



SPN2310

N-Channel Enhancement Mode MOSFET

DESCRIPTION

The SPN2310 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.

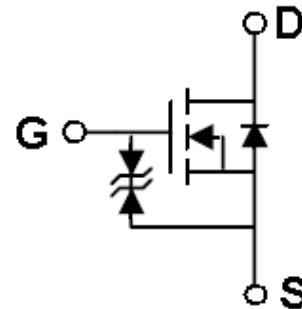
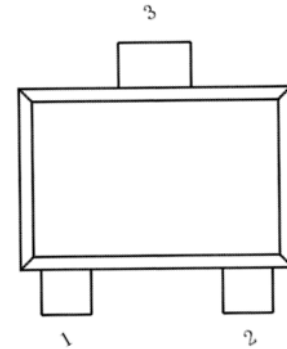
FEATURES

- ◆ N-Channel
30V/0.95A, $R_{DS(ON)}=380m\Omega@V_{GS}=4.5V$
30V/0.75A, $R_{DS(ON)}=450m\Omega@V_{GS}=2.5V$
30V/0.65A, $R_{DS(ON)}=800m\Omega@V_{GS}=1.8V$
- ◆ Super high density cell design for extremely low $R_{DS(ON)}$
- ◆ Exceptional on-resistance and maximum DC current capability
- ◆ ESD protected.
- ◆ SOT-23 package design

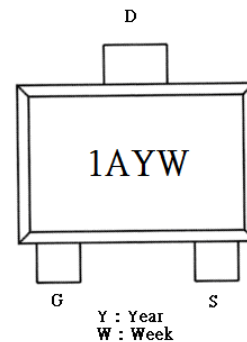
APPLICATIONS

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

PIN CONFIGURATION(SOT-23)



PART MARKING





SPN2310

N-Channel Enhancement Mode MOSFET

PIN DESCRIPTION

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

ORDERING INFORMATION

| Part Number | Package | Part Marking |
|---------------|---------|--------------|
| SPN2310S23RGB | SOT-23 | 1A |

※ SPN2310S23RGB : Tape Reel ; Pb – Free ; Halogen – Free

ABSOLUTE MAXIMUM RATINGS

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

| Parameter | Symbol | Typical | Unit |
|---|-----------------|----------|-----------------------------|
| Drain-Source Voltage | V_{DSS} | 30 | V |
| Gate –Source Voltage | V_{GSS} | ± 12 | V |
| Continuous Drain Current($T_J=150^{\circ}\text{C}$) | I_D | 1.8 | A |
| Pulsed Drain Current | I_{DM} | 6 | A |
| Continuous Source Current(Diode Conduction) | I_S | 1 | A |
| Power Dissipation | P_D | 1.25 | W |
| Operating Junction Temperature | T_J | -55/150 | $^{\circ}\text{C}$ |
| Storage Temperature Range | T_{STG} | -55/150 | $^{\circ}\text{C}$ |
| Thermal Resistance-Junction to Ambient | $R_{\theta JA}$ | 120 | $^{\circ}\text{C}/\text{W}$ |



SPN2310

N-Channel Enhancement Mode MOSFET

ELECTRICAL CHARACTERISTICS

(TA=25°C Unless otherwise noted)

