# SPN1423
# N-Channel Enhancement Mode MOSFET

## DESCRIPTION

The SPN1423 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 such as cellular phone and notebook computer power management and other battery powered circuits where high-side switching , and low in-line power loss are needed in a very small outline surface mount package.

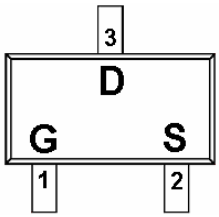
## APPLICATIONS

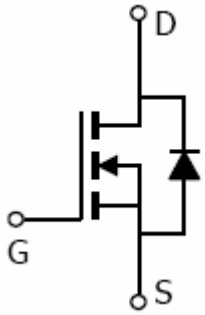
- Power Management in Note book
- Portable Equipment
- Battery Powered System
- DC/DC Converter
- Load Switch
- DSC
- LCD Display inverter

## FEATURES

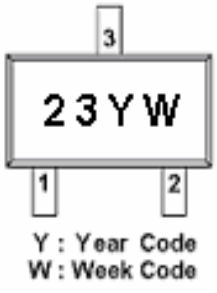
- 20V/2.8A,$R_{DS(ON)}$= 90mΩ@$V_{GS}$=4.5V
- 20V/2.2A,$R_{DS(ON)}$= 100mΩ@$V_{GS}$=2.5V
- Super high density cell design for extremely low $R_{DS\ (ON)}$
- Exceptional on-resistance and maximum DC current capability
- SOT-323 ( SC–70 ) package design

## PIN CONFIGURATION ( SOT-323 ; SC-70 )




## PART MARKING




Y : Year Code
W : Week Code

# SPN1423
## 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 |
|---|---|---|
| SPN1423S32RG | SOT-323 | 23YW |

※ Week Code : A ~ Z( 1 ~ 26 ) ; a ~ z( 27 ~ 52 )
※ SPN1423S32RG : Tape Reel ; Pb – Free

**ABSOULTE MAXIMUM RATINGS**

($T_A$=25℃ Unless otherwise noted)

| Parameter | | Symbol | Typical | Unit |
|---|---|---|---|---|
| Drain-Source Voltage | | $V_{DSS}$ | 20 | V |
| Gate –Source Voltage | | $V_{GSS}$ | ±12 | V |
| Continuous Drain Current($T_J$=150℃) | $T_A$=25℃ | $I_D$ | 2.8 | A |
| | $T_A$=70℃ | | 2.2 | |
| Pulsed Drain Current | | $I_{DM}$ | 10 | A |
| Continuous Source Current(Diode Conduction) | | $I_S$ | 1.6 | A |
| Power Dissipation | $T_A$=25℃ | $P_D$ | 0.33 | W |
| | $T_A$=70℃ | | 0.21 | |
| Operating Junction Temperature | | $T_J$ | 150 | ℃ |
| Storage Temperature Range | | $T_{STG}$ | -55/150 | ℃ |
| Thermal Resistance-Junction to Ambient | | $R_{\theta JA}$ | 100 | ℃/W |

