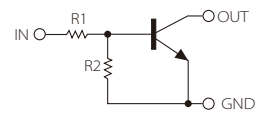


FEATURES

- | Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors(see equivalent circuit)
- | The bias resistors consist of thin-film resistors with complete isolation to allow negative biasing of the input.They also have the advantage of almost completely eliminating parasitic effects
- | Only the on/off conditions need to be set for operation, making device design easy



Schematic Symbol

APPROVALS

| | |
|-------------|------------------------------------|
| RoHS | Compliance with 2011/65/EU |
| HF | Compliance with IEC61249-2-21:2003 |

MAXIMUM RATINGS (T_A=25°C)

| Parameter | Symbol | Value | Unit |
|--|-----------------------------------|-------------|------|
| Supply Voltage | V _{CC} | 50 | V |
| Input Voltage | V _{IN} | -5 to +30 | V |
| Output Current | I _O | 100 | mA |
| Power Dissipation | P _D | 150 | mW |
| Operation Junction and Storage Temperature Range | T _J , T _{stg} | -55 to +150 | °C |

ELECTRICAL CHARACTERISTICS($T_A=25^{\circ}\text{C}$)

| Parameter | Symbol | Test Conditions | Min. | Typ. | Max. | Unit |
|----------------------|--------------|--|------|------|------|------------------|
| Input voltage | $V_{I(off)}$ | $V_{CC}=5V, I_o=100\mu\text{A}$ | 0.5 | | | V |
| | $V_{I(on)}$ | $V_o=0.3V, I_o=5\text{mA}$ | | | 1.3 | V |
| Output voltage | $V_{O(on)}$ | $I_o/I_i=5\text{mA}/0.25\text{mA}$ | | 0.1 | 0.3 | V |
| Input current | I_i | $V_i=5V$ | | | 1.8 | mA |
| Output current | $I_{O(off)}$ | $V_{CC}=50V, V_i=0$ | | | 0.5 | μA |
| DC current gain | G_1 | $V_o=5V, I_o=10\text{mA}$ | 80 | | | |
| Input resistance | R_1 | | 3.29 | 4.7 | 6.11 | $\text{k}\Omega$ |
| Resistance ratio | R_2/R_1 | | 8 | 10 | 12 | |
| Transition frequency | f_T | $V_o=10V, I_o=5\text{mA}, f=100\text{MHz}$ | | 250 | | MHz |

CHARACTERISTIC CURVES

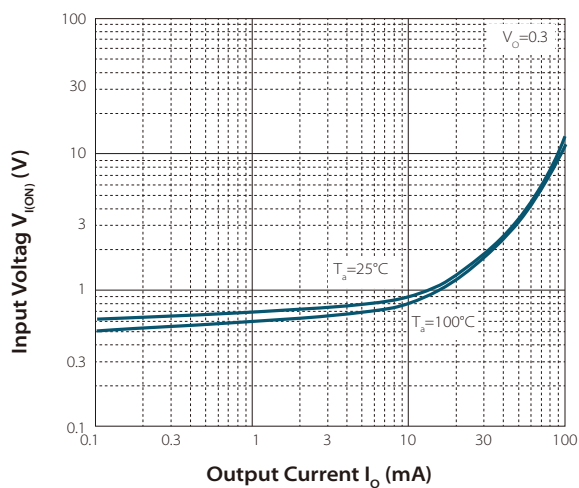
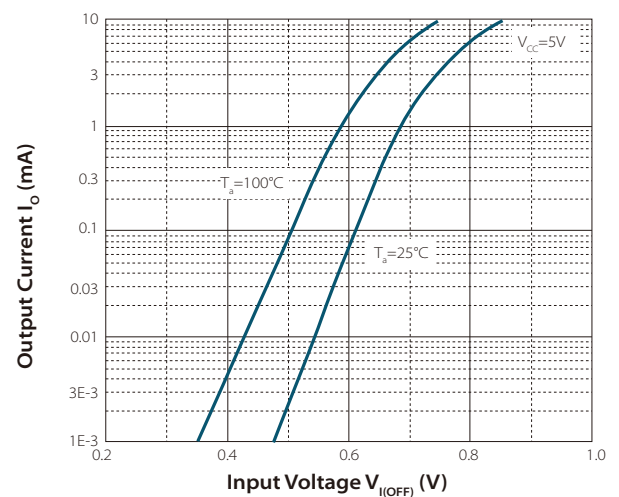
Fig.1 ON Characteristics

