

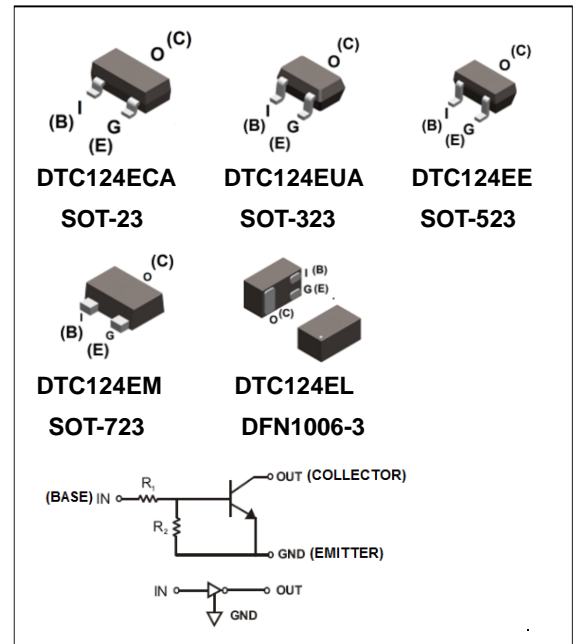


### Features

- Epitaxial planar die construction
- Built-in biasing resistors ( $R_1$ : 22k $\Omega$ ,  $R_2$ : 22k $\Omega$ )
- 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
DTC124ECA	SOT-23	3000 pcs / Tape & Reel	25
DTC124EUA	SOT-323	3000 pcs / Tape & Reel	25
DTC124EE	SOT-523	3000 pcs / Tape & Reel	25
DTC124EM	SOT-723	10000 pcs / Tape & Reel	25
DTC124EL	DFN1006-3	10000 pcs / Tape & Reel	25

### 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<sub>A</sub> = 25°C unless otherwise specified)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Input Voltage	V <sub>I(OFF)</sub>	V <sub>CC</sub> = 5V, I <sub>O</sub> = 100μA	0.5	-	-	V
Input Voltage	V <sub>I(ON)</sub>	V <sub>O</sub> = 0.2V, I <sub>O</sub> = 5mA	-	-	3	V
Output Voltage	V <sub>O(on)</sub>	I <sub>O</sub> = 10mA, I <sub>I</sub> = 0.5mA	-	-	0.3	V
Input Current	I <sub>I</sub>	V <sub>I</sub> = 5V	-	-	0.36	mA
Output Current	I <sub>O(off)</sub>	V <sub>CC</sub> = 50V, V <sub>I</sub> = 0V	-	-	0.5	μA
DC Current Gain	G <sub>I</sub>	V <sub>O</sub> = 5V, I <sub>O</sub> = 5mA	56	-	-	-
Input Resistor	R <sub>1</sub>		15.4	22	28.6	kΩ
Resistance ratio	R <sub>2</sub> /R <sub>1</sub>		0.8	1.0	1.2	-
Gain-Bandwidth Product	f <sub>T</sub>	V <sub>CE</sub> = 10V, I <sub>E</sub> = 5mA f = 100MHz	-	250	-	MHz

