

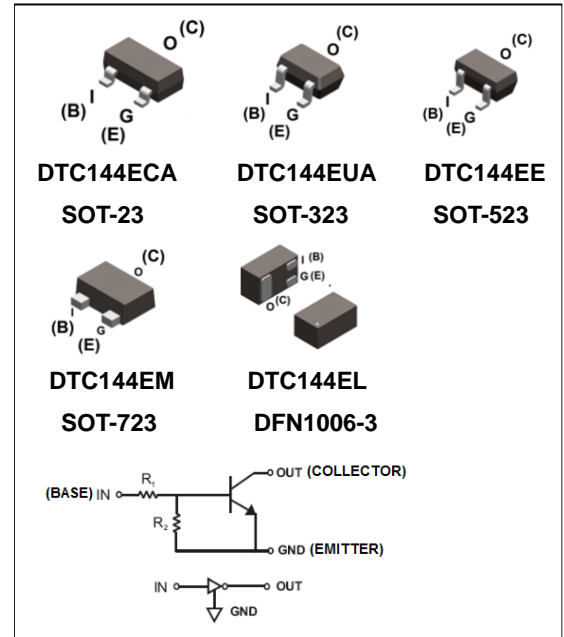


Features

- Epitaxial planar die construction
- Built-in biasing resistors (R_1 : 47k Ω , R_2 : 47k Ω)
- Also available in lead free version
- RoHS compliant with Halogen-free

Mechanical Data

- Case: SOT-23, SOT-323, SOT-523, SOT-723, DFN1006-3
- Molding Compound: UL Flammability Classification Rating 94V-0
- Terminals: Matte tin-plated leads; solderability-per MIL-STD-202, Method 208



Ordering Information

| Part Number | Package | Shipping Quantity | Marking Code |
|-------------|-----------|-------------------------|--------------|
| DTC144ECA | SOT-23 | 3000 pcs / Tape & Reel | 26 |
| DTC144EUA | SOT-323 | 3000 pcs / Tape & Reel | 26 |
| DTC144EE | SOT-523 | 3000 pcs / Tape & Reel | 26 |
| DTC144EM | SOT-723 | 10000 pcs / Tape & Reel | 26 |
| DTC144EL | DFN1006-3 | 10000 pcs / Tape & Reel | 26 |

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

| Parameter | Symbol | Value | | | | | Unit |
|----------------------------|--------------|------------|---------|---------|---------|-----------|------------------|
| | | SOT-23 | SOT-323 | SOT-523 | SOT-723 | DFN1006-3 | |
| Supply Voltage | V_{CC} | 50 | | | | | V |
| Input Voltage | V_I | -10 to +40 | | | | | V |
| Output Current | I_O | 30 | | | | | mA |
| Collector Current | $I_{C(Max)}$ | 100 | | | | | mA |
| Power Dissipation | P_D | 200 | 200 | 150 | 100 | 100 | mW |
| Junction Temperature Range | T_J | -55 ~ +150 | | | | | $^\circ\text{C}$ |
| Storage Temperature Range | T_{STG} | -55 ~ +150 | | | | | $^\circ\text{C}$ |



Electrical Characteristics (@ T_A = 25°C unless otherwise specified)

| Parameter | Symbol | Test Condition | Min. | Typ. | Max. | Unit |
|------------------------|--------------------------------|---|------|------|------|------|
| Input Voltage | V _{I(OFF)} | V _{CC} = 5V, I _O = 100μA | 0.5 | - | - | V |
| Input Voltage | V _{I(ON)} | V _O = 0.3V, I _O = 2mA | - | - | 3 | V |
| Output Voltage | V _{O(on)} | I _O = 10mA, I _I = 0.5mA | - | - | 0.3 | V |
| Input Current | I _I | V _I = 5V | - | - | 0.18 | mA |
| Output Current | I _{O(off)} | V _{CC} = 50V, V _I = 0V | - | - | 0.5 | μA |
| DC Current Gain | G _I | V _O = 5V, I _O = 5mA | 68 | - | - | - |
| Input Resistor | R ₁ | | 32.9 | 47 | 61.1 | kΩ |
| Resistance ratio | R ₂ /R ₁ | | 0.8 | 1.0 | 1.2 | - |
| Gain-Bandwidth Product | f _T | V _{CE} = 10V, I _E = 5mA f = 100MHz | - | 250 | - | MHz |



Ratings and Characteristic Curves (@ $T_A = 25^\circ\text{C}$ unless otherwise specified)

