



SPN8457

N-Channel Enhancement Mode MOSFET

DESCRIPTION

The SPN8457 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, and low in-line power loss are needed in a very small outline surface mount package.

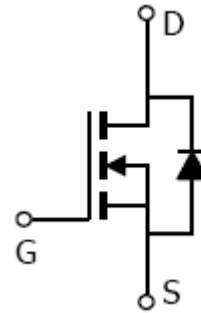
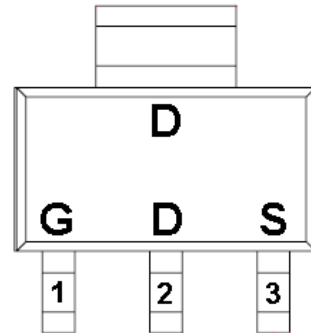
FEATURES

- ◆ 30V/5.5A, $R_{DS(ON)}=58m\Omega@V_{GS}=10V$
- ◆ 30V/4.0A, $R_{DS(ON)}=98m\Omega@V_{GS}=4.5V$
- ◆ Super high density cell design for extremely low $R_{DS(ON)}$
- ◆ Exceptional on-resistance and maximum DC current capability
- ◆ SOT-223 package design

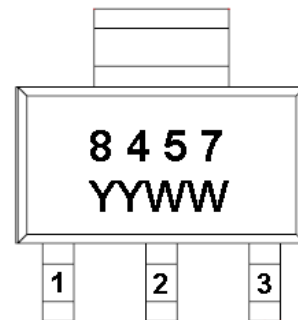
APPLICATIONS

- Power Management in Note book
- DC/DC Converter
- LCD Display inverter

PIN CONFIGURATION(SOT-223)



PART MARKING



Y : Year Code
W : Week Code



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PIN DESCRIPTION

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

ORDERING INFORMATION

| Part Number | Package | Part Marking |
|--------------|---------|--------------|
| SPN8457S22RG | SOT-223 | 8457 |

※ SPN8457S22RG : Tape Reel ; Pb – 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 | 5.8 | A |
| | | TA=70°C | 4.2 | |
| Pulsed Drain Current | I _{DM} | 10 | A | |
| Continuous Source Current(Diode Conduction) | I _S | 1.25 | A | |
| Power Dissipation | P _D | TA=25°C | 2.8 | W |
| | | TA=70°C | 1.2 | |
| Operating Junction Temperature | T _J | 150 | °C | |
| Storage Temperature Range | T _{STG} | -55/150 | °C | |
| Thermal Resistance-Junction to Ambient | R _{θJA} | 100 | °C/W | |



