

PNP Silicon Switching Transistors

PZT 2907
PZT 2907 A

- High DC current gain: 0.1 mA to 500 mA
- Low collector-emitter saturation voltage
- Complementary types: PZT 2222 (NPN)
PZT 2222 A (NPN)



Type	Marking	Ordering Code (tape and reel)	Pin Configuration				Package ¹⁾
			1	2	3	4	
PZT 2907 PZT 2907 A	ZT 2907 ZT 2907 A	Q62702-Z2028 Q62702-Z2025	B	C	E	C	SOT-223

Maximum Ratings

Parameter	Symbol	Values		Unit
		PZT 2907	PZT 2907 A	
Collector-emitter voltage	V_{CE0}	40	60	V
Collector-base voltage	V_{CB0}	60		
Emitter-base voltage	V_{EB0}	5		
Collector current	I_C	600		mA
Total power dissipation, $T_s = 110\text{ °C}$	P_{tot}	1.5		W
Junction temperature	T_j	150		°C
Storage temperature range	T_{stg}	- 65 ... + 150		

Thermal Resistance

Junction - ambient ²⁾	$R_{th\ JA}$	≤ 87	K/W
Junction - soldering point	$R_{th\ JS}$	≤ 27	

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					
Collector-emitter breakdown voltage $I_C = 10\text{ mA}$, $I_B = 0$	$V_{(BR)CE0}$				V
PZT 2907		40	–	–	
PZT 2907 A		60	–	–	
Collector-base breakdown voltage $I_C = 10\text{ }\mu\text{A}$, $I_B = 0$	$V_{(BR)CB0}$				
PZT 2907		60	–	–	
PZT 2907 A		60	–	–	
Emitter-base breakdown voltage $I_E = 10\text{ }\mu\text{A}$, $I_E = 0$	$V_{(BR)EB0}$	5	–	–	
Collector-base cutoff current $V_{CB} = 50\text{ V}$, $I_E = 0$	I_{CB0}				nA
PZT 2907		–	–	20	nA
PZT 2907 A		–	–	10	nA
$V_{CB} = 50\text{ V}$, $I_E = 0$, $T_A = 150\text{ °C}$					μA
PZT 2907		–	–	20	μA
PZT 2907 A		–	–	10	μA
Emitter-base cutoff current $V_{EB} = 3\text{ V}$, $I_C = 0$	I_{EB0}	–	–	10	nA
Collector-emitter cutoff current $V_{CE} = 30\text{ V}$, + $V_{BE} = 0.5\text{ V}$	I_{CEV}	–	–	50	
Collector-base cutoff current $V_{CE} = 30\text{ V}$, + $V_{BE} = 0.5\text{ V}$	I_{EBV}	–	–	50	
DC current gain ¹⁾ $I_C = 0.1\text{ mA}$, $V_{CE} = 10\text{ V}$	h_{FE}				–
PZT 2907		35	–	–	
PZT 2907 A		75	–	–	
$I_C = 1\text{ mA}$, $V_{CE} = 10\text{ V}$					
PZT 2907		50	–	–	
PZT 2907 A		100	–	–	
$I_C = 10\text{ mA}$, $V_{CE} = 10\text{ V}$					
PZT 2907		75	–	–	
PZT 2907 A		100	–	–	
$I_C = 150\text{ mA}$, $V_{CE} = 10\text{ V}$					
PZT 2907		100	–	300	
PZT 2907 A		100	–	300	
$I_C = 500\text{ mA}$, $V_{CE} = 10\text{ V}$					
PZT 2907		30	–	–	
PZT 2907 A		50	–	–	

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

Electrical Characteristics

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

Parameter	Symbol	Values			Unit
		min.	typ.	max.	

DC characteristics

Collector-emitter saturation voltage ¹⁾ $I_C = 150\text{ mA}$, $I_B = 15\text{ mA}$ $I_C = 500\text{ mA}$, $I_B = 50\text{ mA}$	V_{CEsat}	–	–	0.4 1.6	V
Base-emitter saturation voltage ¹⁾ $I_C = 150\text{ mA}$, $I_B = 15\text{ mA}$ $I_C = 500\text{ mA}$, $I_B = 50\text{ mA}$	V_{BEsat}	–	–	1.3 2.6	

