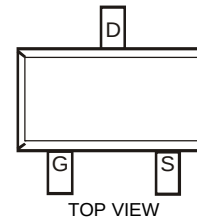
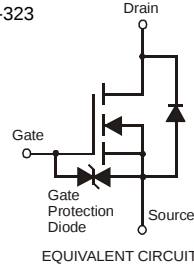


## Features

- Low On-Resistance:  $R_{DS(ON)}$
- Low Gate Threshold Voltage
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- **Lead Free By Design/RoHS Compliant (Note 2)**
- **ESD Protected up to 2kV**
- **"Green" Device (Note 4)**
- **Qualified to AEC-Q101 standards for High Reliability**



SOT-323



EQUIVALENT CIRCUIT

TOP VIEW

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

| Characteristic                |              |                            | Symbol    | Value | Units |
|-------------------------------|--------------|----------------------------|-----------|-------|-------|
| Drain-Source Voltage          |              |                            | $V_{DSS}$ | 20    | V     |
| Gate-Source Voltage           |              |                            | $V_{GSS}$ | ±8    | V     |
| Drain Current (Note 1)        | Steady State | $T_A = 25^{\circ}\text{C}$ | $I_D$     | 540   | mA    |
|                               |              | $T_A = 85^{\circ}\text{C}$ |           | 390   |       |
| Pulsed Drain Current (Note 3) |              |                            | $I_{DM}$  | 1.5   | A     |

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

| Characteristic                          | Symbol          | Value       | Units              |
|-----------------------------------------|-----------------|-------------|--------------------|
| Total Power Dissipation (Note 1)        | $P_D$           | 200         | mW                 |
| Thermal Resistance, Junction to Ambient | $R_{\theta JA}$ | 625         | $^\circ\text{C/W}$ |
| Operating and Storage Temperature Range | $T_J, T_{STG}$  | -55 to +150 | $^\circ\text{C}$   |

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

| Characteristic                      | Symbol       | Min | Typ | Max     | Unit     | Test Condition                              |
|-------------------------------------|--------------|-----|-----|---------|----------|---------------------------------------------|
| <b>OFF CHARACTERISTICS (Note 5)</b> |              |     |     |         |          |                                             |
| Drain-Source Breakdown Voltage      | $BV_{DS}$    | 20  | —   | —       | V        | $V_{GS} = 0V, I_D = 10\mu A$                |
| Zero Gate Voltage Drain Current     | $I_{DSS}$    | —   | —   | 1       | $\mu A$  | $V_{DS} = 16V, V_{GS} = 0V$                 |
| Gate-Source Leakage                 | $I_{GSS}$    | —   | —   | $\pm 1$ | $\mu A$  | $V_{GS} = \pm 4.5V, V_{DS} = 0V$            |
| <b>ON CHARACTERISTICS (Note 5)</b>  |              |     |     |         |          |                                             |
| Gate Threshold Voltage              | $V_{GS(th)}$ | 0.5 | —   | 1.0     | V        | $V_{DS} = V_{GS}, I_D = 250\mu A$           |
| Static Drain-Source On-Resistance   | $R_{DS(ON)}$ | —   | 0.4 | 0.55    | $\Omega$ | $V_{GS} = 4.5V, I_D = 540mA$                |
|                                     |              |     | 0.5 | 0.70    |          | $V_{GS} = 2.5V, I_D = 500mA$                |
|                                     |              |     | 0.7 | 0.9     |          | $V_{GS} = 1.8V, I_D = 350mA$                |
| Forward Transfer Admittance         | $ Y_{fs} $   | 200 | —   | —       | ms       | $V_{DS} = 10V, I_D = 0.2A$                  |
| Diode Forward Voltage (Note 5)      | $V_{SD}$     | 0.5 | —   | 1.4     | V        | $V_{GS} = 0V, I_S = 115mA$                  |
| <b>DYNAMIC CHARACTERISTICS</b>      |              |     |     |         |          |                                             |
| Input Capacitance                   | $C_{iss}$    | —   | —   | 150     | pF       | $V_{DS} = 16V, V_{GS} = 0V$<br>$f = 1.0MHz$ |
| Output Capacitance                  | $C_{oss}$    | —   | —   | 25      | pF       |                                             |
| Reverse Transfer Capacitance        | $C_{rss}$    | —   | —   | 20      | pF       |                                             |