# SPN1423
# N-Channel Enhancement Mode MOSFET

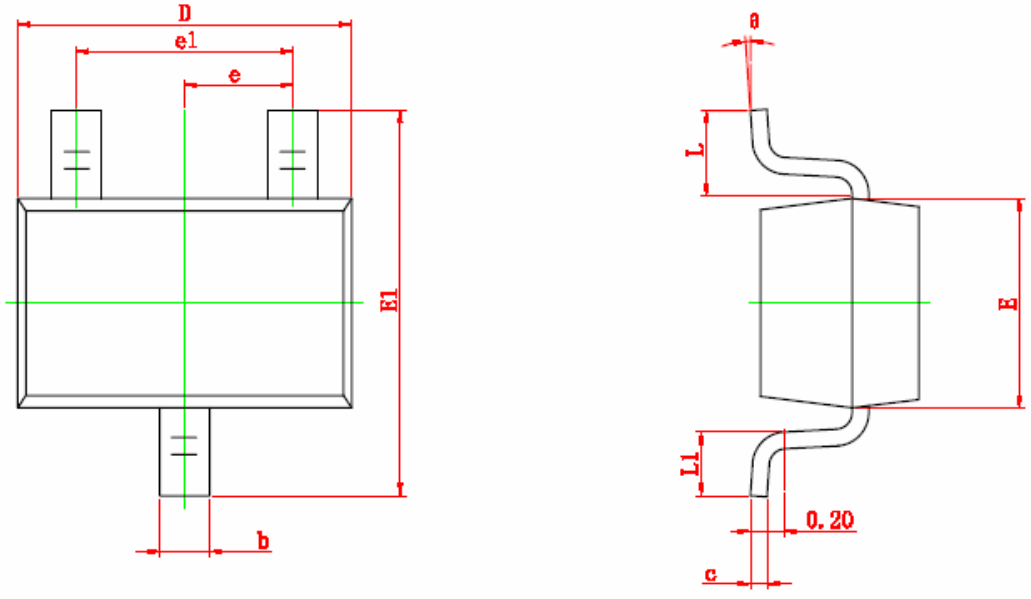
**ELECTRICAL CHARACTERISTICS**

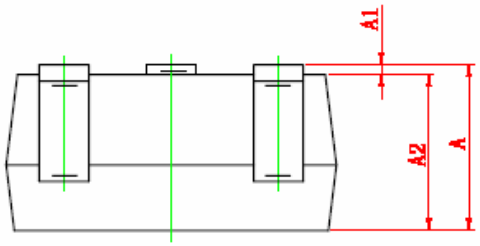
($T_A$=25°C Unless otherwise noted)

| Parameter | Symbol | Conditions | Min. | Typ | Max. | Unit |
|---|---|---|---|---|---|---|
| **Static** | | | | | | |
| Drain-Source Breakdown Voltage | $V_{(BR)DSS}$ | $V_{GS}$=0V,$I_D$=250uA | 20 | | | V |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS}$=$V_{GS}$,$I_D$=250uA | 0.45 | | 1.2 | |
| Gate Leakage Current | $I_{GSS}$ | $V_{DS}$=0V,$V_{GS}$=±12V | | | ±100 | nA |
| Zero Gate Voltage Drain Current | $I_{DSS}$ | $V_{DS}$=20V,$V_{GS}$=0V | | | 1 | uA |
| | | $V_{DS}$=20V,$V_{GS}$=0V $T_J$=55°C | | | 10 | |
| On-State Drain Current | $I_{D(on)}$ | $V_{DS}$≧5V,$V_{GS}$=4.5V | 5 | | | A |
| | | $V_{DS}$≧5V,$V_{GS}$=2.5V | 4 | | | |
| Drain-Source On-Resistance | $R_{DS(on)}$ | $V_{GS}$=4.5V,$I_D$=2.8A | | 0.055 | 0.090 | Ω |
| | | $V_{GS}$=2.5V,$I_D$=2.2A | | 0.075 | 0.100 | |
| Forward Transconductance | gfs | $V_{DS}$=5V,$I_D$=2.8A | | 10 | | S |
| Diode Forward Voltage | $V_{SD}$ | $I_S$=1.6A,$V_{GS}$=0V | | 0.85 | 1.2 | V |
| **Dynamic** | | | | | | |
| Total Gate Charge | $Q_g$ | $V_{DS}$=10V,$V_{GS}$=4.5V $I_D$≡2.8A | | 5.4 | 10 | nC |
| Gate-Source Charge | $Q_{gs}$ | | | 0.65 | | |
| Gate-Drain Charge | $Q_{gd}$ | | | 1.4 | | |
| Input Capacitance | $C_{iss}$ | $V_{DS}$=10V,$V_{GS}$=0V f=1MHz | | 340 | | pF |
| Output Capacitance | $C_{oss}$ | | | 115 | | |
| Reverse Transfer Capacitance | $C_{rss}$ | | | 33 | | |
| Turn-On Time | $t_{d(on)}$ | $V_{DD}$=10V,$R_L$=5.5Ω $I_D$≡2.8A,$V_{GEN}$=4.5V $R_G$=6Ω | | 12 | 25 | ns |
| | $t_r$ | | | 36 | 60 | |
| Turn-Off Time | $t_{d(off)}$ | | | 34 | 60 | |
| | $t_f$ | | | 10 | 25 | |

# SPN1423
## N-Channel Enhancement Mode MOSFET

**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° |

SYNC Power Corporation
9F-5, No.3-2, Park Street
NanKang District (NKSP), Taipei, Taiwan 115
Phone: 886-2-2655-8178
Fax: 886-2-2655-8468
©http://www.syncpower.com