

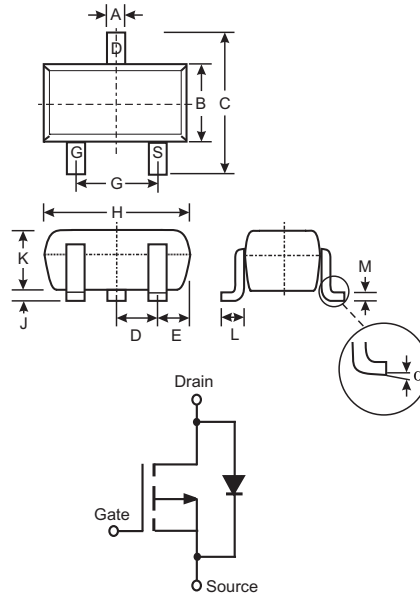
P-CHANNEL ENHANCEMENT MODE FIELD EFFECT TRANSISTOR

Features

- Low On-Resistance
- Low Gate Threshold Voltage
- Low Input Capacitance
- Fast Switching Speed
- **Lead Free/RoHS Compliant (Note 2)**
- **"Green" Device (Note 3 and 4)**

Mechanical Data

- Case: SOT-323
- Case Material: Molded Plastic, "Green" Molding Compound, Note 4. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020C
- Terminal Connections: See Diagram
- Terminals: Solderable per MIL-STD-202, Method 208
- Lead Free Plating (Matte Tin Finish annealed over Alloy 42 leadframe).
- Marking Code (See Page 2): K84
- Ordering & Date Code Information: See Page 2
- Weight: 0.006 grams (approximate)



| SOT-323 | | |
|----------------------|--------------|------|
| Dim | Min | Max |
| A | 0.25 | 0.40 |
| B | 1.15 | 1.35 |
| C | 2.00 | 2.20 |
| D | 0.65 Nominal | |
| E | 0.30 | 0.40 |
| G | 1.20 | 1.40 |
| H | 1.80 | 2.20 |
| J | 0.0 | 0.10 |
| K | 0.90 | 1.00 |
| L | 0.25 | 0.40 |
| M | 0.10 | 0.18 |
| α | 0° | 8° |
| All Dimensions in mm | | |

Maximum Ratings @ T_A = 25°C unless otherwise specified

| Characteristic | Symbol | Value | Units |
|---|-----------------------------------|-------------|-------|
| Drain-Source Voltage | V _{DSS} | -50 | V |
| Drain-Gate Voltage (Note 1) | V _{DGR} | -50 | V |
| Gate-Source Voltage | V _{GSS} | ±20 | V |
| Drain Current (Note 1) | I _D | -130 | mA |
| Total Power Dissipation (Note 1) | P _d | 200 | mW |
| Thermal Resistance, Junction to Ambient | R _{θJA} | 625 | °C/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 inch; pad layout as shown on Diodes Inc. suggested pad layout document AP02001, which can be found on our website at <http://www.diodes.com/datasheets/ap02001.pdf>.
 2. No purposefully added lead.
 3. Diodes Inc.'s "Green" policy can be found on our website at <http://www.diodes.com>.
 4. Product manufactured with Date Code 0627 (week 27, 2006) and newer are built with Green Molding Compound. Product manufactured prior to Date Code 0627 are built with Non-Green Molding Compound and may contain Halogens or Sb2O3 Fire Retardants.

Electrical Characteristics

 @ $T_A = 25^\circ\text{C}$ unless otherwise specified

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| Characteristic | Symbol | Min | Typ | Max | Unit | Test Condition |
|-----------------------------------|---------------------|------|------|--------------------|----------------|--|
| OFF CHARACTERISTICS (Note 5) | | | | | | |
| Drain-Source Breakdown Voltage | BV _{DSS} | -50 | -75 | — | V | V _{GS} = 0V, I _D = -250μA |
| Zero Gate Voltage Drain Current | I _{DSS} | — | — | -15 -60 -100 | μA μA nA | V _{DS} = -50V, V _{GS} = 0V, T _J = 25°C V _{DS} = -50V, V _{GS} = 0V, T _J = 125°C V _{DS} = -25V, V _{GS} = 0V, T _J = 25°C |
| Gate-Body Leakage | I _{GSS} | — | — | ±10 | nA | V _{GS} = ±20V, V _{DS} = 0V |
| ON CHARACTERISTICS (Note 5) | | | | | | |
| Gate Threshold Voltage | V _{GS(th)} | -0.8 | -1.6 | -2.0 | V | V _{DS} = V _{GS} , I _D = -1mA |
| Static Drain-Source On-Resistance | R _{DS(ON)} | — | 6 | 10 | Ω | V _{GS} = -5V, I _D = -0.100A |
| Forward Transconductance | g _{FS} | .05 | — | — | S | V _{DS} = -25V, I _D = -0.1A |
| DYNAMIC CHARACTERISTICS | | | | | | |
| Input Capacitance | C _{iss} | — | — | 45 | pF | V _{DS} = -25V, V _{GS} = 0V f = 1.0MHz |
| Output Capacitance | C _{oss} | — | — | 25 | pF | |
| Reverse Transfer Capacitance | C _{rss} | — | — | 12 | pF | |
| SWITCHING CHARACTERISTICS | | | | | | |
| Turn-On Delay Time | t _{D(ON)} | — | 10 | — | ns | V _{DD} = -30V, I _D = -0.27A, R _{GEN} = 50Ω, V _{GS} = -10V |
| Turn-Off Delay Time | t _{D(OFF)} | — | 18 | — | ns | |