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

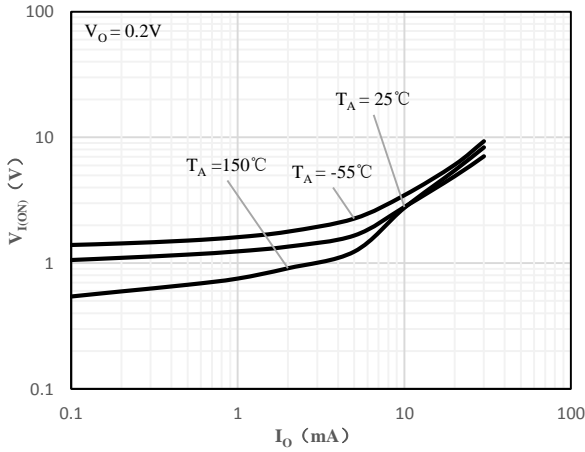


Fig 1 Input Voltage vs Output Current

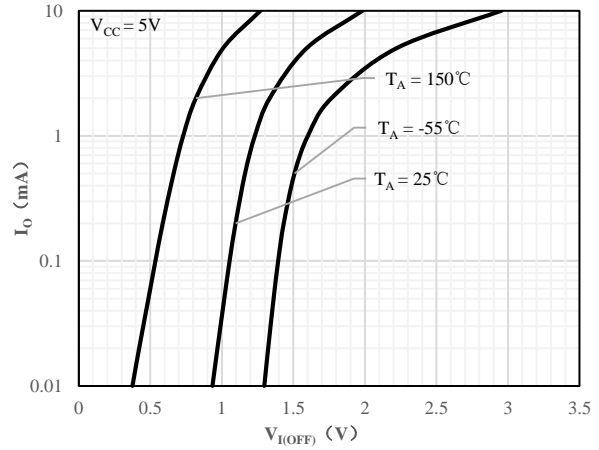


Fig 2 Output Current vs Input Voltage

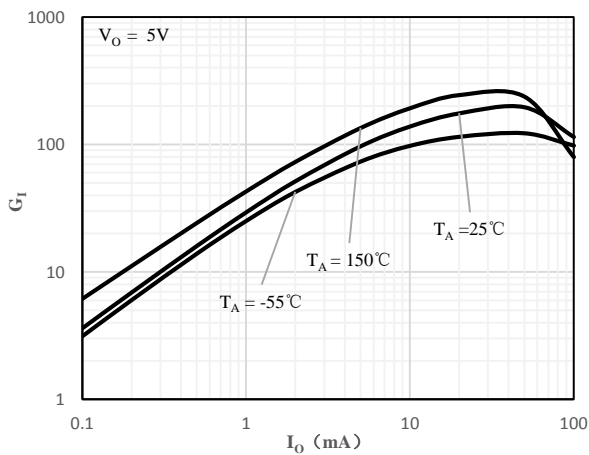


Fig 3 DC Current Gain vs Output Current

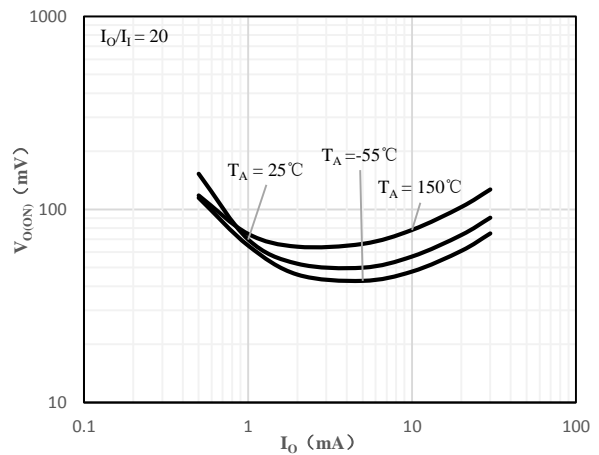


Fig 4 Output Voltage vs Output Current

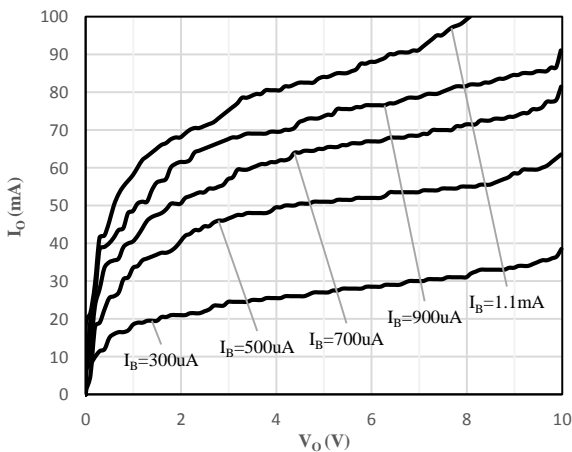
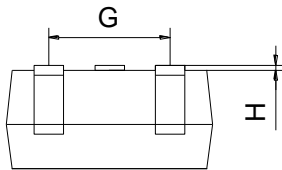
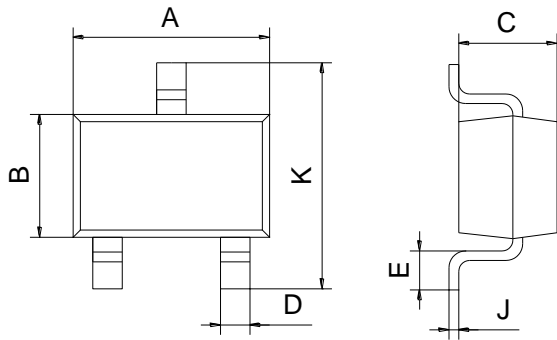
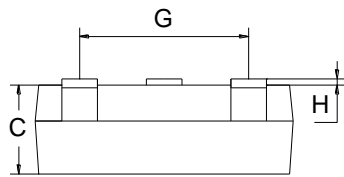
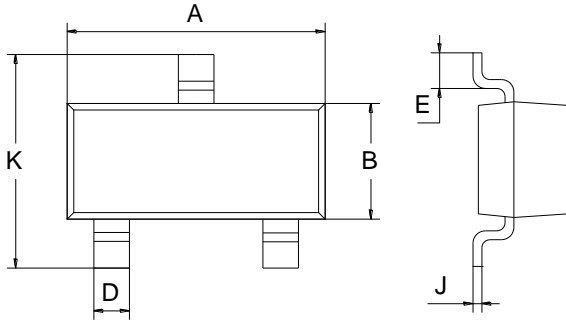


