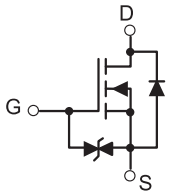
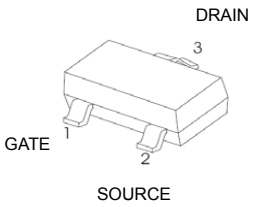
迈拓电子
MAITUO ELECTRONIC

BSS123KT **N Channel MOSFET**




| $V_{(BR)DSS}$ | $R_{DS(on)}$MAX | $I_D$ |
|---|---|---|
| 100 V | 6Ω@10V | 0.17A |
| | 10Ω@4.5V | |




**SOT-523**

**FEATURE**

- Surface Mount Package
- High Density Cell Design for Extremely Low $R_{DS(ON)}$
- Voltage Controlled Small Signal Switch
- Rugged and Reliable
- ESD protected

**APPLICATION**

- Small Servo Motor Controls
- Power MOSFET Gate Drivers
- Switching Application

**MARKING :** 123

**ABSOLUTE MAXIMUM RATINGS ($T_a$=25℃ unless otherwise noted)**

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| **N-MOSFET** | | | |
| Drain-Source Voltage | $V_{DS}$ | 100 | V |
| Gate-Source Voltage | $V_{GS}$ | ±20 | V |
| Continuous Drain Current (note 1) | $I_D$ | 0.17 | A |
| Pulsed Drain Current (tp=10us) | $I_{DM}$ | 0.68 | A |
| Continous Source-Drain Diode Current | $I_S$ | 0.17 | A |
| Power Dissipation | $P_D$ | 0.35 | W |
| Thermal Resistance from Junction to Ambient (note 1) | $R_{\theta JA}$ | 357 | ℃/W |
| Junction Temperature | $T_J$ | 150 | ℃ |
| Storage Temperature | $T_{STG}$ | -55~+150 | ℃ |
| Lead Temperature for Soldering Purposes(1/8'' from case for 10 s) | $T_L$ | 260 | ℃ |

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# MOSFET ELECTRICAL CHARACTERISTICS

## $T_a$=25℃ unless otherwise specified

| Parameter | Symbol | Test Condition | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| **STATIC CHARACTERISTICS** | | | | | | |
| Drain-source breakdown voltage | $V_{(BR)DSS}$ | $V_{GS}$ = 0V, $I_D$ =250μA | 100 | | | V |
| Zero gate voltage drain current | $I_{DSS}$ | $V_{DS}$ =100V,$V_{GS}$ = 0V | | | 1 | μA |
| | | $V_{DS}$ =20V,$V_{GS}$ = 0V | | | 100 | nA |
| Gate-body leakage current | $I_{GSS}$ | $V_{GS}$ =±20V, $V_{DS}$ = 0V | | | ±2 | uA |
| Gate threshold voltage (note 2) | $V_{GS(th)}$ | $V_{DS}$ =$V_{GS}$, $I_D$ =250μA | 1 | | 2.5 | V |
| Drain-source on-resistance(note 2) | $R_{DS(on)}$ | $V_{GS}$ =4.5V, $I_D$ =0.17A | | | 10 | Ω |
| | | $V_{GS}$ =10V, $I_D$ =0.17A | | | 6 | Ω |
| Forward tranconductance(note 2) | $g_{FS}$ | $V_{DS}$ =10V, $I_D$ =170mA | 80 | | | mS |
| Diode forward voltage | $V_{SD}$ | $I_S$=340mA, $V_{GS}$ = 0V | | | 1.3 | V |
| **DYNAMIC CHARACTERISTICS (note 4)** | | | | | | |
| Input Capacitance | $C_{iss}$ | $V_{DS}$ =25V,$V_{GS}$ =0V,f =1MHz | | 29 | 60 | pF |
| Output Capacitance | $C_{oss}$ | | | 10 | 15 | pF |
| Reverse Transfer Capacitance | $C_{rss}$ | | | 2 | 6 | pF |
| **SWITCHING CHARACTERISTICS (note 3,4)** | | | | | | |
| Turn-on delay time | $t_{d(on)}$ | $V_{GS}$=10V,$V_{DD}$=30V, $I_D$=2.8A,$R_{GEN}$=50Ω | | | 8 | ns |
| Turn-on rise time | $t_r$ | | | | 8 | ns |
| Turn-off delay time | $t_{d(off)}$ | | | | 13 | ns |
| Turn-off fall time | $t_f$ | | | | 16 | ns |
| Total Gate Charge | $Q_g$ | $V_{DS}$=10V,$I_D$=0.22A, $V_{GS}$=10V | | 1.4 | 2 | nC |
| Gate-Source Charge | $Q_{gs}$ | | | 0.15 | 0.25 | nC |
| Gate-Drain Charge | $Q_{gd}$ | | | 0.2 | 0.4 | nC |

**Notes :**

1.Surface mounted on FR4 board using the minimum recommended pad size.