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ELECTRICAL CHARACTERISTICS

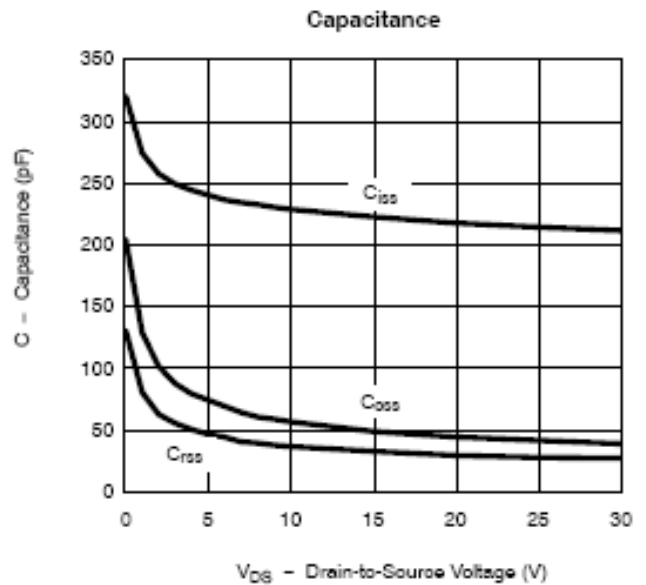
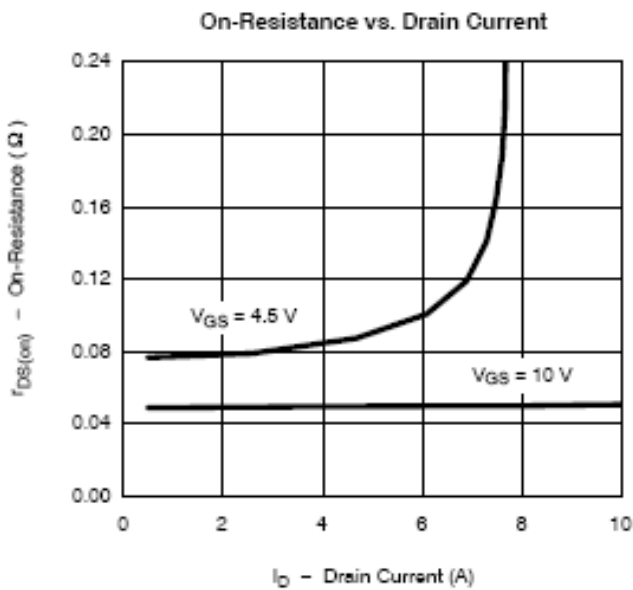
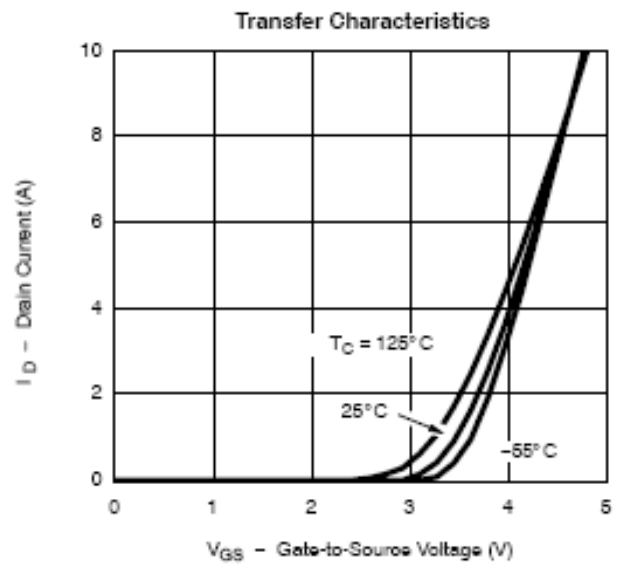
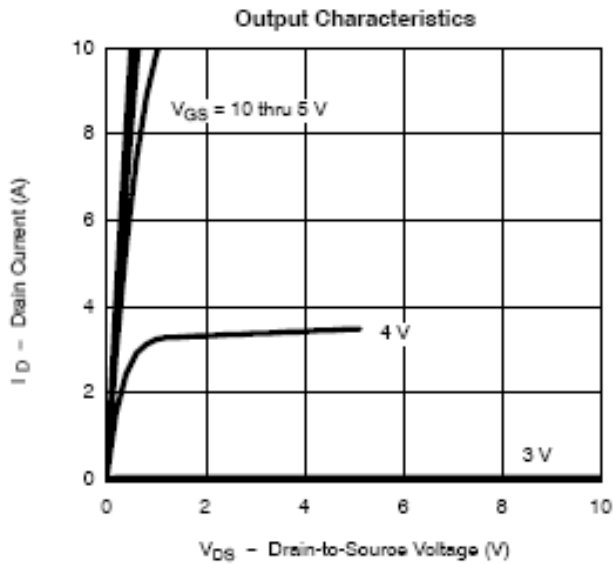
(TA=25°C Unless otherwise noted)

