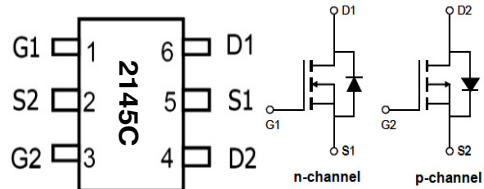


Main Product Characteristics

| | | |
|---------------------|--------------|--------------|
| $V_{(BR)DSS}$ | 20V | -20V |
| $R_{DS(ON)} (Typ.)$ | 38m Ω | 68m Ω |
| I_D | 4.8A | -2.9A |



TSOP-6



Marking and Pin Assignment

Schematic Diagram

Features and Benefits

- Advanced trench MOSFET process technology
- Designed for load switching and battery protection applications
- 150°C operating temperature



Description

The SSF2145CH6 utilizes the latest techniques to achieve high cell density and low on-resistance. These features make this device extremely efficient and reliable for use in high efficiency switch mode power supply and a wide variety of other applications.

Absolute Max Ratings

| Symbol | Parameter | Max. | | Unit |
|---------------------------------|--|--------------|--------------|------------------|
| | | N-channel | P-channel | |
| $I_D @ T_C = 25^\circ\text{C}$ | Continuous Drain Current, $V_{GS} @ 4.5\text{V}^{(1)}$ | 4.8 | -2.9 | A |
| $I_D @ T_C = 100^\circ\text{C}$ | Continuous Drain Current, $V_{GS} @ 4.5\text{V}^{(1)}$ | 3.9 | -2.4 | |
| I_{DM} | Pulsed Drain Current ⁽²⁾ | 17 | -11 | |
| $P_D @ T_C = 25^\circ\text{C}$ | Power Dissipation ⁽³⁾ | 1.7 | 1.7 | W |
| V_{DS} | Drain-Source Voltage | 20 | -20 | V |
| V_{GS} | Gate-to-Source Voltage | ± 8 | ± 8 | V |
| T_J, T_{STG} | Operating Junction and Storage Temperature Range | -55 to + 150 | -55 to + 150 | $^\circ\text{C}$ |

Thermal Resistance

| Symbol | Characteristics | Typ. | Max. | | Unit |
|-----------------|--|------|-----------|-----------|--------------------|
| | | | N-channel | P-channel | |
| $R_{\theta JA}$ | Junction-to-Ambient ($t \leq 10\text{s}$) ⁽⁴⁾ | — | 76 | 114 | $^\circ\text{C/W}$ |
| | Junction-to-Ambient (PCB mounted, steady-state) ⁽⁴⁾ | — | 53 | 53 | $^\circ\text{C/W}$ |

Electrical Characteristics (T_A=25°C unless otherwise specified)

