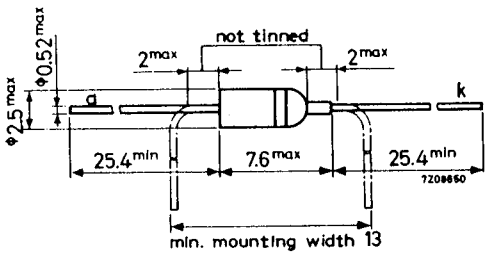
GOLD BONDED DIODE

Gold bonded germanium diode in subminiature all glass DO-7 envelope, intended for switching applications and general purposes.

QUICK REFERENCE DATA				
Continuous reverse voltage	V_R	max.	20	V
Repetitive peak reverse voltage	V_{RRM}	max.	20	V
Forward current (d.c.)	I_F	max.	180	mA
Repetitive peak forward current	I_{FRM}	max.	300	mA
Junction temperature	T_j	max.	75	°C
Forward voltage at I_F = 300 mA	V_F	<	0.78	V
Recovered charge when switched from I_F = 10 mA to V_R = 10 V	Q_s	<	200	pC

MECHANICAL DATA Dimensions in mm

DO-7



The coloured band indicates the cathode side

RATINGS (Limiting values) [1])

Voltages				
Continuous reverse voltage	V_R	max.	20	V
Repetitive peak reverse voltage	V_{RRM}	max.	20	V
Non repetitive peak reverse voltage ($t < 1$ s)	V_{RSM}	max.	30	V
Currents				
Forward current (d.c.)	I_F	max.	180	mA
Average rectified forward current (averaged over any 20 ms period)	I_{FAV}	max.	180	mA
Repetitive peak forward current	I_{FRM}	max.	300	mA
Non repetitive peak forward current ($t < 1$ s)	I_{FSM}	max.	400	mA
Temperatures				
Storage temperature	T_{stg}	−65 to +	75	°C
Junction temperature	T_j	max.	75	°C

THERMAL RESISTANCE

From junction to ambient in free air	$R_{th\,j\text{-}a}$	=	0.45	°C/mW

[1]) Limiting values according to the Absolute Maximum System as defined in IEC publication 134.

CHARACTERISTICS

Forward voltage at T_j = 25 °C

I_F = 0.1 mA	V_F < 0.20 V
I_F = 1.0 mA	V_F < 0.30 V
I_F = 10 mA	V_F < 0.41 V
I_F = 30 mA	V_F < 0.49 V
I_F = 150 mA	V_F < 0.65 V
I_F = 300 mA [1]	V_F < 0.78 V

Forward voltage at T_j = 60 °C

I_F = 0.1 mA	V_F < 0.14 V
I_F = 1.0 mA	V_F < 0.25 V
I_F = 10 mA	V_F < 0.36 V
I_F = 30 mA	V_F < 0.45 V
I_F = 150 mA	V_F < 0.62 V
I_F = 300 mA [1]	V_F < 0.76 V

Reverse current at T_j = 25 °C

V_R = 1.5 V	I_R < 3.5 μA
V_R = 10 V	I_R < 15 μA
V_R = 20 V	I_R < 50 μA

Reverse current at T_j = 60 °C

V_R = 1.5 V	I_R < 30 μA
V_R = 10 V	I_R < 45 μA
V_R = 20 V	I_R < 100 μA

Diode capacitance

V_R = 1 V; f = 1 MHz	C_d < 1.5 pF

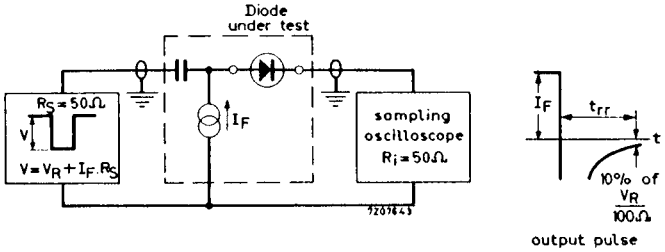
1) Measured under pulsed conditions to prevent excessive dissipation.