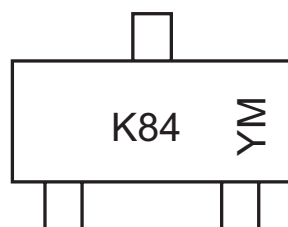
Ordering Information

(Notes 4 and 6)

| Device | Packaging | Shipping |
|------------|-----------|------------------|
| BSS84W-7-F | SOT-323 | 3000/Tape & Reel |

- Notes:
- Product manufactured with Date Code 0627 (week 27, 2006) and newer are built with Green Molding Compound. Product manufactured prior to Date Code 0627 are built with Non-Green Molding Compound and may contain Halogens or Sb2O3 Fire Retardants.
 - Short duration test pulse used to minimize self-heating effect.
 - For Packaging Details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

Marking Information



K84= Product Type Marking Code
 YM = Date Code Marking
 Y = Year ex: N = 2002
 M = Month ex: 9 = September

Date Code Key

| Year | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Code | J | K | L | M | N | P | R | S | T | U | V | W |

| Month | Jan | Feb | March | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|-------|-----|-----|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Code | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | O | N | D |

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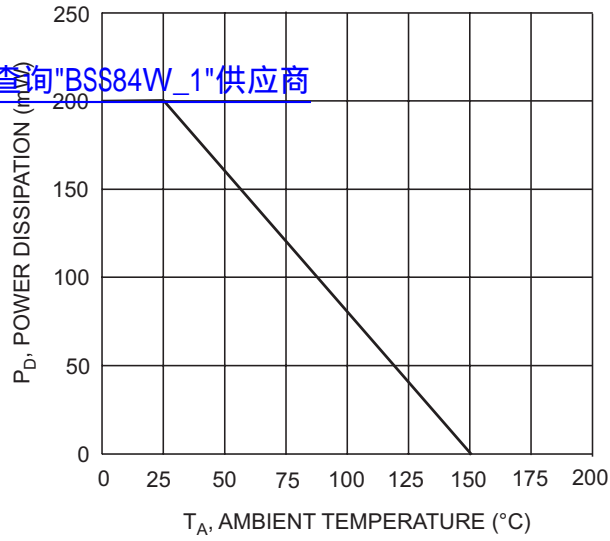