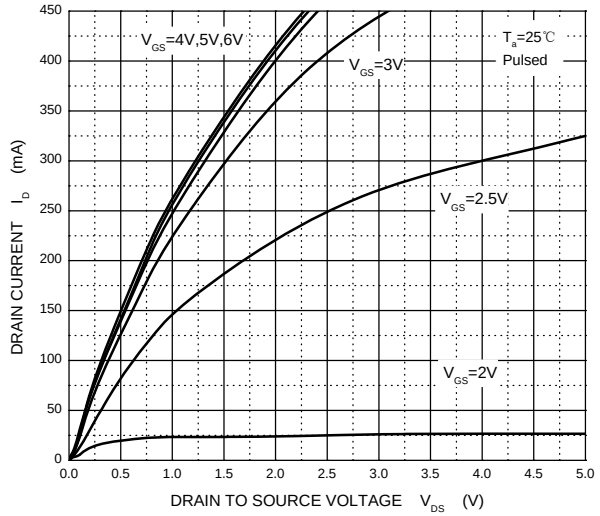
2. Pulse Test : Pulse width=300μs, duty cycle≤2%.

3. Switching characteristics are independent of operating junction temperature.

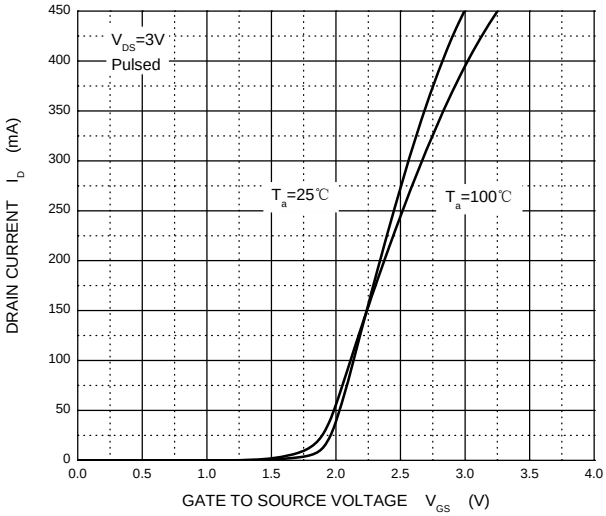
4. Graranted by design，not subject to producting.