Fig 5 Output Current vs. Output Voltage

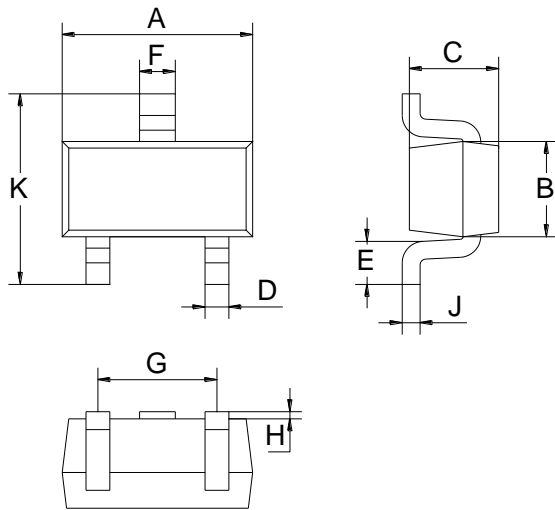


### Package Outline Dimensions (Unit: mm)

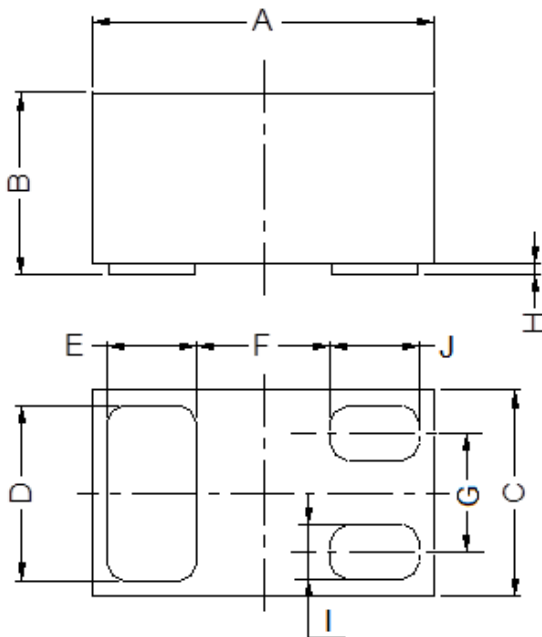


SOT-23		
Dimension	Min.	Max.
A	2.70	3.10
B	1.10	1.50
C	0.90	1.10
D	0.30	0.50
E	0.35	0.48
G	1.80	2.00
H	0.02	0.10
J	0.05	0.15
K	2.20	2.60