Fig. 1, Max Power Dissipation vs Ambient Temperature

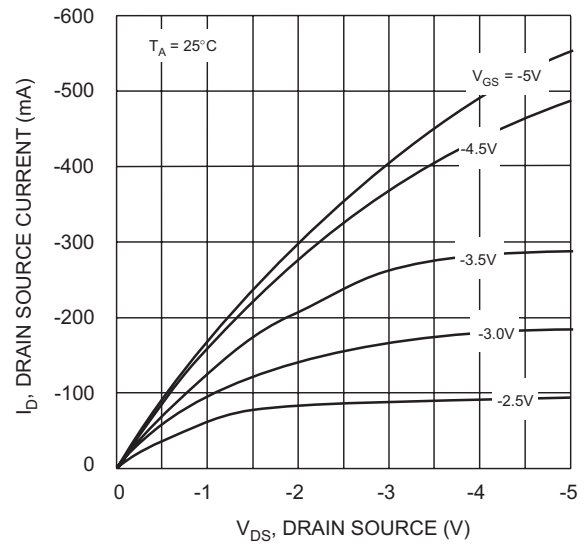


Fig. 2, Drain Source Current vs. Drain Source Voltage

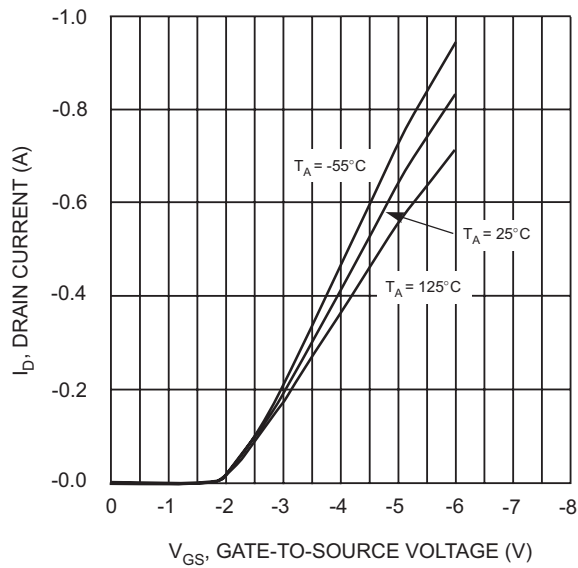


Fig. 3, Drain Current vs. Gate Source Voltage

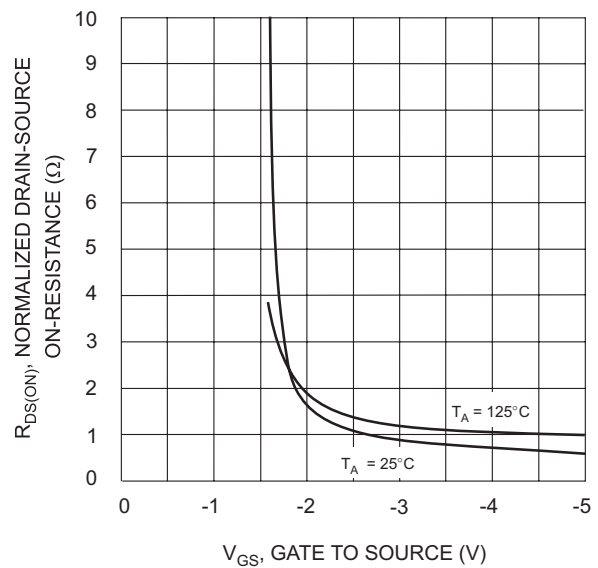


Fig. 4, On Resistance vs. Gate Source Voltage

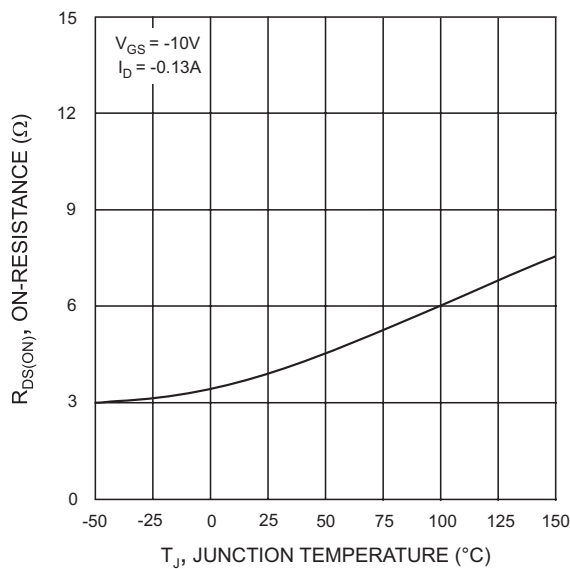


Fig. 5, On-Resistance vs. Junction Temperature

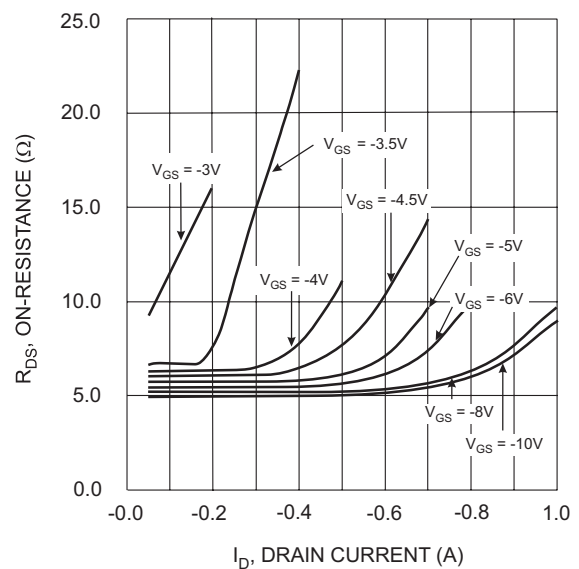


Fig. 6, On-Resistance vs. Drain Current

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