Fig.2 OFF Characteristics


Fig.3 G_I — I_O

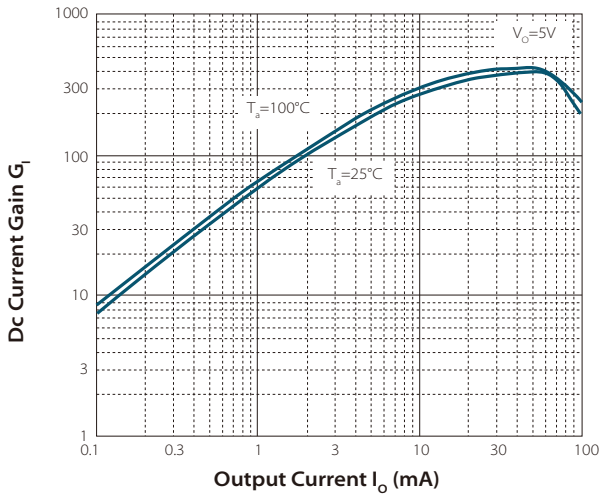


Fig.4 $V_{O(ON)}$ — I_O

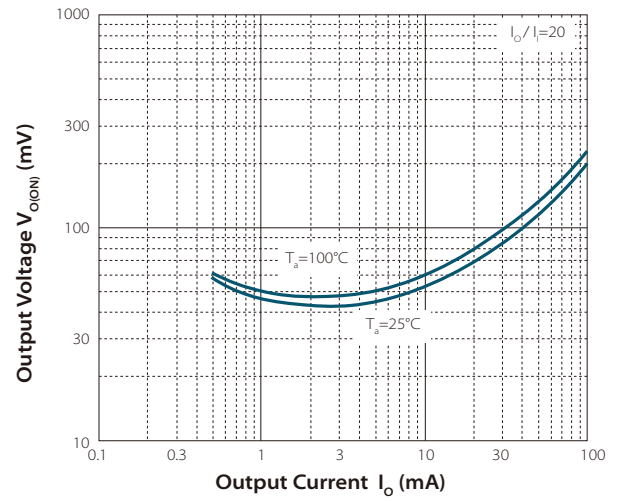


Fig.5 C_O — V_R

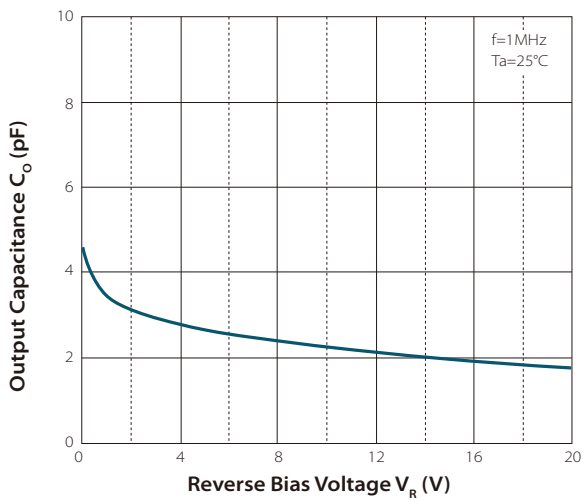
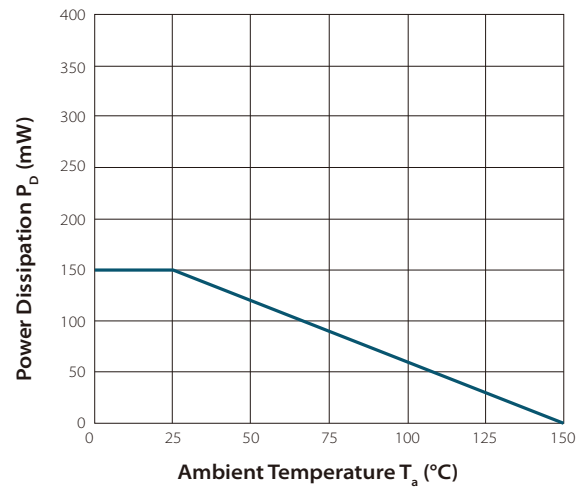
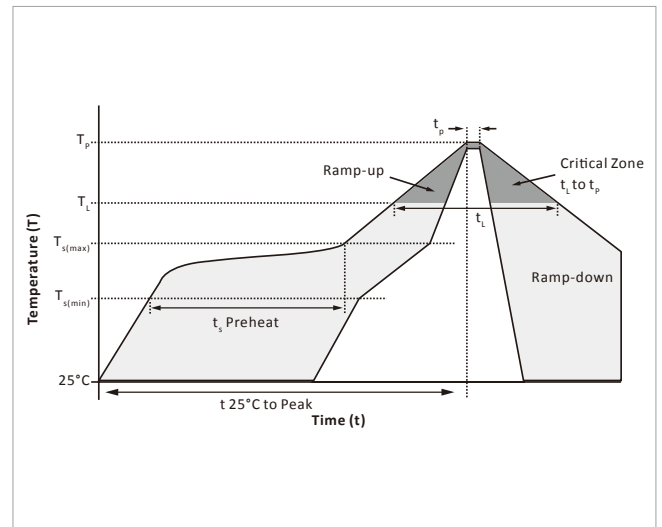