- Notes:
1. Device mounted on FR-4 PCB.
  2. No purposefully added lead.
  3. Pulse width  $\leq 10\mu s$ , Duty Cycle  $\leq 1\%$ .
  4. Diodes Inc.'s "Green" policy can be found on our website at [http://www.diodes.com/products/lead\\_free/index.php](http://www.diodes.com/products/lead_free/index.php).
  5. Short duration pulse test used to minimize self-heating effect.

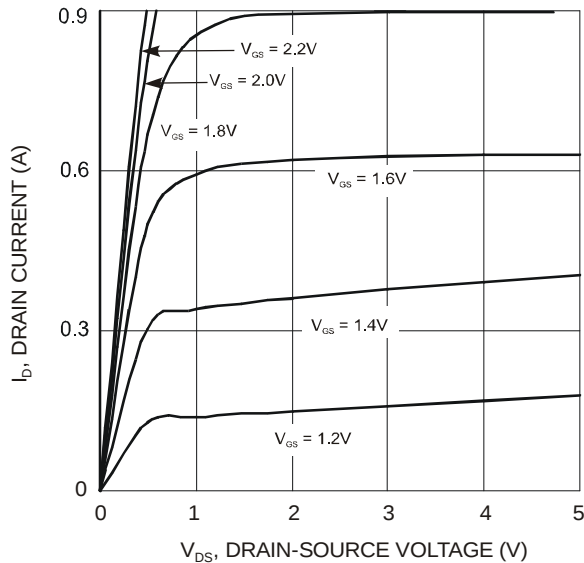


Fig. 1 Typical Output Characteristics

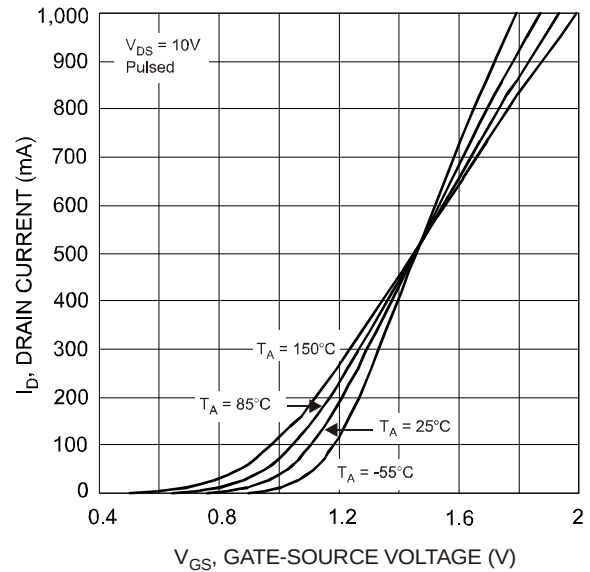


