HIGH-SPEED SILICON DIODE

Planar epitaxial high-speed diode in a DO-35 envelope. The BAW62 is primarily intended for fast logic applications.

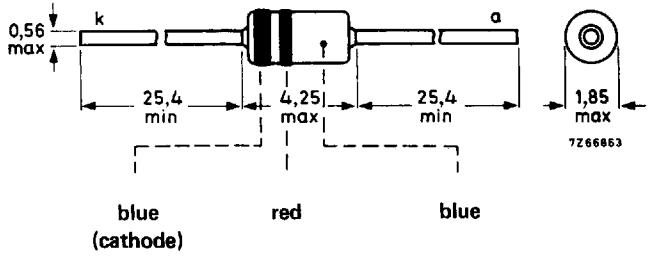
QUICK REFERENCE DATA

Continuous reverse voltage	V_R	max.	75 V
Repetitive peak reverse voltage	V_{RRM}	max.	75 V
Repetitive peak forward current	I_{FRM}	max.	450 mA
Junction temperature	T_j	max.	200 °C
Forward voltage at I_F = 100 mA	V_F	<	1 V
Reverse recovery time when switched from I_F = 10 mA to I_R = 10 mA; R_L = 100 Ω; measured at I_R = 1 mA	t_{rr}	<	4 ns

MECHANICAL DATA

Dimensions in mm

Fig. 1 SOD-27 (DO-35).



Diodes may be either type-branded or colour-coded.

Products, approved to CECC 50 001-021.

RATINGS Limiting values in accordance with the Absolute Maximum System (IEC 134)

Continuous reverse voltage	V_R	max.	75	V
Repetitive peak reverse voltage	V_{RRM}	max.	75	V
Average rectified forward current	$I_{F(AV)}$	max.	150	mA [1]
Forward current (d.c.)	I_F	max.	200	mA
Repetitive peak forward current	I_{FRM}	max.	450	mA
Non-repetitive peak forward current; t = 1 μs	I_{FSM}	max.	2000	mA
t = 1 s	I_{FSM}	max.	500	mA
Storage temperature	T_{stg}	−65 to +200		°C
Junction temperature	T_j	max.	200	°C

THERMAL RESISTANCE

From junction to ambient in free air at maximum lead length	$R_{th\ j\text{-}a}$	=	0,6	K/mW

CHARACTERISTICS T_j = 25 °C unless otherwise specified

Forward voltages				
I_F = 5 mA	V_F	0,62 to 0,75		V
I_F = 100 mA	V_F	<	1,00	V
I_F = 100 mA; T_j = 100 °C	V_F	<	0,93	V
Reverse currents				
V_R = 20 V	I_R	<	25	nA
V_R = 20 V; T_j = 150 °C	I_R	<	50	μA
V_R = 50 V	I_R	<	200	nA
V_R = 75 V	I_R	<	5	μA
V_R = 75 V; T_j = 150 °C	I_R	<	100	μA
Diode capacitance				
V_R = 0; f = 1 MHz	C_d	<	2	pF

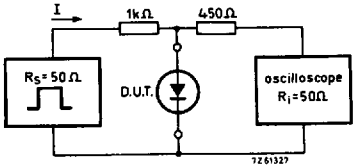
[1] For pulse operation see Figs 5 and 6. For sinusoidal operation see Figs7 to 10.

CHARACTERISTICS (continued) $T_j = 25\ ^oC$

Forward recovery voltage when switched to

$I_F = 50$ mA; $t_r = 20$ ns $V_{fr} < 2,5$ V

Test circuit and waveforms:



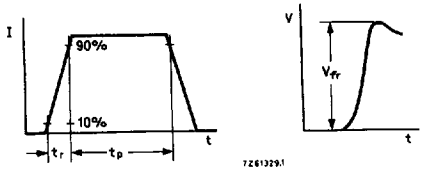


Fig. 2. input signal output signal

Input signal : Rise time of the forward pulse $t_r = 20$ ns

Forward current pulse duration $t_p = 120$ ns

Duty factor $\delta = 0,01$

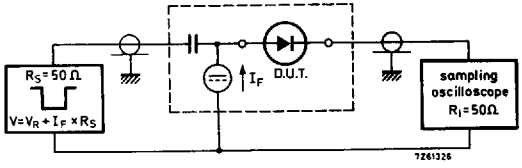
Oscilloscope : Rise time $t_r = 0,35$ ns

