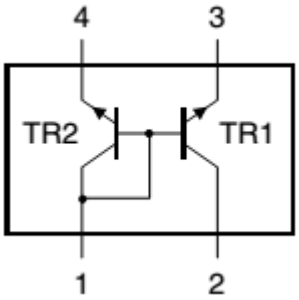
NPN General-purpose Double Transistor

BCV61

Features

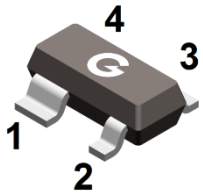
- Low current
- Low voltage
- Matched pairs
- RoHS compliant with Halogen-free

HF



Applications

- Applications With Working Point Independent of Temperature
- Current Mirrors



SOT-143

Mechanical Data

- Case: SOT-143
- Molding compound: UL flammability classification rating 94V-0
- Terminals: Tin-plated; solderability per MIL-STD-202, Method 208

Ordering Information

Part Number	Package	Shipping Quantity	Marking Code
BCV61	SOT-143	3000 pcs / Tape & Reel	1M
BCV61A	SOT-143	3000 pcs / Tape & Reel	1J
BCV61B	SOT-143	3000 pcs / Tape & Reel	1K
BCV61C	SOT-143	3000 pcs / Tape & Reel	1L

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

Parameter	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	30	V
Collector-Emitter Voltage	V_{CEO}	30	V
Emitter-Base Voltage	V_{EBO}	6	V
Collector Current	I_C	100	mA
Peak Collector Current	I_{CM}	200	mA

Thermal Characteristics

Parameter	Symbol	Value	Unit
Power Dissipation (T_A = 25°C)	P_D	250	mW
Thermal Resistance Junction-to-Air *1	$R_{\theta JA}$	320	°C/W
Thermal Resistance Junction-to-Case *1	$R_{\theta JC}$	230	°C/W
Thermal Resistance Junction-to-Lead *1	$R_{\theta JL}$	250	°C/W
Operating Junction Temperature	T_J	-65 ~ +150	°C
Storage Temperature Range	T_{STG}	-65 ~ +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 = 100μA, I_E = 0	30	-	-	V
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C = 10mA, I_B = 0	30	-	-	V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	I_E = 100μA, I_C = 0	6	-	-	V
Collector Cut-Off Current	I_{CBO}	V_{CB} = 30V, I_E = 0	-	-	15	nA
Emitter Cut-Off Current	I_{EBO}	V_{EB} = 5V, I_C = 0	-	-	100	nA
DC Current Gain	h_{FE}	V_{CE} = 5V, I_C = 100μA	100	-	-	-
		V_{CE} = 5V, I_C = 2mA, BCV61	110	-	800	-
		V_{CE} = 5V, I_C = 2mA, BCV61A	110	-	220	-
		V_{CE} = 5V, I_C = 2mA, BCV61B	200	-	450	-
		V_{CE} = 5V, I_C = 2mA, BCV61C	420	-	800	-
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	I_C = 10mA, I_B = 0.5mA	-	0.09	0.25	V
		I_C = 100mA, I_B = 5mA	-	0.20	0.60	V
Base−Emitter Saturation Voltage *2	$V_{BE(sat)}$	I_C= 10mA, I_B = 0.5mA	-	0.7	-	V
		I_C= 100mA, I_B = 5mA	-	0.9	1.00	V
Base−Emitter Turn−on Voltage *3	$V_{BE(on)}$	I_C = 2mA, V_{CE} = 5V	0.58	0.66	0.70	V
		I_C = 10mA, V_{CE} = 5V	-	-	0.77	V
Transition Frequency	f_T	V_{CE} = 5V, I_C = 10mA, f = 100MHz	100	-	-	MHz
Collector Output Capacitance	C_{ob}	V_{CB} = 10V, I_E = 0, f = 1MHz	-	2.5	-	pF
V_{BE} Matching	$\|V_{BE1}-V_{BE2}\|$	V_{CE} = 5V, I_C = 2mA	-	-	20	mV
h_{FE} Matching	h_{FE1}/h_{FE2}	V_{CE} = 5V, I_C = 2mA	0.8	-	1.2	-

Notes：

1. The data tested by surface mounted on a 1 $inch^2$ FR-4 board with 2OZ copper
2. V_{BEsat} decreases by about 1.7 mV/K with increasing temperature
3. V_{BE} decreases by about 2 mV/K with increasing temperature

Ratings and Characteristic Curves-BCV61A (@ T_A = 25°C unless otherwise specified)

