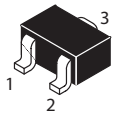
# WEITRON

# BSS84W

## P-Channel POWER MOSFET

Lead(Pb)-Free



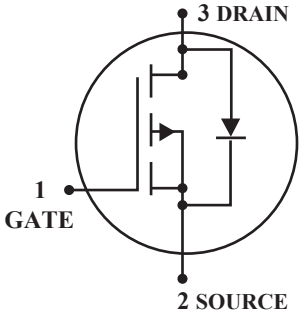

SOT-323(SC-70)

### Description:

* These miniature surface mount MOSFETs reduce power loss conserve energy, making this device ideal for use in small power management circuitry. Typical applications are dc–dc converters, load switching, power management in portable and battery–powered products such as computers, printers, cellular and cordless telephones.

### Features:

* Simple Drive Requirement
* Small Package Outline




## Maximum Ratings ($T_A$=25°C Unless Otherwise Specified)

| Rating | Symbol | Value | Unit |
|---|---|---|---|
| Drain-Source Voltage | $V_{DDS}$ | 50 | V |
| Gate-Source Voltage | $V_{GS}$ | ±20 | V |
| Continuous Drain Current $V_{GS}$ = ($T_A$=25°C) | $I_D$ | 130 | mA |
| Pulsed Drain Current (tp <=10μS) | $I_{DM}$ | 520 | mA |
| Total Power Dissipation ($T_A$=25°C) | $P_D$ | 225 | mW |
| Thermal Resistance – Junction–to–Ambient | $R_{\theta JA}$ | 556 | °C/W |
| Operating Junction Temperature Range | $T_J$ | -55 to +150 | °C |
| Storage Temperature Range | Tstg | -55 to +150 | °C |
| Maximum Lead Temperature for Soldering Purposes, for 10 seconds | $T_L$ | 260 | °C |

## Device Marking

BSS84W = PD

## Electrical Characteristics ($T_A$=25°C Unless otherwise noted)

| Characteristic | Symbol | Min | Typ | Max | Unit |
|---|---|---|---|---|---|
| **Static** | | | | | |
| Drain-Source Breakdown Voltage<br>$V_{GS}$=0V, $I_D$=250μA | $V_{(BR)DSS}$ | 50 | - | - | V |
| Gate–Source Threaded Voltage<br>$V_{DS}$=$V_{GS}$, $I_D$=1.0mA | $V_{GS\ (th)}$ | 0.8 | - | 2.0 | V |
| Gate-Body Leakage Current<br>$V_{GS}$=±20V, $V_{DS}$=0 | $I_{GSS}$ | - | - | ±60 | μA |
| Zero Gate Voltage Drain Current<br>$V_{DS}$=25V, $V_{GS}$=0<br>$V_{DS}$=50V, $V_{GS}$=0<br>$V_{DS}$=50V, $V_{GS}$=0, TJ = 125°C) | $I_{DSS}$ | -<br>-<br>- | -<br>-<br>- | 0.1<br>15<br>60 | μA |
| Static Drain-Source On-Resistance<br>$V_{GS}$=5.0V, $I_D$=100mA | $R_{DS\ (on)}$ | - | 5.0 | 10 | Ω |
| Transfer Admittance<br>$V_{DS}$=25V, $I_D$=100mA, f = 1.0kHz | $\|y_{fs}\|$ | 50 | - | - | mS |
| **Dynamic** | | | | | |
| Input Capacitance<br>$V_{DS}$=5.0V | $C_{iss}$ | - | 30 | - | pF |
| Output Capacitance<br>$V_{DS}$=5.0V | $C_{oss}$ | - | 10 | - | |
| Reverse Transfer Capacitance<br>$V_{DS}$=5.0V | $C_{rss}$ | - | 5.0 | - | |
| **Switching**[2] | | | | | |
| Turn-On Delay Time<br>$V_{DD}$=-15V, $I_D$=-2.5A, RL=50Ω | td(on) | - | 2.5 | - | ns |
| Rise Time<br>$V_{DD}$=-15V, $I_D$=-2.5A, RL=50Ω | tr | - | 1.0 | - | |
| Turn-Off Delay Time<br>$V_{DD}$=-15V, $I_D$=-2.5A, RL=50Ω | td(off) | - | 16 | - | |
| Fall Time<br>$V_{DD}$=-15V, $I_D$=-2.5A, RL=50Ω | tf | - | 8.0 | - | |
| Gate Charge | $Q_T$ | - | 6000 | - | pC |
| **Source–Drain Diode** | | | | | |
| Continuous Current | $I_S$ | - | - | 0.130 | A |
| Pulsed Current | $I_{SM}$ | - | - | 0.520 | |
| Forward Voltage (Note 2.) | $V_{SD}$ | - | 2.5 | - | V |

1. Pulse Test: Pulse Width <= 300 μs, Duty Cycle <= 2%.
2. Switching characteristics are independent of operating junction temperature.

