Digital Transistor

TDTC114T Series

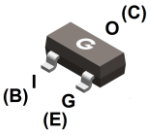
Features

HF

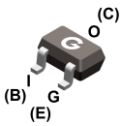
- Epitaxial planar die construction
- Built-in biasing resistors (R_1: 10kΩ)
- Also available in lead free version
- RoHS compliant with Halogen-free
- Qualified to AEC-Q101 Standards

Mechanical Data

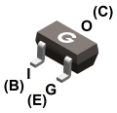
- Case: SOT-23, SOT-323, SOT-523, SOT-723, DFN1006-3
- Molding Compound: UL Flammability Classification Rating 94V-0
- Terminals: Matte tin-plated leads; solderability-per MIL-STD-202, Method 208



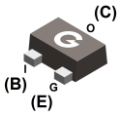
TDTC114TCA
SOT-23



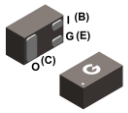
TDTC114TUA
SOT-323



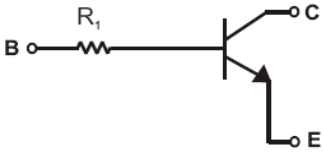
TDTC114TE
SOT-523



TDTC114TM
SOT-723



TDTC114TL
DFN1006-3



Ordering Information

Part Number	Package	Shipping Quantity	Marking Code
TDTC114TCA	SOT-23	3000 pcs / Tape & Reel	04
TDTC114TUA	SOT-323	3000 pcs / Tape & Reel	04
TDTC114TE	SOT-523	3000 pcs / Tape & Reel	04
TDTC114TM	SOT-723	10000 pcs / Tape & Reel	04
TDTC114TL	DFN1006-3	10000 pcs / Tape & Reel	04

Maximum Ratings (@ T_A = 25°C unless otherwise specified)

Parameter	Symbol	Value					Unit
		SOT-23	SOT-323	SOT-523	SOT-723	DFN1006-3	
Collector-Base Voltage	V_{CBO}	50					V
Collector-Emitter Breakdown Voltage	V_{CEO}	50					V
Emitter-Base Breakdown Voltage	V_{EBO}	5					V
Collector Current (Continuous)	I_C	100					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					°C
Storage Temperature Range	T_{STG}	-55 ~ +150					°C

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

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C = 50μA, I_E = 0	50	-	-	V
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C = 1mA, I_B = 0	50	-	-	V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	I_E = 50μA, I_C = 0	5	-	-	V
Collector Cut-off Current	I_{CBO}	V_{CB} = 50V, I_E = 0	-	-	0.5	μA
Emitter Cut-off Current	I_{EBO}	V_{EB} = 4V, I_C = 0	-	-	0.5	μA
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 = 10mA	-	-	1.7	V
Collector-emitter Saturation Voltage	$V_{CE(sat)}$	I_o = 10mA, I_I = 1mA	-	-	0.3	V
DC Current Gain	h_{FE}	V_O = 5V, I_O = 1mA	100	-	600	-
Input Resistor	R_1		7	10	13	kΩ
Gain-Bandwidth Product	f_T	V_{CE} = 10V, I_E = 5mA f = 100MHz	-	250	-	MHz

Ratings and Characteristic Curves (@ T_A = 25°C unless otherwise specified)