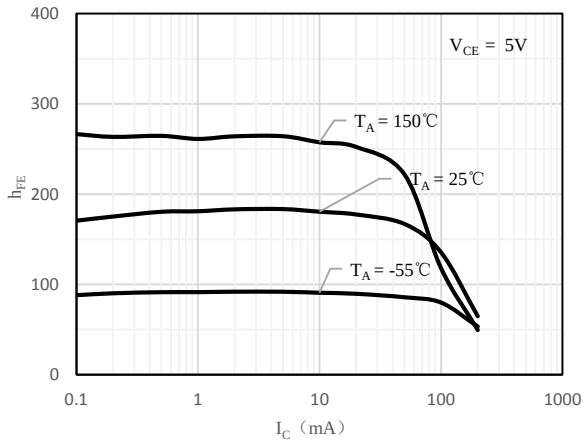


Fig 1 h_{FE} vs. I_C

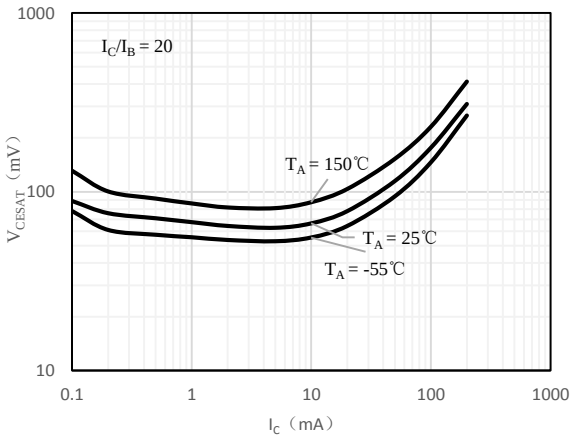


Fig 2 $V_{CE(sat)}$ vs. I_C

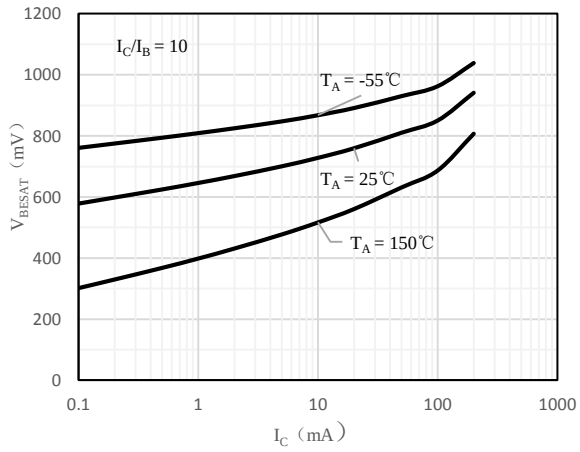


Fig 3 $V_{BE(sat)}$ vs. I_C

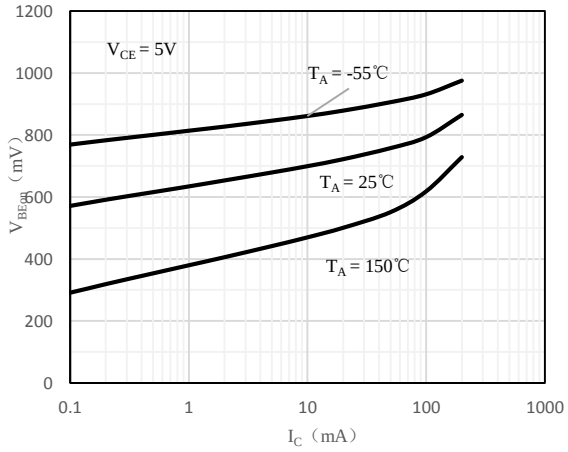


Fig 4 $V_{BE(ON)}$ vs. I_C

Ratings and Characteristic Curves-BCV61B (@ T_A = 25°C unless otherwise specified)