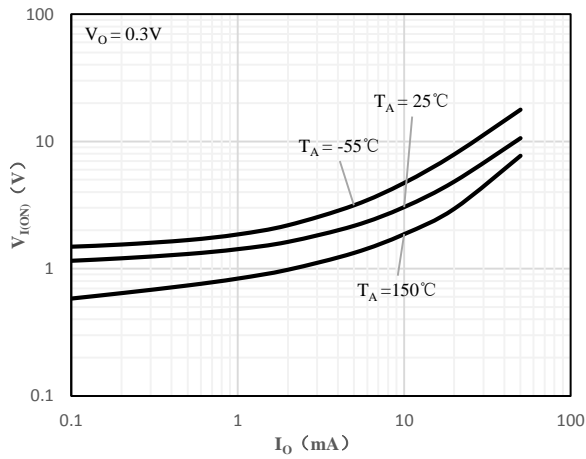


Fig 1 Input Voltage vs Output Current

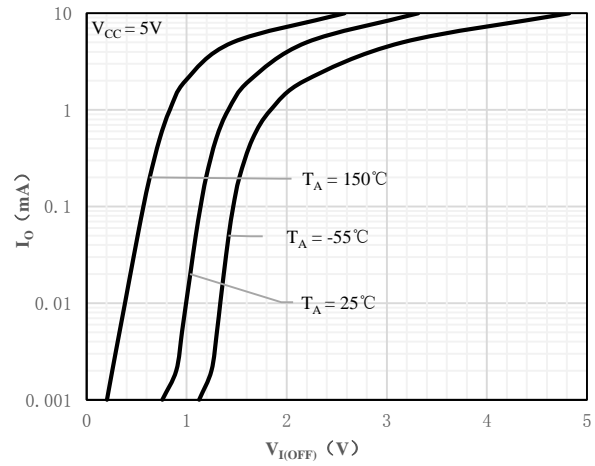


Fig 2 Output Current vs Input Voltage

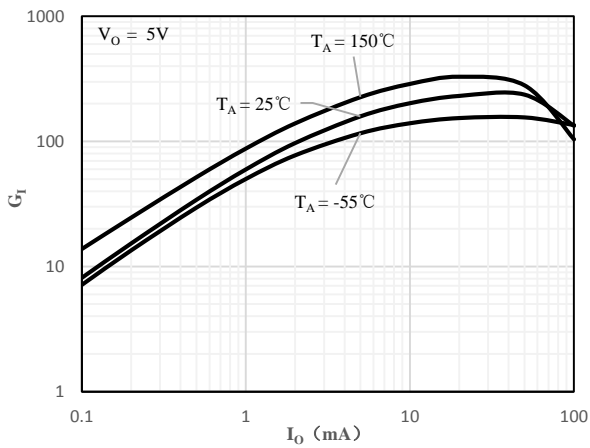


Fig 3 DC Current Gain vs Output Current

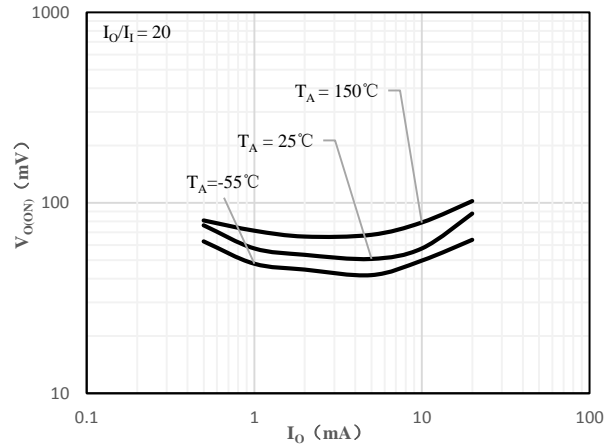
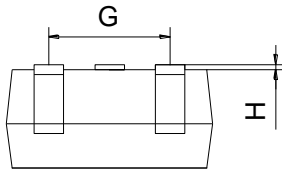
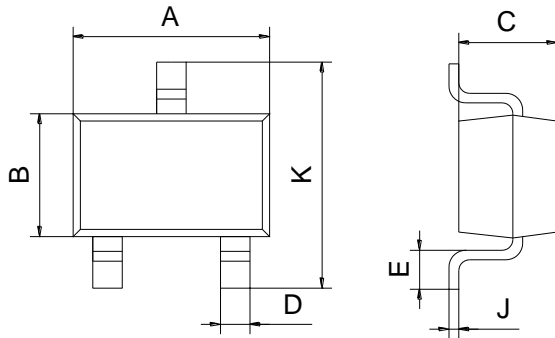
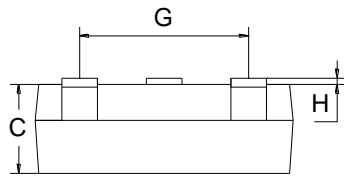
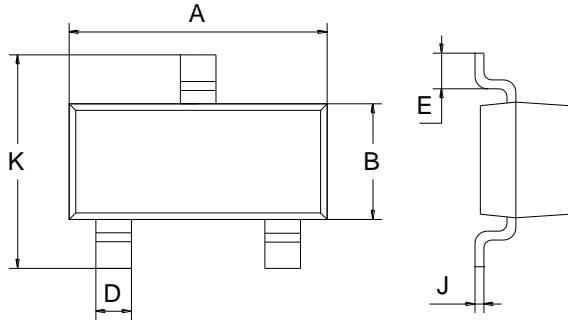