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

Reverse recovery time when switched
from I_F = 10 mA to V_R = 1 V; R_L = 100 Ω $t_{rr} < 70$ ns

Measured at I_R = 10 % of $\frac{V_R}{R_L}$

Test circuit:

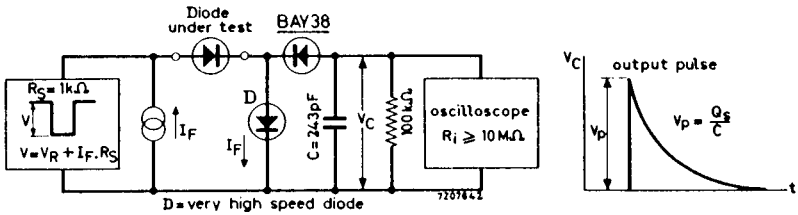


Reverse pulse: Rise time t_r = 0.6 ns
Pulse duration t_p = 100 ns
Duty cycle δ = 0.05

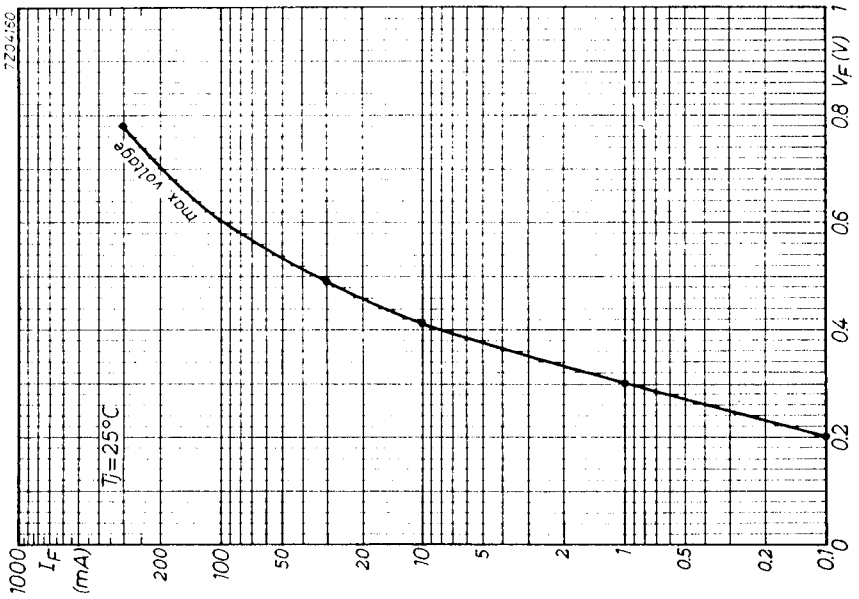
Circuit capacitance C < 1 pF (C = Oscilloscope + parasitical capacitance)

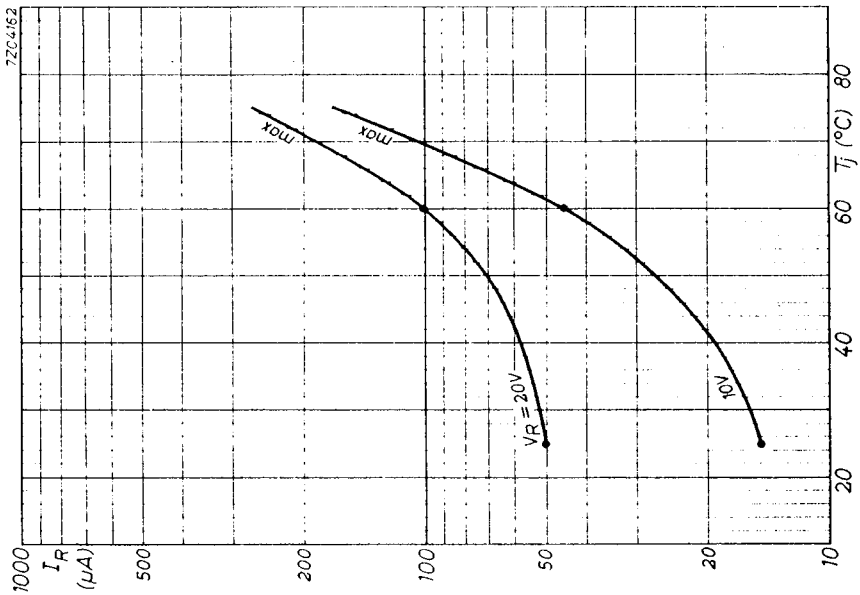
Recovered charge when switched
from I_F = 10 mA to V_R = 10 V; R_L = 1 kΩ $Q_s < 200$ pC