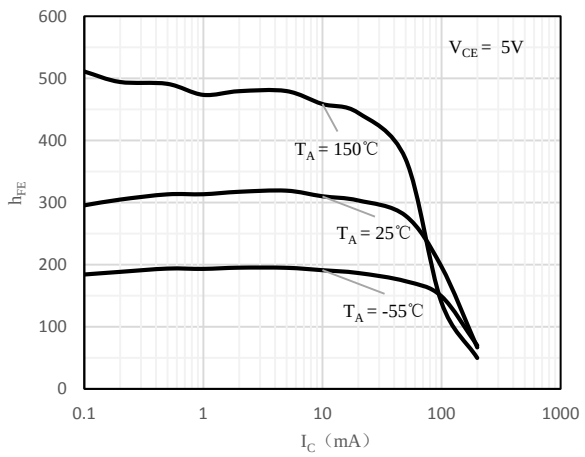


Fig 1 h_{FE} vs. I_C

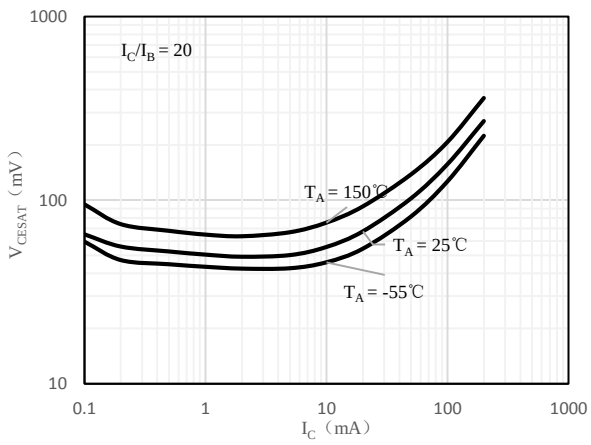


Fig 2 $V_{CE(sat)}$ vs. I_C

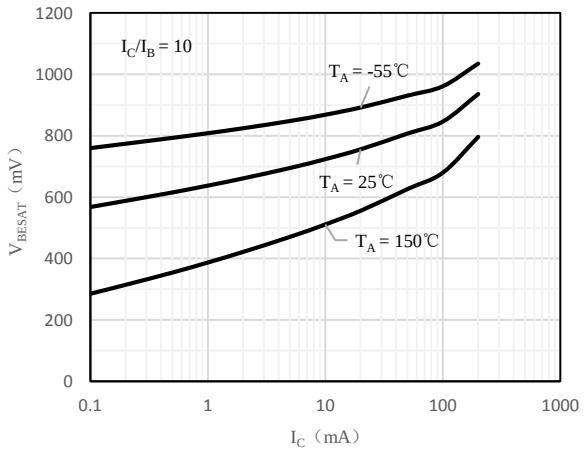


Fig 3 $V_{BE(sat)}$ vs. I_C

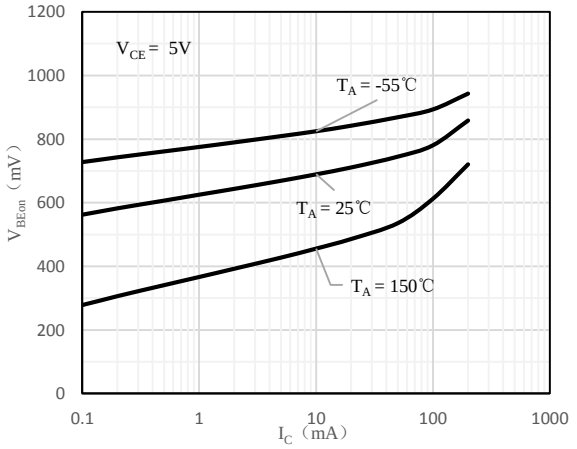


Fig 4 $V_{BE(ON)}$ vs. I_C

Ratings and Characteristic Curves-BCV61C (@ T_A = 25°C unless otherwise specified)

