

Features

- Low current
- Low voltage
- Matched pairs
- RoHS compliant with Halogen-free
- Qualified to AEC-Q101 Standards

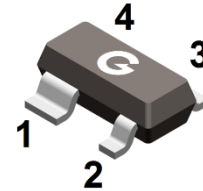
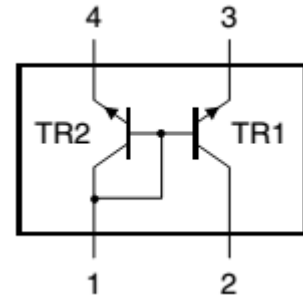
HF

Applications

- Applications With Working Point Independent of Temperature
- Current Mirrors

Mechanical Data

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



SOT-143

Ordering Information

Part Number	Package	Shipping Quantity	Marking Code
TBCV61	SOT-143	3000 pcs / Tape & Reel	1M
TBCV61A	SOT-143	3000 pcs / Tape & Reel	1J
TBCV61B	SOT-143	3000 pcs / Tape & Reel	1K
TBCV61C	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 _{θJA}	320	°C/W
Thermal Resistance Junction-to-Case ^{*1}	R _{θJC}	230	°C/W
Thermal Resistance Junction-to-Lead ^{*1}	R _{θJL}	250	°C/W
Operating Junction Temperature	T _J	-65 ~ +150	°C
Storage Temperature Range	T _{STG}	-65 ~ +150	°C

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

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C = 100\mu\text{A}, I_E = 0$	30	-	-	V
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = 10\text{mA}, I_B = 0$	30	-	-	V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E = 100\mu\text{A}, I_C = 0$	6	-	-	V
Collector Cut-Off Current	I_{CBO}	$V_{CB} = 30\text{V}, I_E = 0$	-	-	15	nA
Emitter Cut-Off Current	I_{EBO}	$V_{EB} = 5\text{V}, I_C = 0$	-	-	100	nA
DC Current Gain	h_{FE}	$V_{CE} = 5\text{V}, I_C = 100\mu\text{A}$	100	-	-	-
		$V_{CE} = 5\text{V}, I_C = 2\text{mA}, \text{TBCV61}$	110	-	800	-
		$V_{CE} = 5\text{V}, I_C = 2\text{mA}, \text{TBCV61A}$	110	-	220	-
		$V_{CE} = 5\text{V}, I_C = 2\text{mA}, \text{TBCV61B}$	200	-	450	-
		$V_{CE} = 5\text{V}, I_C = 2\text{mA}, \text{TBCV61C}$	420	-	800	-
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 10\text{mA}, I_B = 0.5\text{mA}$	-	0.09	0.25	V
		$I_C = 100\text{mA}, I_B = 5\text{mA}$	-	0.20	0.60	V
Base-Emitter Saturation Voltage ^{*2}	$V_{BE(sat)}$	$I_C = 10\text{mA}, I_B = 0.5\text{mA}$	-	0.7	-	V
		$I_C = 100\text{mA}, I_B = 5\text{mA}$	-	0.9	1.00	V
Base-Emitter Turn-on Voltage ^{*3}	$V_{BE(on)}$	$I_C = 2\text{mA}, V_{CE} = 5\text{V}$	0.58	0.66	0.70	V
		$I_C = 10\text{mA}, V_{CE} = 5\text{V}$	-	-	0.77	V
Transition Frequency	f_T	$V_{CE} = 5\text{V}, I_C = 10\text{mA}, f = 100\text{MHz}$	100	-	-	MHz
Collector Output Capacitance	C_{ob}	$V_{CB} = 10\text{V}, I_E = 0, f = 1\text{MHz}$	-	2.5	-	pF
V_{BE} Matching	$ V_{BE1} - V_{BE2} $	$V_{CE} = 5\text{V}, I_C = 2\text{mA}$	-	-	20	mV
h_{FE} Matching	h_{FE1}/h_{FE2}	$V_{CE} = 5\text{V}, I_C = 2\text{mA}$	0.8	-	1.2	-

Notes:

1. The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper
2. $V_{BE(sat)}$ 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-TBCV61A (@ $T_A = 25^\circ\text{C}$ unless otherwise specified)

