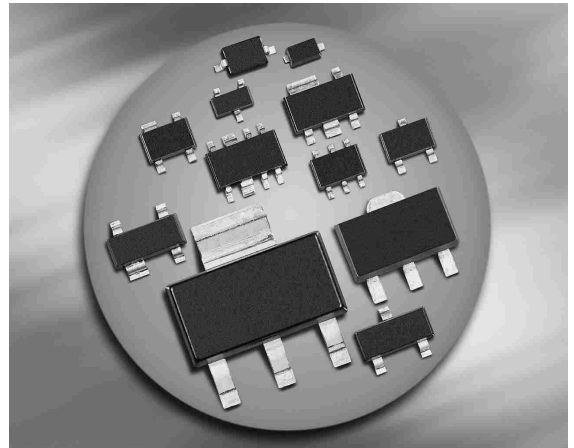
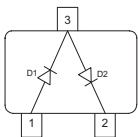


## Silicon Switching Diode

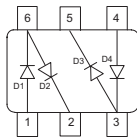
- For high-speed switching applications
- Series pair configuration



**BAV99**  
**BAV99F**  
**BAV99T**  
**BAV99W**



**BAV99S**  
**BAV99U**



| Type    | Package | Configuration | Marking |
|---------|---------|---------------|---------|
| BAV99   | SOT23   | series        | A7s     |
| BAV99F* | TSFP-3  | series        | A7s     |
| BAV99S  | SOT363  | dual series   | A7s     |
| BAV99T  | SC75    | series        | A7s     |
| BAV99U  | SC74    | dual series   | A7s     |
| BAV99W  | SOT323  | series        | A7s     |

\* Preliminary

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

| Parameter                                 | Symbol    | Value       | Unit             |
|-------------------------------------------|-----------|-------------|------------------|
| Diode reverse voltage                     | $V_R$     | 80          | V                |
| Peak reverse voltage                      | $V_{RM}$  | 85          |                  |
| Forward current                           | $I_F$     | 200         | mA               |
| Non-repetitive peak surge forward current | $I_{FSM}$ |             | A                |
| $t = 1 \mu\text{s}$                       |           | 4.5         |                  |
| $t = 1 \text{ ms}$                        |           | 1           |                  |
| $t = 1 \text{ s, single}$                 |           | 0.5         |                  |
| $t = 1 \text{ s, double}$                 |           | 0.75        |                  |
| Total power dissipation                   | $P_{tot}$ |             | mW               |
| BAV99, $T_S \leq 28^\circ\text{C}$        |           | 330         |                  |
| BAV99F, $T_S \leq \text{td}$              |           | 250         |                  |
| BAV99S, $T_S \leq 85^\circ\text{C}$       |           | 250         |                  |
| BAV99T, $T_S \leq 104^\circ\text{C}$      |           | 250         |                  |
| BAV99U, $T_S \leq 113^\circ\text{C}$      |           | 250         |                  |
| BAV99W, $T_S \leq 110^\circ\text{C}$      |           | 250         |                  |
| Junction temperature                      | $T_j$     | 150         | $^\circ\text{C}$ |
| Storage temperature                       | $T_{stg}$ | -65 ... 150 |                  |

### Thermal Resistance

| Parameter                                | Symbol     | Value            | Unit |
|------------------------------------------|------------|------------------|------|
| Junction - soldering point <sup>1)</sup> | $R_{thJS}$ |                  | K/W  |
| BAV99                                    |            | $\leq 360$       |      |
| BAV99F                                   |            | $\leq \text{td}$ |      |
| BAV99S                                   |            | $\leq 260$       |      |
| BAV99T                                   |            | $\leq 185$       |      |
| BAV99U                                   |            | $\leq 150$       |      |
| BAV99W                                   |            | $\leq 160$       |      |

