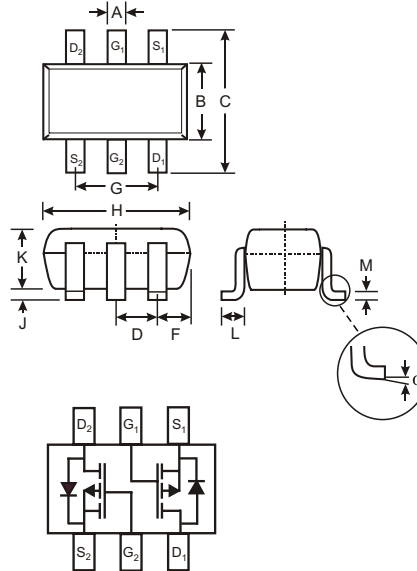


### Features

- Low On-Resistance
- Low Gate Threshold Voltage
- Low Input Capacitance
- Fast Switching Speed
- Also Available in Lead Free Version

### Mechanical Data

- Case: SOT-363, Molded Plastic
- Case material - UL Flammability Rating Classification 94V-0
- Moisture sensitivity: Level 1 per J-STD-020A
- Terminals: Solderable per MIL-STD-202, Method 208
- Also Available in Lead Free Plating (Matte Tin Finish). Please see Ordering Information, Note 5, on Page 2
- Terminal Connections: See Diagram
- Marking Code (See Page 2): K84
- Ordering & Date Code Information: See Page 2
- Weight: 0.006 grams (approx.)



| SOT-363              |              |      |
|----------------------|--------------|------|
| Dim                  | Min          | Max  |
| A                    | 0.10         | 0.30 |
| B                    | 1.15         | 1.35 |
| C                    | 2.00         | 2.20 |
| D                    | 0.65 Nominal |      |
| F                    | 0.30         | 0.40 |
| H                    | 1.80         | 2.20 |
| J                    | —            | 0.10 |
| K                    | 0.90         | 1.00 |
| L                    | 0.25         | 0.40 |
| M                    | 0.10         | 0.25 |
| $\alpha$             | 0°           | 8°   |
| All Dimensions in mm |              |      |

### Maximum Ratings @ $T_A = 25^\circ\text{C}$ 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                     | $V_{GSS}$       | $\pm 20$    | V                         |
| Drain Current (Note 2)                  | $I_D$           | -130        | mA                        |
| Total Power Dissipation (Note 2)        | $P_d$           | 300         | mW                        |
| Thermal Resistance, Junction to Ambient | $R_{\theta JA}$ | 417         | $^\circ\text{C}/\text{W}$ |
| Operating and Storage Temperature Range | $T_j, T_{STG}$  | -55 to +150 | $^\circ\text{C}$          |

- Note: 1.  $R_{GS} \leq 20\text{K}\Omega$ .  
 2. 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>.

## Electrical Characteristics @ T<sub>A</sub> = 25°C unless otherwise specified

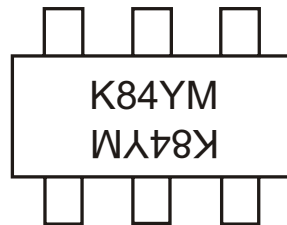
| Characteristic                      | Symbol              | Min  | Typ  | Max                | Unit           | Test Condition   |
|-------------------------------------|---------------------|------|------|--------------------|----------------|--|
| <b>OFF CHARACTERISTICS (Note 3)</b> |                     |      |      |                    |                |  |
| Drain-Source Breakdown Voltage      | BV <sub>DSS</sub>   | -50  | -75  | —                  | V              | V <sub>GS</sub> = 0V, I <sub>D</sub> = -250μA  |
| Zero Gate Voltage Drain Current     | I <sub>DSS</sub>    | —    | —    | -15<br>-60<br>-100 | μA<br>μA<br>nA | V <sub>DS</sub> = -50V, V <sub>GS</sub> = 0V, T <sub>J</sub> = 25°C<br>V <sub>DS</sub> = -50V, V <sub>GS</sub> = 0V, T <sub>J</sub> = 125°C<br>V <sub>DS</sub> = -25V, V <sub>GS</sub> = 0V, T <sub>J</sub> = 25°C |
| Gate-Body Leakage                   | I <sub>GSS</sub>    | —    | —    | ±10                | nA             | V <sub>GS</sub> = ±20V, V <sub>DS</sub> = 0V   |
| <b>ON CHARACTERISTICS (Note 3)</b>  |                     |      |      |                    |                |  |
| Gate Threshold Voltage              | V <sub>GS(th)</sub> | -0.8 | -1.6 | -2.0               | V              | V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = -1mA  |
| Static Drain-Source On-Resistance   | R <sub>DS(ON)</sub> | —    | 6    | 10                 | Ω              | V <sub>GS</sub> = -5V, I <sub>D</sub> = 0.100A   |
| Forward Transconductance            | g <sub>FS</sub>     | 0.05 | —    | —                  | S              | V <sub>DS</sub> = -25V, I <sub>D</sub> = 0.1A  |
| <b>DYNAMIC CHARACTERISTICS</b>      |                     |      |      |                    |                |  |
| Input Capacitance                   | C <sub>iss</sub>    | —    | —    | 45                 | pF             | V <sub>DS</sub> = -25V, V <sub>GS</sub> = 0V<br>f = 1.0MHz   |
| Output Capacitance                  | C <sub>oss</sub>    | —    | —    | 25                 | pF             |  |
| Reverse Transfer Capacitance        | C <sub>rss</sub>    | —    | —    | 12                 | pF             |  |
| <b>SWITCHING CHARACTERISTICS</b>    |                     |      |      |                    |                |  |
| Turn-On Delay Time                  | t <sub>D(ON)</sub>  | —    | 10   | —                  | ns             | V <sub>DD</sub> = -30V, I <sub>D</sub> = -0.27A,<br>R <sub>GEN</sub> = 50Ω, V <sub>GS</sub> = -10V   |
| Turn-Off Delay Time                 | t <sub>D(OFF)</sub> | —    | 18   | —                  | ns             |  |