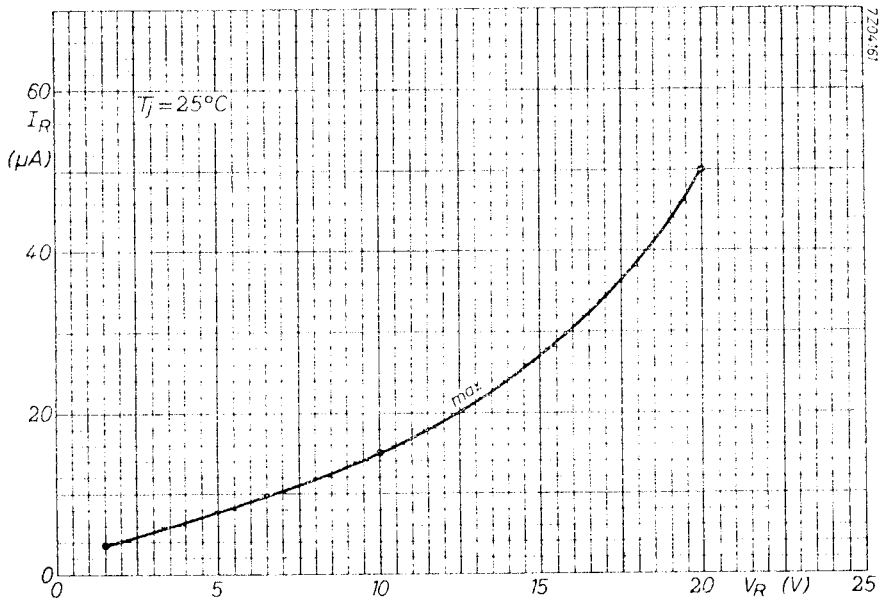
Test circuit:

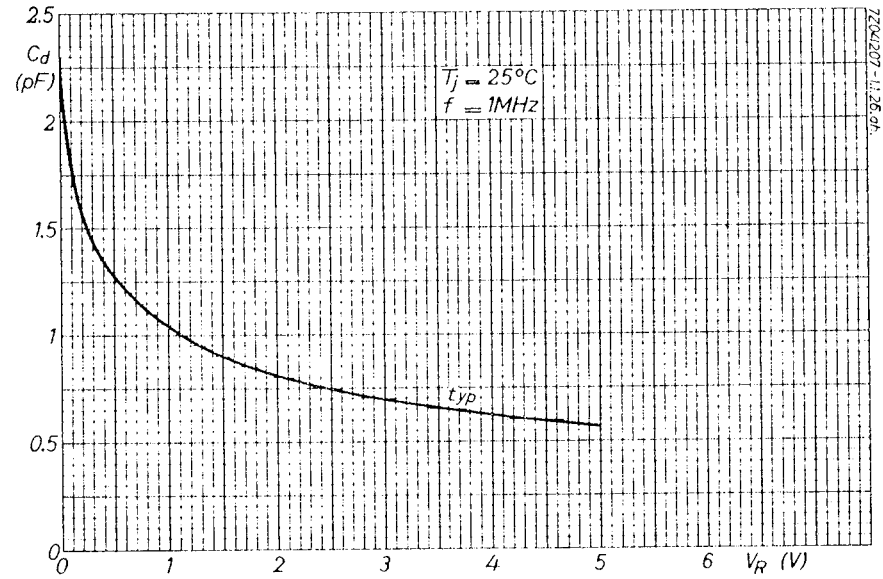


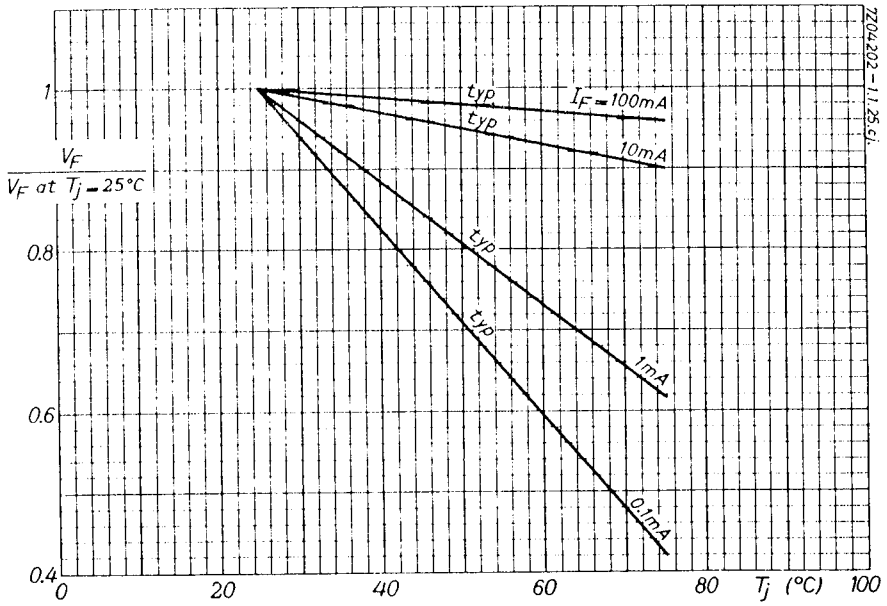
Reverse pulse: Rise time t_r = 2 ns
Pulse duration t_p = 0.4 μs
Duty cycle δ = 0.02

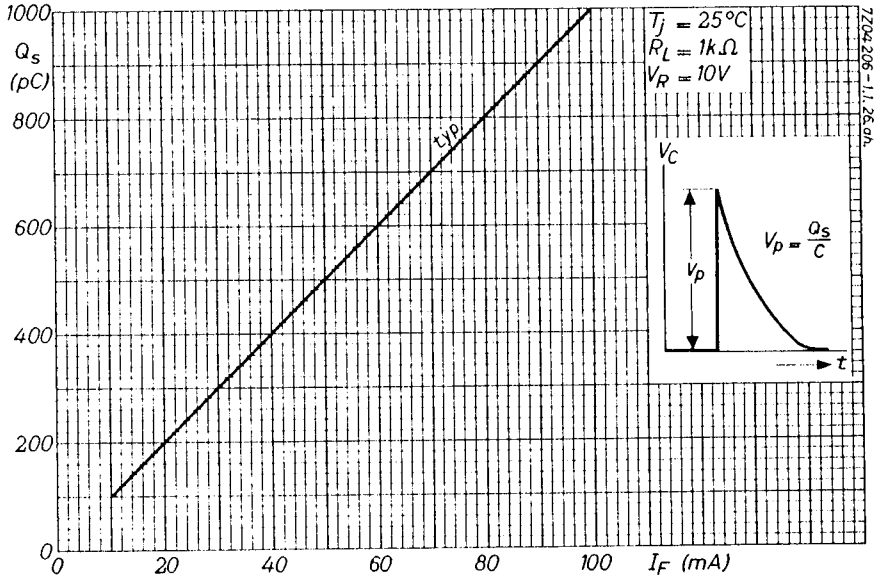

7Z04150
I_F (mA)
1000
200
100
50
20
10
5
2
1
0.5
0.2
0.1
T_j=25°C
max voltage
0
0.2
0.4
0.6
0.8
1
V_F (V)