| Parameter | Symbol | Conditions | Min. | Typ | Max. | Unit |
|---------------------------------|---------------|---|------|-------|-----------|----------|
| Static | | | | | | |
| Drain-Source Breakdown Voltage | $V_{(BR)DSS}$ | $V_{GS}=0V, I_D=250\mu A$ | 30 | | | V |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS}=V_{GS}, I_D=250\mu A$ | 1.0 | | 3.0 | |
| Gate Leakage Current | I_{GSS} | $V_{DS}=0V, V_{GS}=\pm 20V$ | | | ± 100 | nA |
| Zero Gate Voltage Drain Current | I_{DSS} | $V_{DS}=30V, V_{GS}=1.0V$ | | | 1 | uA |
| | | $V_{DS}=30V, V_{GS}=0.0V$ $T_J=55^\circ C$ | | | 10 | |
| On-State Drain Current | $I_{D(on)}$ | $V_{DS} \geq 4.5V, V_{GS}=10V$ | 6 | | | A |
| | | $V_{DS} \geq 4.5V, V_{GS}=4.5V$ | 4 | | | |
| Drain-Source On-Resistance | $R_{DS(on)}$ | $V_{GS} = 10V, I_D=5.5A$ | | 0.050 | 0.058 | Ω |
| | | $V_{GS} = 4.5V, I_D=4.0A$ | | 0.078 | 0.098 | |
| Forward Transconductance | g_{fs} | $V_{DS}=4.5V, I_D=2.5A$ | | 4.6 | | S |
| Diode Forward Voltage | V_{SD} | $I_S=1.25A, V_{GS}=0V$ | | 0.82 | 1.2 | V |
| Dynamic | | | | | | |
| Total Gate Charge | Q_g | $V_{DS}=15V, V_{GS}=10V$ $I_D=2.5$ | | 4.5 | 10 | nC |
| Gate-Source Charge | Q_{gs} | | | 0.8 | | |
| Gate-Drain Charge | Q_{gd} | | | 1.0 | | |
| Input Capacitance | C_{iss} | $V_{DS}=15V, V_{GS}=0V$ $f=1MHz$ | | 240 | | pF |
| Output Capacitance | C_{oss} | | | 110 | | |
| Reverse Transfer Capacitance | C_{rss} | | | 17 | | |
| Turn-On Time | $t_{d(on)}$ | $V_{DD}=15V, R_L=15$ $I_D=1.0A, V_{GEN}=10$ $R_G=6\Omega$ | | 8 | 20 | ns |
| | t_r | | | 12 | 30 | |
| Turn-Off Time | $t_{d(off)}$ | | | 17 | 35 | |
| | t_f | | | 8 | 20 | |