Fig. 2 Reverse Drain Current vs. Source-Drain Voltage

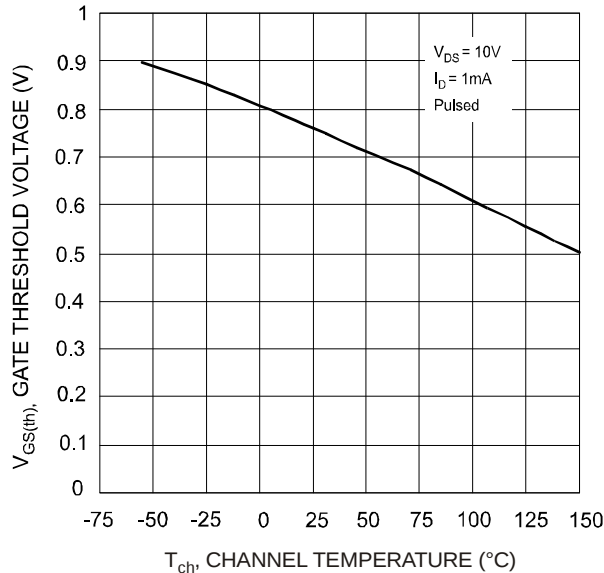


Fig. 3 Gate Threshold Voltage vs. Channel Temperature

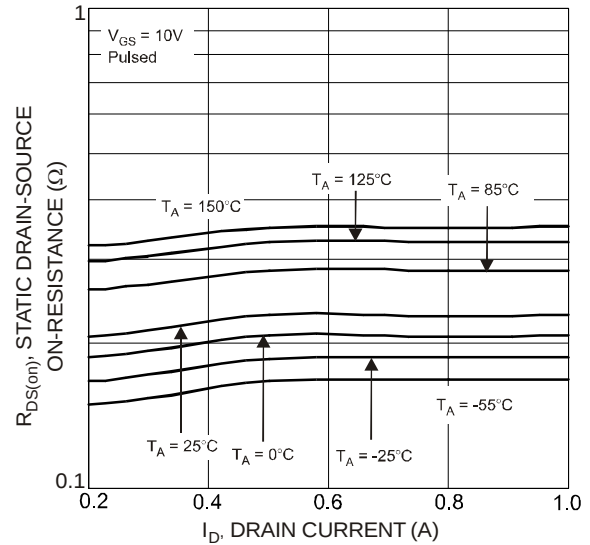


Fig. 4 Static Drain-Source On-Resistance vs. Drain Current

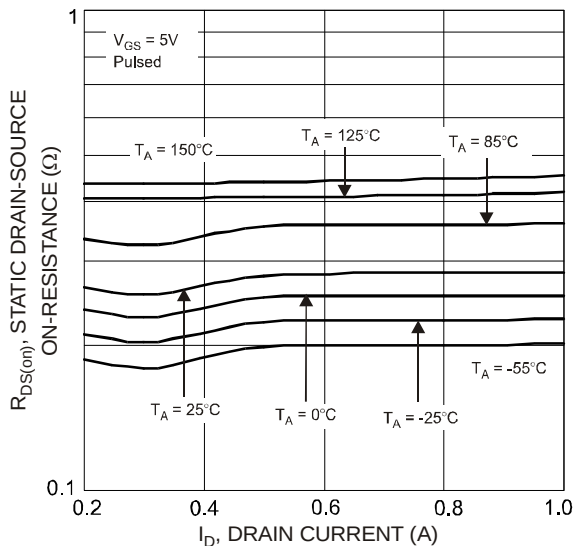


Fig. 5 Static Drain-Source On-Resistance vs. Drain Current

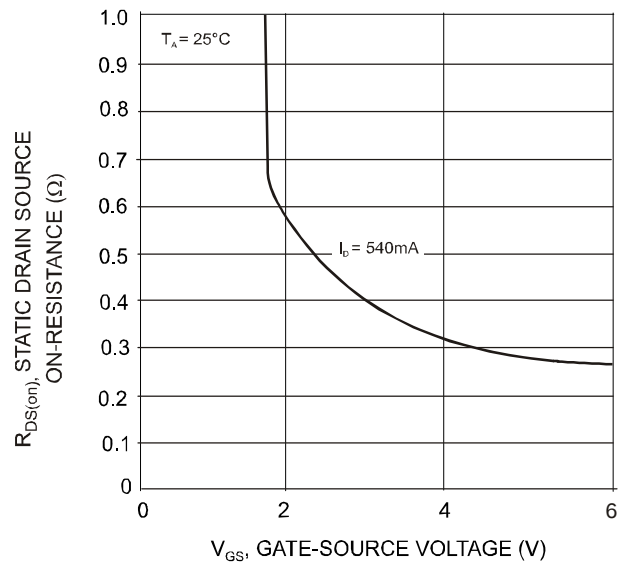


Fig. 6 Static Drain-Source, On-Resistance vs. Gate-Source Voltage