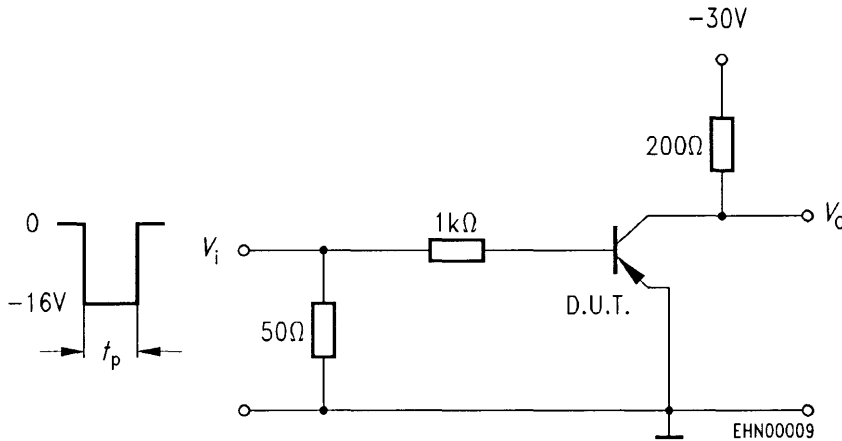
AC characteristics

Transition frequency $I_C = 20\text{ mA}$, $V_{CE} = 20\text{ V}$, $f = 100\text{ MHz}$	f_T	200	–	–	MHz
Collector-base capacitance $V_{CB} = 10\text{ V}$, $f = 1\text{ MHz}$	C_{obo}	–	–	8	pF
Input capacitance $V_{EB} = 0.5\text{ V}$, $f = 1\text{ MHz}$	C_{ibo}	–	–	30	
$V_{CC} = 30\text{ V}$, $I_C = 150\text{ mA}$, $I_{B1} = 15\text{ mA}$ Delay time	t_d	–	–	10	ns
Rise time	t_r	–	–	40	ns
$V_{CC} = 6\text{ V}$, $I_C = 150\text{ mA}$, $I_{B1} = I_{B2} = 15\text{ mA}$ Storage time	t_{stg}	–	–	80	ns
Fall time (see diagrams)	t_f	–	–	30	ns

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

Input waveform and test circuit for determining delay, rise and turn-on time

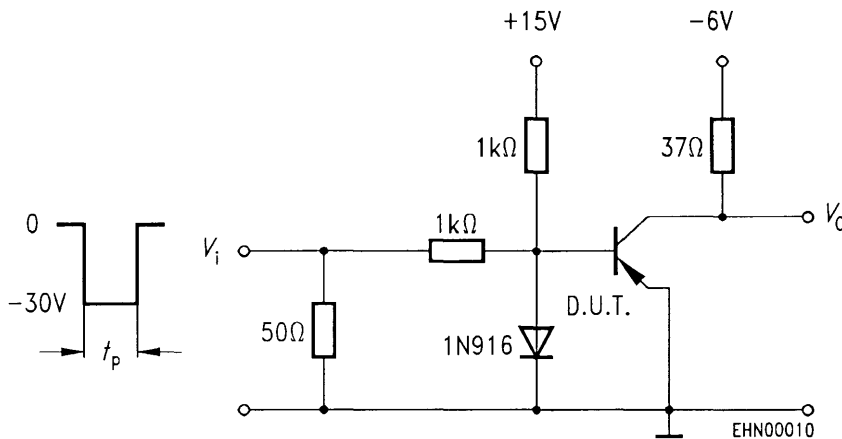
Turn-on time when switched to $-I_{Con} = 150 \text{ mA}$; $-I_{Bon} = 15 \text{ mA}$



Input waveform and test circuit for determining storage, fall and turn-off time

Turn-off time when switched to $-I_{Con} = 150 \text{ mA}$;

$-I_{Bon} = 15 \text{ mA}$ to cut-off with $+I_{Boff} = 15 \text{ mA}$



Pulse generator:

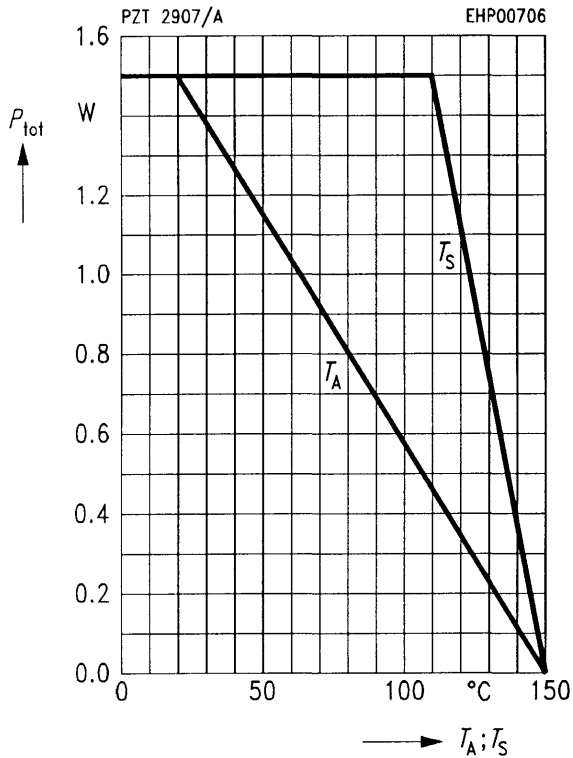
duty factor $D = 2 \%$
 pulse duration $t_p = 200 \text{ ns}$
 rise time $t_r \leq 2 \text{ ns}$
 output impedance $Z_o = 50 \Omega$

