

P-Channel Enhancement Mode MOSFET with Schottky Diode

- Features**

P-MOSFET

| VDS | VGS | RDSon TYP | ID |
|------|-----|------------|-----|
| -20V | ±8V | 105mR@-4V5 | -2A |
| | | 130mR@-2V5 | |
| | | 180mR@-1V8 | |

Schottky

| VR | IR | VF TYP | IO |
|-----|------|------------|----|
| 20V | 35uA | 410Mv@0.5A | 1A |

- General Description**

SSC8K21GN3 combines a P-Channel enhancement mode power MOSFET which is produced with high cell density and DMOS trench technology and a low forward voltage schottky diode. the tiny and thin outline saves PCB consumption.

- Package Information**

Top View

Bottom View

Side View

| Symbol | Dimensions In Millimeters | |
|--------|---------------------------|-------------|
| | Min. | Max. |
| A | 0.700/0.800 | 0.800/0.900 |
| A1 | 0.000 | 0.050 |
| A3 | 0.203REF. | |
| D | 2.924 | 3.076 |
| E | 1.924 | 2.076 |
| D1 | 0.820 | 1.020 |
| D2 | 1.110TYP. | |
| E1 | 0.200 | 0.400 |
| k | 0.200MIN. | |
| b | 0.250 | 0.350 |
| e | 0.650TYP. | |
| L | 0.274 | 0.426 |

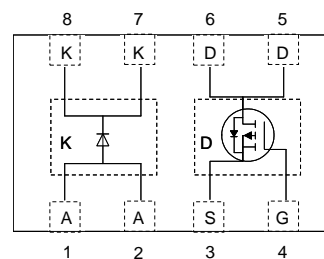
Package: DFN3x2

- Applications**

- Li Battery Charging
- High Side DC/DC Converter
- High Side Driver for Brushless DC Motor
- Power Management in Portable, Battery Powered Devices

- Pin configuration**

Top View





SSC8K21GN3

● **Absolute Maximum Ratings @ TA = 25°C unless otherwise specified**

| Parameter | | Symbol | Ratings | Unit |
|--|------------|----------------|-------------|------|
| Drain-Source Voltage | | V_{DS} | -20 | V |
| Gate-Source Voltage | | V_{GS} | ±8 | |
| Drain Current (Note 1) | Continuous | I_D | -2 | A |
| | Pulsed | | -8 | |
| Schottky Reverse Voltage | | V_R | 20 | V |
| Schottky Continuous Forward Current | | I_F | 1 | A |
| Power Dissipation Derating above $T_A = 25^\circ\text{C}$ (Note 1) | | P_d | 1.2 | W |
| Operating and Storage Temperature Range | | T_J, T_{STG} | -55 to +150 | °C |

Note: 1. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inches. The rating is for each chip in the package.

● **Electrical Characteristics @ TA = 25°C unless otherwise specified**

| Parameter (Note 2) | Symbol | Test Conditions | Min | Typ | Max | Unit |
|--|---------------|---|------|-------|------|------|
| P-channel Enhancement Mode MOSFET | | | | | | |
| Drain-Source Breakdown Voltage | $V_{(BR)DSS}$ | $V_{GS} = 0V, I_D = -250\mu A$ | -20 | -- | -- | V |
| Zero Gate Voltage Drain Current | I_{DSS} | $V_{DS} = -20V, V_{GS} = 0V$ | -- | -- | -1 | uA |
| Gate-Body Leakage | I_{GSS} | $V_{GS} = \pm 8V, V_{DS} = 0V$ | -- | -- | ±100 | nA |
| Gate Threshold Voltage | $V_{GS(TH)}$ | $V_{DS} = V_{GS}, I_D = -250\mu A$ | -0.5 | -0.75 | -1.2 | V |
| Static Drain-Source On-Resistance | $R_{DS(ON)}$ | $I_D = -0.5A, V_{GS} = -4.50V$ | -- | 105 | 180 | mR |
| | | $I_D = -0.5A, V_{GS} = -2.50V$ | -- | 130 | 200 | |
| | | $I_D = -0.5A, V_{GS} = -1.80V$ | -- | 180 | 260 | |
| Turn-On Delay Time | $t_{d(on)}$ | $V_{DD} = -6V, R_L = 6R, I_D = -1A,$ $V_{GEN} = -4.5V, R_G = 6R$ | -- | 13 | -- | ns |
| Turn-On Rise Time | t_r | | -- | 18 | -- | |
| Turn-Off Delay Time | $t_{d(off)}$ | | -- | 42 | -- | |
| Turn-Off Fall Time | t_f | | -- | 120 | -- | |
| Input Capacitance | C_{ISS} | $V_{DS} = -6V, V_{GS} = 0V,$ $f = 1.0\text{ MHz}$ | -- | 376 | -- | pF |
| Output Capacitance | C_{OSS} | | -- | 187 | -- | |
| Reverse Transfer Capacitance | C_{RSS} | | -- | 78 | -- | |
| Schottky Diode | | | | | | |
| Breakdown Voltage | V_R | $I_R = 300\mu A$ | 20 | -- | -- | V |
| Forward Voltage Drop | V_F | $I_F = 0.5A$ | -- | 0.41 | 0.48 | V |
| Maximum reverse leakage current | I_R | $V_R = 20V$ | -- | 15 | 200 | uA |