Circuit capacitance C ≤ 1 pF (C = oscilloscope input capacitance + parasitic capacitance)

Reverse recovery time when switched from

$I_F = 10$ mA to $I_R = 10$ mA; $R_L = 100\ \Omega$;
measured at $I_R = 1$ mA $t_{rr} < 4$ ns

Test circuit and waveforms:



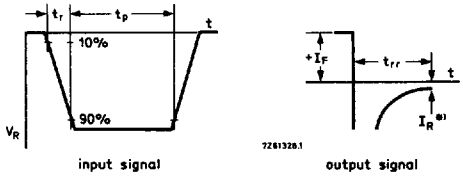


Fig. 3. input signal output signal

Input signal : Rise time of the reverse pulse $t_r = 0,6$ ns *) $I_R = 1$ mA

Reverse pulse duration $t_p = 100$ ns

Duty factor $\delta = 0,05$

Oscilloscope: Rise time $t_r = 0,35$ ns

Circuit capacitance C ≤ 1 pF (C = oscilloscope input capacitance + parasitic capacitance)

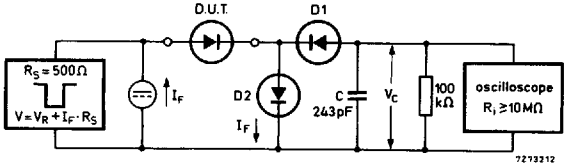
CHARACTERISTICS (continued)

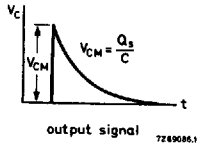
$T_j = 25\ ^oC$

Recovery charge when switched from

I_F = 10 mA to V_R = 5 V; R_L = 500 Ω $\quad Q_s$ typ. 50 pC

Test circuit and waveform:





D1 = D2 = BAW62 Fig. 4.

Input signal : Rise time of the reverse pulse t_r = 2 ns

Reverse pulse duration t_p = 400 ns

Duty factor δ = 0,02

Circuit capacitance C ≤ 7 pF (C = oscilloscope input capacitance + parasitic capacitance)