## TYPICAL ELECTRICAL CHARACTERISTICS

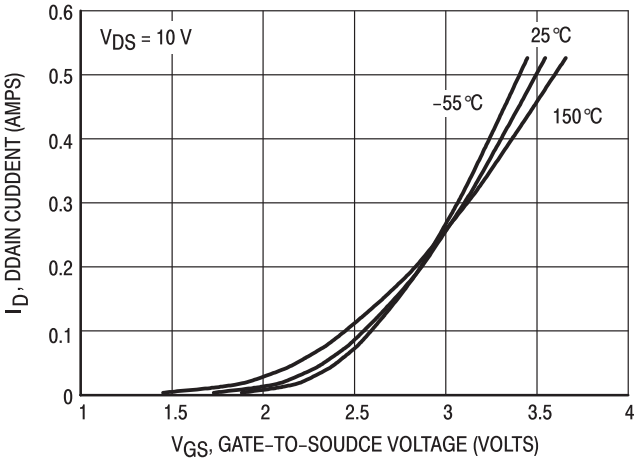



**Figure 1. Transfer Characteristics**

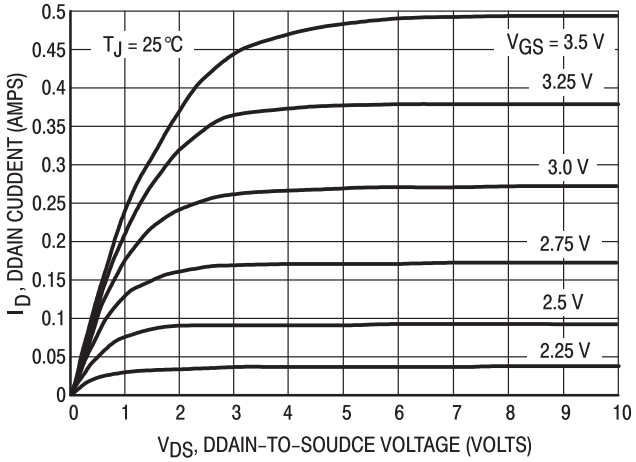



**Figure 2. On–Region Characteristics**

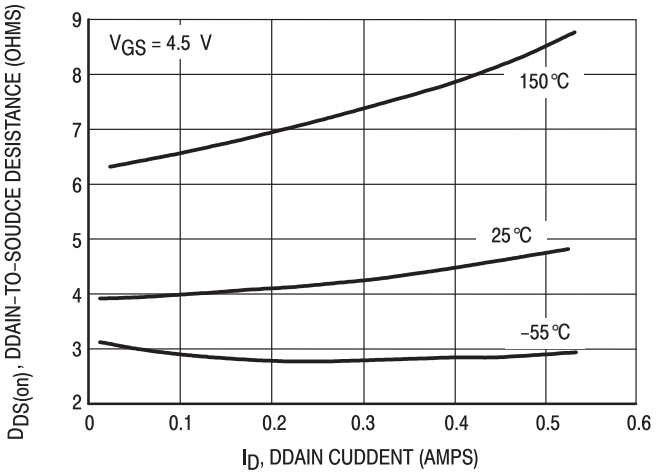



**Figure 3. On–Resistance versus Drain Current**

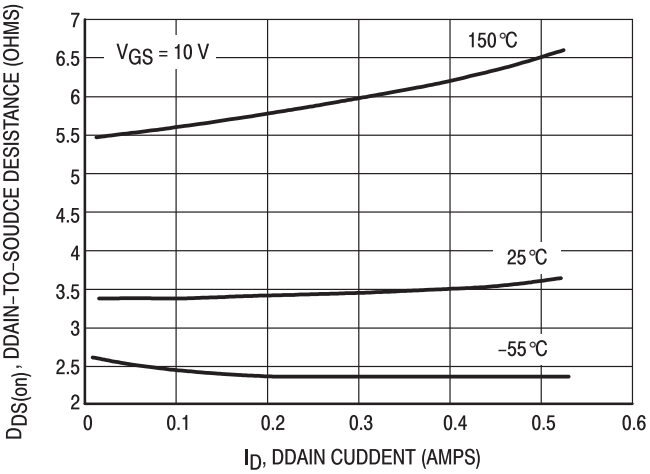



**Figure 4. On–Resistance versus Drain Current**

## TYPICAL ELECTRICAL CHARACTERISTICS

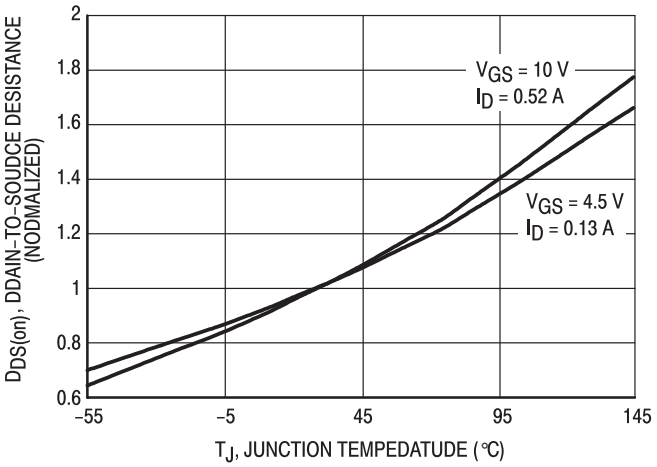



**Figure 5. On−Resistance Variation with Temperature**

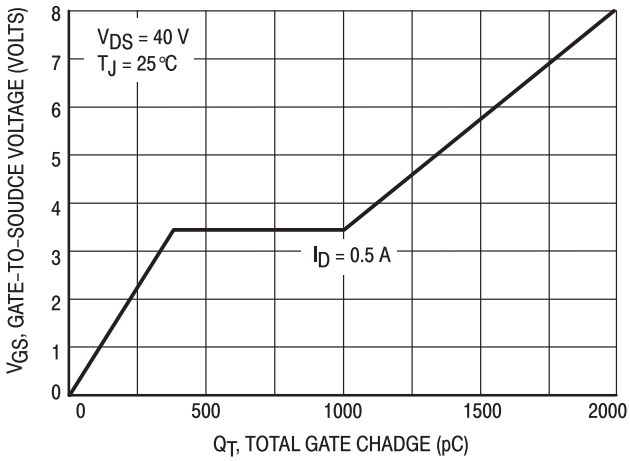