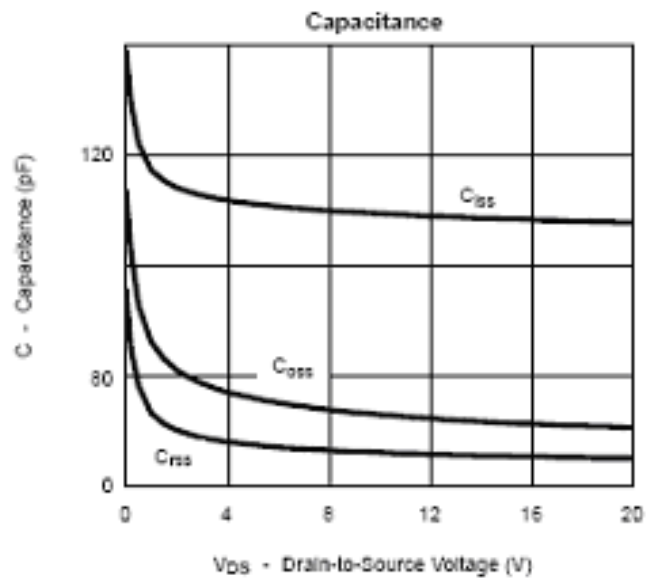
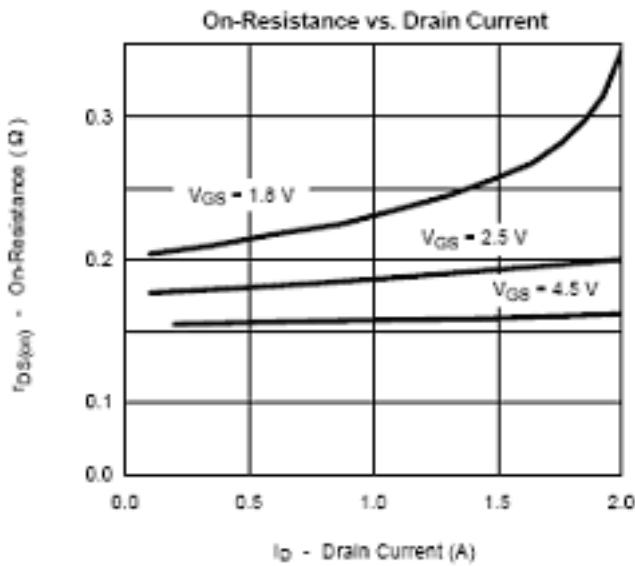
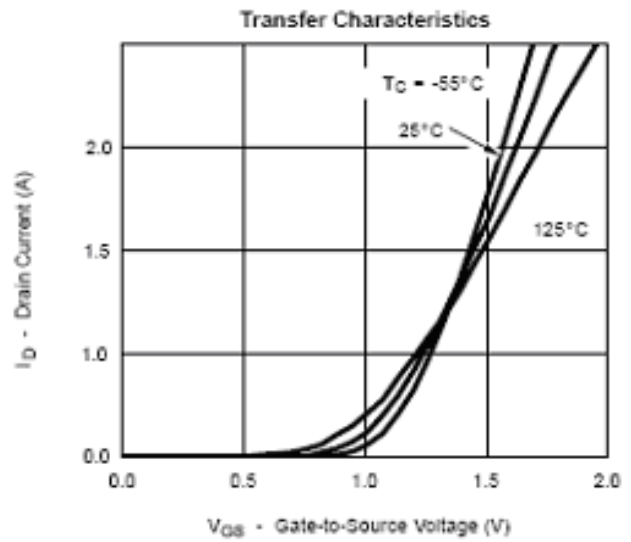
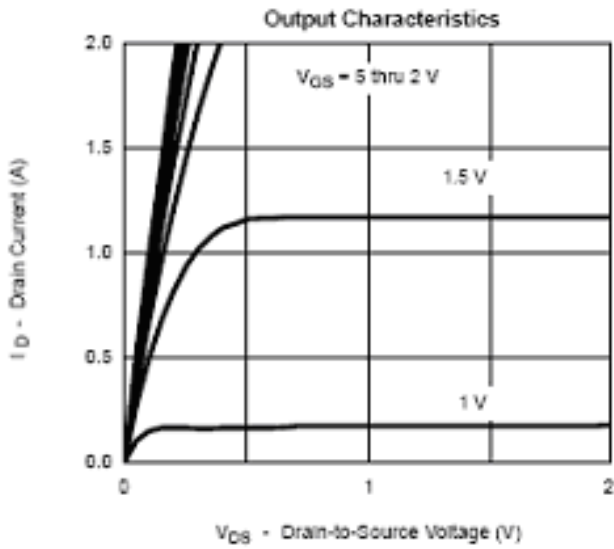
| Parameter | Symbol | Conditions | Min. | Typ | Max. | Unit |
|---------------------------------|---------------|--|------|------|------|----------|
| Static | | | | | | |
| Drain-Source Breakdown Voltage | $V_{(BR)DSS}$ | $V_{GS}=0V, I_D=250\mu A$ | 30 | | | V |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS}=V_{GS}, I_D=250\mu A$ | 0.35 | | 1.0 | |
| Gate Leakage Current | I_{GSS} | $V_{DS}=0V, V_{GS}=\pm 12V$ | | | 30 | μA |
| Zero Gate Voltage Drain Current | I_{DSS} | $V_{DS}=24V, V_{GS}=0V$ | | | 1 | μA |
| | | $V_{DS}=24V, V_{GS}=0V$ $T_J=55^\circ C$ | | | 5 | |
| On-State Drain Current | $I_{D(on)}$ | $V_{DS} \geq 4.5V, V_{GS}=5V$ | 0.7 | | | A |
| Drain-Source On-Resistance | $R_{DS(on)}$ | $V_{GS}=4.5V, I_D=0.95A$ | | 0.26 | 0.38 | Ω |
| | | $V_{GS}=2.5V, I_D=0.75A$ | | 0.32 | 0.45 | |
| | | $V_{GS}=1.8V, I_D=0.65A$ | | 0.42 | 0.80 | |
| Forward Transconductance | g_{fs} | $V_{DS}=10V, I_D=0.4A$ | | 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 | $t_{d(on)}$ | $V_{DD}=10V, R_L=10\Omega,$ $I_D=0.5A$ $V_{GEN}=4.5V, R_G=6\Omega$ | | 5 | 10 | ns |
| | t_r | | | 8 | 15 | |
| Turn-Off Time | $t_{d(off)}$ | | | 10 | 18 | |
| | t_f | | | 1.2 | 2.8 | |