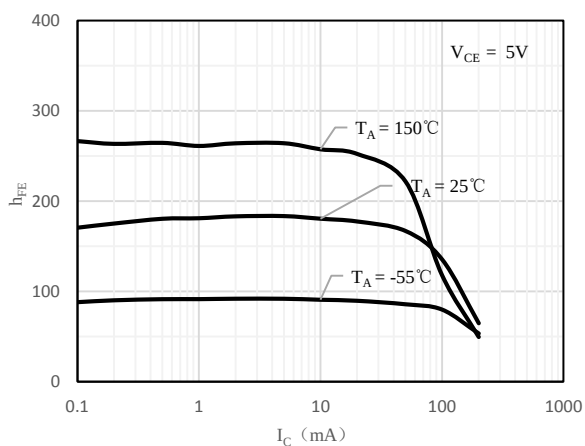


Fig 1 h_{FE} vs. I_C

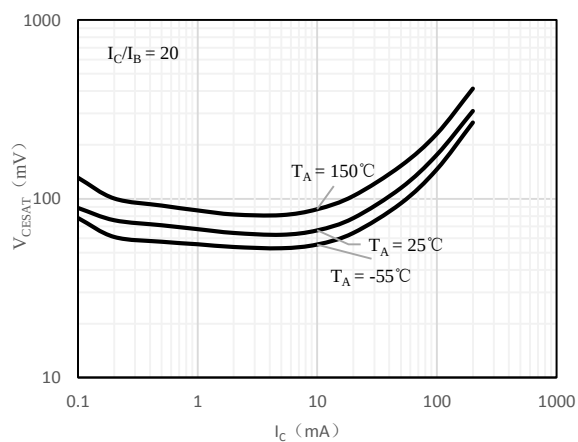


Fig 2 $V_{CE(sat)}$ vs. I_C

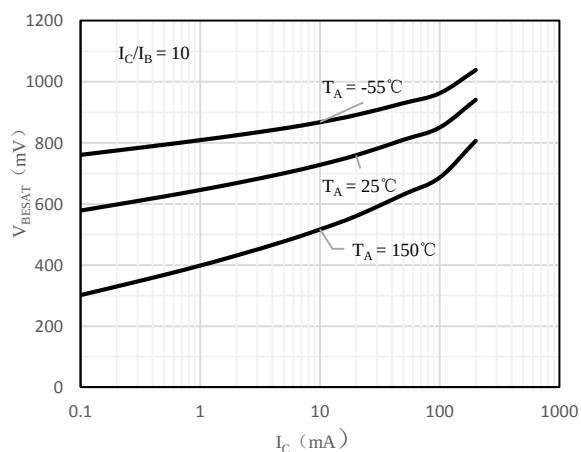


Fig 3 $V_{BE(sat)}$ vs. I_C

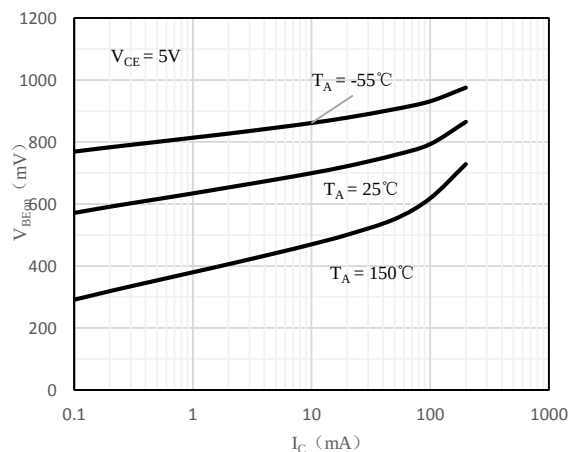


Fig 4 $V_{BE(ON)}$ vs. I_C

Ratings and Characteristic Curves-TBCV61B (@ $T_A = 25^\circ\text{C}$ unless otherwise specified)

