

EVVOSEMI[®]

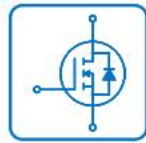
THINK CHANGE DO



ESD



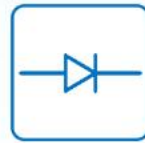
TVS



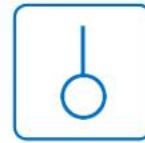
MOS



LDO



Diode



Sensor



DC-DC

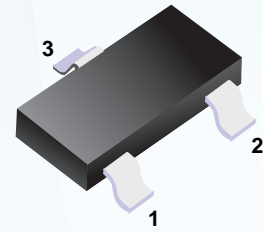
Product Specification

| | | |
|--------------|-------------|-------------|
| ▶ Domestic | Part Number | EVBSS123-S1 |
| ▶ Overseas | Part Number | BSS123 |
| ▶ Equivalent | Part Number | BSS123 |

"S1" means SOT-23

EV is the abbreviation of name EVVO

■ N-Channel MOSFET

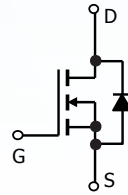


1. Gate
2. Source
3. Drain

■ Features

- $V_{DS} (V) = 100V$
- $I_D = 0.17 A (V_{GS} = 10V)$
- $R_{DS(ON)} < 6 \Omega (V_{GS} = 10V)$
- $R_{DS(ON)} < 10 \Omega (V_{GS} = 4.5V)$
- ESD Protected 2KV HBM

■ Simplified outline(SOT-23)



■ Absolute Maximum Ratings $T_a = 25^\circ C$

| Parameter | Symbol | Rating | Unit |
|---|-----------------|------------|----------------|
| Drain-Source Voltage | V_{DS} | 100 | V |
| Gate-Source Voltage | V_{GS} | ± 20 | |
| Continuous Drain Current | I_D | 0.17 | A |
| Pulsed Drain Current | I_{DM} | 0.68 | |
| Power Dissipation | P_D | 0.36 | W |
| Derate Above $25^\circ C$ | | 2.8 | mW/ $^\circ C$ |
| Thermal Resistance, Junction-to-Ambient | $R_{\theta JA}$ | 350 | $^\circ C/W$ |
| Junction Temperature | T_J | 150 | $^\circ C$ |
| Storage Temperature Range | T_{stg} | -55 to 150 | |

■ Electrical Characteristics Ta = 25°C

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
|---------------------------------------|---------------------|--|------|-----|------|------|
| Drain-Source Breakdown Voltage | V _{DSS} | I _D =250 μA, V _{GS} =0V | 100 | | | V |
| Zero Gate Voltage Drain Current | I _{DSS} | V _{DS} =100V, V _{GS} =0V | | | 1 | μA |
| | | V _{DS} =100V, V _{GS} =0V, T _J =55°C | | | 60 | |
| Gate-Body Leakage Current | I _{GSS} | V _{DS} =0V, V _{GS} =±20V | | | ±10 | |
| Gate Threshold Voltage | V _{GS(th)} | V _{DS} =V _{GS} , I _D =1mA | 0.8 | | 2.8 | V |
| Static Drain-Source On-Resistance | R _{DS(on)} | V _{GS} =10V, I _D =0.17A | | | 6 | Ω |
| | | V _{GS} =10V, I _D =0.17A T _J =125°C | | | 12 | |
| | | V _{GS} =4.5V, I _D =0.17A | | | 10 | |
| On State Drain Current | I _{D(ON)} | V _{GS} =10V, V _{DS} =5V | 0.68 | | | A |
| Forward Transconductance | g _{FS} | V _{DS} =10V, I _D =0.17A | 0.08 | | | S |
| Input Capacitance | C _{iss} | V _{GS} =0V, V _{DS} =25V, f=1MHz | | 73 | | pF |
| Output Capacitance | C _{oss} | | | 7 | | |
| Reverse Transfer Capacitance | C _{rss} | | | 3.4 | | |
| Gate Resistance | R _g | V _{GS} =15mV, f=1MHz | | 2.2 | | Ω |
| Total Gate Charge | Q _g | V _{GS} =10V, V _{DS} =30V, I _D =0.22A | | 1.8 | 2.5 | nC |
| Gate Source Charge | Q _{gs} | | | 0.2 | | |
| Gate Drain Charge | Q _{gd} | | | 0.3 | | |
| Turn-On DelayTime | t _{d(on)} | V _{DD} = 30 V, I _D = 0.28 A, V _{GS} = 10 V, R _{GEN} = 6 Ω | | 1.7 | 3.4 | ns |
| Turn-On Rise Time | t _r | | | 9 | 18 | |
| Turn-Off DelayTime | t _{d(off)} | | | 17 | 31 | |
| Turn-Off Fall Time | t _f | | | 2.4 | 5 | |
| Body Diode Reverse Recovery Time | t _{rr} | I _F = 0.17A, di/dt= 100A/μs | | 11 | | nC |
| Body Diode Reverse Recovery Charge | Q _{rr} | | | 3 | | |
| Maximum Body-Diode Continuous Current | I _S | | | | 0.17 | A |
| Diode Forward Voltage | V _{SD} | I _S =0.34A, V _{GS} =0V | | | 1.3 | V |