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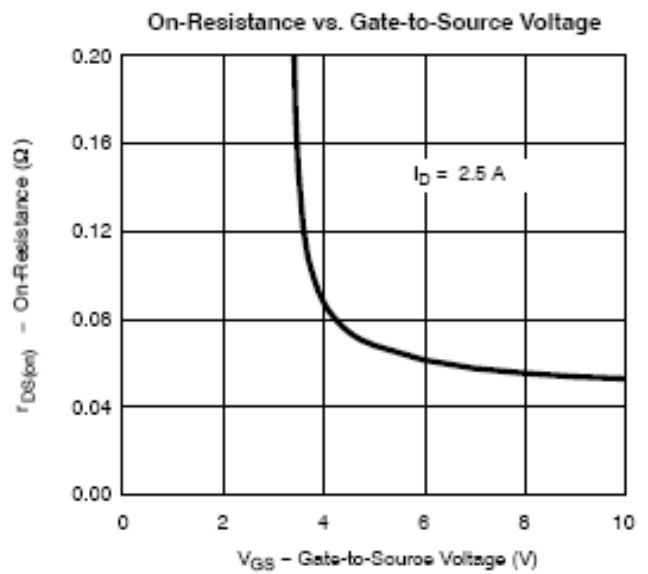
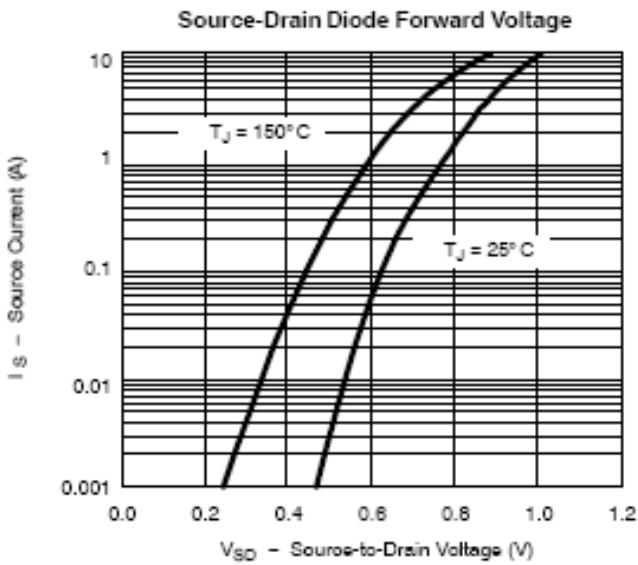
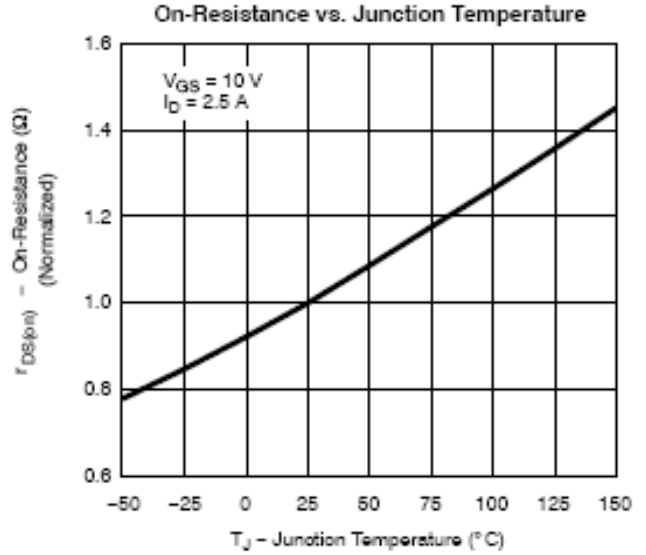
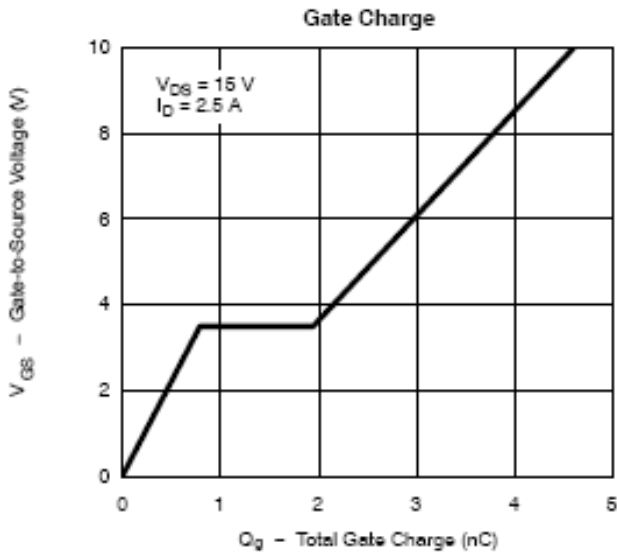
TYPICAL CHARACTERISTICS