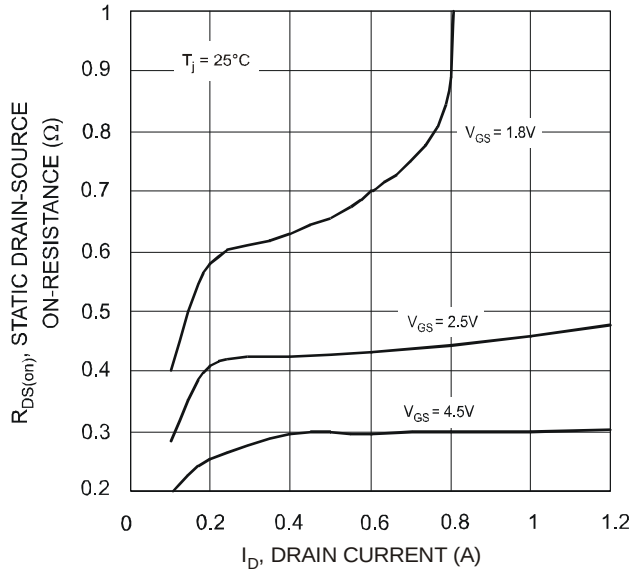


Fig. 7 On-Resistance vs. Drain Current and Gate Voltage

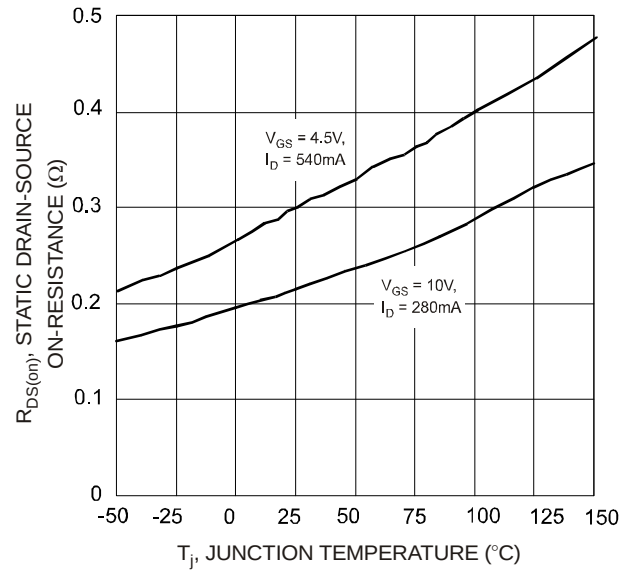


Fig. 8 Static Drain-Source, On-Resistance vs. Temperature

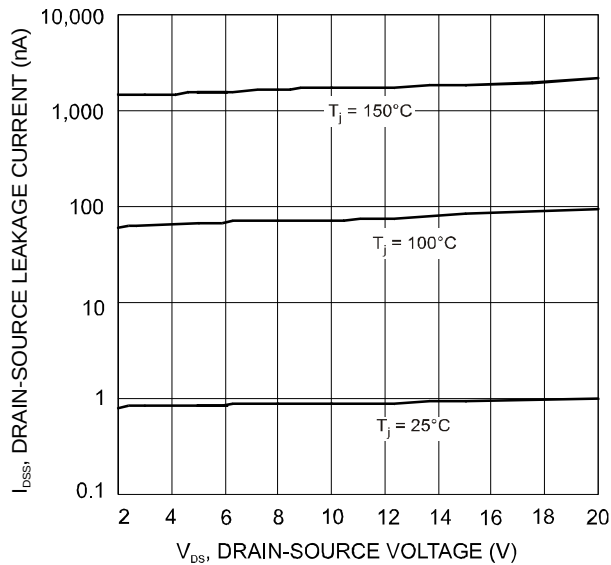


Fig. 9 Drain Source Leakage Current vs. Voltage

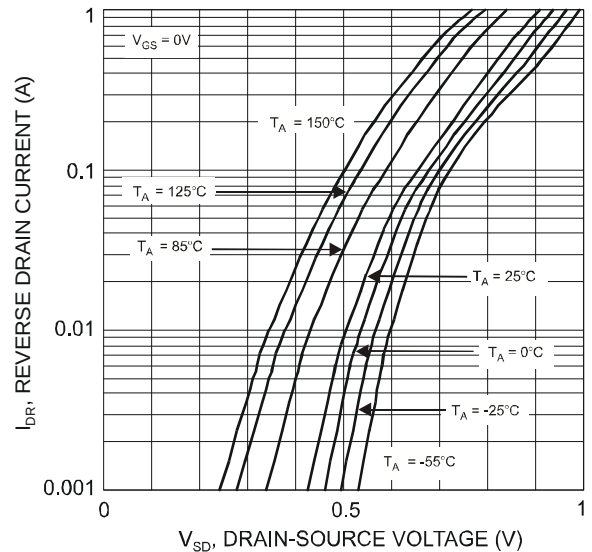


Fig. 10 Reverse Drain Current vs. Source-Drain Voltage

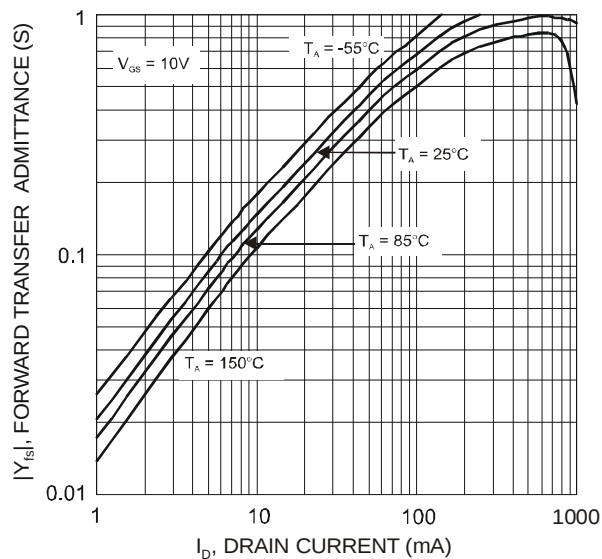


Fig. 11 Forward Transfer Admittance vs. Drain Current

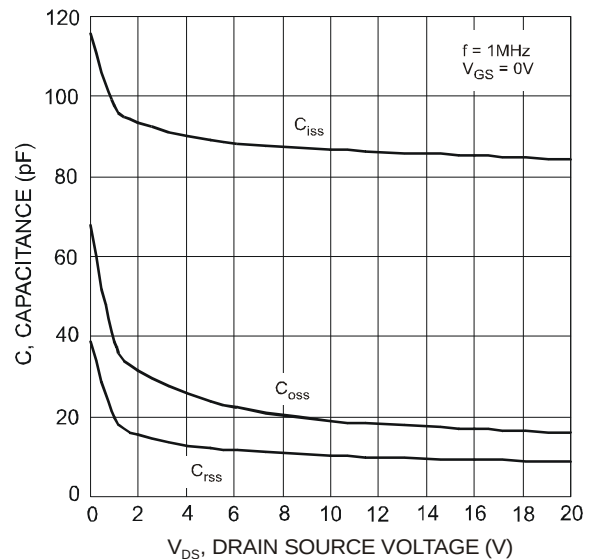


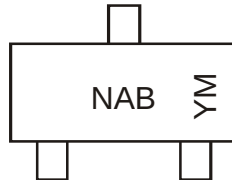
Fig. 12 Capacitance Variation

## Ordering Information (Note 6)

| Part Number | Case    | Packaging        |
|-------------|---------|------------------|
| DMN2004WK-7 | SOT-323 | 3000/Tape & Reel |

Notes: 6. For packaging details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

## Marking Information



NAB = Product Type Marking Code  
 YM = Date Code Marking  
 Y = Year (ex: T = 2006)  
 M = Month (ex: 9 = September)

