

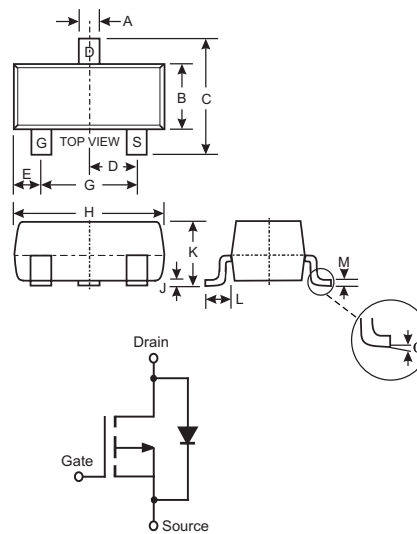
P-CHANNEL ENHANCEMENT MODE FIELD EFFECT TRANSISTOR

Features

- Low On-Resistance
- Low Gate Threshold Voltage
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- **Lead Free/RoHS Compliant (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

Mechanical Data

- Case: SOT-23
- Case Material: UL Flammability Classification Rating 94V-0
- Moisture sensitivity: Level 1 per J-STD-020C
- Terminals: Solderable per MIL-STD-202, Method 208
- Lead Free Plating (Matte Tin Finish).
- Terminal Connections: See Diagram
- Marking (See Page 2): K84
- Ordering & Date Code Information: See Page 2
- Weight: 0.008 grams (approximate)



| SOT-23 | | |
|----------------------|-------|-------|
| Dim | Min | Max |
| A | 0.37 | 0.51 |
| B | 1.20 | 1.40 |
| C | 2.30 | 2.50 |
| D | 0.89 | 1.03 |
| E | 0.45 | 0.60 |
| G | 1.78 | 2.05 |
| H | 2.80 | 3.00 |
| J | 0.013 | 0.10 |
| K | 0.903 | 1.10 |
| L | 0.45 | 0.61 |
| M | 0.085 | 0.180 |
| 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 R _{GS} ≤ 20KΩ | 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 | 300 | mW |
| Thermal Resistance, Junction to Ambient | R _{θJA} | 417 | °C/W |
| Operating and Storage Temperature Range | T _J , T _{STG} | -55 to +150 | °C |

Electrical Characteristics @ T_A = 25°C unless otherwise specified

| Characteristic | Symbol | Min | Typ | Max | Unit | Test Condition |
|-------------------------------------|---------------------|------|-----|--------------------|----------------|--|
| OFF CHARACTERISTICS (Note 2) | | | | | | |
| Drain-Source Breakdown Voltage | BV _{DSS} | -50 | — | — | 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 2) | | | | | | |
| Gate Threshold Voltage | V _{GS(th)} | -0.8 | — | -2.0 | V | V _{DS} = V _{GS} , I _D = -1mA |
| Static Drain-Source On-Resistance | R _{DS(on)} | — | — | 10 | Ω | V _{GS} = -5V, I _D = -0.100A |
| Forward Transconductance | g _{FS} | 0.05 | — | — | 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 | |

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>.

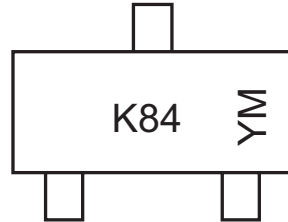
2. Short duration test pulse used to minimize self-heating effect.
3. No purposefully added lead.

