

## Silicon Switching Diode Array

## SMBD 7000

- For high-speed switching applications
- Connected in series



| Type      | Marking | Ordering Code (tape and reel) | Pin Configuration | Package <sup>1)</sup> |
|-----------|---------|-------------------------------|-------------------|-----------------------|
| SMBD 7000 | s5C     | Q68000-A8440                  |                   | SOT-23                |

### Maximum Ratings

| Parameter  | Symbol    | Values         | Unit             |
|--|-----------|----------------|------------------|
| Reverse voltage  | $V_R$     | 100            | V                |
| Peak reverse voltage                                       | $V_{RM}$  | 100            |                  |
| Forward current  | $I_F$     | 200            | mA               |
| Surge forward current, $t = 1 \mu s$                       | $I_{FS}$  | 4.5            | A                |
| Total power dissipation, $T_s = 31 \text{ }^\circ\text{C}$ | $P_{tot}$ | 330            | mW               |
| Junction temperature                                       | $T_j$     | 150            | $^\circ\text{C}$ |
| Storage temperature range                                  | $T_{stg}$ | - 65 ... + 150 |                  |

### Thermal Resistance

|                                  |             |            |     |
|----------------------------------|-------------|------------|-----|
| Junction - ambient <sup>2)</sup> | $R_{th JA}$ | $\leq 500$ | K/W |
| Junction - soldering point       | $R_{th JS}$ | $\leq 360$ |     |

<sup>1)</sup> For detailed information see chapter Package Outlines.

<sup>2)</sup> Package mounted on epoxy pcb 40 mm × 40 mm × 1.5 mm/6 cm<sup>2</sup> Cu.

## Electrical Characteristics

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

| Parameter | Symbol | Values |      |      | Unit |
|-----------|--------|--------|------|------|------|
|           |        | min.   | typ. | max. |      |

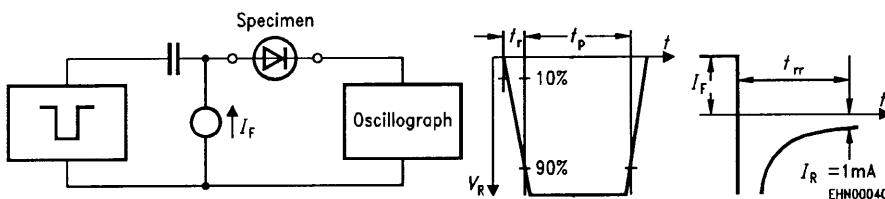
### DC characteristics

|  |            |                   |             |                    |                           |
|--|------------|-------------------|-------------|--------------------|---------------------------|
| Breakdown voltage  | $V_{(BR)}$ | 100               | –           | –                  | V                         |
| Forward voltage<br>$I_F = 1\text{ mA}$<br>$I_F = 10\text{ mA}$<br>$I_F = 100\text{ mA}$                                | $V_F$      | 550<br>670<br>750 | –<br>–<br>– | 700<br>820<br>1100 | mV                        |
| Reverse current<br>$V_R = 50\text{ V}$<br>$V_R = 100\text{ V}$<br>$V_R = 50\text{ V}, T_A = 125\text{ }^\circ\text{C}$ | $I_R$      | –<br>–<br>–       | –<br>–<br>– | 300<br>500<br>100  | nA<br>nA<br>$\mu\text{A}$ |

### AC characteristics

|  |          |   |   |    |    |
|--|----------|---|---|----|----|
| Diode capacitance<br>$V_R = 0, f = 1\text{ MHz}$   | $C_D$    | – | – | 2  | pF |
| Reverse recovery time<br>$I_F = 10\text{ mA}, I_R = 10\text{ mA}, R_L = 100\text{ }\Omega$ | $t_{rr}$ | – | – | 15 | ns |

### Test circuit for reverse recovery time

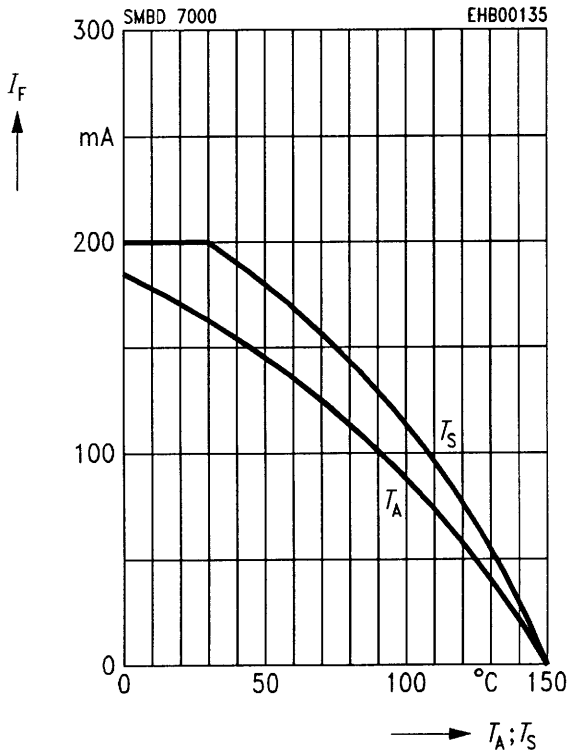


Pulse generator:  $t_p = 100\text{ ns}, D = 0.05$   
 $t_r = 0.6\text{ ns}, R_j = 50\text{ }\Omega$