## Typical Characteristics

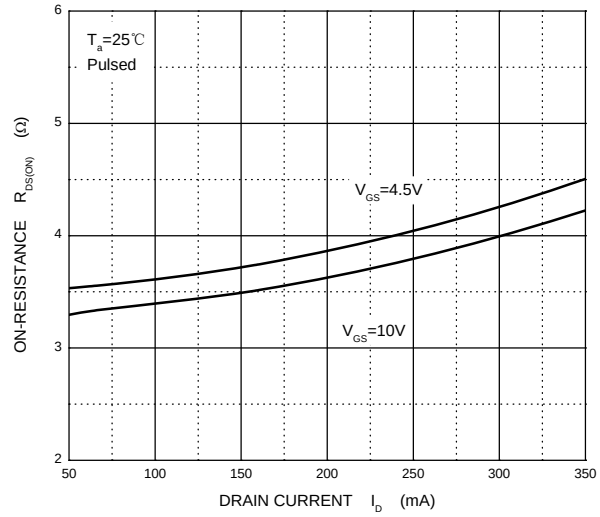
**Output Characteristics**



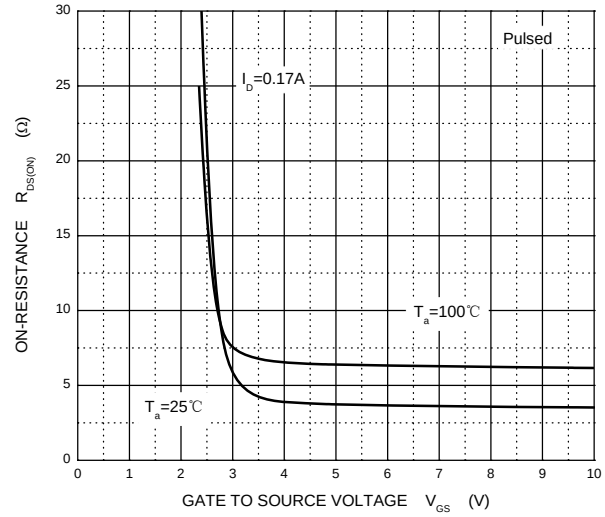

**Transfer Characteristics**



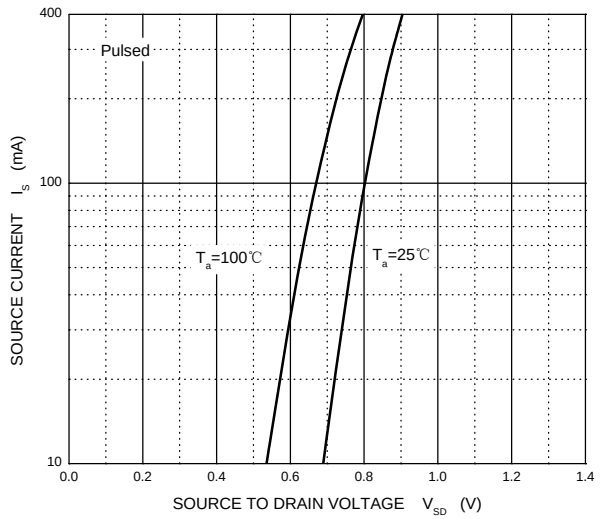

**$R_{DS(ON)}$ —— $I_D$**



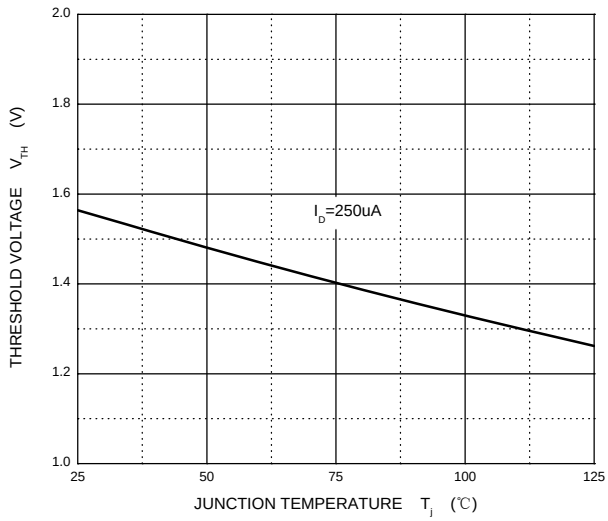

**$R_{DS(ON)}$ —— $V_{GS}$**




**$I_S$ —— $V_{SD}$**




**Threshold Voltage**



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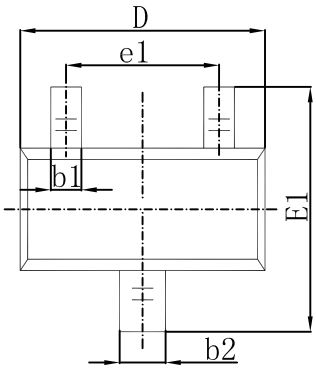
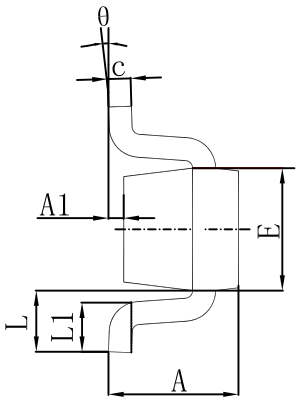
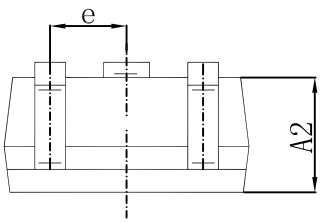
## SOT-523 Package Outline Dimensions

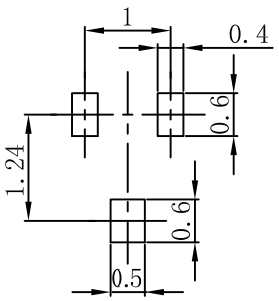



| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|---|---|---|---|---|
| | Min. | Max. | Min. | Max. |
| A | 0.700 | 0.900 | 0.028 | 0.035 |
| A1 | 0.000 | 0.100 | 0.000 | 0.004 |
| A2 | 0.700 | 0.800 | 0.028 | 0.031 |
| b1 | 0.150 | 0.250 | 0.006 | 0.010 |
| b2 | 0.250 | 0.350 | 0.010 | 0.014 |
| c | 0.100 | 0.200 | 0.004 | 0.008 |
| D | 1.500 | 1.700 | 0.059 | 0.067 |
| E | 0.700 | 0.900 | 0.028 | 0.035 |
| E1 | 1.450 | 1.750 | 0.057 | 0.069 |
| e | 0.500 TYP. | | 0.020 TYP. | |
| e1 | 0.900 | 1.100 | 0.035 | 0.043 |
| L | 0.400 REF. | | 0.016 REF. | |
| L1 | 0.260 | 0.460 | 0.010 | 0.018 |
| θ | 0° | 8° | 0° | 8° |

## SOT-523 Suggested Pad Layout




Note:
1.Controlling dimension:in millimeters.
2.General tolerance:±0.05mm.
3.The pad layout is for reference purposes only.