Fig.6 P_D — T_a

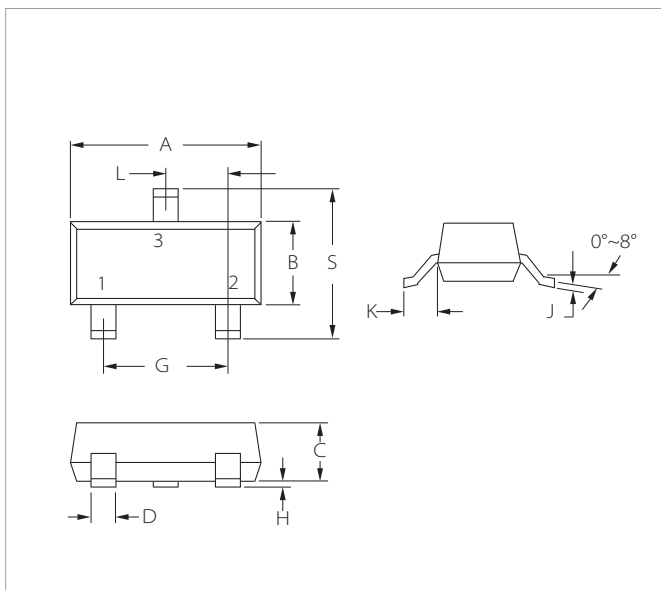


SOLDERING PARAMETERS

| Reflow Condition | | Lead-free assembly |
|--|----------------------------------|--------------------|
| Pre Heat | Temperature Max ($T_{s(min)}$) | 150°C |
| | Temperature Max ($T_{s(max)}$) | 200°C |
| | Time (min to max) (t_s) | 60 – 180 secs |
| Average ramp up rate (Liquidus Temp (T_L) to peak) | | 3°C/second max |
| $T_{s(max)}$ to T_L - Ramp-up Rate | | 3°C/second max |
| Reflow | Temperature (T_L) (Liquidus) | 217°C |
| | Time (min to max) (t_L) | 60 – 150 seconds |
| Peak Temperature (T_p) | | 260°C |
| Time within 5°C of actual peak Temperature (t_p) | | 20 – 40 seconds |
| Ramp-down Rate | | 6°C/second max |
| Time 25°C to peak Temperature (T_p) | | 8 minutes max. |
| Do not exceed | | 260°C |

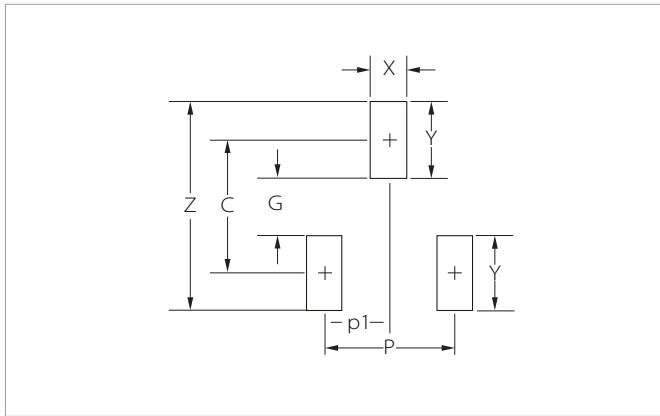


SOT-523 PACKAGE INFORMATION



| Ref. | Millimeters | | Inches | |
|------|-------------|------|----------|-------|
| | Min. | Max. | Min. | Max. |
| A | 1.50 | 1.70 | 0.059 | 0.067 |
| B | 0.75 | 0.85 | 0.029 | 0.033 |
| C | 0.60 | 0.80 | 0.023 | 0.031 |
| D | 0.15 | 0.30 | 0.005 | 0.012 |
| G | 1.00BSC | | 0.039BSC | |
| H | 0.00 | 0.10 | 0.000 | 0.004 |
| J | 0.10 | 0.20 | 0.004 | 0.008 |
| K | (0.22) | | (0.009) | |
| L | 0.50BSC | | 0.020BSC | |
| S | 1.45 | 1.75 | 0.057 | 0.069 |

RECOMMENDED PAD LAYOUT DIMENSIONS



| Ref. | Millimeters | Inches |
|------|-------------|---------|
| C | (1.40) | (0.055) |
| P | 1.00 | 0.039 |
| p1 | 0.50 | 0.020 |
| G | 0.60 | 0.024 |
| X | 0.40 | 0.016 |
| Y | 0.80 | 0.031 |
| Z | 2.20 | 0.087 |

ORDERING INFORMATION

| Part Number | Component Package | QTY/Reel | Reel Size |
|-------------|-------------------|----------|-----------|
| DTC143ZE | SOT-523 | 3000PCS | 7" |

To find your local partner within Semiwell's website : www.semiwell.com.cn

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