Note : 2. Short duration test pulse used to minimize self-heating effect.

● P-channel MOSFET Typical Performance Characteristics

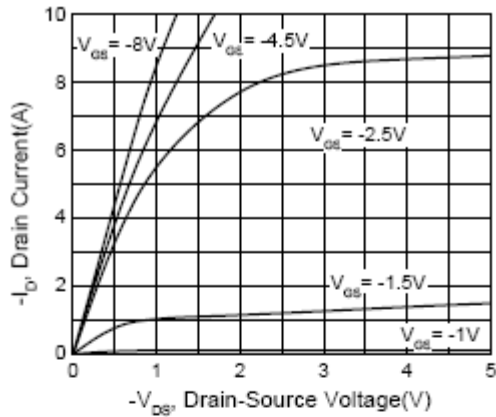


Fig1. Output Characteristics

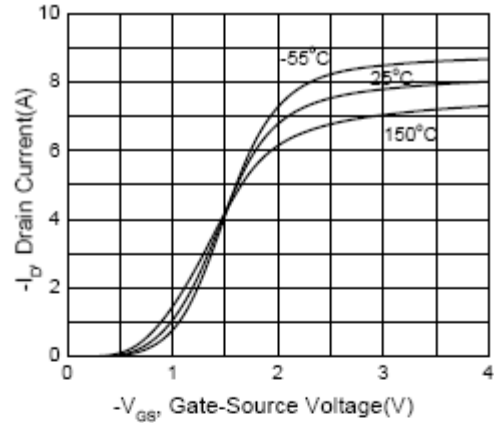


Fig2. Transfer Characteristics

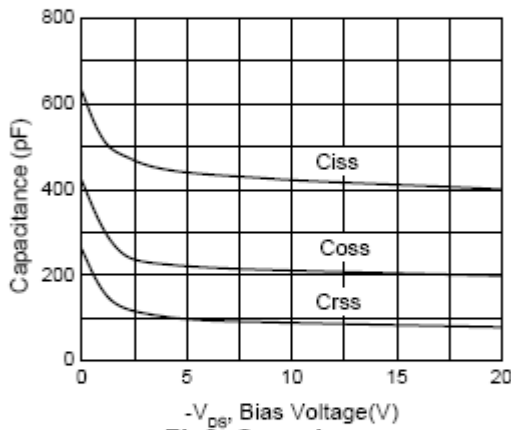


Fig3. Capacitance

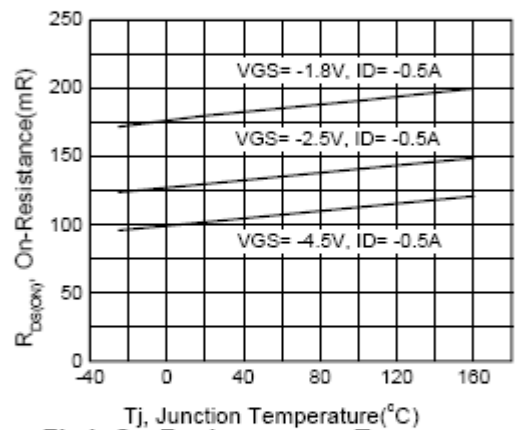


Fig4. On-Resistance vs. Temperature

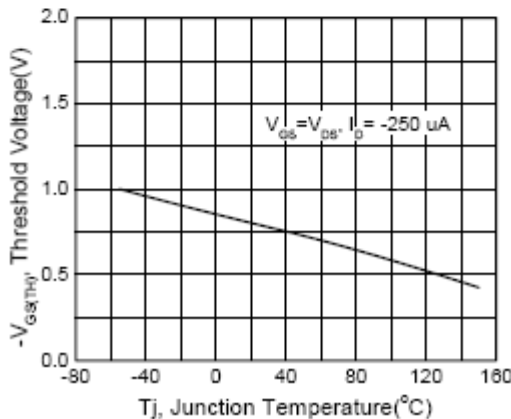