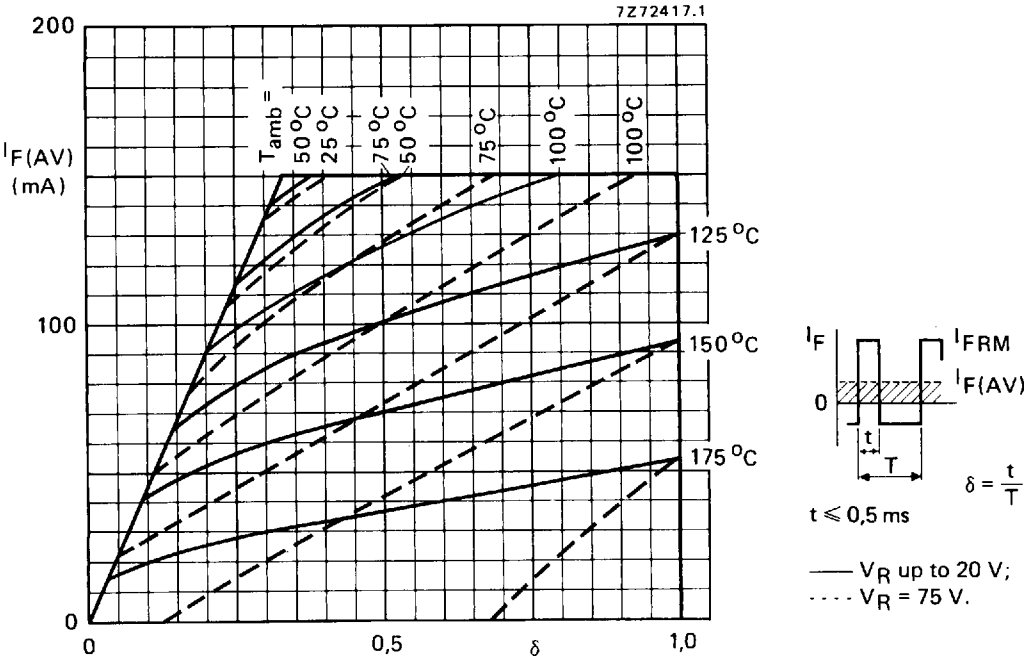


Fig. 5 Maximum permissible average rectified forward current as a function of the duty factor (pulse operated).

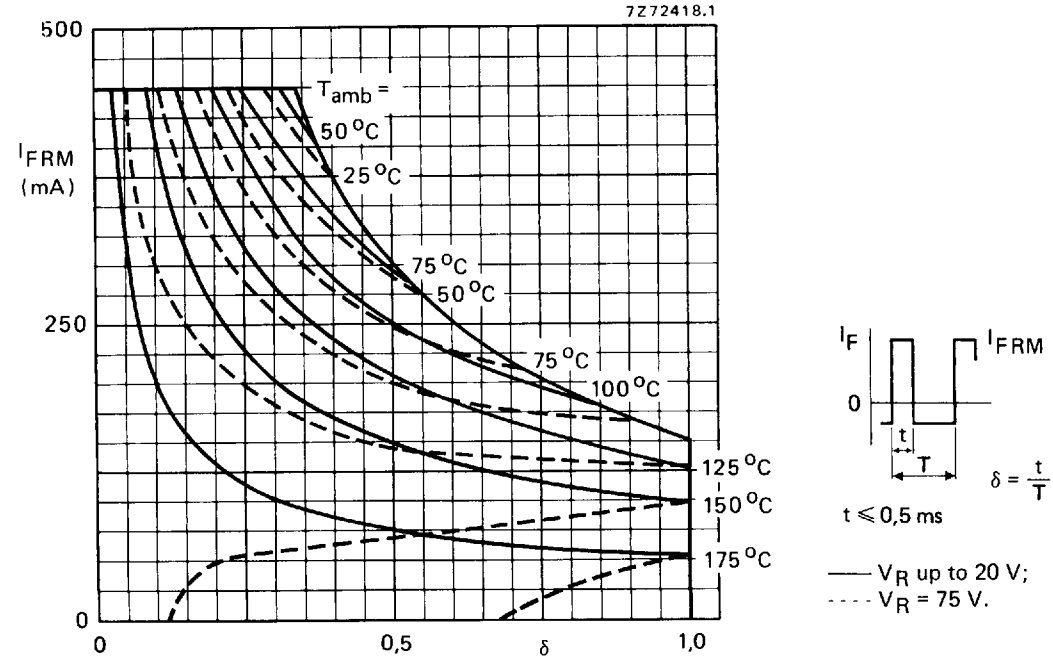


Fig. 6 Maximum permissible repetitive peak forward current as a function of the duty factor (pulse operated).

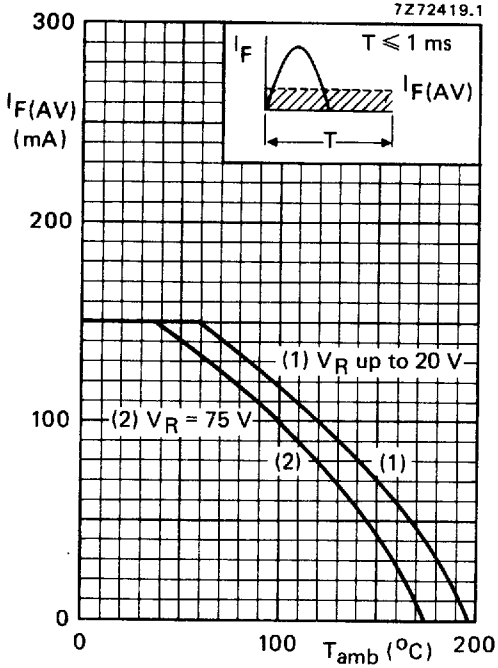


Fig. 7 Maximum permissible average rectified forward current.