Ordering Information (Note 4)

| Device | Packaging | Shipping |
|-----------|-----------|------------------|
| BSS84-7-F | SOT-23 | 3000/Tape & Reel |

Notes: 4. For Packaging Details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

Marking Information

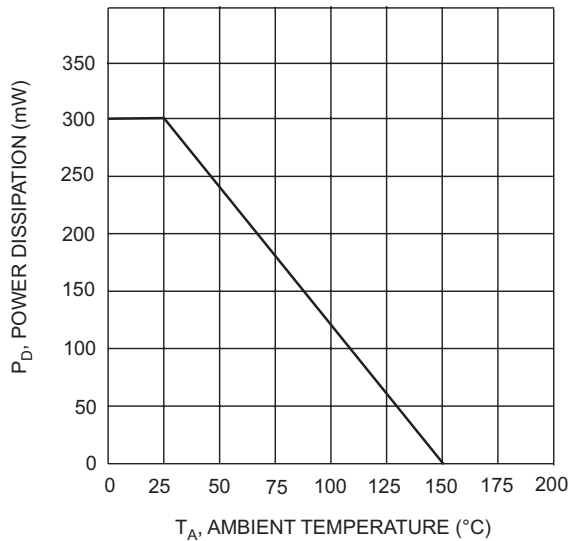


K84 = Product Type Marking Code
 YM = Date Code Marking
 Y = Year ex: N = 2002
 M = Month ex: 9 = September

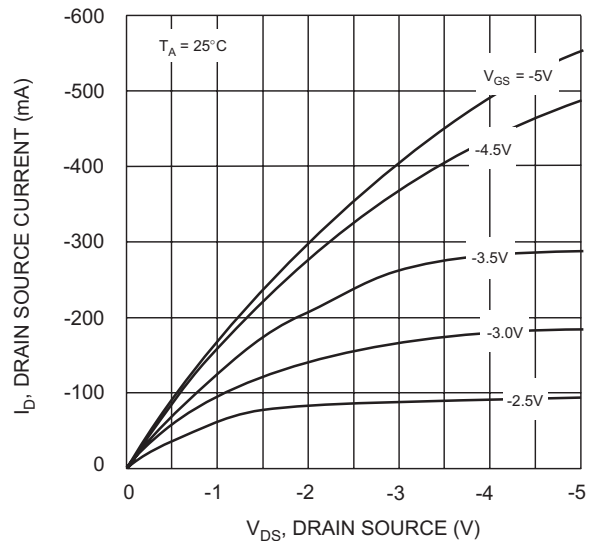
Date Code Key

| 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 |



T_A, AMBIENT TEMPERATURE (°C)
 Fig. 1, Max Power Dissipation vs Ambient Temperature



