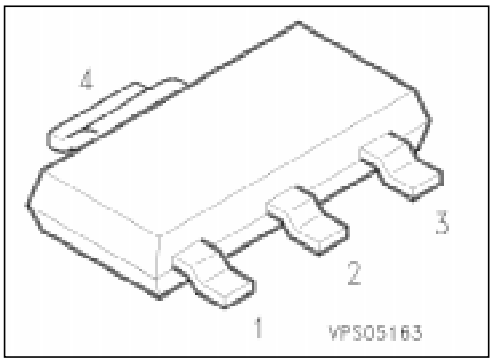
SIEMENS

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 1	2	3	4	Package[1]
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 PZT 2907	PZT 2907 A	Unit
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 °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 °C, unless otherwise specified.

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

1) Pulse test conditions: $t \leq 300$ µs, D = 2 %.

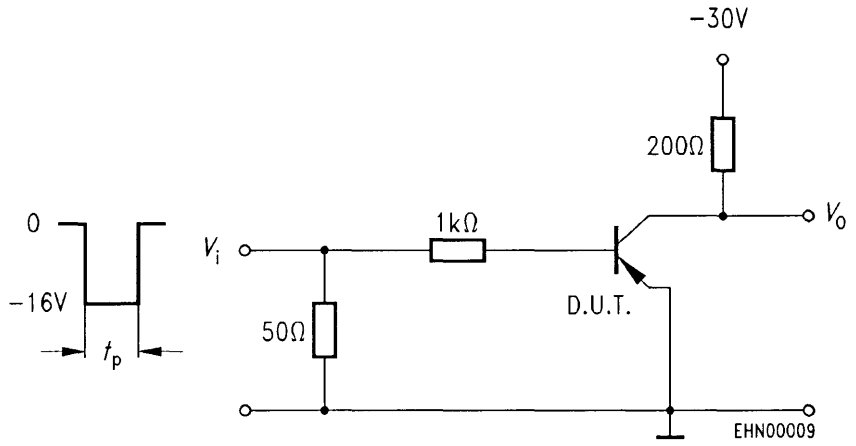
Electrical Characteristics
at T_A = 25 °C, unless otherwise specified.

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
DC characteristics					
Collector-emitter saturation voltage[1)]	V_{CEsat}				V
I_C = 150 mA, I_B = 15 mA		–	–	0.4	
I_C = 500 mA, I_B = 50 mA		–	–	1.6	
Base-emitter saturation voltage[1)]	V_{BEsat}				
I_C = 150 mA, I_B = 15 mA		–	–	1.3	
I_C = 500 mA, I_B = 50 mA		–	–	2.6	
AC characteristics					
Transition frequency I_C = 20 mA, V_{CE} = 20 V, f = 100 MHz	f_t	200	–	–	MHz
Collector-base capacitance V_{CB} = 10 V, f = 1 MHz	C_{obo}	–	–	8	pF
Input capacitance V_{EB} = 0.5 V, f = 1 MHz	C_{ibo}	–	–	30	
V_{CC} = 30 V, I_C = 150 mA, I_{B1} = 15 mA					
Delay time	t_d	–	–	10	ns
Rise time	t_r	–	–	40	ns
V_{CC} = 6 V, I_C = 150 mA, I_{B1} = I_{B2} = 15 mA					
Storage time	t_{stg}	–	–	80	ns
Fall time	t_f	–	–	30	ns
(see diagrams)					

1) Pulse test conditions: $t \leq 300$ µs, D = 2 %.

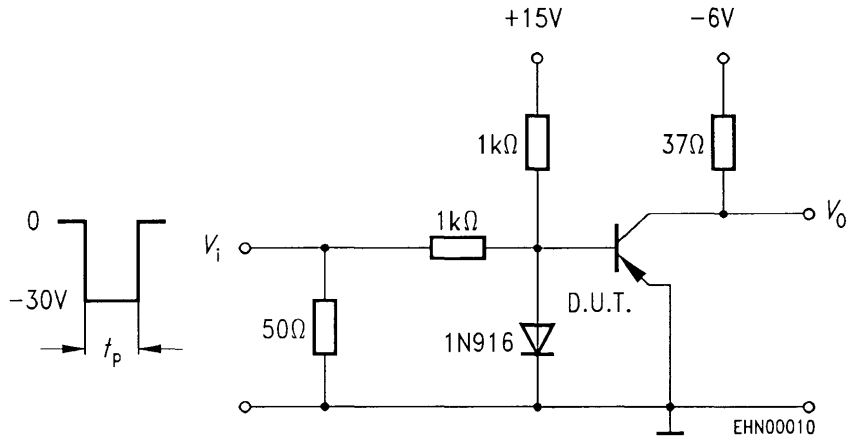
Input waveform and test circuit for determining delay, rise and turn-on time

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



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

Turn-off time when switched to $-I_{Con}$ = 150 mA;
$-I_{Bon}$ = 15 mA to cut-off with + I_{Boff} = 15 mA