Fig 4 Output Voltage vs Output Current

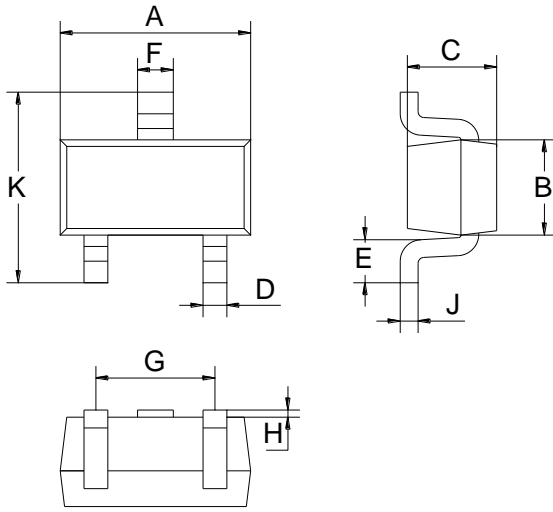


Package Outline Dimensions (Unit: mm)

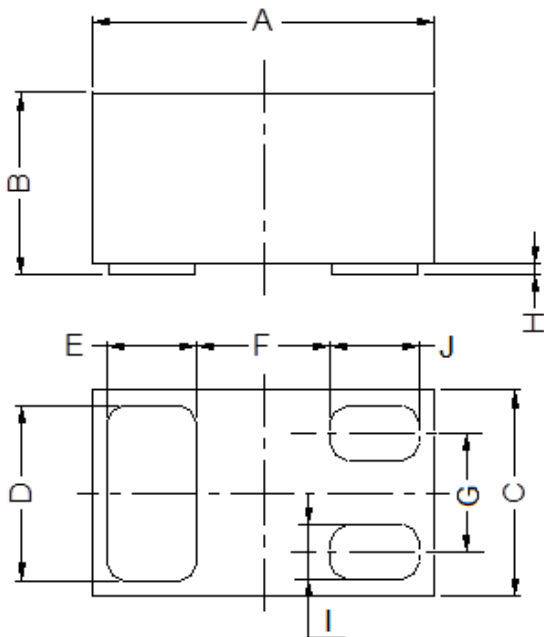


| SOT-23 | | |
|-----------|------|------|
| Dimension | Min. | Max. |
| A | 2.70 | 3.10 |
| B | 1.10 | 1.50 |
| C | 0.90 | 1.10 |
| D | 0.30 | 0.50 |
| E | 0.35 | 0.48 |
| G | 1.80 | 2.00 |
| H | 0.02 | 0.10 |
| J | 0.05 | 0.15 |
| K | 2.20 | 2.60 |

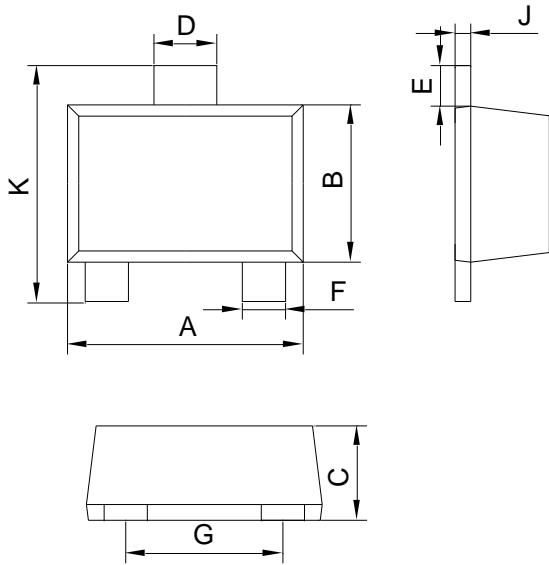
| SOT-323 | | |
|-----------|------|------|
| Dimension | Min. | Max. |
| A | 2.00 | 2.20 |
| B | 1.15 | 1.35 |
| C | 0.90 | 1.10 |
| D | 0.15 | 0.35 |
| E | 0.25 | 0.40 |
| G | 1.20 | 1.40 |
| H | 0.02 | 0.10 |
| J | 0.05 | 0.15 |
| K | 2.20 | 2.40 |