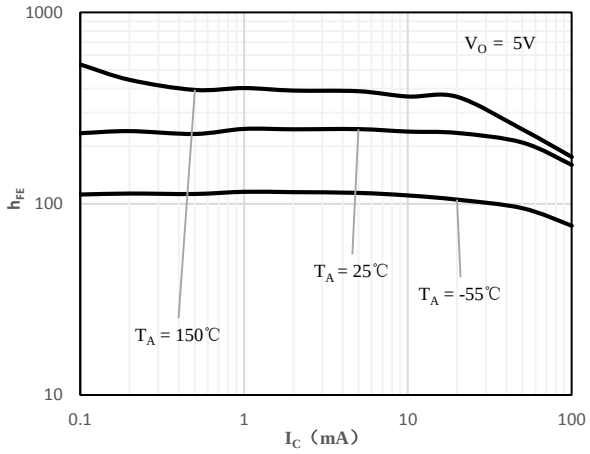


Fig 1 h_{FE} vs. I_C

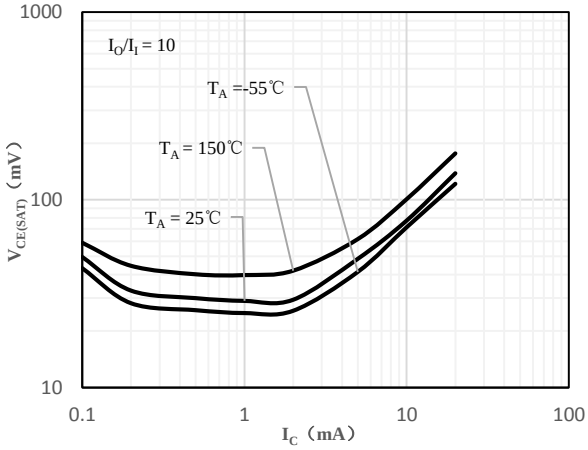


Fig 2 $V_{CE(sat)}$ vs. I_C

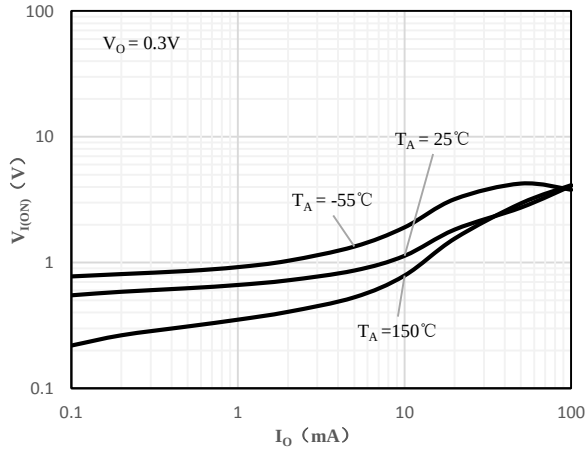


Fig 3 Input Voltage vs Output Current

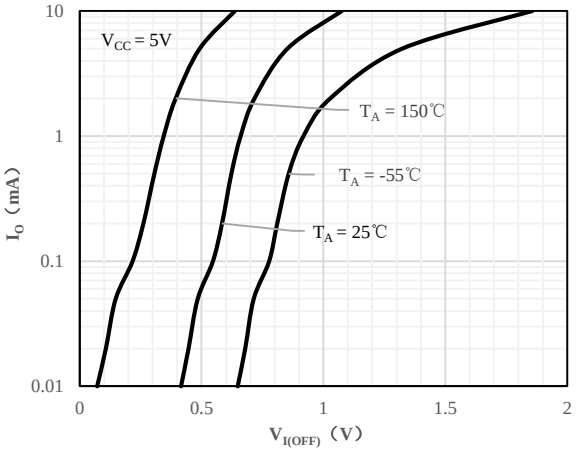
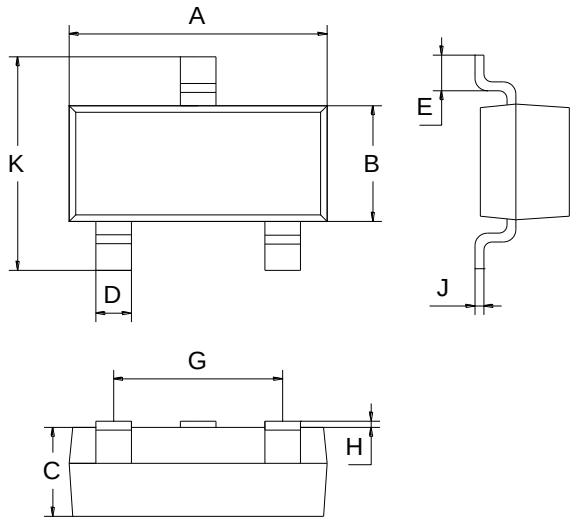
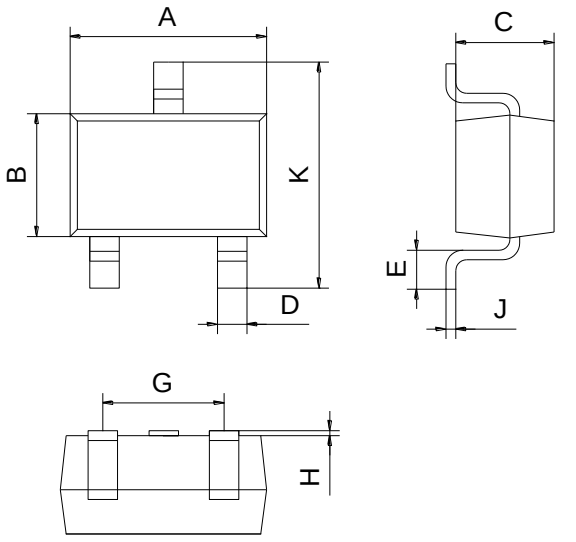