| Symbol | Parameter | | Min. | Typ. | Max. | Unit | Conditions |
|----------------------|--------------------------------------|-----------|------|-------|-------|------|--|
| V _{(BR)DSS} | Drain-to-Source Breakdown Voltage | N-Channel | 20 | — | — | V | V _{GS} = 0V, I _D = 250μA |
| | | | 22 | — | — | | T _J = 125°C |
| | | P-Channel | -20 | — | — | | V _{GS} = 0V, I _D = -250μA |
| | | | -22 | — | — | | T _J = 125°C |
| R _{DS(ON)} | Static Drain-to-Source On-Resistance | N-Channel | — | 38 | 55 | mΩ | V _{GS} =4.5V, I _D = 3.6A |
| | | P-Channel | — | 68 | 80 | | V _{GS} =-4.5V, I _D = -3A |
| | | N-Channel | — | 64 | 75 | | V _{GS} =2.5V, I _D = 3.1A |
| | | P-Channel | — | 89 | 100 | | V _{GS} =-3.5V, I _D = -2A |
| | | N-Channel | — | 55 | 63 | | V _{GS} =1.8V, I _D = 2A |
| | | P-Channel | — | 129 | 148 | | V _{GS} =-1.8V, I _D = -1A |
| V _{GS(th)} | Gate Threshold Voltage | N-Channel | 0.4 | 0.72 | 1 | V | V _{DS} = V _{GS} , I _D = 250μA |
| | | P-Channel | -0.4 | -0.56 | -1 | | T _J = 125°C |
| | | N-Channel | 0.4 | 0.78 | 1 | | V _{DS} = V _{GS} , I _D = -250μA |
| | | P-Channel | -0.4 | -0.66 | -1 | | T _J = 125°C |
| I _{DSS} | Drain-to-Source Leakage Current | N-Channel | — | — | 1 | μA | V _{DS} = 20V, V _{GS} = 0V |
| | | P-Channel | — | — | -1 | | V _{DS} = -20V, V _{GS} = 0V |
| I _{GSS} | Gate-to-Source Forward Leakage | N-Channel | — | — | 100 | nA | V _{GS} = 8V |
| | | N-Channel | — | — | 100 | | V _{GS} = -8V |
| | | P-Channel | — | — | -100 | | V _{GS} = 8V |
| | | P-Channel | — | — | -100 | | V _{GS} = -8V |
| C _{iss} | Input Capacitance | N-Channel | — | 348 | 420 | pF | V _{GS} = 0V, V _{DS} = 10V, f = 1.0MHz |
| C _{oss} | Output Capacitance | N-Channel | — | 58 | 70 | | |
| Cr _{ss} | Reverse Transfer Capacitance | N-Channel | — | 32 | 39 | | |
| C _{iss} | Input Capacitance | P-Channel | — | 519 | 622 | | V _{GS} = 0V, V _{DS} = -10V, f = 1.0MHz |
| C _{oss} | Output Capacitance | P-Channel | — | 75 | 90 | | |
| Cr _{ss} | Reverse Transfer Capacitance | P-Channel | — | 58 | 70 | | |
| t _{d(on)} | Turn-On Delay Time | N-Channel | — | 5 | 12 | | |
| t _r | Rise Time | N-Channel | — | 10 | 30 | | |
| t _{d(off)} | Turn-Off Delay Time | N-Channel | — | 10 | 30 | | |
| t _f | Fall Time | N-Channel | — | 7 | 28 | | |
| t _{d(on)} | Turn-On Delay Time | P-Channel | — | 13.6 | 27.2 | nS | V _{DD} =-10V, I _D =-3A V _{GS} =-4.5V, R _{GEN} =3Ω |
| t _r | Rise Time | P-Channel | — | 8.6 | 17.2 | | |
| t _{d(off)} | Turn-Off Delay Time | P-Channel | — | 73.6 | 147.2 | | |
| t _f | Fall Time | P-Channel | — | 34.6 | 69.2 | | |



Source-Drain Ratings and Characteristics

| Symbol | Parameter | | Min. | Typ. | Max. | Unit | Conditions |
|-----------------|--|-----------|------|-------|------|------|--|
| I _S | Continuous Source Current (Body Diode) | N-Channel | — | — | 4.8 | A | MOSFET symbol showing the integral reverse p-n junction diode. |
| | | P-Channel | — | — | -2.9 | | |
| I _{SM} | Pulsed Source Current (Body Diode) | N-Channel | — | — | 17 | A | |
| | | P-Channel | — | — | -11 | | |
| V _{SD} | Diode Forward Voltage | N-Channel | — | 0.69 | 1.2 | V | I _S =0.94A, V _{GS} =0V |
| | | P-Channel | — | -0.72 | -1.2 | | I _S =-0.75A, V _{GS} =0V |

Notes:

1. The maximum current rating is limited by bond-wires.
2. Repetitive rating; pulse width limited by max. junction temperature.
3. The power dissipation P_D is based on max. junction temperature, using junction-to-ambient thermal resistance.
4. The value of R_{θJA} is measured with the device mounted on 1 in² FR-4 board with 2oz. Copper, in a still air environment with T_A=25°C