SPN2310

N-Channel Enhancement Mode MOSFET

TYPICAL CHARACTERISTICS

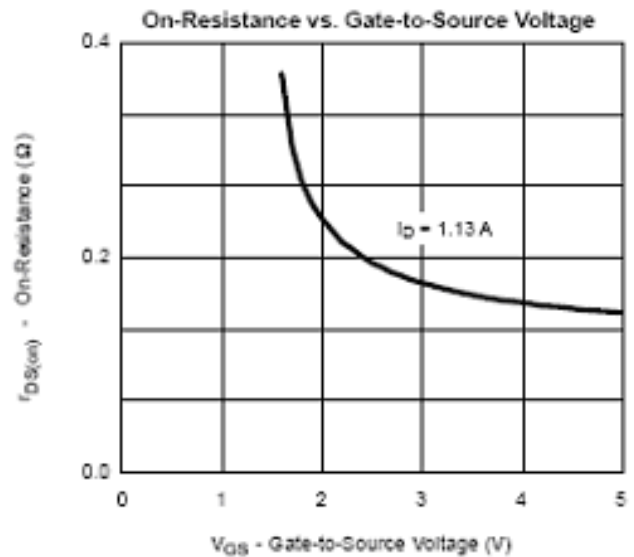
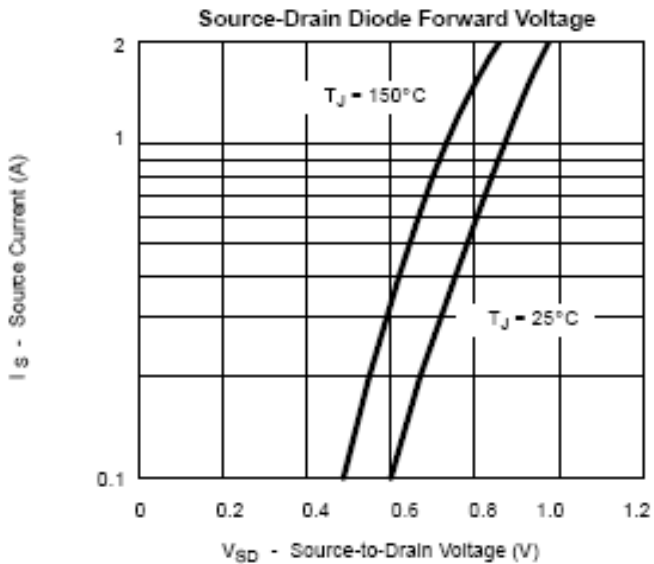
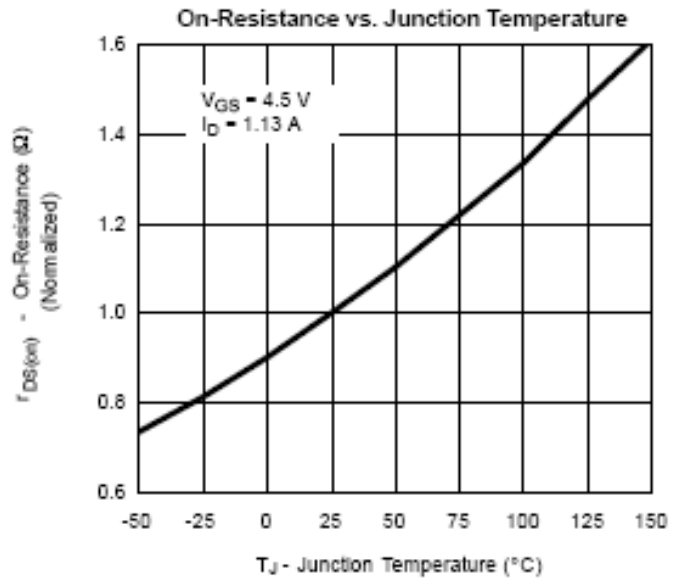
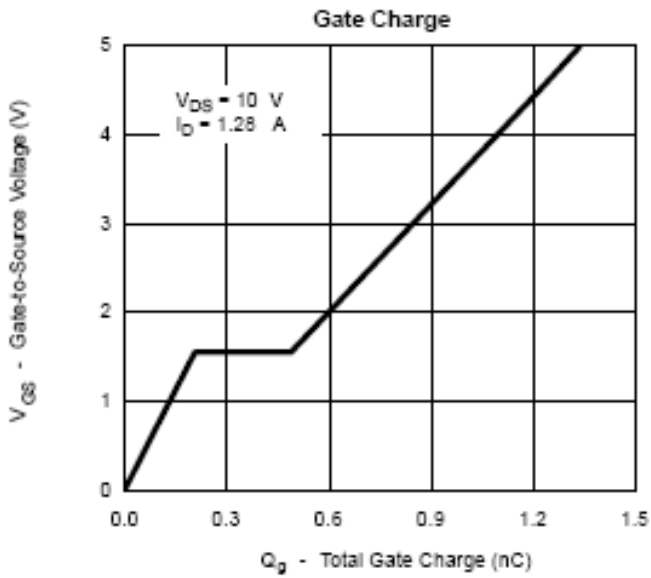