Fig 4 Output Current vs Input Voltage

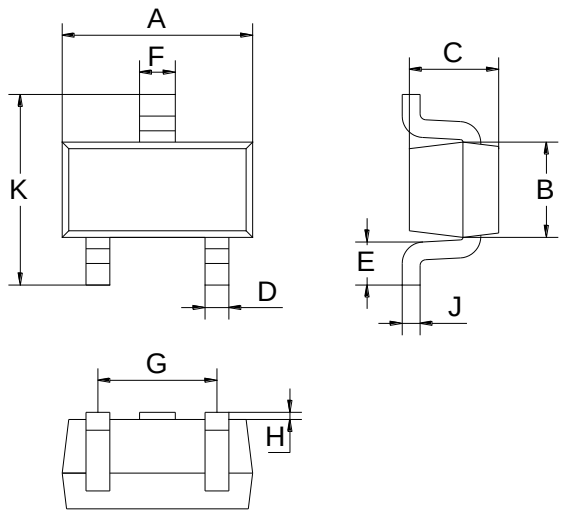
Package Outline Dimensions (Unit: mm)



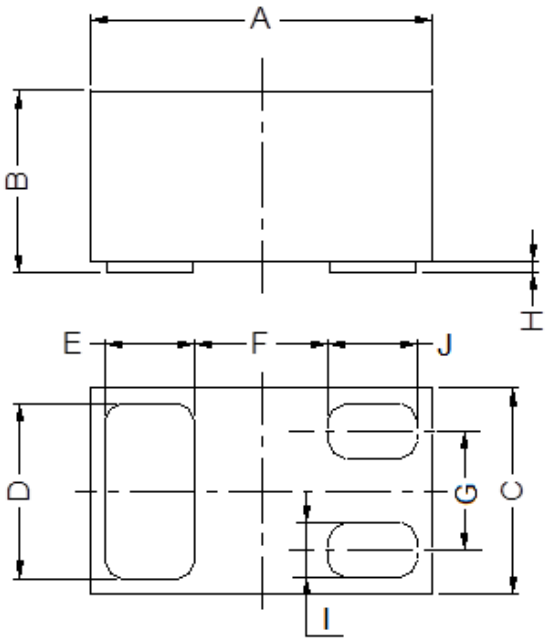
SOT-23		
Dimension	**Min.**	**Max.**
A	2.70	3.10
B	1.10	1.50
C	0.90	1.10
D	0.30	0.50
E	0.35	0.48
G	1.80	2.00
H	0.02	0.10
J	0.05	0.15
K	2.20	2.60



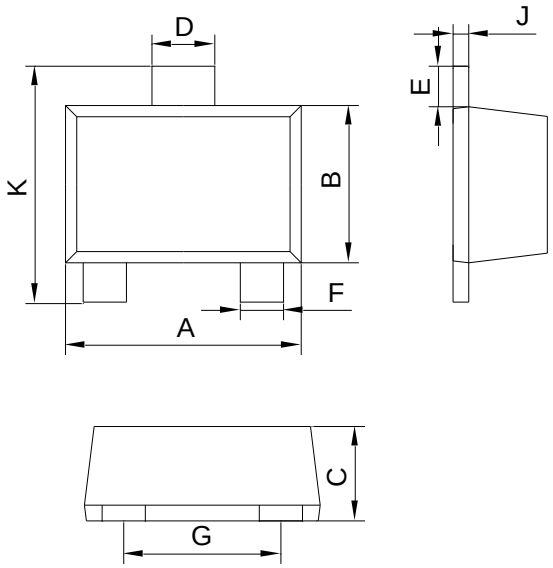
SOT-323		
Dimension	**Min.**	**Max.**
A	2.00	2.20
B	1.15	1.35
C	0.90	1.10
D	0.15	0.35
E	0.25	0.40
G	1.20	1.40
H	0.02	0.10
J	0.05	0.15
K	2.20	2.40