Note.: Pulse Test: Pulse Width ≤ 300 us, Duty Cycle ≤ 2.0%

■ Typical Characteristics

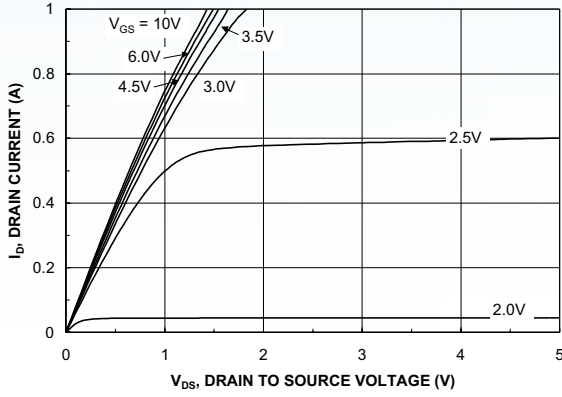


Figure 1. On-Region Characteristics.

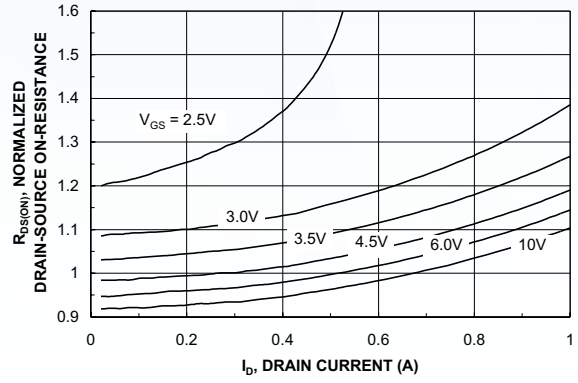


Figure 2. On-Resistance Variation with Drain Current and Gate Voltage.

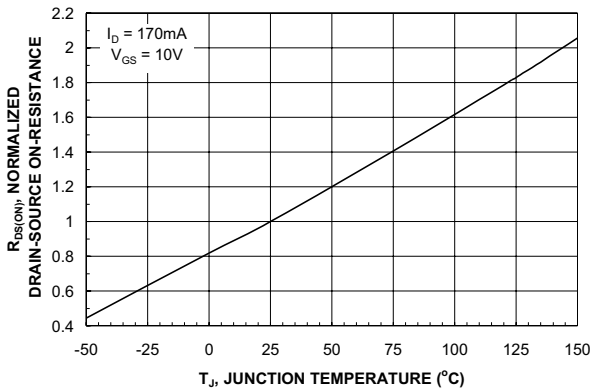


Figure 3. On-Resistance Variation with Temperature.

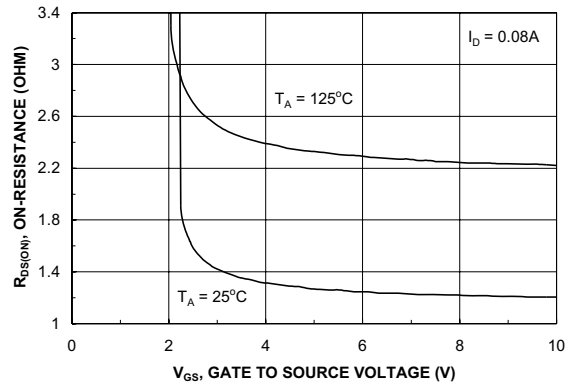


Figure 4. On-Resistance Variation with Gate-to-Source Voltage.

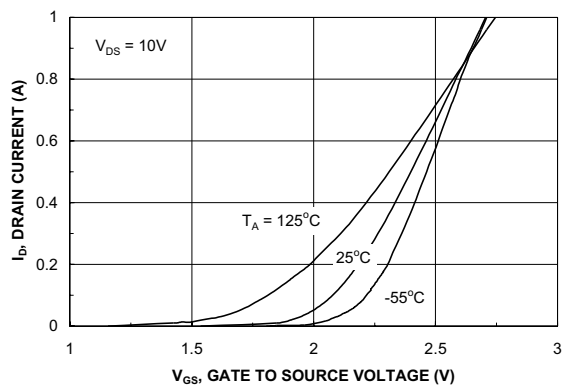


Figure 5. Transfer Characteristics.