## Ordering Information (Note 4)

| Device    | Packaging | Shipping         |
|-----------|-----------|------------------|
| BSS84DW-7 | SOT-363   | 3000/Tape & Reel |

- Notes:
3. Short duration test pulse used to minimize self-heating effect.
  4. For Packaging Details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.
  5. For Lead Free version (with Lead Free terminal finish) part number, please add "-F" suffix to part number above.  
Example: BSS84DW-7-F.

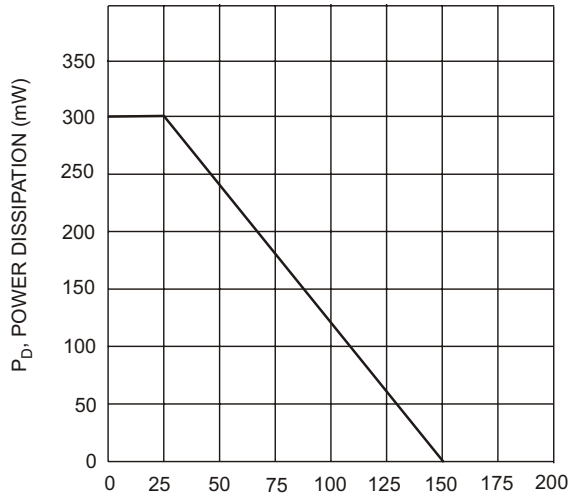
## Marking Information



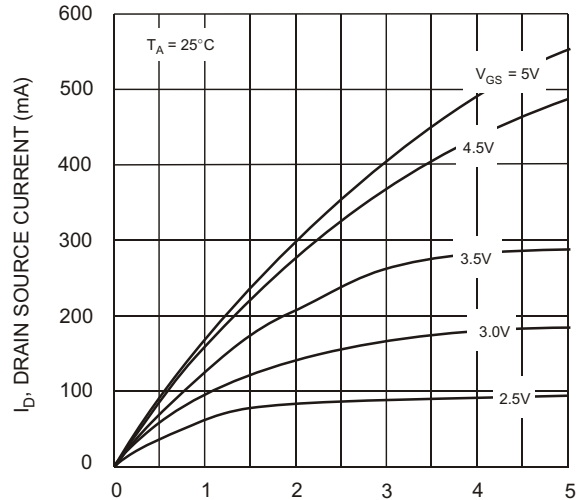
K84 = Product Type Marking Code  
 YM = Date Code Marking  
 Y = Year ex: N = 2002  
 M = Month ex: 9 = September