Oscillograph:

rise time $t_r \leq 5 \text{ ns}$
 output impedance $Z_i = 10 \text{ M}\Omega$

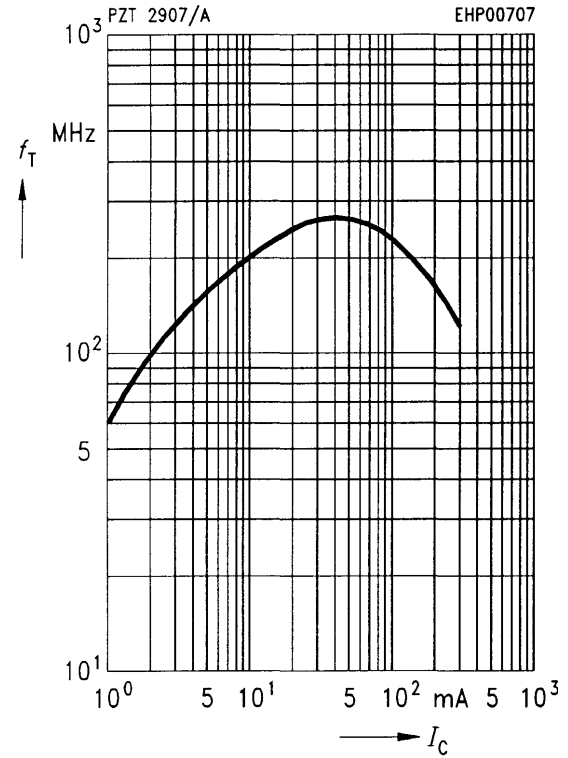
Total power dissipation $P_{tot} = f(T_A^*; T_S)$

* Package mounted on epoxy



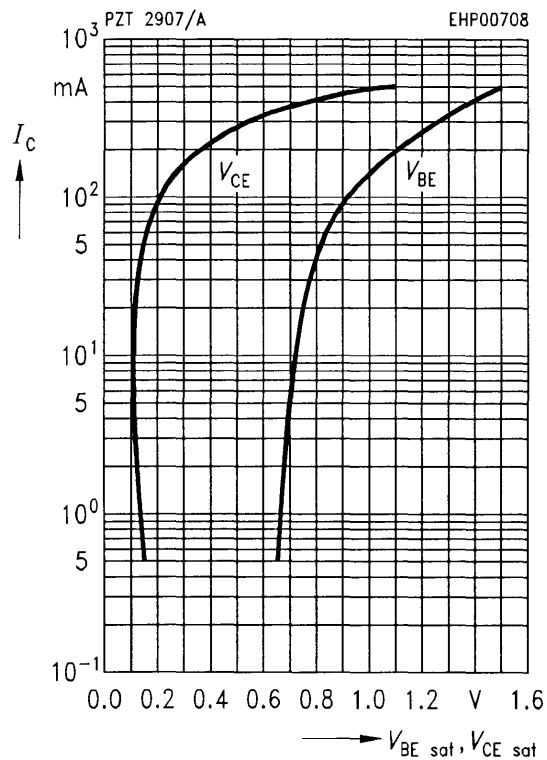
Transition frequency $f_T = f(I_C)$

$V_{CE} = 20 \text{ V}, f = 100 \text{ MHz}$



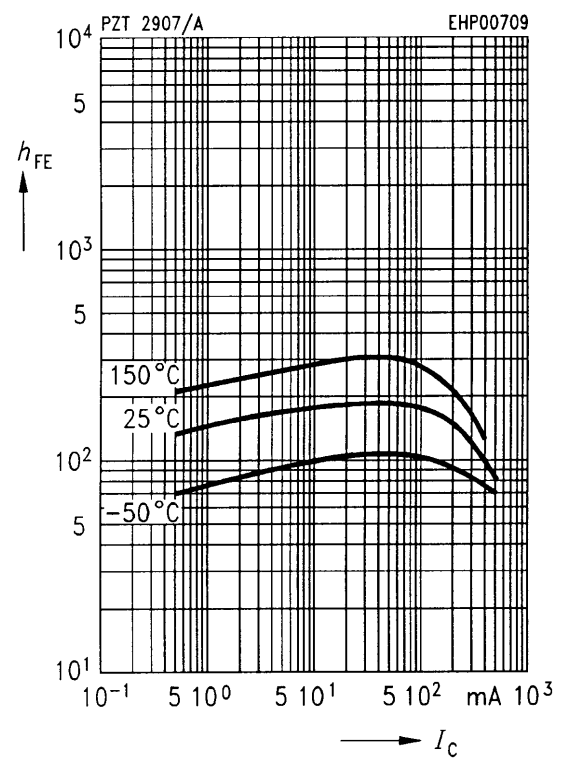
Saturation voltage $I_C = f(V_{BEsat}, V_{CEsat})$

$h_{FE} = 10$



DC current gain $h_{FE} = f(I_C)$

$V_{CE} = 10 \text{ V}$



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

