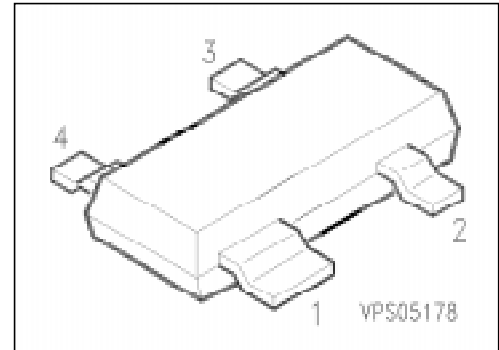


PNP Silicon Double Transistors

BCV 62

Preliminary Data

- To be used as a current mirror
- Good thermal coupling and V_{BE} matching
- High current gain
- Low emitter-saturation voltage



Type	Marking	Ordering Code (tape and reel)	Pin Configuration	Package ¹⁾
BCV 62 A BCV 62 B BCV 62 C	3Js 3Ks 3Ls	Q62702-C2158 Q62702-C2159 Q62702-C2160		SOT-143

Maximum Ratings

Parameter	Symbol	Values	Unit
Collector-emitter voltage (transistor T1)	V_{CE0}	30	V
Collector-base voltage (open emitter) (transistor T1)	V_{CB0}	30	
Emitter-base voltage	V_{EBS}	6	
Collector current	I_C	100	mA
Collector peak current	I_{CM}	200	
Base peak current (transistor T1)	I_{BM}	200	
Total power dissipation, $T_s = 99\text{ °C}^2)$	P_{tot}	300	mW
Junction temperature	T_j	150	°C
Storage temperature range	T_{stg}	- 65 ... + 150	

Thermal Resistance

Junction - ambient ²⁾	$R_{th JA}$	≤ 240	K/W
Junction - soldering point	$R_{th JS}$	≤ 170	

1) For detailed information see chapter Package Outlines.

2) Package mounted on epoxy pcb 40 mm × 40 mm × 1.5 mm/6 cm² Cu.

Electrical Characteristics

at $T_A = 25\text{ °C}$, unless otherwise specified.

Parameter	Symbol	Values			Unit
		min.	typ.	max.	

DC characteristics for transistor T1

Collector-emitter breakdown voltage $I_C = 10\text{ mA}$, $I_B = 0$	$V_{(BR)CE0}$	30	–	–	V
Collector-base breakdown voltage $I_C = 10\text{ }\mu\text{A}$, $I_B = 0$	$V_{(BR)CB0}$	30	–	–	
Emitter-base breakdown voltage $I_E = 10\text{ }\mu\text{A}$, $I_C = 0$	$V_{(BR)EBS}$	6	–	–	
Collector-base cutoff current $V_{CB} = 30\text{ V}$, $I_E = 0$ $V_{CB} = 30\text{ V}$, $I_E = 0$, $T_A = 150\text{ °C}$	I_{CB0}	–	–	15	nA
		–	–	5	μA
DC current gain ¹⁾ $I_C = 0.1\text{ mA}$, $V_{CE} = 5\text{ V}$ $I_C = 2\text{ mA}$, $V_{CE} = 5\text{ V}$	h_{FE}	100	–	–	–
		125	180	220	
BCV 62 A		220	290	475	
BCV 62 B BCV 62 C		420	520	800	
Collector-emitter saturation voltage ¹⁾ $I_C = 10\text{ mA}$, $I_B = 0.5\text{ mA}$ $I_C = 100\text{ mA}$, $I_B = 5\text{ mA}$	V_{CEsat}	–	75	300	mV
		–	250	650	
Base-emitter saturation voltage ¹⁾ $I_C = 10\text{ mA}$, $I_C = 0.5\text{ mA}$ $I_C = 100\text{ mA}$, $I_C = 5\text{ mA}$	V_{BEsat}	–	700	–	
		–	850	–	
Base-emitter voltage $I_C = 2\text{ mA}$, $V_{CE} = 5\text{ V}$ $I_C = 10\text{ mA}$, $V_{CE} = 5\text{ V}$	V_{BE}	600	650	750	
		–	–	820	

¹⁾ Pulse test conditions: $t \leq 300\text{ }\mu\text{s}$, $D = 2\text{ %}$.