Typical Electrical and Thermal Characteristics

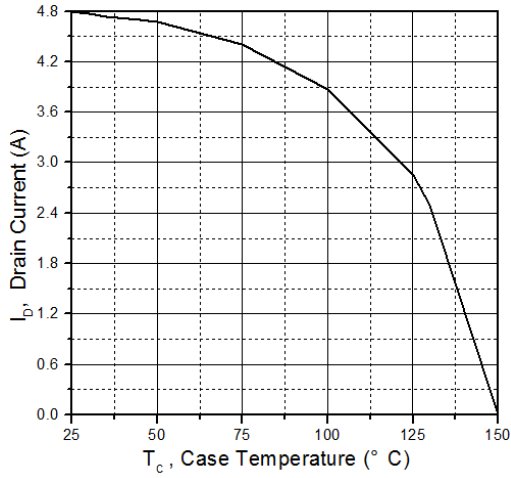


Figure 1. Maximum Drain Current Vs. Case Temperature (N-Channel)

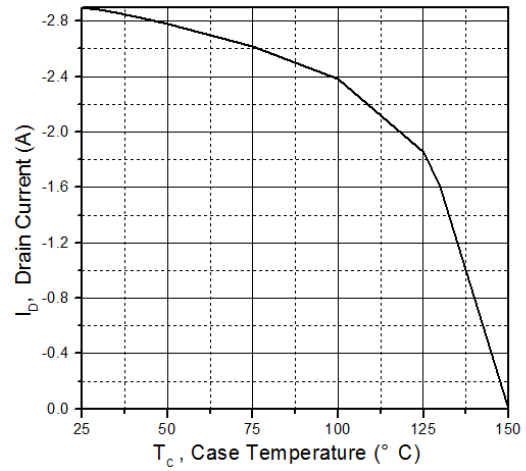


Figure 2. Maximum Drain Current Vs. Case Temperature (P-Channel)

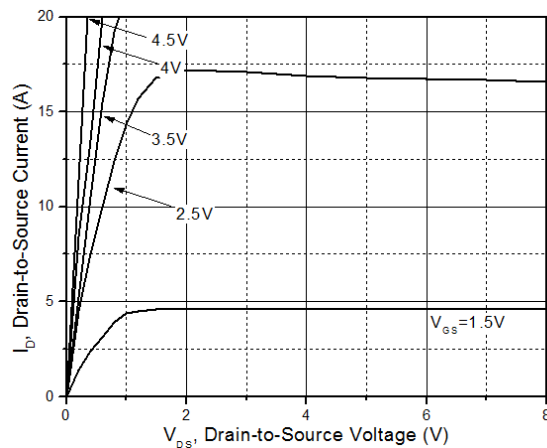


Figure 3. Typical Output Characteristics (N-Channel)

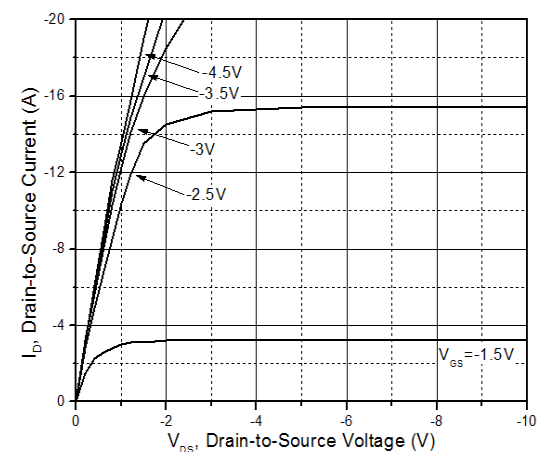


Figure 4. Typical Output Characteristics (P-Channel)

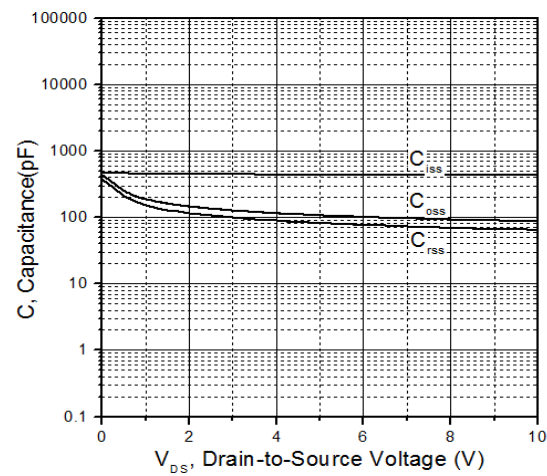


Figure 5. Typical Capacitance Vs. Drain-to-Source Voltage (N-Channel)