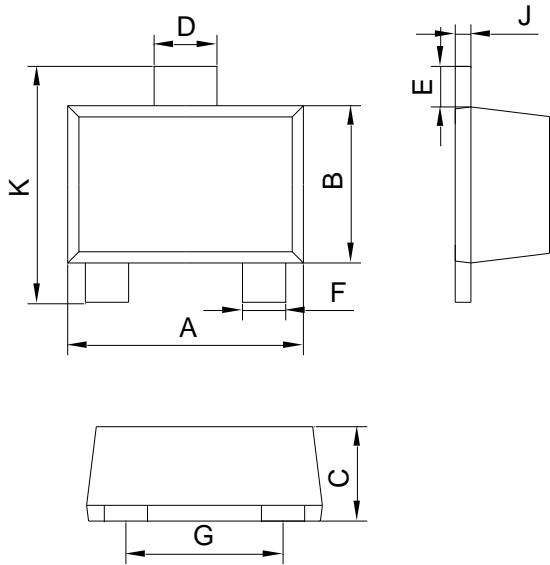
SOT-323		
Dimension	Min.	Max.
A	2.00	2.20
B	1.15	1.35
C	0.90	1.10
D	0.15	0.35
E	0.25	0.40
G	1.20	1.40
H	0.02	0.10
J	0.05	0.15
K	2.20	2.40



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



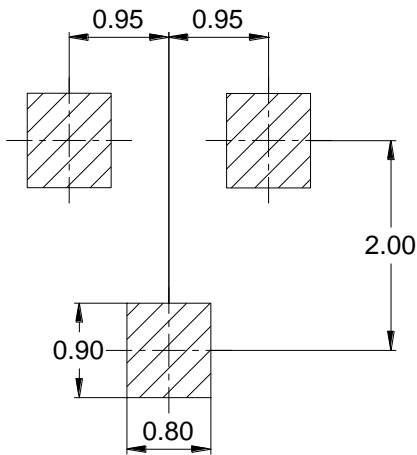
DFN1006-3			
Dimension	Min.	Typ.	Max.
A	0.95	1.00	1.075
B	0.47	0.50	0.53
C	0.55	0.60	0.675
D	0.45	0.50	0.55
E/J	0.20	0.25	0.30
F	-	0.40	-
G	-	0.35	-
H	0	0.03	0.05
I	0.10	0.15	0.20



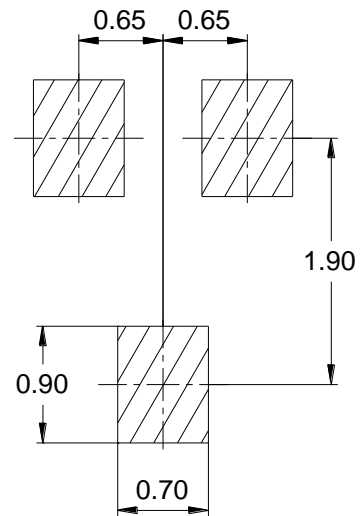
SOT-723		
Dimension	Min.	Max.
A	1.10	1.30
B	0.70	0.90
C	0.40	0.54
D	0.22	0.42
E	0.10	0.30
F	0.12	0.32
G	0.70	0.90
J	0.08	0.15
K	1.10	1.30

### Mounting Pad Layout (Unit: mm)

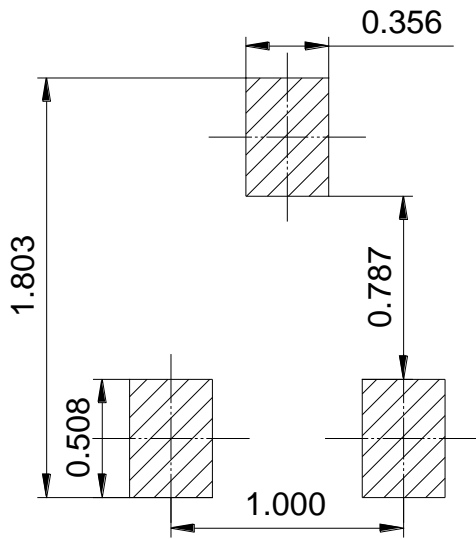
#### SOT-23



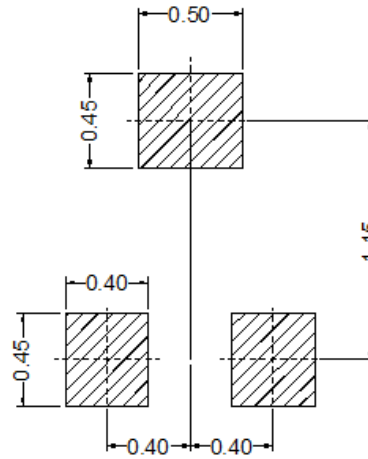
#### SOT-323



**SOT-523**



**SOT-723**



**DFN1006-3**