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



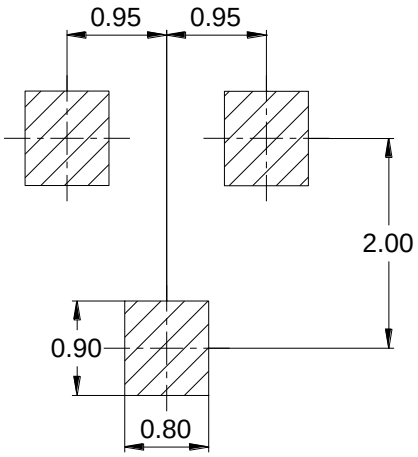
DFN1006-3			
Dimension	**Min.**	**Typ.**	**Max.**
A	0.95	1.00	1.075
B	0.47	0.50	0.53
C	0.55	0.60	0.675
D	0.45	0.50	0.55
E/J	0.20	0.25	0.30
F	-	0.40	-
G	-	0.35	-
H	0	0.03	0.05
I	0.10	0.15	0.20



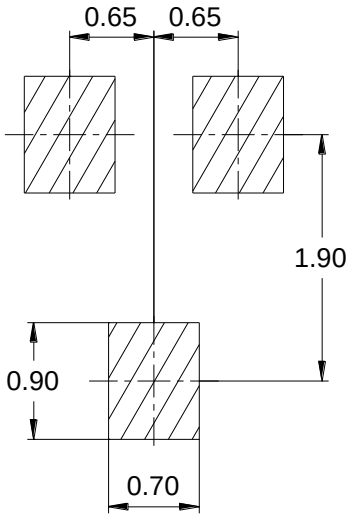
SOT-723		
Dimension	**Min.**	**Max.**
A	1.10	1.30
B	0.70	0.90
C	0.40	0.54
D	0.22	0.42
E	0.10	0.30
F	0.12	0.32
G	0.70	0.90
J	0.08	0.15
K	1.10	1.30

Mounting Pad Layout (Unit: mm)

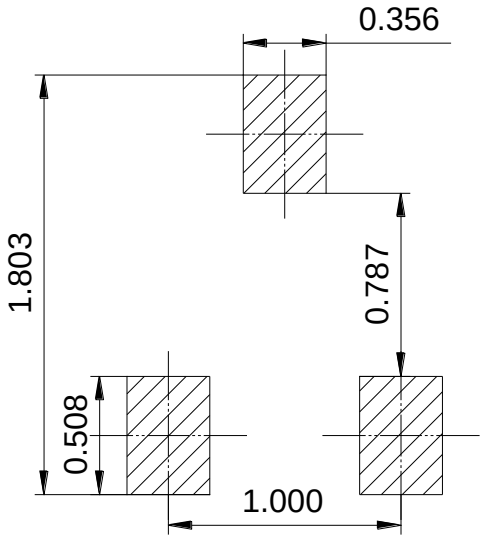
SOT-23



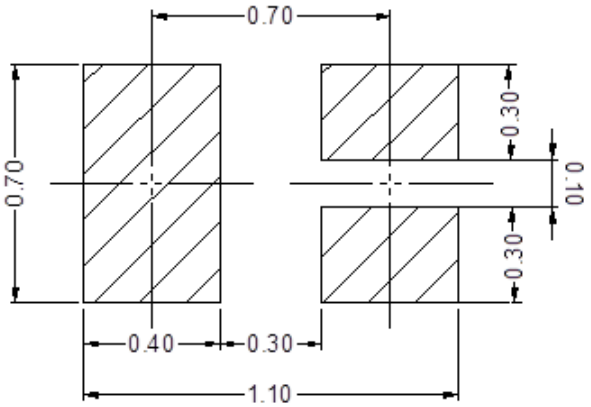
SOT-323



SOT-523



DFN1006-3



SOT-723