Electrical Characteristics

at $T_A = 25\text{ °C}$, unless otherwise specified.

Parameter	Symbol	Values			Unit
		min.	typ.	max.	

DC characteristics for transistor T2

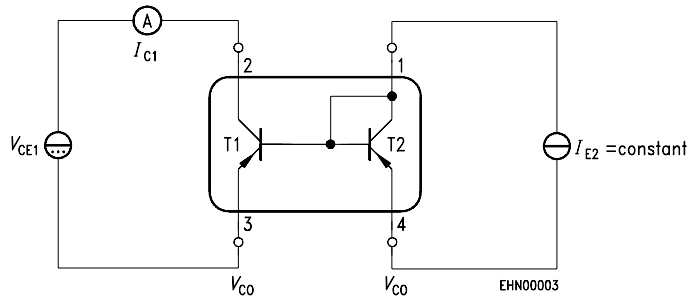
Base-emitter forward voltage $I_E = 10\text{ }\mu\text{A}$ $I_E = 250\text{ mA}$	V_{BES}	0.4 —	— —	— 1.8	V
Matching of transistor T1 and transistor T2 at $I_{E2} = 0.5\text{ mA}$ and $V_{CE1} = 5\text{ V}$ $T_A = 25\text{ °C}$ $T_A = 150\text{ °C}$	I_{C1} / I_{C2} I_{C1} / I_{C2}	0.7 0.7	— —	1.3 1.3	
Thermal coupling of transistor T1 and transistor T2 ¹⁾ T1: $V_{CE} = 5\text{ V}$ Maximum current for thermal stability of I_{C1}	I_{E2}	—	5	—	mA

AC characteristics for transistor T1

Transition frequency $I_C = 10\text{ mA}$, $V_{CE} = 5\text{ V}$, $f = 100\text{ MHz}$	f_T	—	250	—	MHz
Collector-base capacitance $V_{CB} = 10\text{ V}$, $I_C = i_C = 0$, $f = 1\text{ MHz}$	C_{cb}	—	3	—	pF
Input capacitance $V_{EB} = 0.5\text{ V}$, $I_C = i_C = 0$, $f = 1\text{ MHz}$	C_{ibo}	—	8	—	
Noise figure $I_C = 200\text{ }\mu\text{A}$, $V_{CE} = 5\text{ V}$, $R_S = 2\text{ k}\Omega$ $f = 1\text{ kHz}$, $B = 200\text{ Hz}$	F	—	2	—	dB
Input impedance $I_C = 1\text{ mA}$, $V_{CE} = 10\text{ V}$, $f = 1\text{ kHz}$	h_{11e}	—	4.5	—	k Ω
Open-circuit reverse voltage transfer ratio $I_C = 1\text{ mA}$, $V_{CE} = 10\text{ V}$, $f = 1\text{ kHz}$	h_{12e}	—	2	—	10^{-4}
Short-circuit forward current transfer ratio $I_C = 1\text{ mA}$, $V_{CE} = 10\text{ V}$, $f = 1\text{ kHz}$	h_{21e}	100	—	900	—
Open-circuit output admittance $I_C = 1\text{ mA}$, $V_{CE} = 10\text{ V}$, $f = 1\text{ kHz}$	h_{22e}	—	30	—	μS

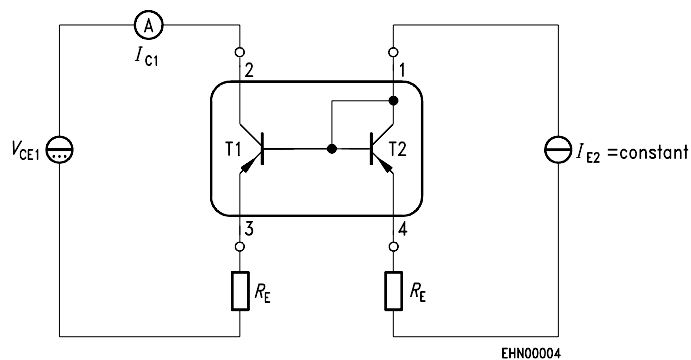
¹⁾ Without emitter resistor. Device mounted on alumina $15\text{ mm} \times 16.5\text{ mm} \times 0.7\text{ mm}$.