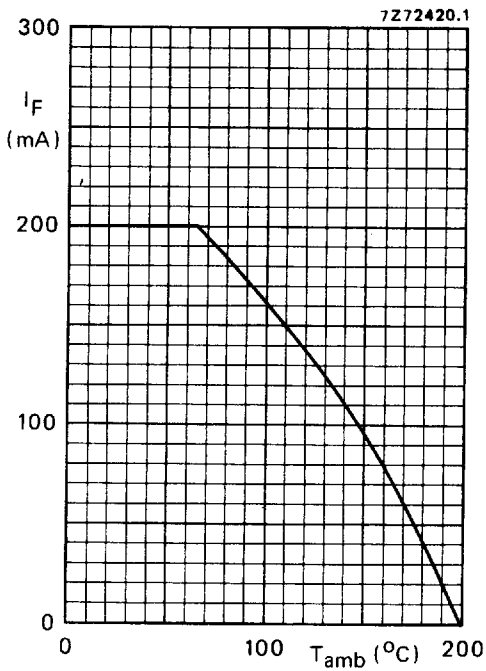


Fig. 8 Maximum permissible continuous forward current.

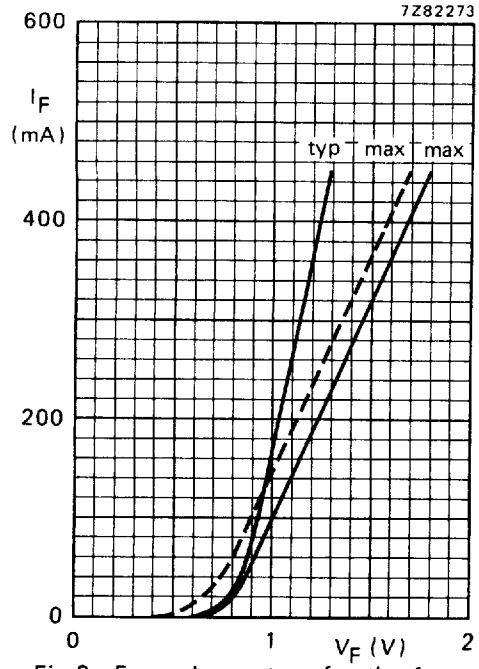


Fig. 9 Forward current as a function forward voltage. —— T_j = 25 °C; – – – T_j = 175 °C.