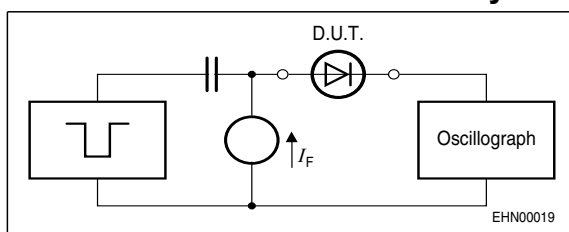
<sup>1)</sup>For calculation of  $R_{thJA}$  please refer to Application Note Thermal Resistance

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

| Parameter                                                                                                                 | Symbol     | Values                |                       |                                    | Unit    |
|---------------------------------------------------------------------------------------------------------------------------|------------|-----------------------|-----------------------|------------------------------------|---------|
|                                                                                                                           |            | min.                  | typ.                  | max.                               |         |
| DC Characteristics                                                                                                        |            |                       |                       |                                    |         |
| Breakdown voltage<br>$I_{(BR)} = 100 \mu A$                                                                               | $V_{(BR)}$ | 85                    | -                     | -                                  | V       |
| Reverse current<br>$V_R = 70 V$<br>$V_R = 25 V, T_A = 150 \text{ }^{\circ}C$<br>$V_R = 70 V, T_A = 150 \text{ }^{\circ}C$ | $I_R$      | -<br>-<br>-           | -<br>-<br>-           | 0.15<br>30<br>50                   | $\mu A$ |
| Forward voltage<br>$I_F = 1 mA$<br>$I_F = 10 mA$<br>$I_F = 50 mA$<br>$I_F = 100 mA$<br>$I_F = 150 mA$                     | $V_F$      | -<br>-<br>-<br>-<br>- | -<br>-<br>-<br>-<br>- | 715<br>855<br>1000<br>1200<br>1250 | mV      |

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

| Parameter                                                                                                                             | Symbol   | Values |      |      | Unit |
|---------------------------------------------------------------------------------------------------------------------------------------|----------|--------|------|------|------|
|                                                                                                                                       |          | min.   | typ. | max. |      |
| AC Characteristics                                                                                                                    |          |        |      |      |      |
| Diode capacitance<br>$V_R = 0\text{ V}$ , $f = 1\text{ MHz}$                                                                          | $C_T$    | -      | -    | 1.5  | pF   |
| Reverse recovery time<br>$I_F = 10\text{ mA}$ , $I_R = 10\text{ mA}$ , measured at $I_R = 1\text{ mA}$ ,<br>$R_L = 100\text{ }\Omega$ | $t_{rr}$ | -      | -    | 4    | ns   |

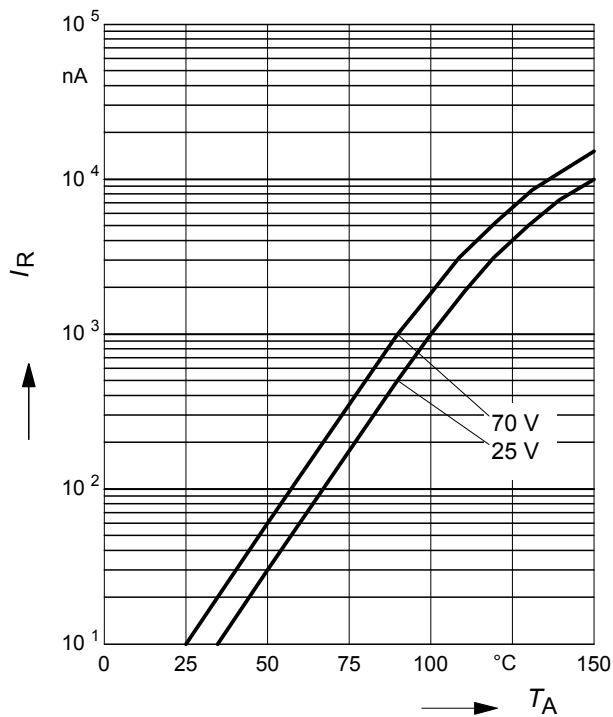
**Test circuit for reverse recovery time**