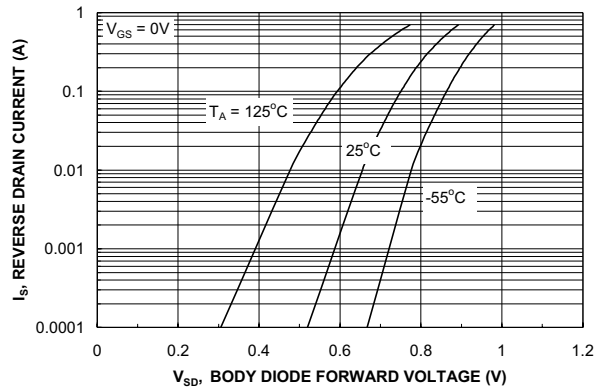


Figure 6. Body Diode Forward Voltage Variation with Source Current and Temperature.

■ Typical Characteristics

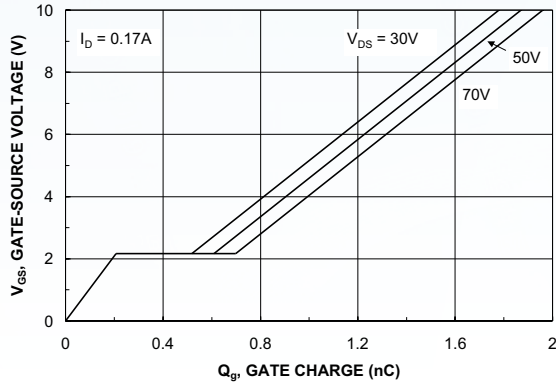


Figure 7. Gate Charge Characteristics.

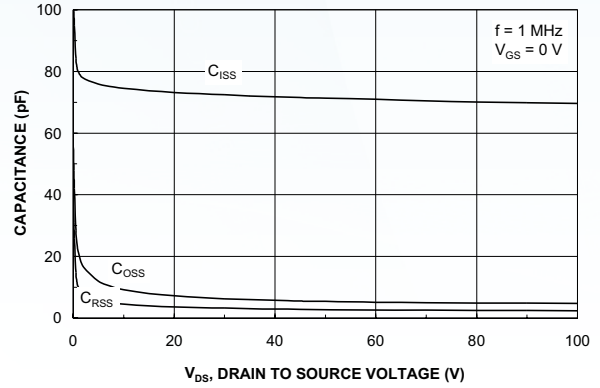


Figure 8. Capacitance Characteristics.

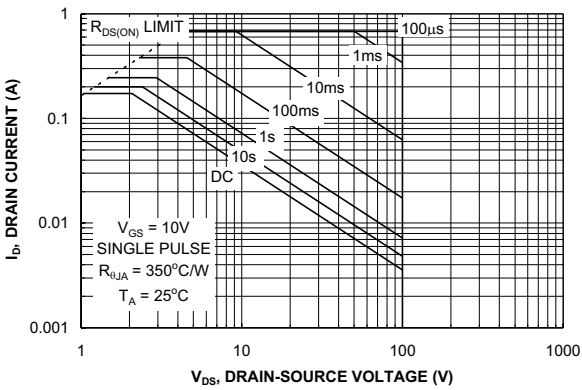


Figure 9. Maximum Safe Operating Area.