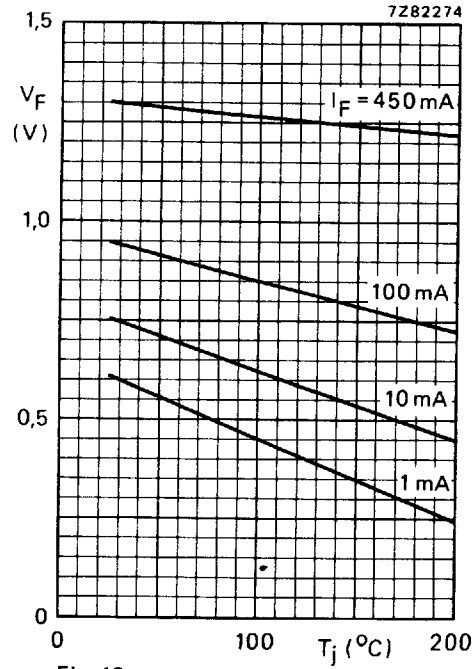
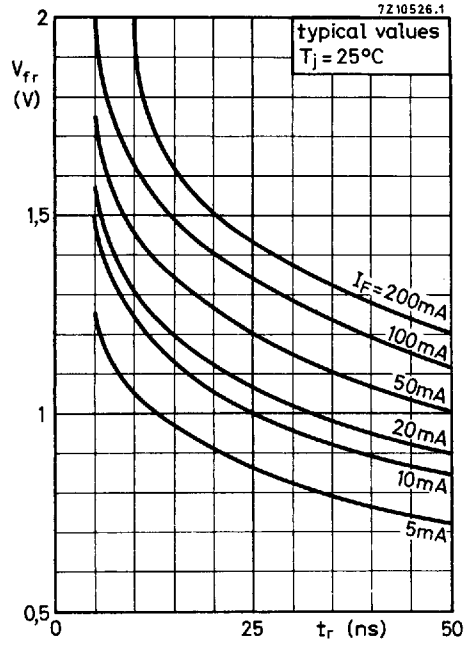
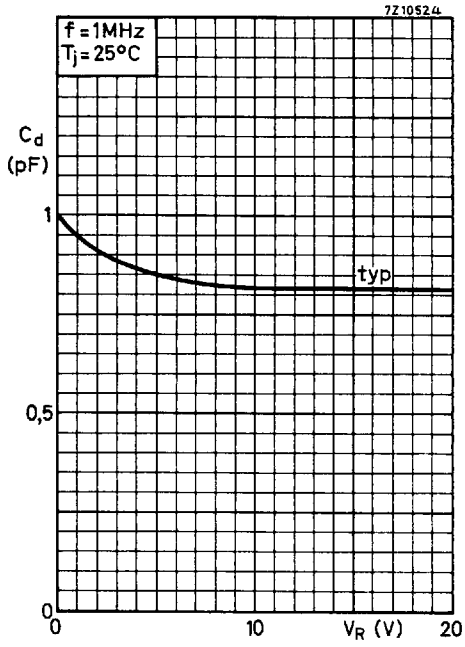
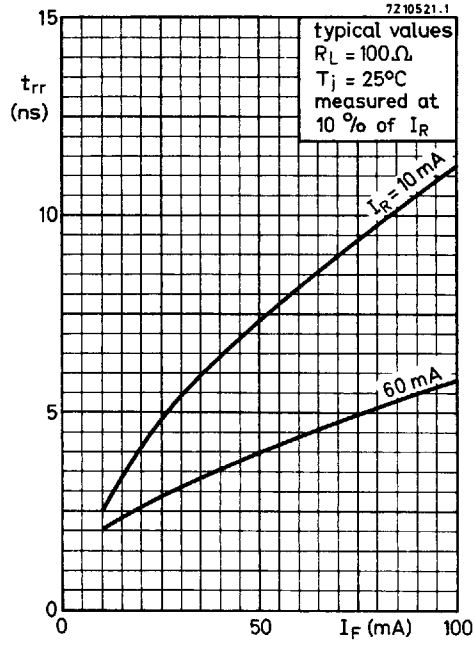
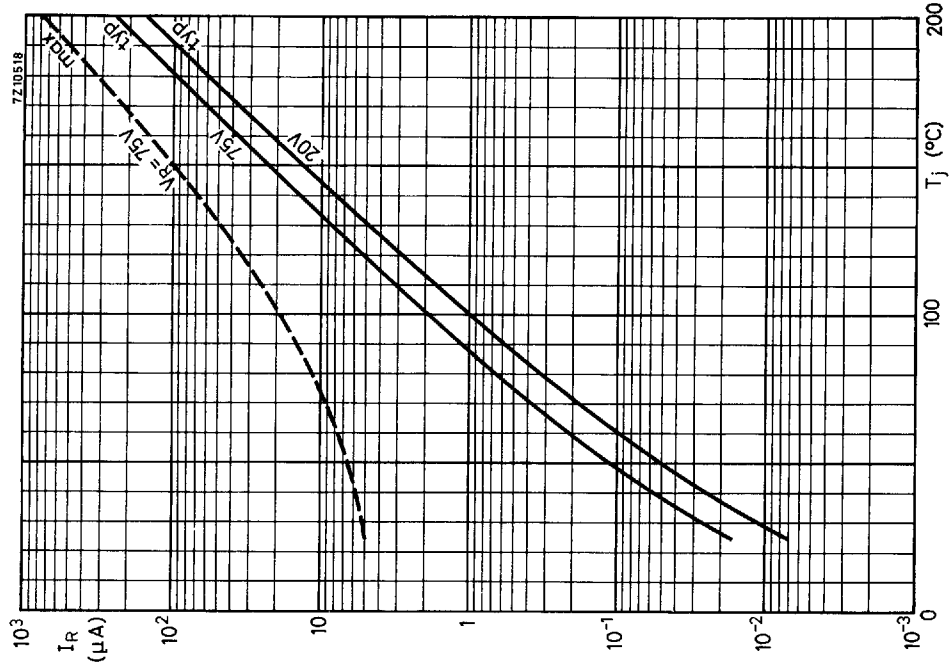