SPN2310

N-Channel Enhancement Mode MOSFET

TYPICAL CHARACTERISTICS

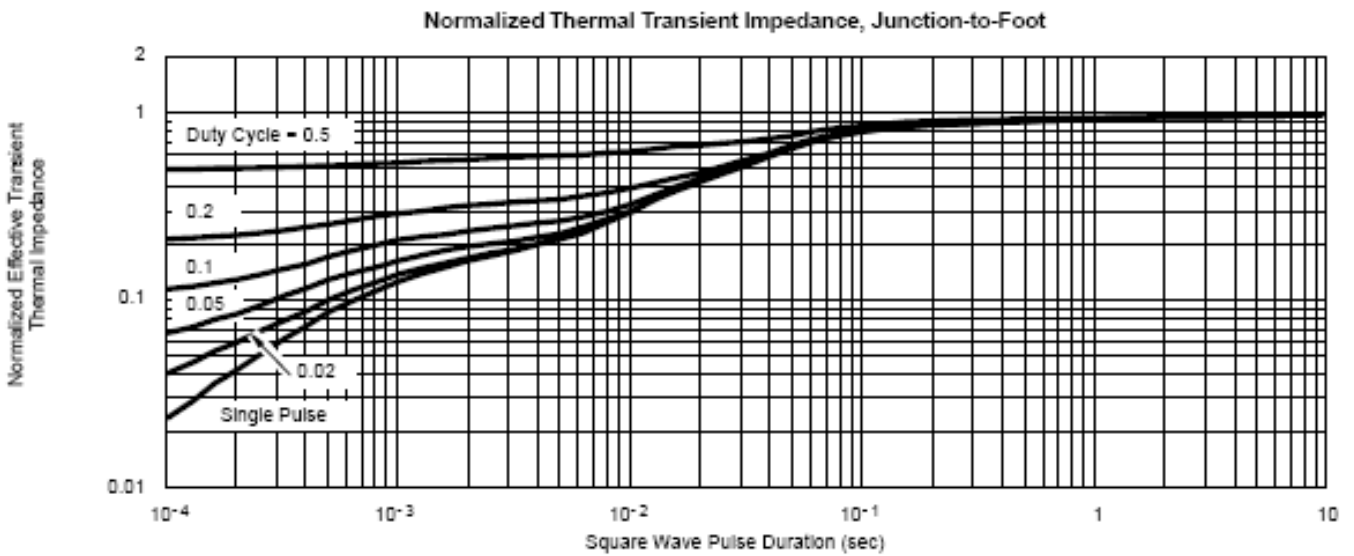
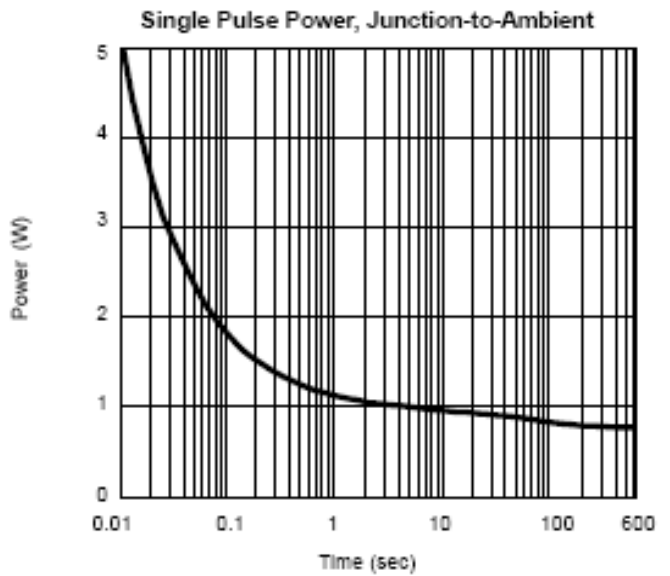
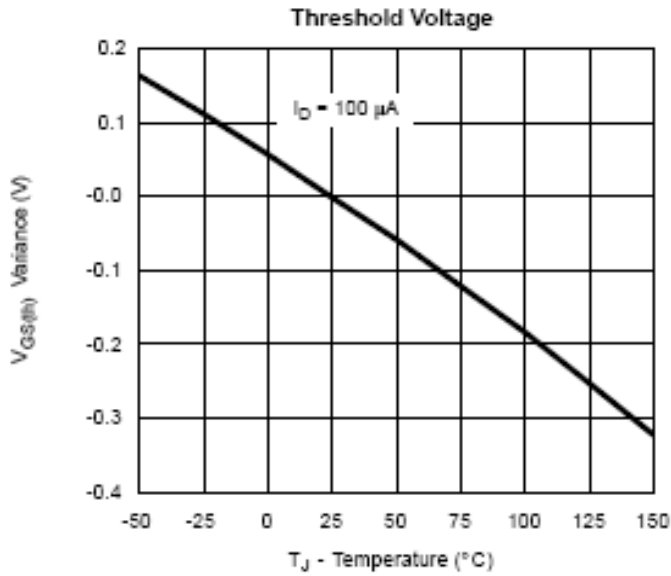




