

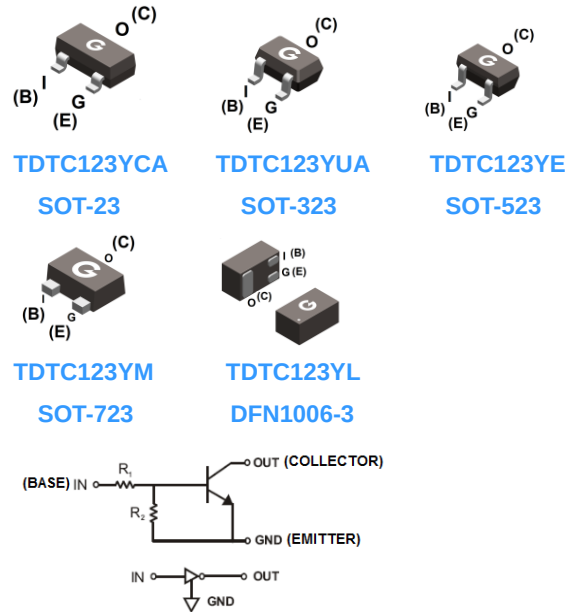
Features

- Epitaxial planar die construction
- Built-in biasing resistors (R_1 : 2.2k Ω , R_2 : 10k Ω)
- Also available in lead free version
- RoHS compliant with Halogen-free
- Qualified to AEC-Q101 Standards

HF

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
TDTC123YCA	SOT-23	3000 pcs / Tape & Reel	62
TDTC123YUA	SOT-323	3000 pcs / Tape & Reel	62
TDTC123YE	SOT-523	3000 pcs / Tape & Reel	62
TDTC123YM	SOT-723	10000 pcs / Tape & Reel	62
TDTC123YL	DFN1006-3	10000 pcs / Tape & Reel	62

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	-5 to +12					V
Output Current	I_O	100					mA
Collector Current	$I_{C(\text{Max})}$	100					mA
Power Dissipation	P_D	250	200	150	100	100	mW
Thermal Resistance Junction-to-Air ^{*1}	$R_{\theta JA}$	500	625	833	1250	1250	$^\circ\text{C/W}$
Junction Temperature Range	T_J	-55 ~ +150					$^\circ\text{C}$
Storage Temperature Range	T_{STG}	-55 ~ +150					$^\circ\text{C}$

Note 1: The data tested by surface mounted on an FR4 Printed-Circuit Board (PCB), single-sided copper, tin-plated and standard footprint

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

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Input Voltage	$V_{I(\text{OFF})}$	$V_{CC} = 5\text{V}, I_O = 100\mu\text{A}$	0.3	-	-	V
Input Voltage	$V_{I(\text{ON})}$	$V_O = 0.3\text{V}, I_O = 20\text{mA}$	-	-	3	V
Output Voltage	$V_{O(\text{on})}$	$I_O = 10\text{mA}, I_I = 0.5\text{mA}$	-	-	0.3	V
Input Current	I_I	$V_I = 5\text{V}$	-	-	3.8	mA
Output Current	$I_{O(\text{off})}$	$V_{CC} = 50\text{V}, V_I = 0\text{V}$	-	-	0.5	μA
DC Current Gain	G_I	$V_O = 5\text{V}, I_O = 10\text{mA}$	33	-	-	-
Input Resistor	R_1		1.54	2.2	2.86	k Ω
Resistance ratio	R_2/R_1		3.6	4.5	5.5	-
Gain-Bandwidth Product	f_T	$V_{CE} = 10\text{V}, I_E = 5\text{mA}$ $f = 100\text{MHz}$	-	250	-	MHz