### Date Code Key

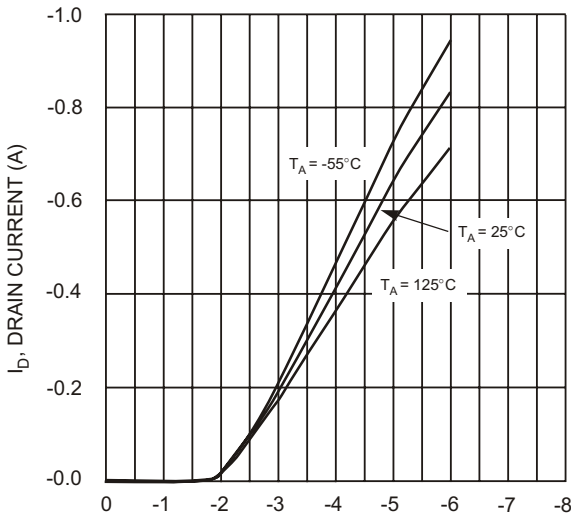
|              |      |      |       |      |      |      |      |      |      |      |      |      |
|--------------|------|------|-------|------|------|------|------|------|------|------|------|------|
| <b>Year</b>  | 1998 | 1999 | 2000  | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
| <b>Code</b>  | J    | K    | L     | M    | N    | P    | R    | S    | T    | U    | V    | W    |
| <b>Month</b> | Jan  | Feb  | March | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| <b>Code</b>  | 1    | 2    | 3     | 4    | 5    | 6    | 7    | 8    | 9    | O    | N    | D    |



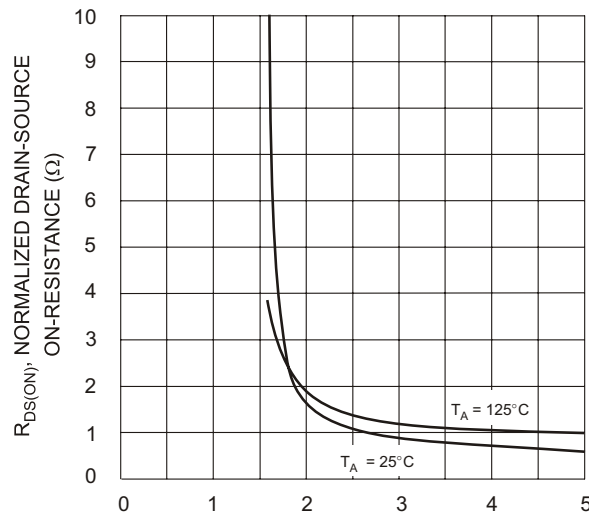
$T_A$ , AMBIENT TEMPERATURE (°C)  
Fig. 1, Max Power Dissipation vs Ambient Temperature



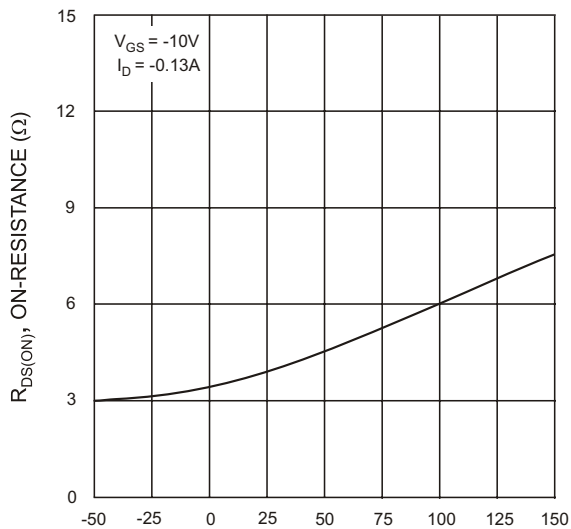
$V_{DS}$ , DRAIN SOURCE (V)  
Fig. 2, Drain Source Current vs. Drain Source Voltage



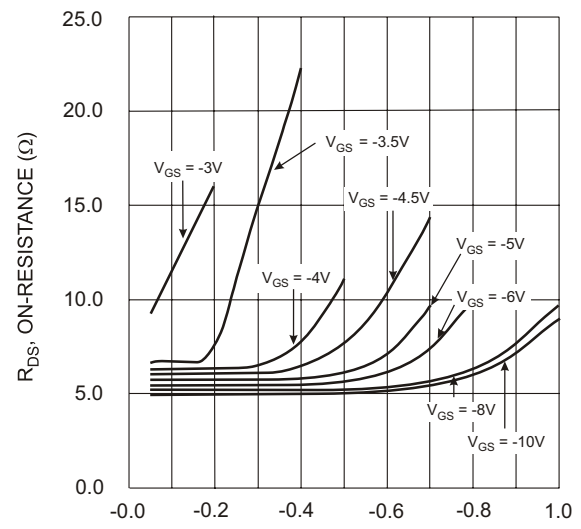
$V_{GS}$ , GATE-TO-SOURCE VOLTAGE (V)  
Fig. 3, Drain Current vs. Gate Source Voltage



$V_{GS}$ , GATE TO SOURCE (V)  
Fig. 4, On Resistance vs. Gate Source Voltage



$T_J$ , JUNCTION TEMPERATURE (°C)  
Fig. 5, On-Resistance vs. Junction Temperature



$I_D$ , DRAIN CURRENT (A)  
Fig. 6, On-Resistance vs. Drain Current



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