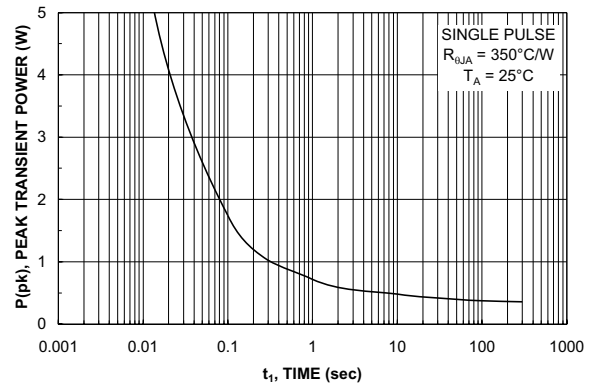
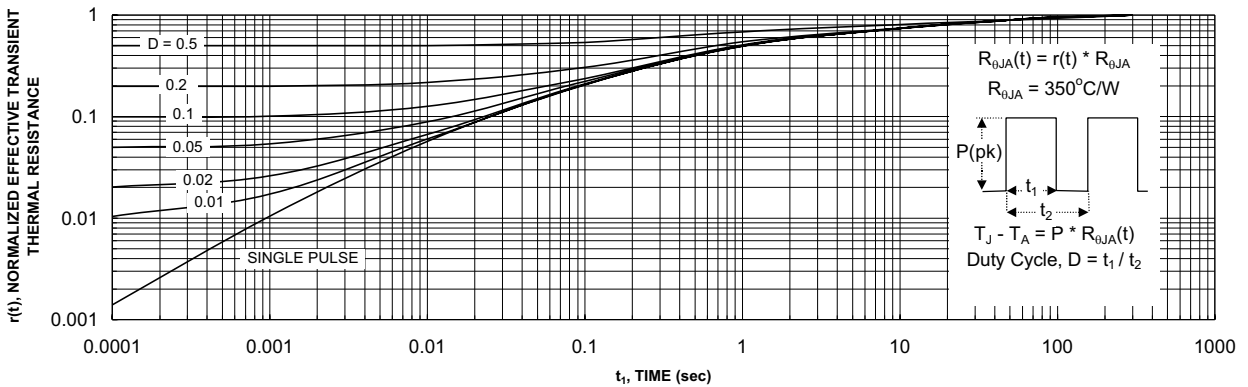
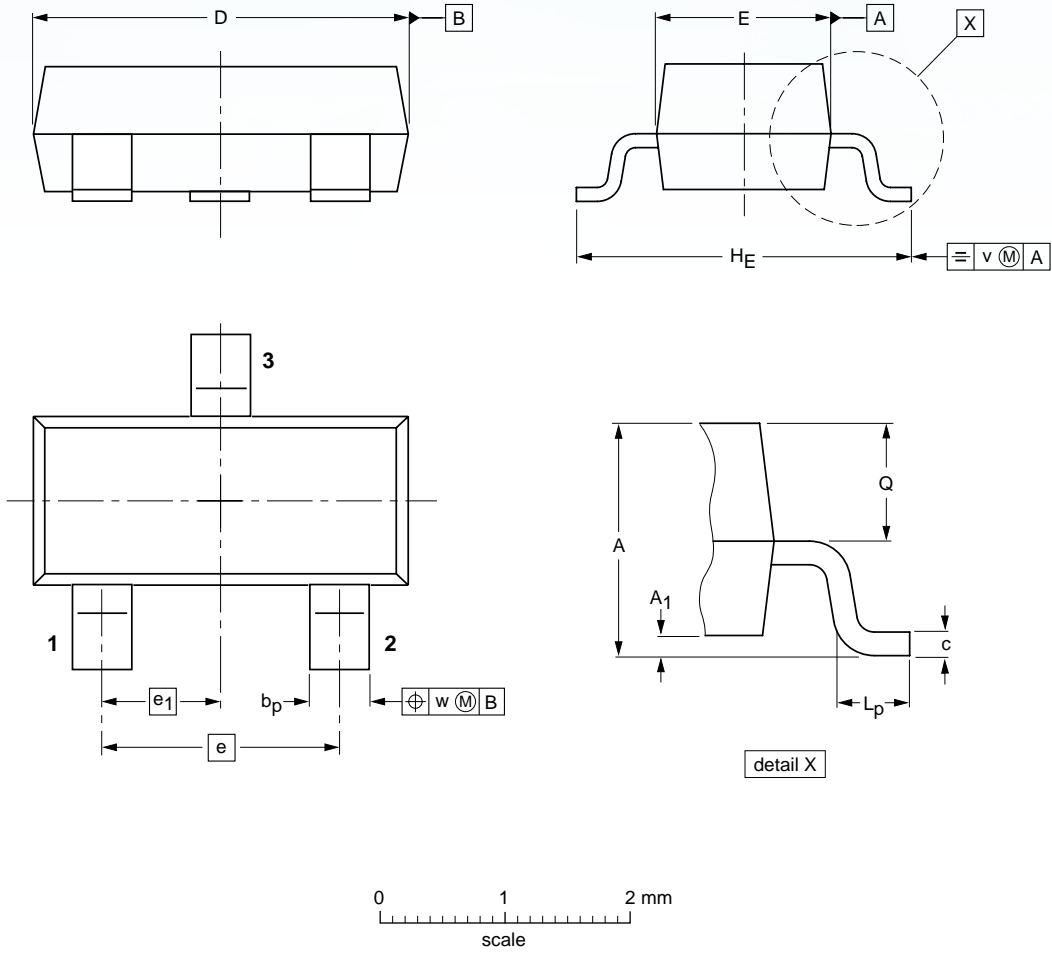


Figure 10. Single Pulse Maximum Power Dissipation.



■ SOT-23



DIMENSIONS (mm are the original dimensions)

| UNIT | A | A ₁ max. | b _p | c | D | E | e | e ₁ | H _E | L _p | Q | v | w |
|------|------------|------------------------|----------------|--------------|------------|------------|-----|----------------|----------------|----------------|--------------|-----|-----|
| mm | 1.1 0.9 | 0.1 | 0.48 0.38 | 0.15 0.09 | 3.0 2.8 | 1.4 1.2 | 1.9 | 0.95 | 2.5 2.1 | 0.45 0.15 | 0.55 0.45 | 0.2 | 0.1 |

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