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

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

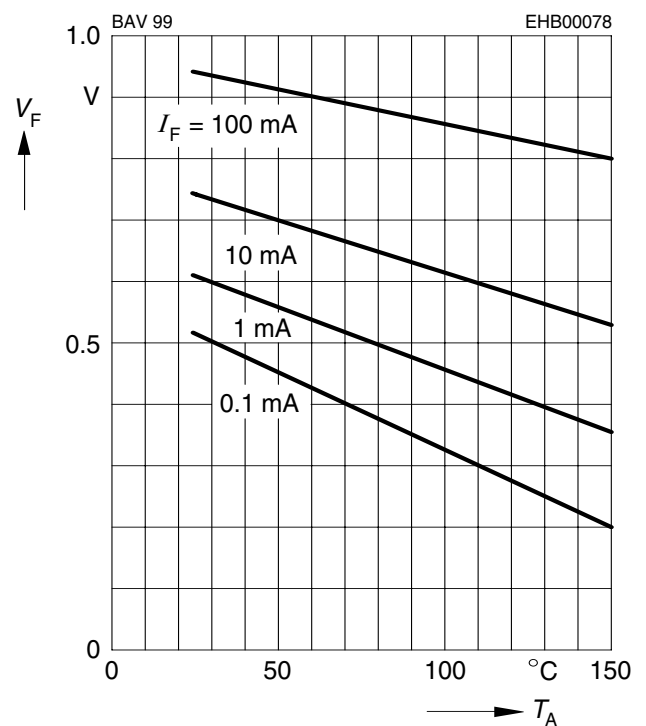
**Reverse current  $I_R = f(T_A)$**

$V_R$  = Parameter



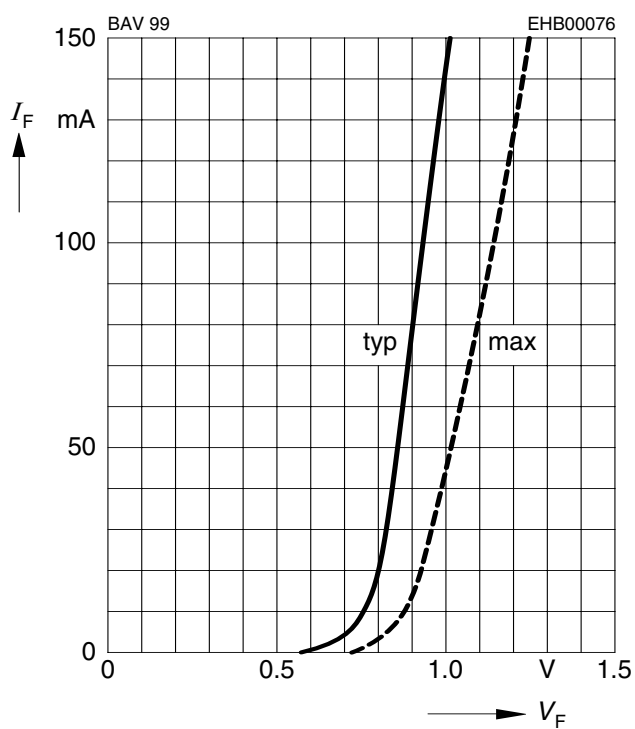
