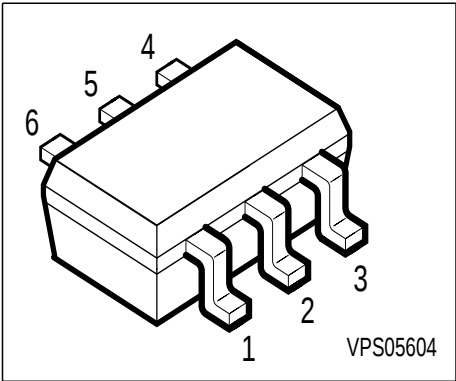
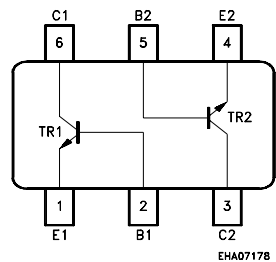


NPN Silicon Switching Transistor Array

- High DC current gain: 0.1mA to 100mA
- Low collector-emitter saturation voltage
- Two (galvanic) internal isolated Transistors with high matching in one package
- Complementary type: SMBT 3906S (PNP)



Type	Marking	Ordering Code	Pin Configuration			Package
SMBT 3904S	s1A	Q62702-A1201	1/4=E1/E2	2/5=B1/B2	3/6=C2/C1	SOT-363

Maximum Ratings

Parameter	Symbol	Value	Unit
Collector-emitter voltage	V_{CEO}	40	V
Collector-base voltage	V_{CBO}	60	
Emitter-base voltage	V_{EBO}	6	
DC collector current	I_C	200	mA
Total power dissipation, $T_S = 115\text{ }^{\circ}\text{C}$	P_{tot}	250	mW
Junction temperature	T_j	150	$^{\circ}\text{C}$
Storage temperature	T_{stg}	- 65...+150	

Thermal Resistance

Junction ambient ¹⁾	R_{thJA}	≤ 275	K/W
Junction - soldering point	R_{thJS}	≤ 140	

1) Package mounted on pcb 40mm x 40mm x 1.5mm / 0.5cm² Cu

Electrical Characteristics at $T_A = 25^\circ\text{C}$, unless otherwise specified.

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
DC Characteristics					
Collector-emitter breakdown voltage $I_C = 1\text{ mA}$, $I_B = 0$	$V_{(BR)CEO}$	40	-	-	V
Collector-base breakdown voltage $I_C = 10\text{ }\mu\text{A}$, $I_B = 0$	$V_{(BR)CBO}$	60	-	-	
Emitter-base breakdown voltage $I_E = 10\text{ }\mu\text{A}$, $I_C = 0$	$V_{(BR)EBO}$	6	-	-	
Collector cutoff current $V_{CB} = 30\text{ V}$, $I_E = 0$	I_{CBO}	-	-	50	nA
DC current gain 1) $I_C = 100\text{ }\mu\text{A}$, $V_{CE} = 1\text{ V}$ $I_C = 1\text{ mA}$, $V_{CE} = 1\text{ V}$ $I_C = 10\text{ mA}$, $V_{CE} = 1\text{ V}$ $I_C = 50\text{ mA}$, $V_{CE} = 1\text{ V}$ $I_C = 100\text{ mA}$, $V_{CE} = 1\text{ V}$	h_{FE}	40 70 100 60 30	- - - - -	- - 300 - -	-
Collector-emitter saturation voltage1) $I_C = 10\text{ mA}$, $I_B = 1\text{ mA}$ $I_C = 50\text{ mA}$, $I_B = 5\text{ mA}$	V_{CEsat}	- -	- -	0.2 0.3	V
Base-emitter saturation voltage 1) $I_C = 10\text{ mA}$, $I_B = 1\text{ mA}$ $I_C = 50\text{ mA}$, $I_B = 5\text{ mA}$	V_{BEsat}	0.65 -	- -	0.85 0.95	