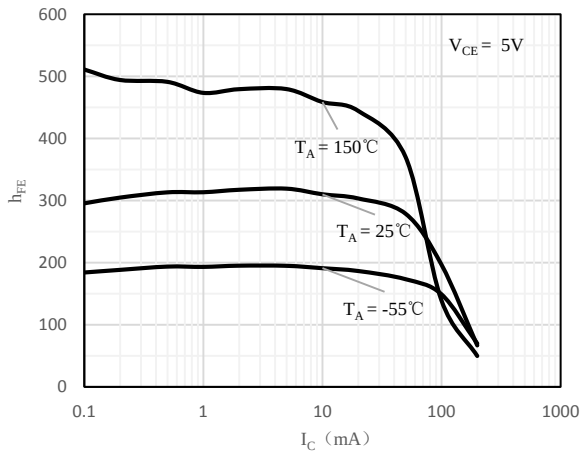


Fig 1 h_{FE} vs. I_C

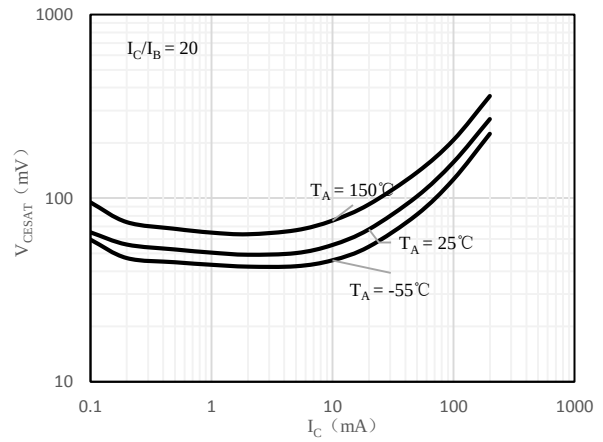


Fig 2 $V_{CE(sat)}$ vs. I_C

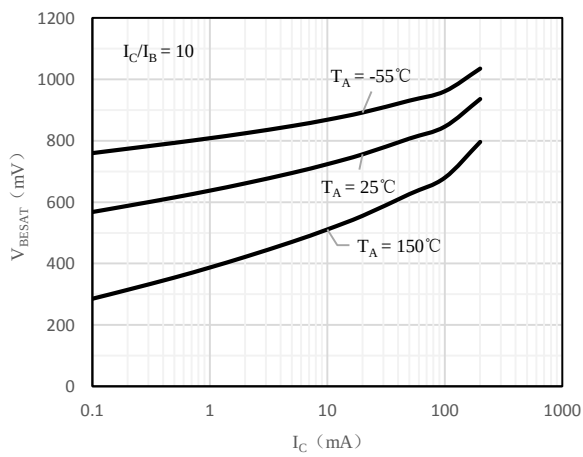


Fig 3 $V_{BE(sat)}$ vs. I_C

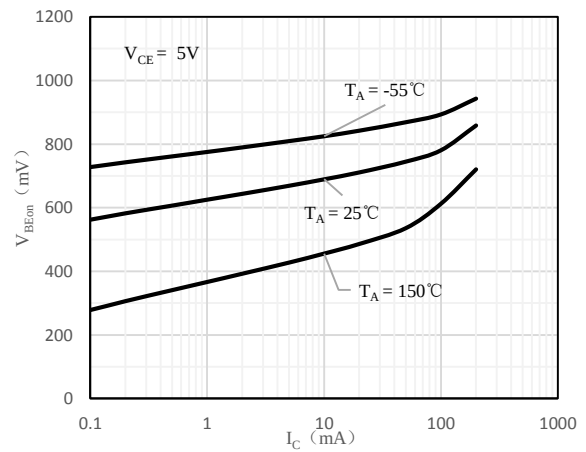


Fig 4 $V_{BE(on)}$ vs. I_C

Ratings and Characteristic Curves-TBCV61C (@ $T_A = 25^\circ\text{C}$ unless otherwise specified)

