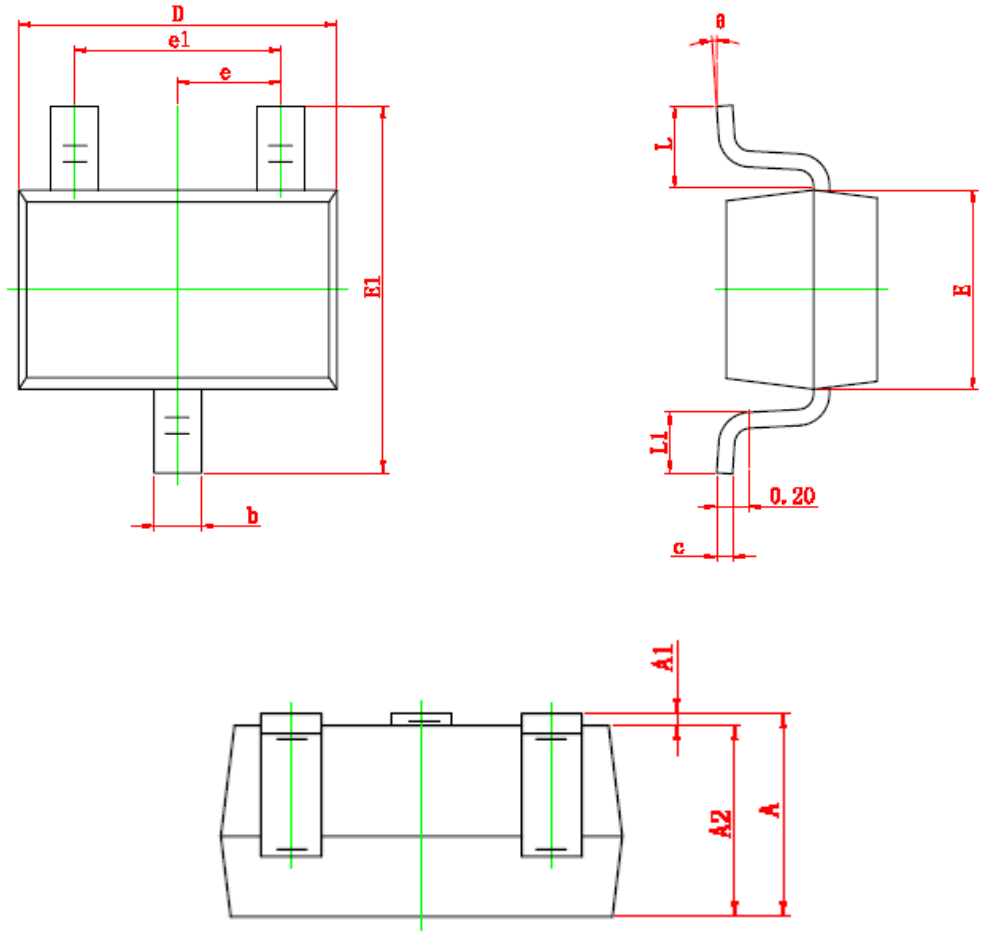


**SOT-323 PACKAGE OUTLINE**




| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|---|---|---|---|---|
| | Min | Max | Min | Max |
| A | 0.900 | 1.100 | 0.035 | 0.043 |
| A1 | 0.000 | 0.100 | 0.000 | 0.004 |
| A2 | 0.900 | 1.000 | 0.035 | 0.039 |
| b | 0.200 | 0.400 | 0.008 | 0.016 |
| c | 0.080 | 0.150 | 0.003 | 0.006 |
| D | 2.000 | 2.200 | 0.079 | 0.087 |
| E | 1.150 | 1.350 | 0.045 | 0.053 |
| E1 | 2.150 | 2.450 | 0.085 | 0.096 |
| e | 0.650 TYP | | 0.026 TYP | |
| e1 | 1.200 | 1.400 | 0.047 | 0.055 |
| L | 0.525 REF | | 0.021 REF | |
| L1 | 0.260 | 0.460 | 0.010 | 0.018 |
| θ | 0° | 8° | 0° | 8° |

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