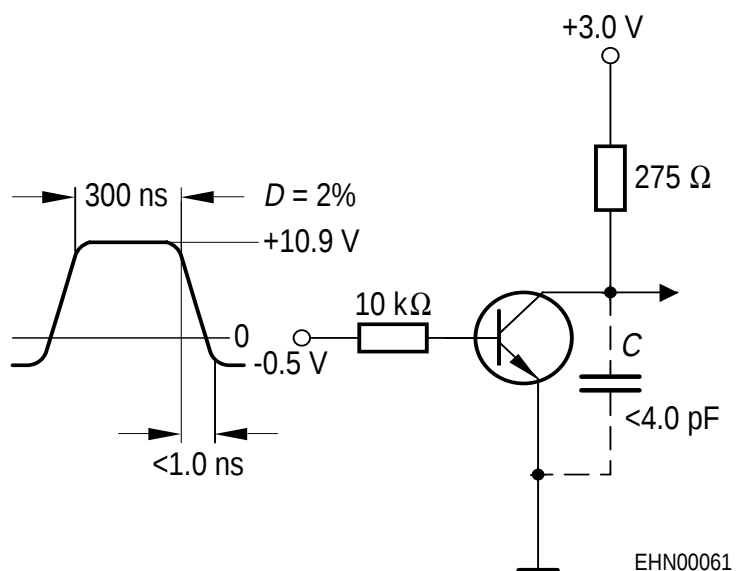
1) Pulse test: $t < 300\text{ }\mu\text{s}$; $D < 2\%$

Electrical Characteristics at $T_A = 25^\circ\text{C}$, unless otherwise specified.

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
AC Characteristics					
Transition frequency $I_C = 10\text{ mA}$, $V_{CE} = 20\text{ V}$, $f = 100\text{ MHz}$	f_T	300	-	-	MHz
Collector-base capacitance $V_{CB} = 5\text{ V}$, $f = 1\text{ MHz}$	C_{cb}	-	-	4	pF
Emitter-base capacitance $V_{EB} = 0.5\text{ V}$, $f = 1\text{ MHz}$	C_{eb}	-	-	8	
Short-circuit input impedance $I_C = 1\text{ mA}$, $V_{CE} = 10\text{ V}$, $f = 1\text{ kHz}$	h_{11e}	1	-	10	kΩ
Open-circuit reverse voltage transfer ratio $I_C = 1\text{ mA}$, $V_{CE} = 10\text{ V}$, $f = 1\text{ kHz}$	h_{12e}	0.5	-	8	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	-	400	-
Open-circuit output admittance $I_C = 1\text{ mA}$, $V_{CE} = 10\text{ V}$, $f = 1\text{ kHz}$	h_{22e}	1	-	40	μs
Noise figure $I_C = 100\text{ μA}$, $V_{CE} = 5\text{ V}$, $R_S = 1\text{ kΩ}$, $f = 1\text{ kHz}$, $\Delta f = 200\text{ Hz}$	F	-	-	5	dB
Delay time $V_{CC} = 3\text{ V}$, $I_C = 10\text{ mA}$, $I_{B1} = 1\text{ mA}$, $V_{BE(off)} = 0.5\text{ V}$	t_d	-	-	35	ns
Rise time $V_{CC} = 3\text{ V}$, $I_C = 10\text{ mA}$, $I_{B1} = 1\text{ mA}$, $V_{BE(off)} = 0.5\text{ V}$	t_r	-	-	35	
Storage time $V_{CC} = 3\text{ V}$, $I_C = 10\text{ mA}$, $I_{B1}=I_{B2} = 1\text{mA}$	t_{stg}	-	-	200	
Fall time $V_{CC} = 3\text{ V}$, $I_C = 10\text{ mA}$, $I_{B1}=I_{B2} = 1\text{mA}$	t_f	-	-	50	

Test circuit

Delay and rise time



Storage time and fall time