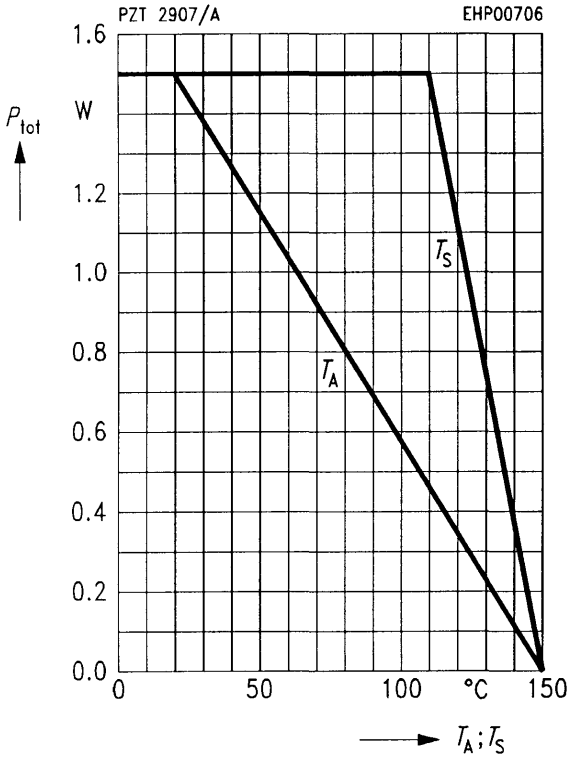
Pulse generator:

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

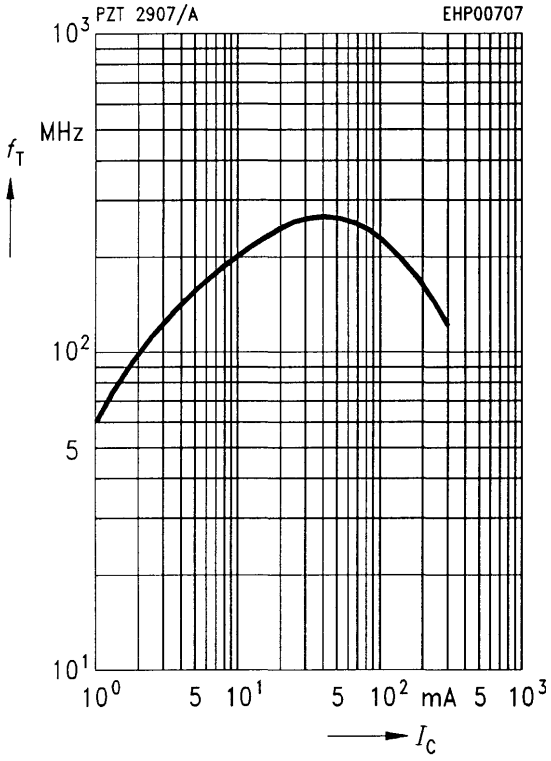
Oscillograph:

rise time	$t_r \leq$ 5 ns
output impedance	Z_i = 10 MΩ

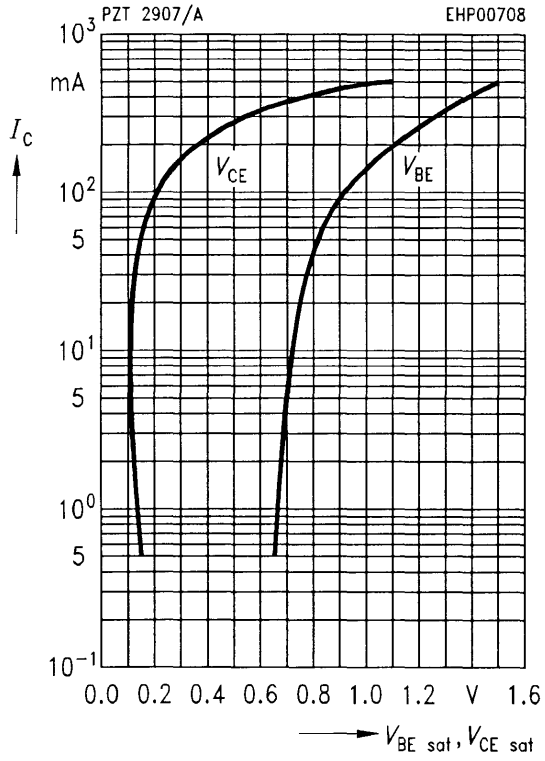
Total power dissipation $P_{tot} = f(T_A^*; T_S)$
* Package mounted on epoxy



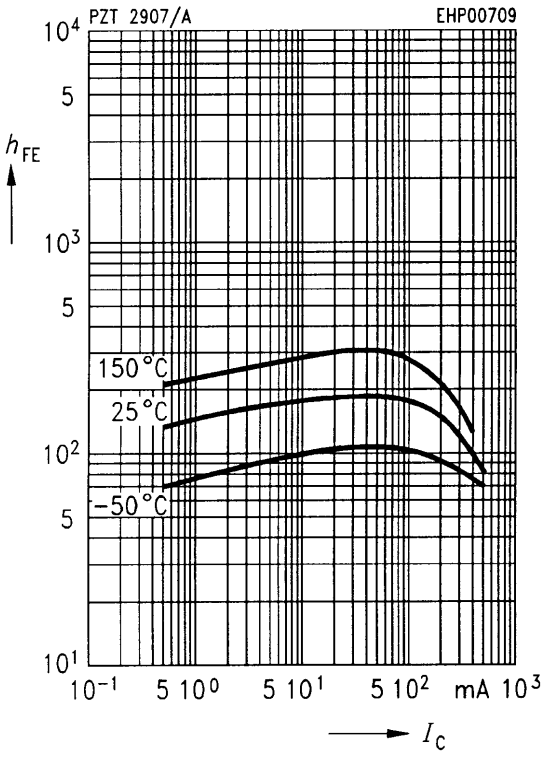
Transition frequency $f_T = f(I_C)$
V_{CE} = 20 V, f = 100 MHz



Saturation voltage $I_C = f(V_{BEsat}, V_{CEsat})$
h_{FE} = 10



DC current gain $h_{FE} = f(I_C)$
V_{CE} = 10 V



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