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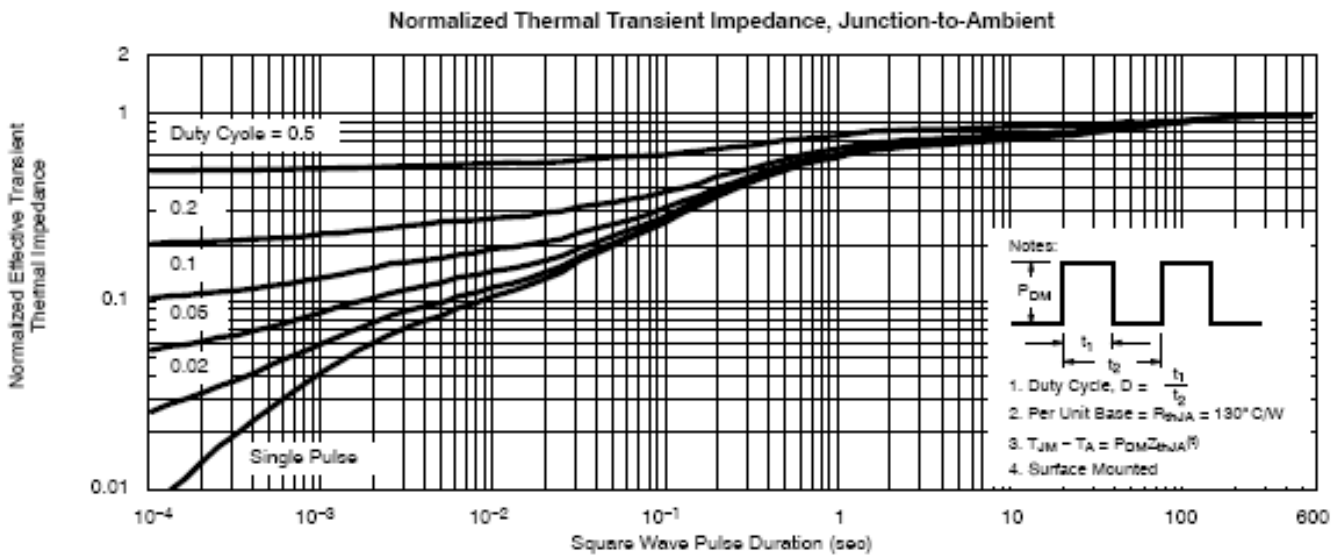
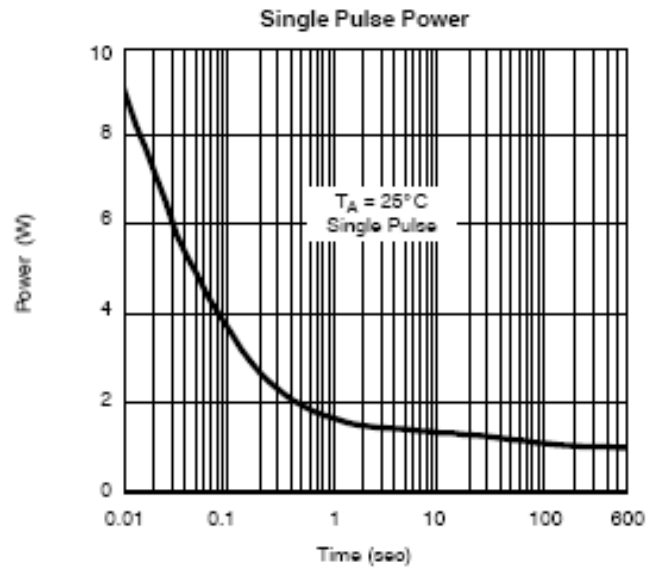
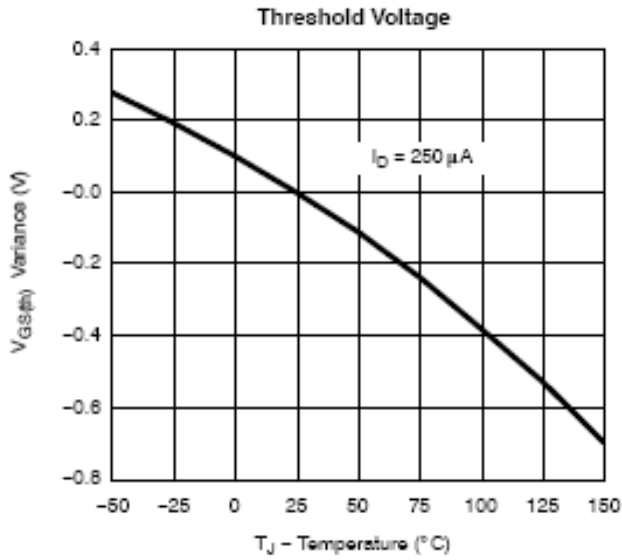
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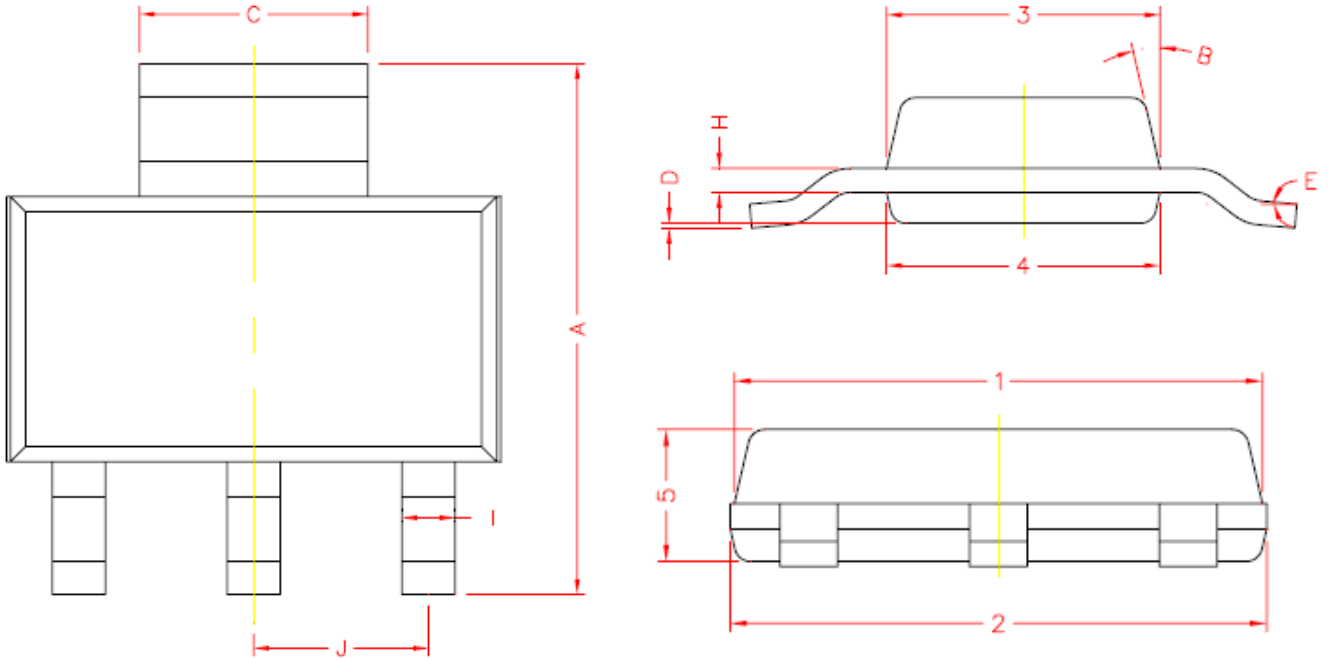
TYPICAL CHARACTERISTICS





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SOT-233 PACKAGE OUTLINE



| REF. | DIMENSIONS | |
|------|-------------|------|
| | Millimeters | |
| | Min. | Max. |
| A | 6.70 | 7.30 |
| C | 2.90 | 3.10 |
| D | 0.02 | 0.10 |
| E | 0° | 10° |
| I | 0.60 | 0.80 |
| H | 0.25 | 0.35 |
| B | 13° TYP. | |
| J | 2.30 REF. | |
| 1 | 6.30 | 6.70 |
| 2 | 6.30 | 6.70 |
| 3 | 3.30 | 3.70 |
| 4 | 3.30 | 3.70 |
| 5 | 1.40 | 1.80 |



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SYNC Power Corporation

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

NanKang District (NKSP), Taipei, Taiwan, 115, R.O.C

Phone: 886-2-2655-8178

Fax: 886-2-2655-8468

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