**Figure 6. Gate Charge**

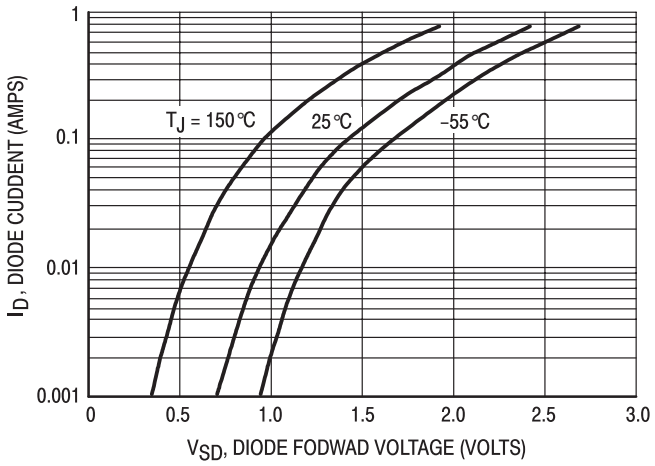
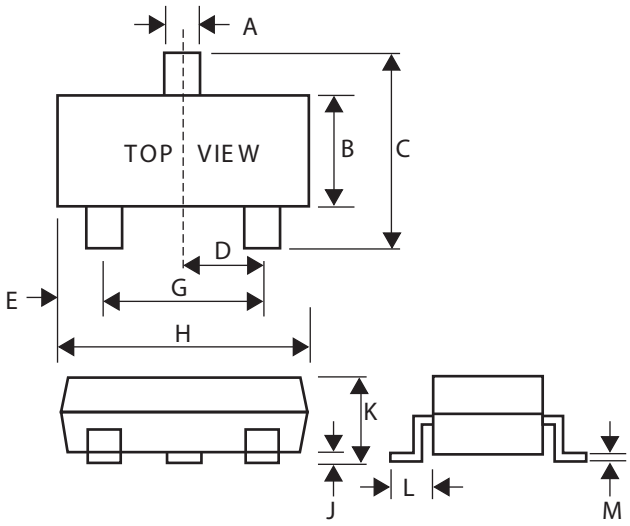



**Figure 7. Body Diode Forward Voltage**

## SOT-323 Outline Demensions

Unit:mm




| SOT-323 | | |
|---|---|---|
| **Dim** | **Min** | **Max** |
| **A** | 0.30 | 0.40 |
| **B** | 1.15 | 1.35 |
| **C** | 2.00 | 2.40 |
| **D** | - | 0.65 |
| **E** | 0.30 | 0.40 |
| **G** | 1.20 | 1.40 |
| **H** | 1.80 | 2.20 |
| **J** | 0.00 | 0.10 |
| **K** | 0.80 | 1.00 |
| **L** | 0.42 | 0.53 |
| **M** | 0.10 | 0.25 |