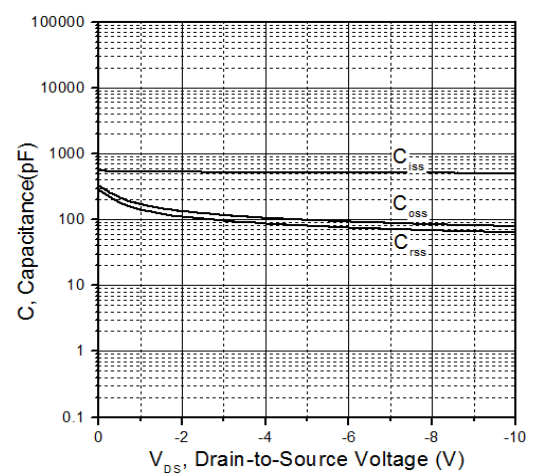
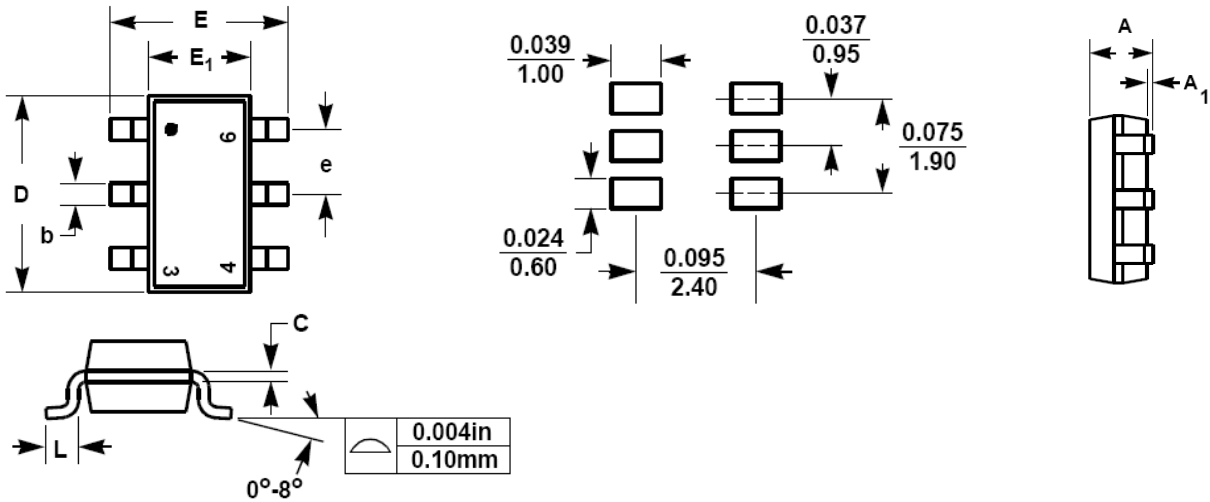


Figure 6. Typical Capacitance Vs. Drain-to-Source Voltage (P-Channel)

Mechanical Data: TSOP-6



| SYMBOL | Millimeters | |
|--------|-------------|------|
| | MIN | MAX |
| A | 0.90 | 1.30 |
| A1 | 0.10 | |
| b | 0.30 | 0.50 |
| c | 0.08 | 0.20 |
| D | 2.80 | 3.10 |
| E | 2.60 | 3.00 |
| E1 | 1.50 | 1.70 |
| e | 0.95 BSC | |
| L | 0.35 | 0.55 |

Notes:

1. Dimensions are inclusive of plating
2. Package body sizes exclude mold flash and gate burrs. Mold flash at the non-lead sides should be less than 6 mils
3. Dimension L is measured in gauge plane.
4. Controlling dimension is millimeter, converted inch dimensions are not necessarily exact.

Order Information

| Device | Package | Marking | Carrier | Quantity |
|------------|---------|---------|-------------|-----------------|
| SSF2145CH6 | TSOP-6 | 2145C | Tape & Reel | 3,000pcs / Reel |