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

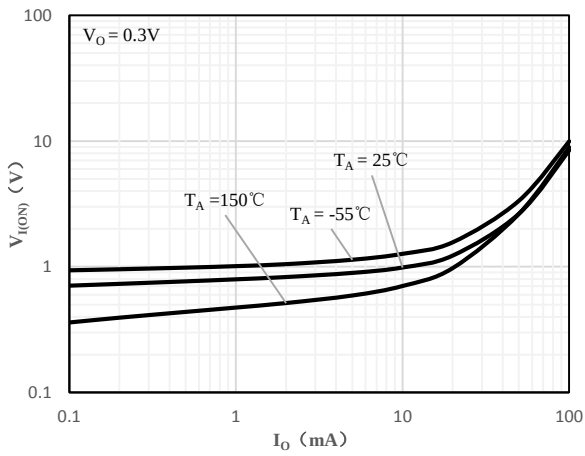


Fig 1 Input Voltage vs Output Current

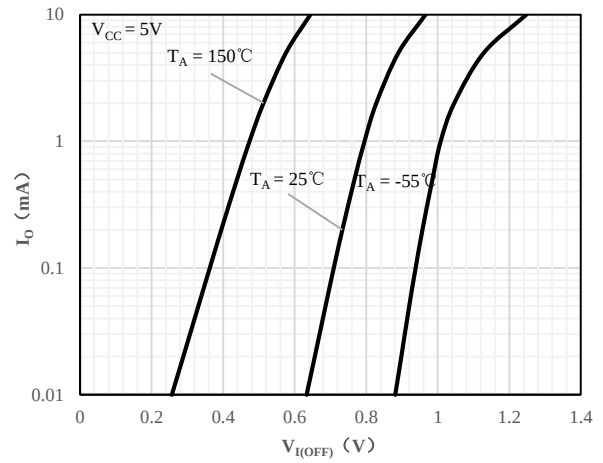


Fig 2 Output Current vs Input Voltage

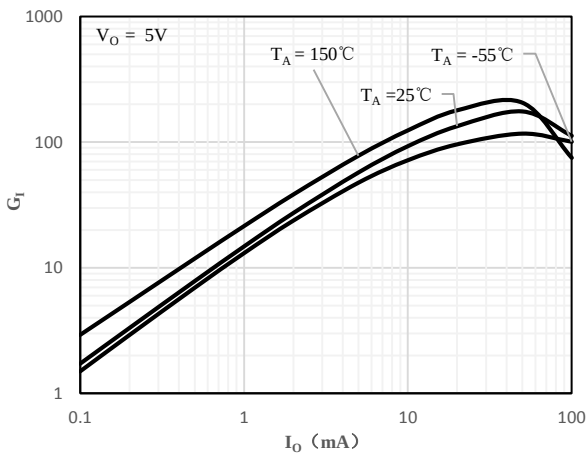


Fig 3 DC Current Gain vs Output Current

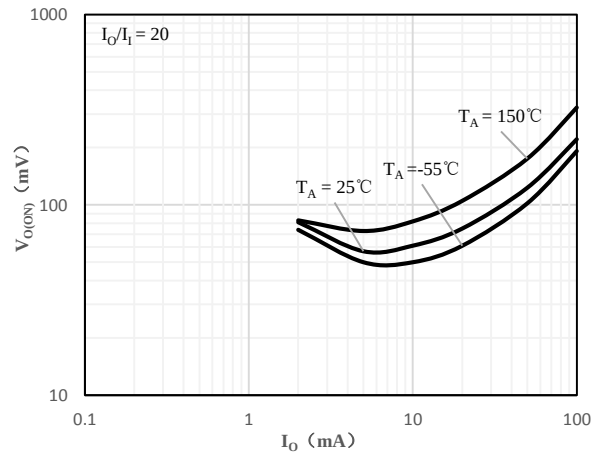


Fig 4 Output Voltage vs Output Current

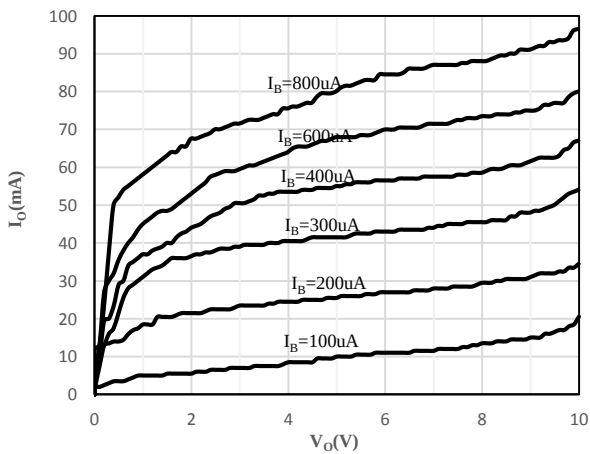
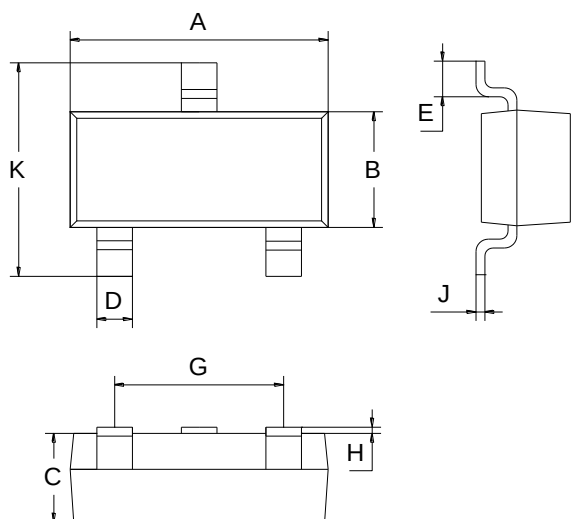
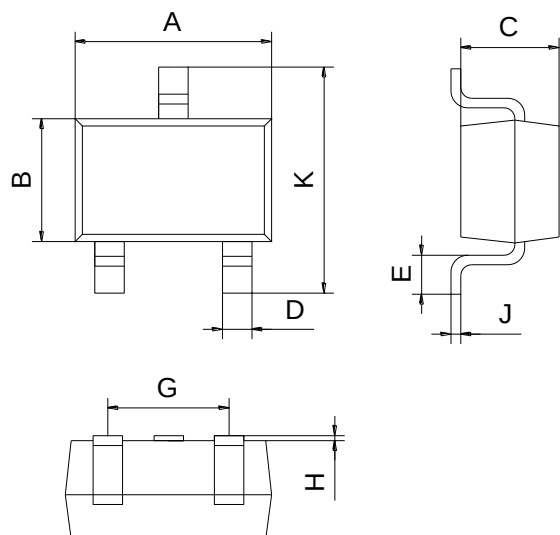