**Forward Voltage  $V_F = f(T_A)$**

$I_F$  = Parameter



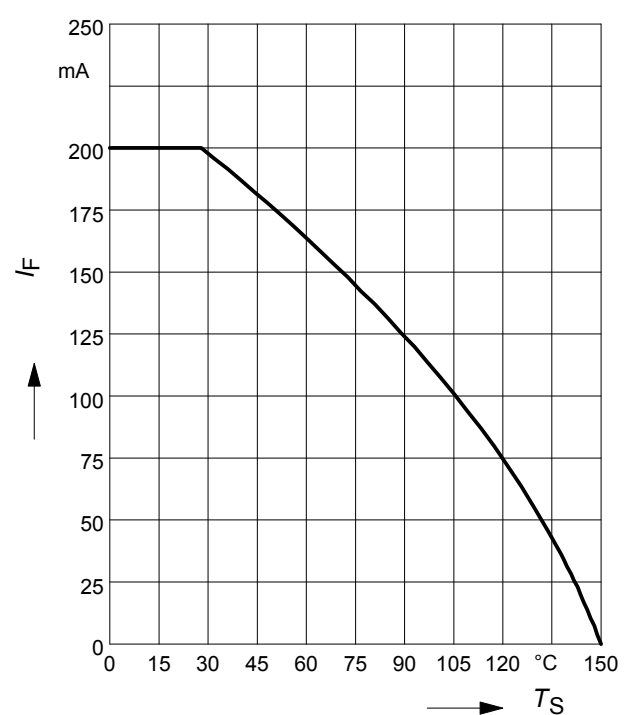
**Forward current  $I_F = f(V_F)$**

$T_A = 25^\circ\text{C}$



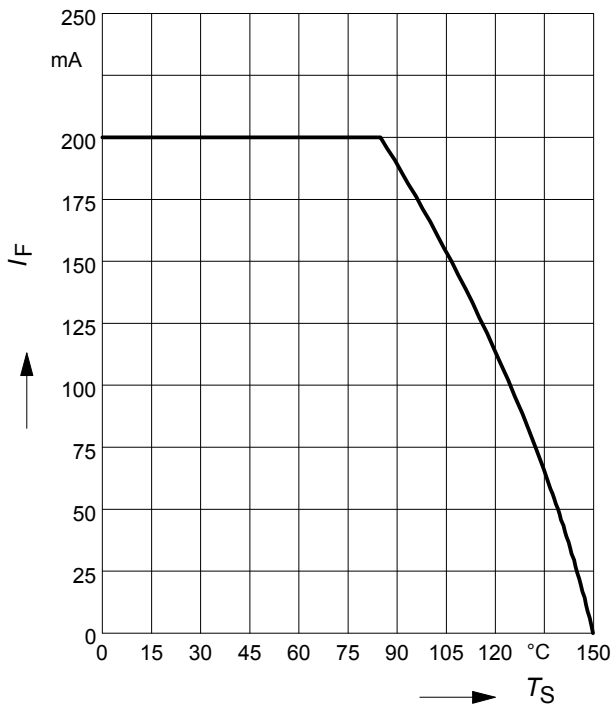
**Forward current  $I_F = f(T_S)$**

BAV99



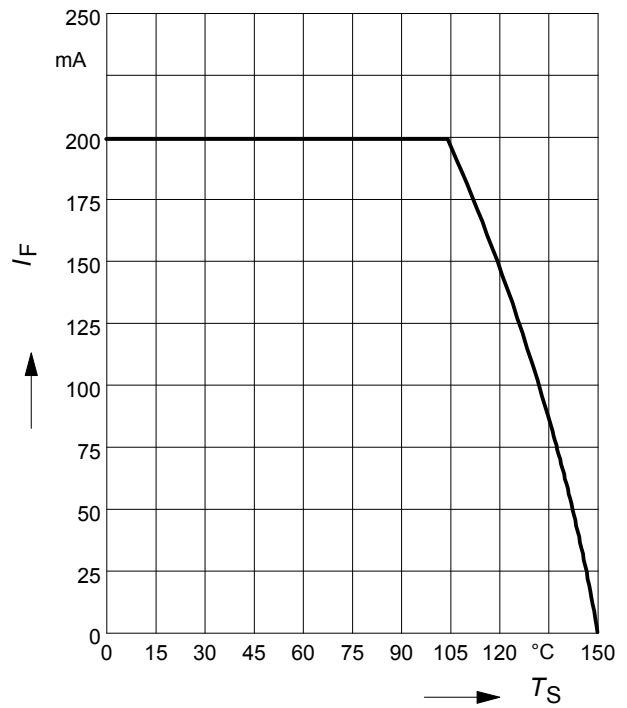