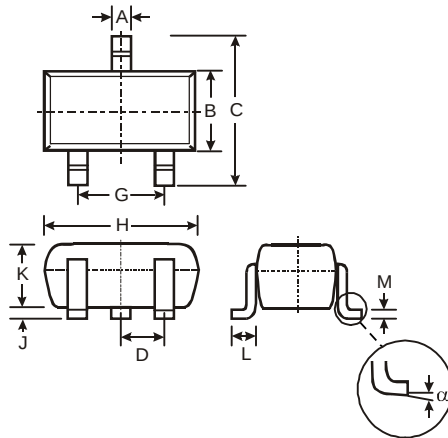
### Date Code Key

| Year | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
|------|------|------|------|------|------|------|------|
| Code | T    | U    | V    | W    | X    | Y    | Z    |

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

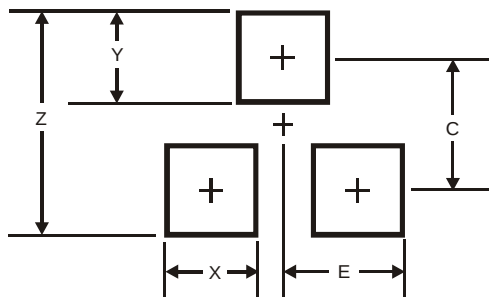
## Package Outline Dimensions



| SOT-323  |      |      |      |
|----------|------|------|------|
| Dim      | Min  | Max  | Typ  |
| A        | 0.25 | 0.40 | 0.30 |
| B        | 1.15 | 1.35 | 1.30 |
| C        | 2.00 | 2.20 | 2.10 |
| D        | -    | -    | 0.65 |
| G        | 1.20 | 1.40 | 1.30 |
| H        | 1.80 | 2.20 | 2.15 |
| J        | 0.0  | 0.10 | 0.05 |
| K        | 0.90 | 1.00 | 1.00 |
| L        | 0.25 | 0.40 | 0.30 |
| M        | 0.10 | 0.18 | 0.11 |
| $\alpha$ | 0°   | 8°   | -    |

All Dimensions in mm

## Suggested Pad Layout



| Dimensions | Value (in mm) |
|------------|---------------|
| Z          | 2.8           |
| X          | 0.7           |
| Y          | 0.9           |
| C          | 1.9           |
| E          | 1.0           |

### IMPORTANT NOTICE

Diodes Incorporated and its subsidiaries reserve the right to make modifications, enhancements, improvements, corrections or other changes without further notice to any product herein. Diodes Incorporated 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

Diodes Incorporated products are not authorized for use as critical components in life support devices or systems without the expressed written approval of the President of Diodes Incorporated.

## Данный компонент на территории Российской Федерации

**Вы можете приобрести в компании MosChip.**

Для оперативного оформления запроса Вам необходимо перейти по данной ссылке:

<http://moschip.ru/get-element>

Вы можете разместить у нас заказ для любого Вашего проекта, будь то серийное производство или разработка единичного прибора.

В нашем ассортименте представлены ведущие мировые производители активных и пассивных электронных компонентов.

Нашей специализацией является поставка электронной компонентной базы двойного назначения, продукции таких производителей как XILINX, Intel (ex.ALTERA), Vicor, Microchip, Texas Instruments, Analog Devices, Mini-Circuits, Amphenol, Glenair.

Сотрудничество с глобальными дистрибьюторами электронных компонентов, предоставляет возможность заказывать и получать с международных складов практически любой перечень компонентов в оптимальные для Вас сроки.

На всех этапах разработки и производства наши партнеры могут получить квалифицированную поддержку опытных инженеров.

Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ РВ 0015-002 и ЭС РД 009

### Офис по работе с юридическими лицами:

105318, г.Москва, ул.Щербаковская д.3, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: [info@moschip.ru](mailto:info@moschip.ru)

Skype отдела продаж:

moschip.ru

moschip.ru\_4

moschip.ru\_6

moschip.ru\_9