V_{DS}, DRAIN SOURCE (V)
 Fig. 2, Drain Source Current vs. Drain Source Voltage

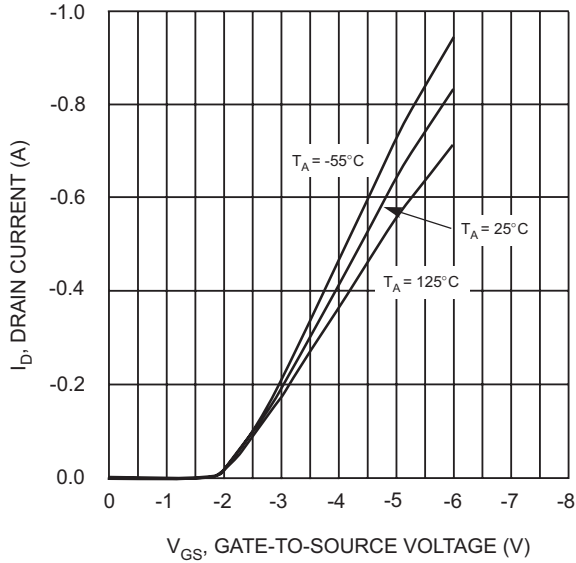


Fig. 3, Drain Current vs. Gate Source Voltage

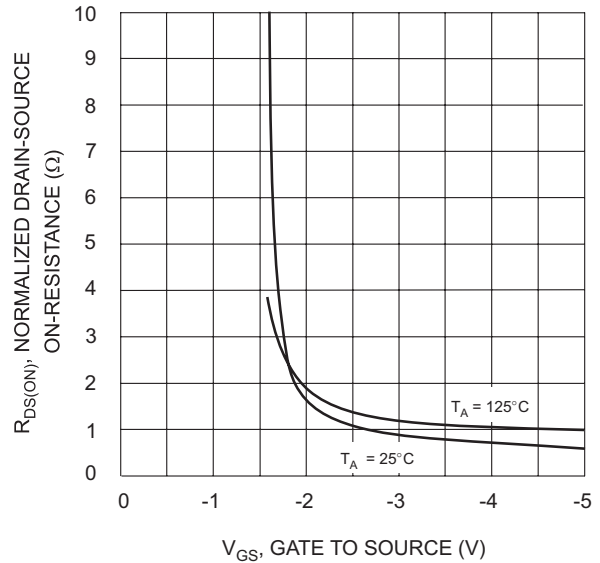


Fig. 4, On Resistance vs. Gate Source Voltage

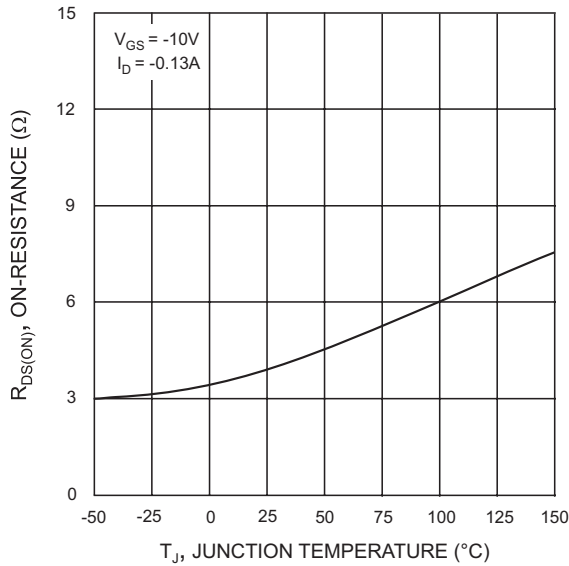


Fig. 5, On-Resistance vs. Junction Temperature

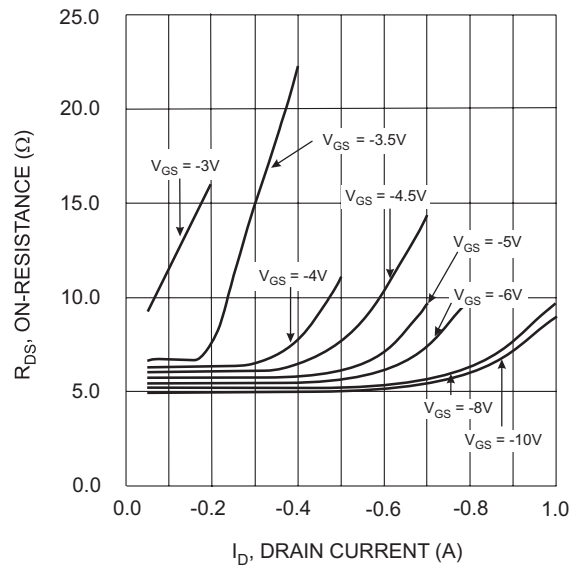


Fig. 6, On-Resistance vs. Drain Current

IMPORTANT NOTICE

Diodes, Inc. and its subsidiaries reserve the right to make changes without further notice to any product herein to make corrections, modifications, enhancements, improvements, or other changes. Diodes, Inc. does not assume any liability arising out of the application or use of any product described herein; neither does it convey any license under its patent rights, nor the rights of others. The user of products in such applications shall assume all risks of such use and will agree to hold Diodes Incorporated and all the companies whose products are represented on our website, harmless against all damages.

LIFE SUPPORT

The products located on our website at www.diodes.com are not recommended for use in life support systems where a failure or malfunction of the component may directly threaten life or cause injury without the expressed written approval of Diodes Incorporated.