Forward current  $I_F = f(T_S)$

BAV99S



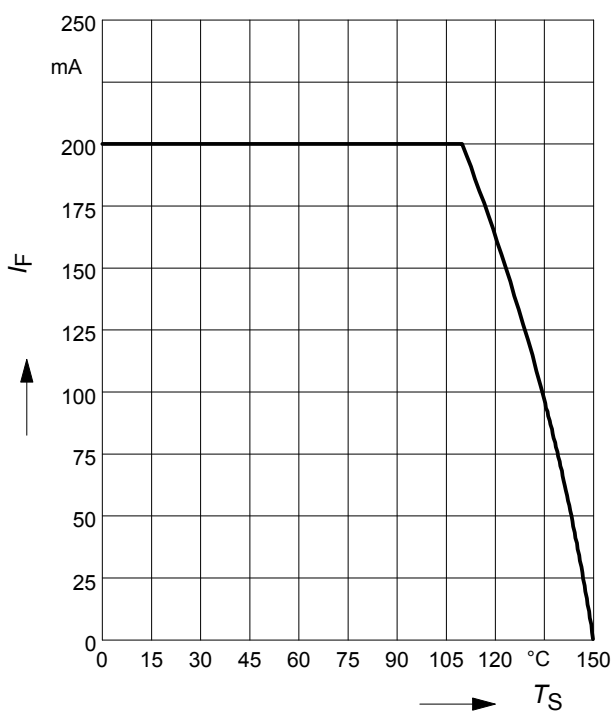
Forward current  $I_F = f(T_S)$

BAV99T



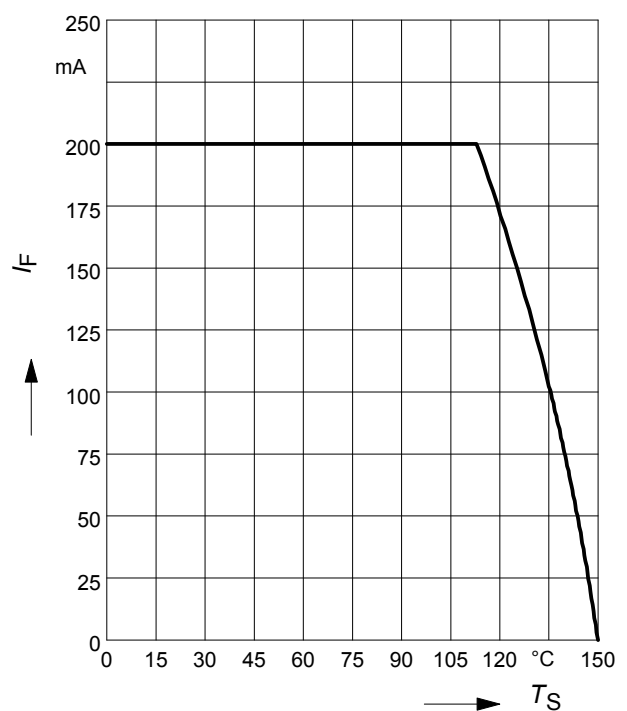
Forward current  $I_F = f(T_S)$

BAV99U



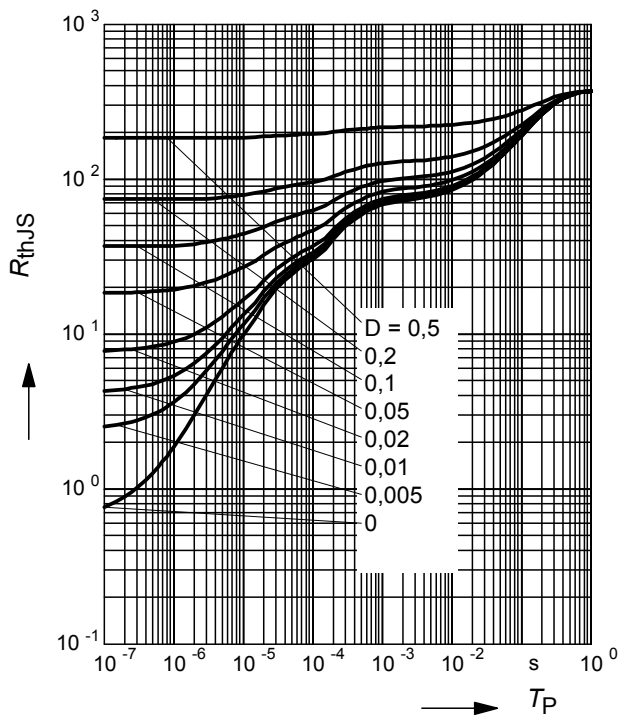
Forward current  $I_F = f(T_S)$