Fig 5 Output Current vs. Output Voltage

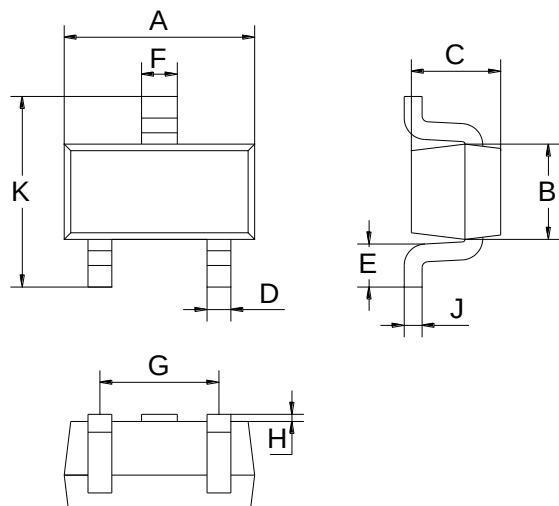
Package Outline Dimensions (Unit: mm)



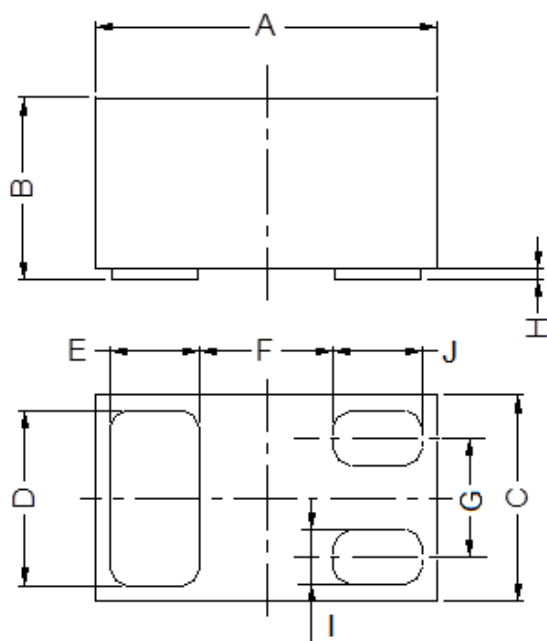
SOT-23		
Dimension	Min.	Max.
A	2.70	3.10
B	1.10	1.50
C	0.90	1.10
D	0.30	0.50
E	0.35	0.48
G	1.80	2.00
H	0.02	0.10
J	0.05	0.15
K	2.20	2.60