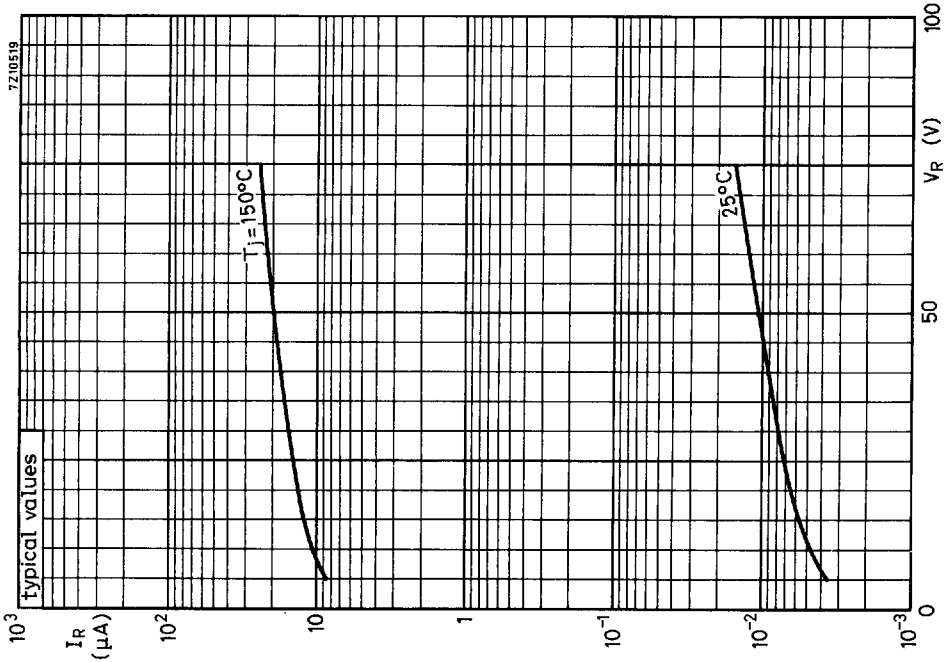
Fig. 10 Typical values forward voltage as a function of junction temperature.


7Z10526.1
typical values
T_j = 25°C
V_{fr} (V)
2
1,5
1
0,5
0
25
t_r (ns)
50
I_F = 200mA
100mA
50mA
20mA
10mA
5mA


7Z10524
f = 1MHz
T_j = 25°C
C_d (pF)
1
0,5
0
typ
0
10
V_R (V)
20


7Z10521.1
typical values
R_L = 100Ω
T_j = 25°C
measured at
10 % of I_R
t_{rr} (ns)
15
10
5
0
0
50
I_F (mA)
100
I_R = 10 mA
60 mA


7Z10518
typ
typ
max
V_R = 75V
75V
20V
T_j (°C)
200
100
0
10^3
10^2
10
1
10^{-1}
10^{-2}
10^{-3}
I_R (μA)


7Z10519
typical values
T_j = 150°C
25°C
V_R (V)
100
50
0
10^3
10^2
10
1
10^{-1}
10^{-2}
10^{-3}
I_R (μA)