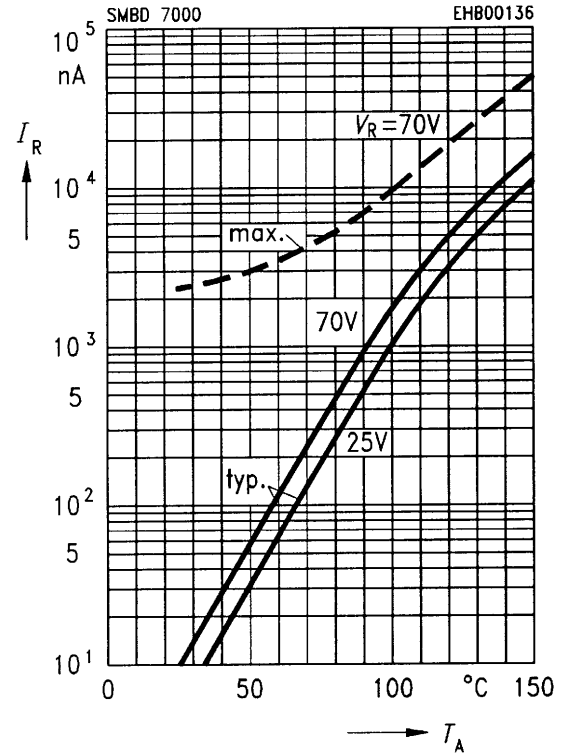
Oscilloscope:  $R = 50\text{ }\Omega$   
 $t_r = 0.35\text{ ns}$   
 $C \leq 1\text{ pF}$

**Forward current  $I_F = f(T_A^*; T_S)$**

\* Package mounted on epoxy

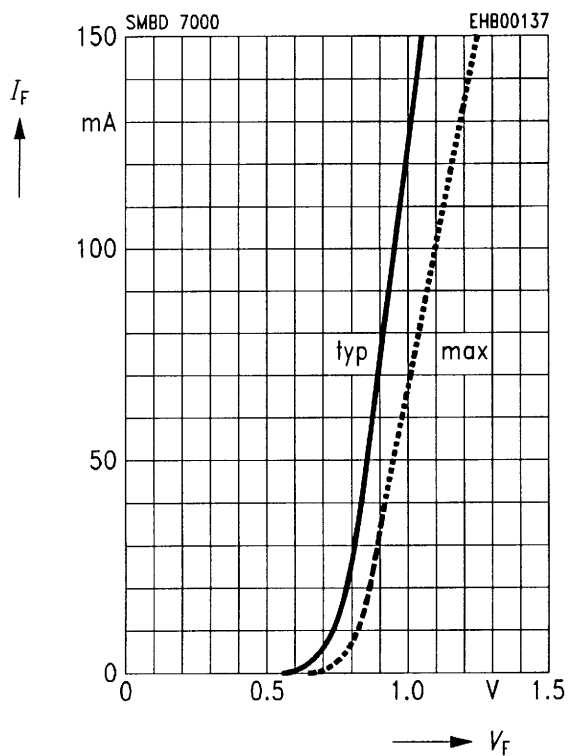


**Reverse current  $I_R = f(T_A)$**



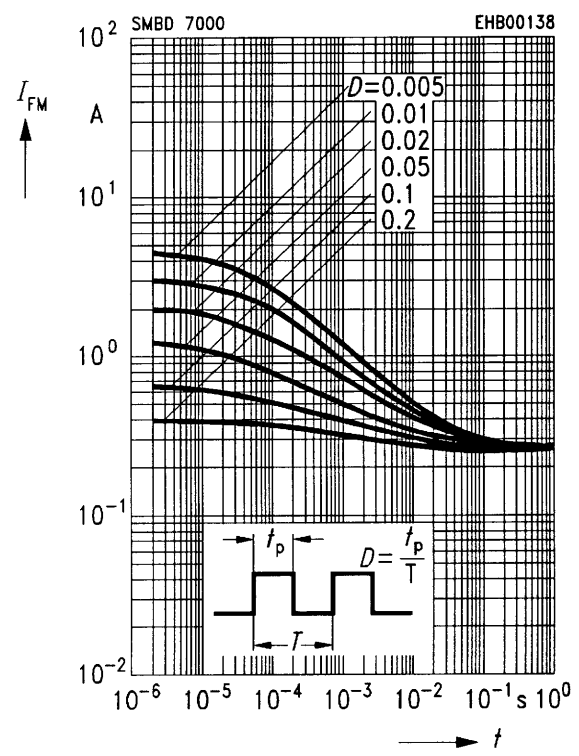
**Forward current  $I_F = f(V_F)$**

$T_A = 25\text{ °C}$



**Peak forward current  $I_{FM} = f(t)$**

$T_A = 25\text{ °C}$



## Forward voltage $V_F = f(T_A)$