SPN2310

N-Channel Enhancement Mode MOSFET

TYPICAL CHARACTERISTICS

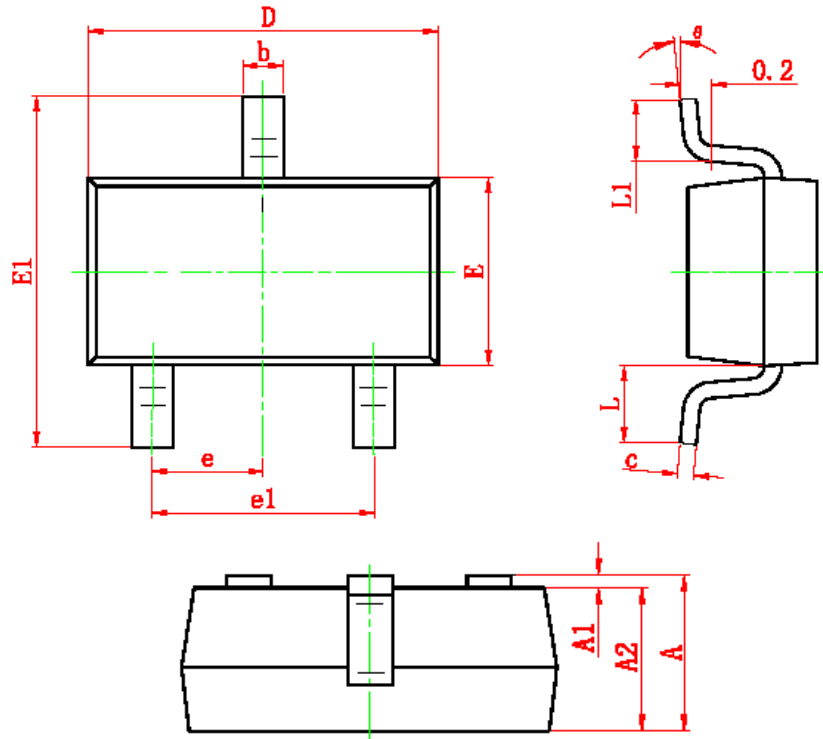




SPN2310

N-Channel Enhancement Mode MOSFET

SOT-23 PACKAGE OUTLINE



| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|--------|---------------------------|-------|----------------------|-------|
| | Min | Max | Min | Max |
| A | 0.900 | 1.200 | 0.035 | 0.043 |
| A1 | 0.000 | 0.100 | 0.000 | 0.004 |
| A2 | 0.900 | 1.100 | 0.035 | 0.039 |
| b | 0.300 | 0.500 | 0.012 | 0.020 |
| c | 0.080 | 0.150 | 0.003 | 0.006 |
| D | 2.800 | 3.000 | 0.110 | 0.118 |
| E | 1.200 | 1.400 | 0.047 | 0.055 |
| E1 | 2.250 | 2.550 | 0.089 | 0.100 |
| e | 0.950 TYP | | 0.037 TYP | |
| e1 | 1.800 | 2.000 | 0.071 | 0.079 |
| L | 0.550 REF | | 0.022 REF | |
| L1 | 0.300 | 0.500 | 0.012 | 0.020 |
| θ | 0° | 8° | 0° | 6° |



SPN2310

N-Channel Enhancement Mode MOSFET

Information provided is alleged to be exact and consistent. SYNC Power Corporation presumes no responsibility for the penalties of use of such information or for any violation of patents or other rights of third parties which may result from its use. No license is granted by allegation or otherwise under any patent or patent rights of SYNC Power Corporation. Conditions mentioned in this publication are subject to change without notice. This publication surpasses and replaces all information previously supplied. SYNC Power Corporation products are not authorized for use as critical components in life support devices or systems without express written approval of SYNC Power Corporation.

© The SYNC Power logo is a registered trademark of SYNC Power Corporation

© 2017 SYNC Power Corporation – Printed in Taiwan – All Rights Reserved

SYNC Power Corporation

7F-2, No.3-1, Park Street

NanKang District (NKSP), Taipei, Taiwan 115

Phone: 886-2-2655-8178

Fax: 886-2-2655-8468

© <http://www.syncpower.com>