Test circuit for current matching



Note: Voltage drop at contacts: $V_{CO} < \frac{2}{3} V_T = 16 \text{ mV}$

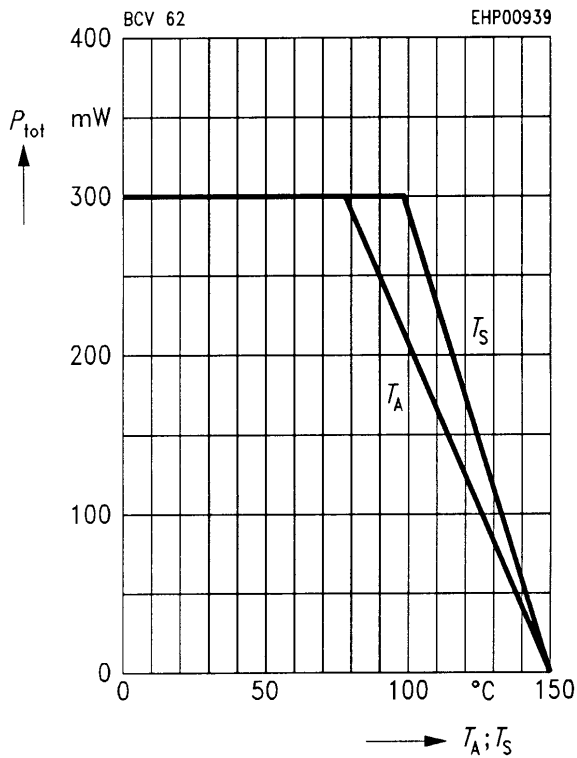
Characteristic for determination of V_{CE1} at specified R_E range with I_{E2} as parameter under condition of $I_{C1} / I_{E2} = 1.3$



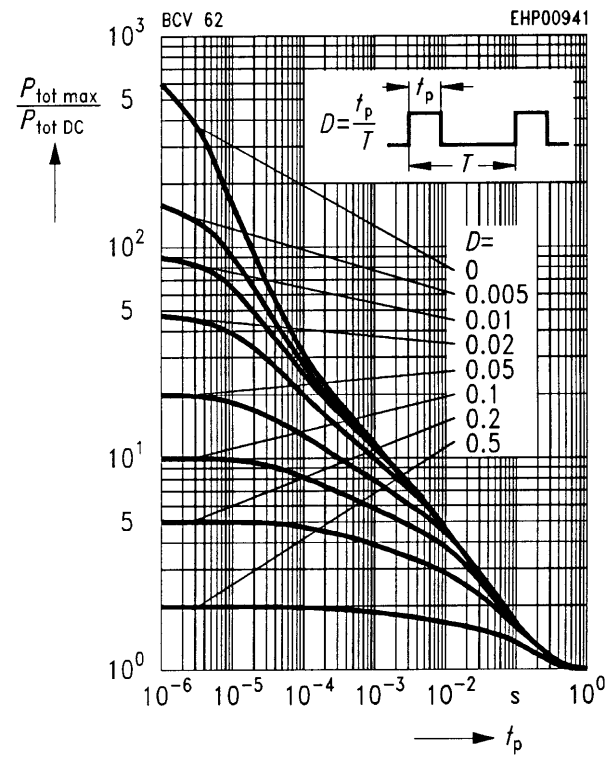
Note: BCV 62 with emitter resistors

Total power dissipation $P_{tot} = f(T_A^*; T_S)$

* Package mounted on epoxy



Permissible pulse load $P_{tot max}/P_{tot DC} = f(t_p)$



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