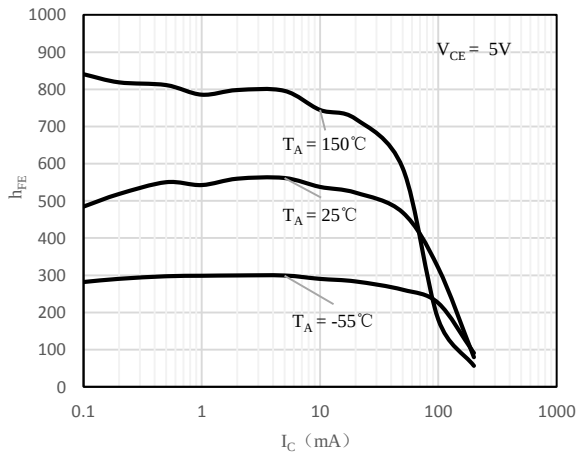


Fig 1 h_{FE} vs. I_C

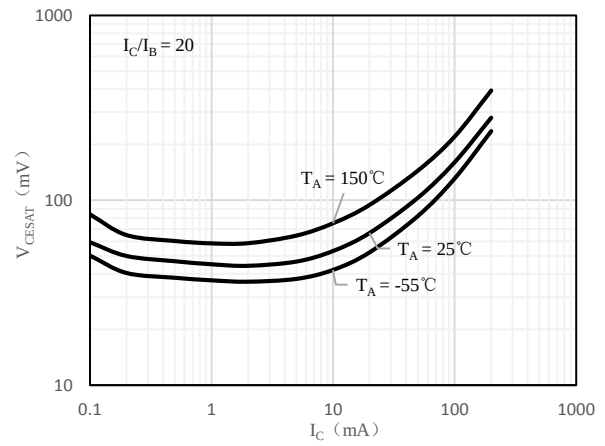


Fig 2 $V_{CE(sat)}$ vs. I_C

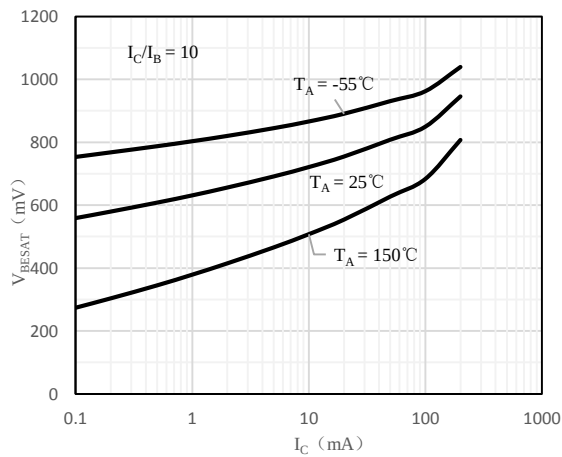


Fig 3 $V_{BE(sat)}$ vs. I_C

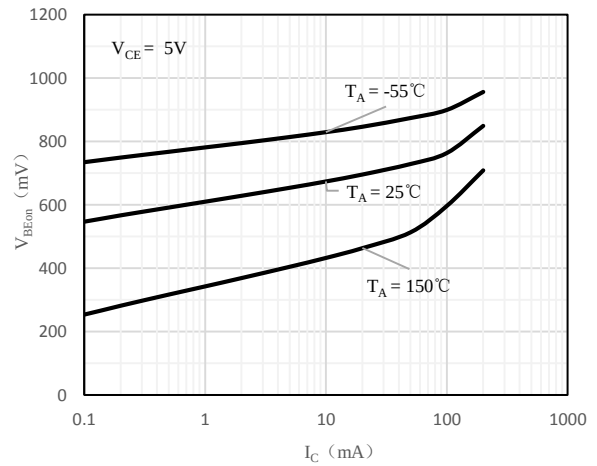
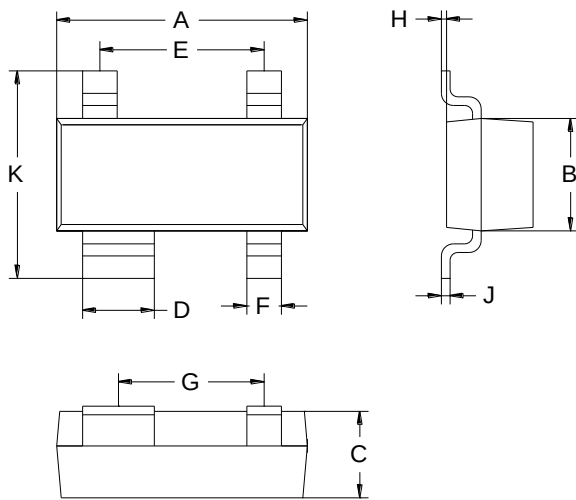


Fig 4 $V_{BE(on)}$ vs. I_C

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