Fig 5. Threshold Voltage

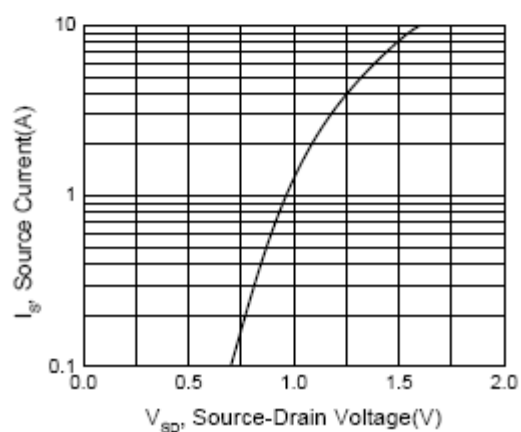


Fig6. Diode Forward Characteristics

● Schottky Diode Typical Performance Characteristics

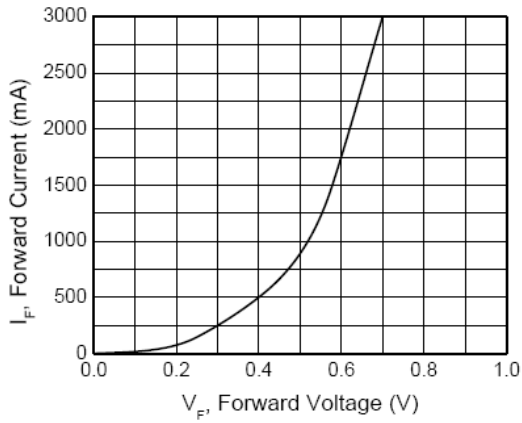


Fig7. Forward Characteristics

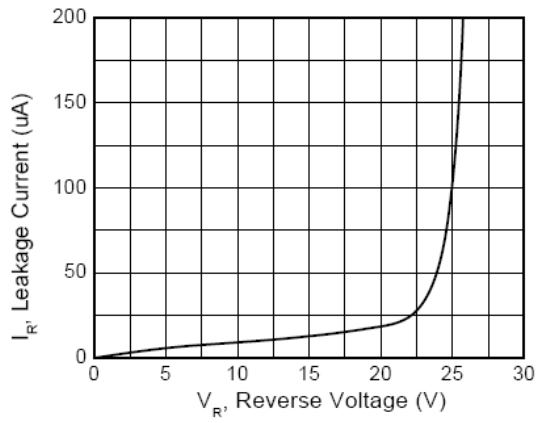


Fig8. Reverse Characteristics

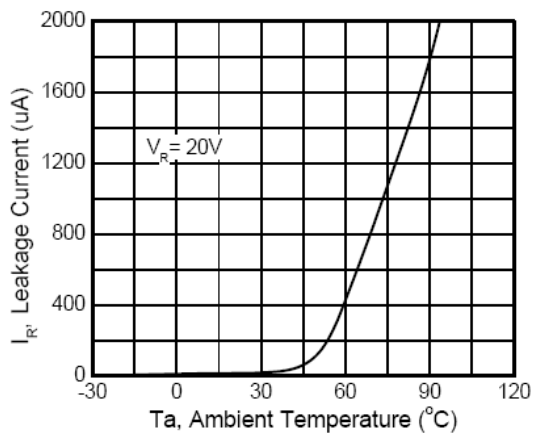


Fig9. Leakage vs. Temperature



SSC8K21GN3

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