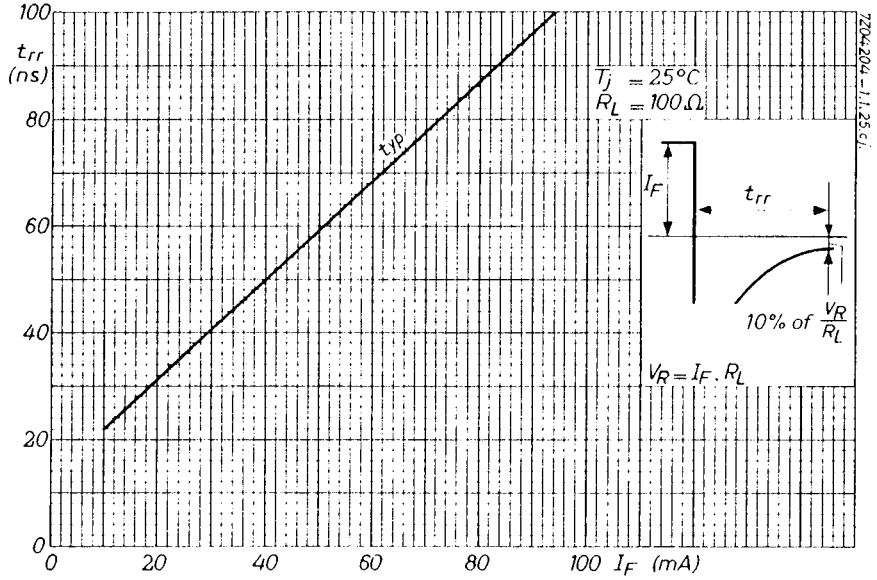

7Z04162
I_R (μA)
1000
500
200
100
50
20
10
max
max
V_R = 20V
10V
20
40
60
80
T_j (°C)

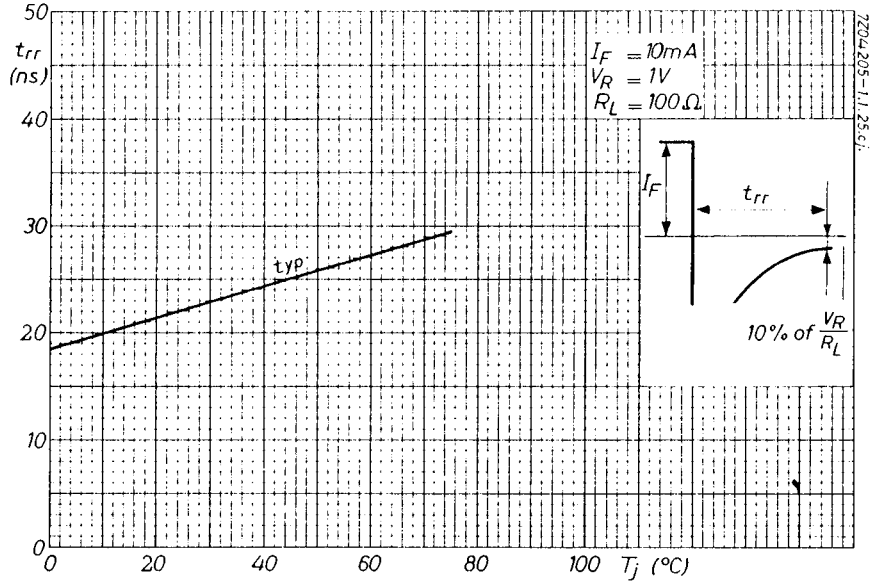

7224161
60
I_R
(μA)
40
20
0
$T_j = 25°C$
max.
0
5
10
15
20
V_R (V)
25


7224207-11.3.6.ab
2.5
C_d
(pF)
2
1.5
1
0.5
0
$T_j = 25°C$
$f = 1MHz$
typ.
0
1
2
3
4
5
6
V_R (V)


7Z04202-1.1.25.gi
1
0.8
0.6
0.4
$\frac{V_F}{V_F \text{ at } T_j = 25°C}$
typ
typ
typ
typ
typ
I_F = 100mA
10mA
1mA
0.1mA
0
20
40
60
80
100
T_j (°C)


7Z04206-1.1.26.gh
1000
800
600
400
200
0
Q_s (pC)
typ
T_j = 25°C
R_L = 1kΩ
V_R = 10V
V_C
V_p
$V_p = \frac{Q_s}{C}$
t
0
20
40
60
80
100
I_F (mA)


100
t_{rr} (ns)
80
60
40
20
0
typ
T_j = 25°C
R_L = 100Ω
I_F
t_{rr}
10% of $\frac{V_R}{R_L}$
$V_R = I_F . R_L$
0
20
40
60
80
100 I_F (mA)
7Z04204-1.1.25.cj.


50
t_{rr} (ns)
40
30
20
10
0
typ
I_F = 10mA
V_R = 1V
R_L = 100Ω
I_F
t_{rr}
10% of $\frac{V_R}{R_L}$
0
20
40
60
80
100 T_j (°C)
7Z04205-1.1.25.cj.