| SOT-523 | | |
|-----------|------|------|
| Dimension | Min. | Max. |
| A | 1.50 | 1.70 |
| B | 0.75 | 0.85 |
| C | 0.60 | 0.80 |
| D | 0.15 | 0.30 |
| E | 0.30 | 0.40 |
| F | 0.25 | 0.40 |
| G | 0.90 | 1.10 |
| H | 0.02 | 0.10 |
| J | 0.08 | 0.18 |
| K | 1.45 | 1.75 |



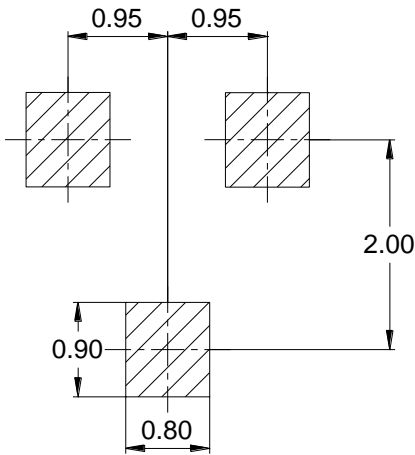
| DFN1006-3 | | | |
|-----------|------|------|-------|
| Dimension | Min. | Typ. | Max. |
| A | 0.95 | 1.00 | 1.075 |
| B | 0.47 | 0.50 | 0.53 |
| C | 0.55 | 0.60 | 0.675 |
| D | 0.45 | 0.50 | 0.55 |
| E/J | 0.20 | 0.25 | 0.30 |
| F | - | 0.40 | - |
| G | - | 0.35 | - |
| H | 0 | 0.03 | 0.05 |
| I | 0.10 | 0.15 | 0.20 |



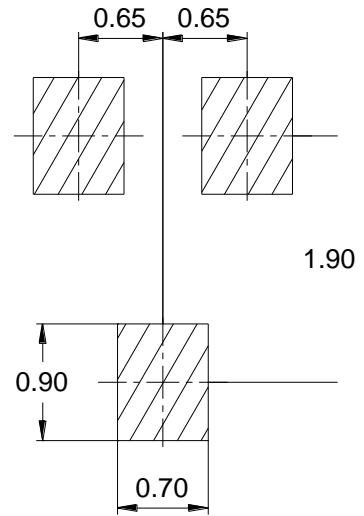
| SOT-723 | | |
|-----------|------|------|
| Dimension | Min. | Max. |
| A | 1.10 | 1.30 |
| B | 0.70 | 0.90 |
| C | 0.40 | 0.54 |
| D | 0.22 | 0.42 |
| E | 0.10 | 0.30 |
| F | 0.12 | 0.32 |
| G | 0.70 | 0.90 |
| J | 0.08 | 0.15 |
| K | 1.10 | 1.30 |

Mounting Pad Layout (Unit: mm)

SOT-23

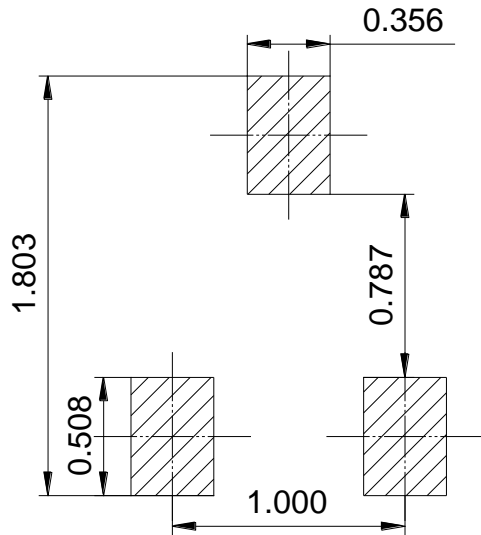


SOT-323

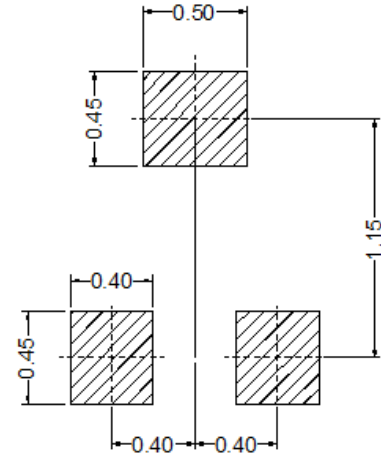




SOT-523



SOT-723



DFN1006-3