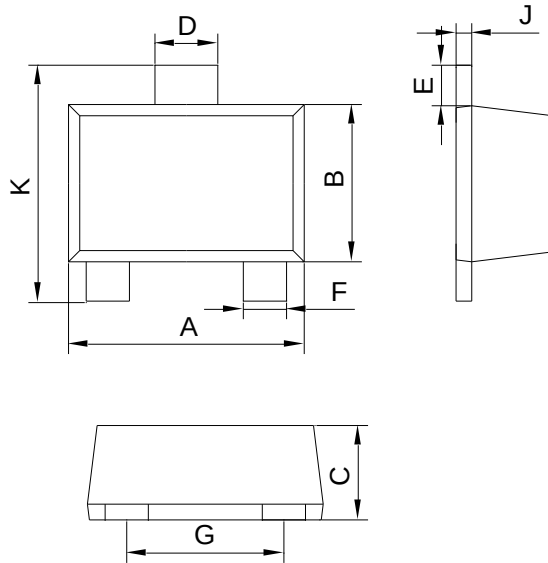
SOT-323		
Dimension	Min.	Max.
A	2.00	2.20
B	1.15	1.35
C	0.90	1.10
D	0.15	0.35
E	0.25	0.40
G	1.20	1.40
H	0.02	0.10
J	0.05	0.15
K	2.20	2.40



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



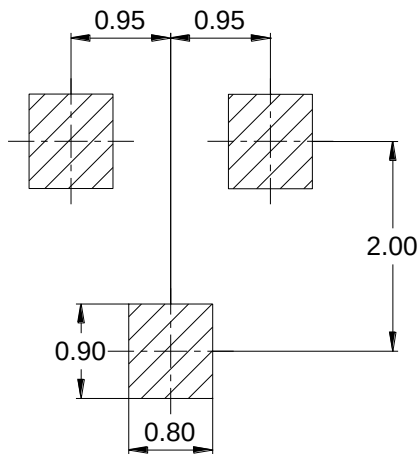
DFN1006-3			
Dimension	Min.	Typ.	Max.
A	0.95	1.00	1.075
B	0.47	0.50	0.53
C	0.55	0.60	0.675
D	0.45	0.50	0.55
E/J	0.20	0.25	0.30
F	-	0.40	-
G	-	0.35	-
H	0	0.03	0.05
I	0.10	0.15	0.20



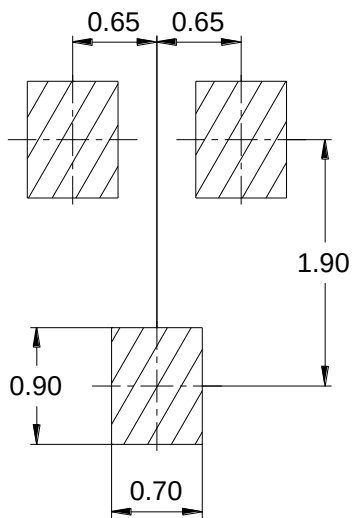
SOT-723		
Dimension	Min.	Max.
A	1.10	1.30
B	0.70	0.90
C	0.40	0.54
D	0.22	0.42
E	0.10	0.30
F	0.12	0.32
G	0.70	0.90
J	0.08	0.15
K	1.10	1.30

Mounting Pad Layout (Unit: mm)

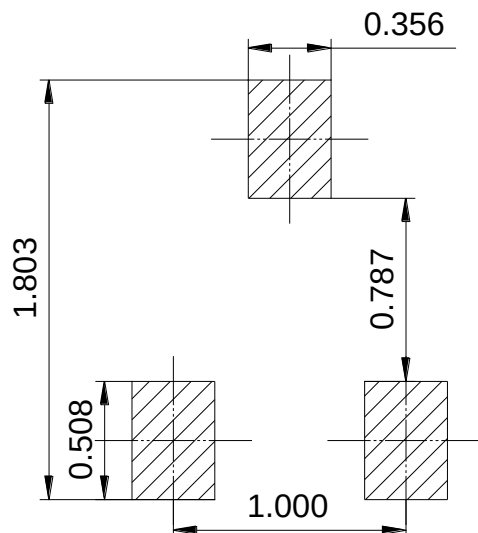
SOT-23



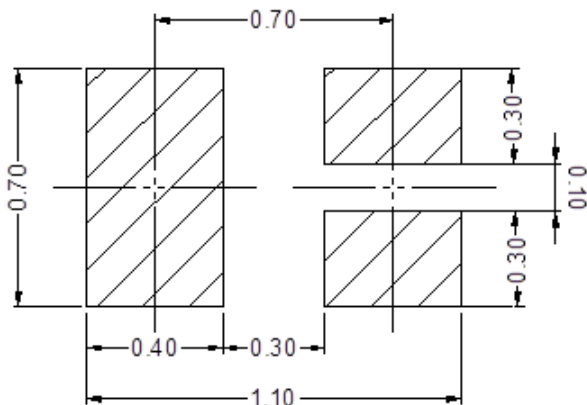
SOT-323



SOT-523



DFN1006-3



SOT-723