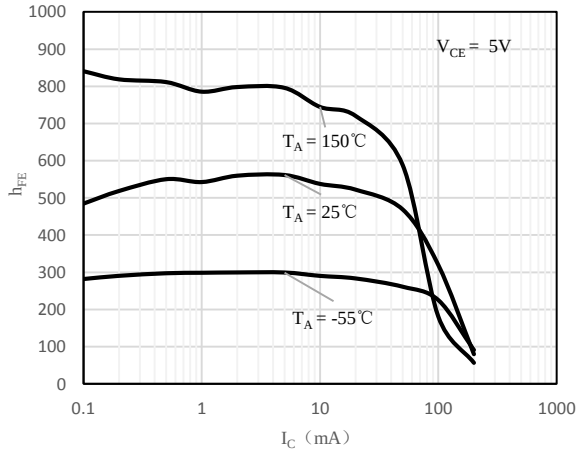


Fig 1 h_{FE} vs. I_C

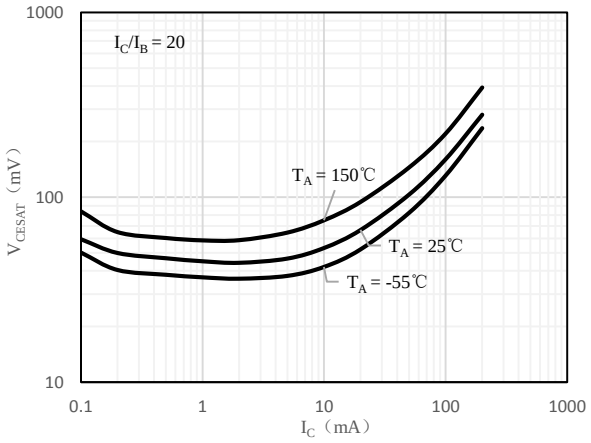


Fig 2 $V_{CE(sat)}$ vs. I_C

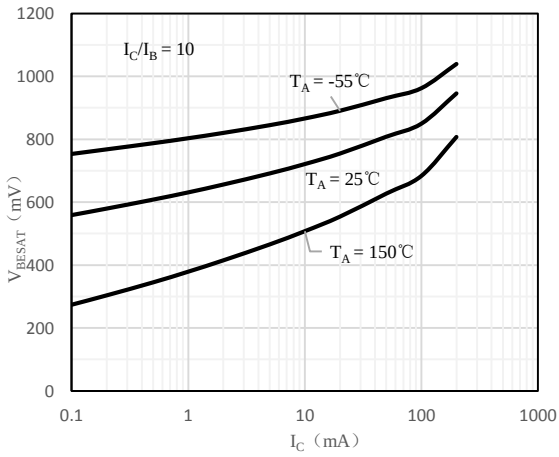


Fig 3 $V_{BE(sat)}$ vs. I_C

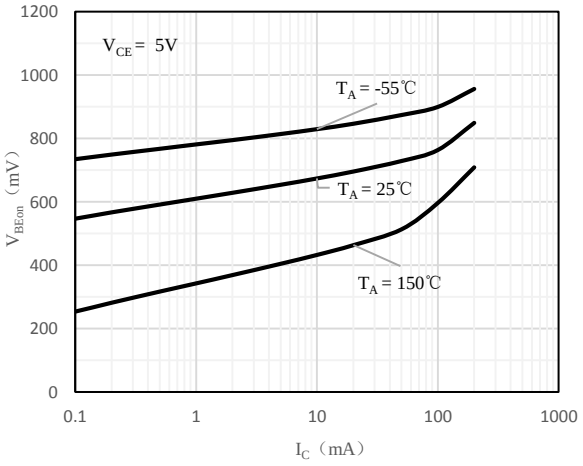
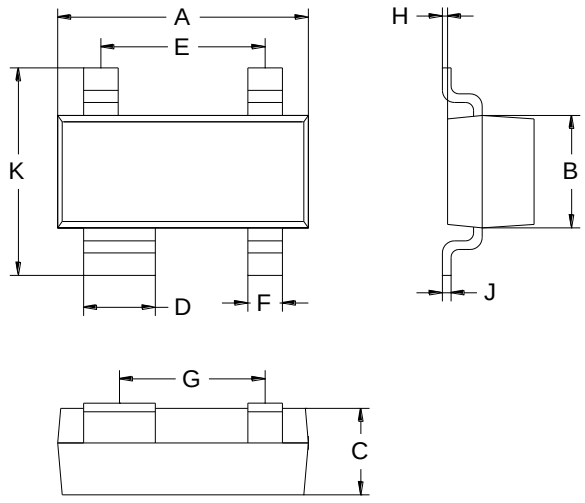
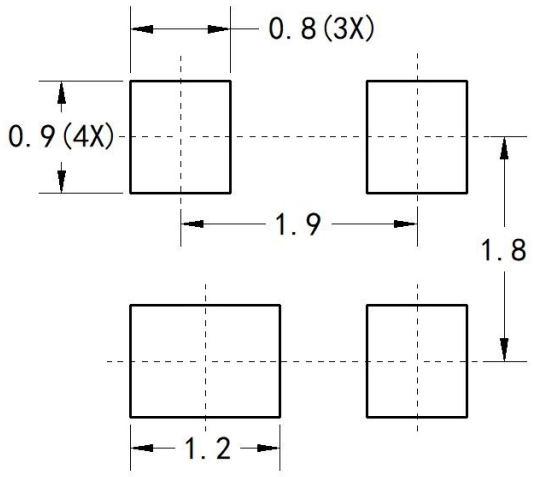


Fig 4 $V_{BE(ON)}$ vs. I_C

Package Outline Dimensions (Unit: mm)



SOT-143		
Dimension	**Min.**	**Max.**
A	2.70	3.10
B	1.10	1.50
C	0.90	1.10
D	0.78	0.88
E	1.80	2.00
F	0.37	0.43
G	1.59	1.79
H	0.02	0.10
J	0.05	0.15
K	2.20	2.60

Package Outline Dimensions (Unit: mm)

SOT-143