BAV99W



**Permissible Puls Load  $R_{thJS} = f(t_p)$**

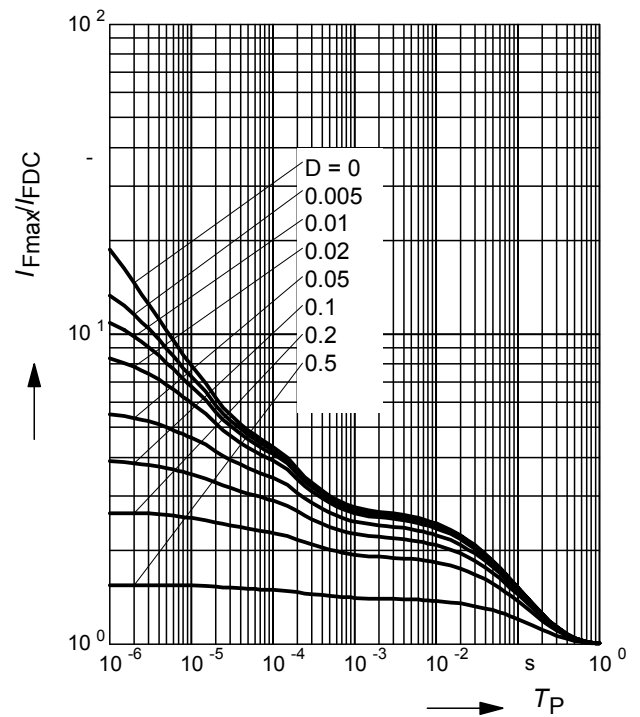
BAV99



**Permissible Pulse Load**

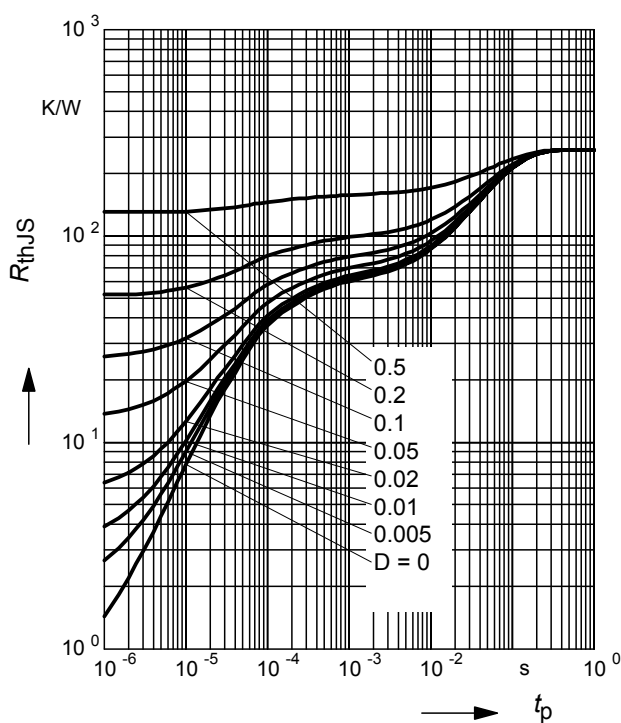
$$I_{Fmax}/I_{FDC} = f(t_p)$$

BAV99



**Permissible Puls Load  $R_{thJS} = f(t_p)$**

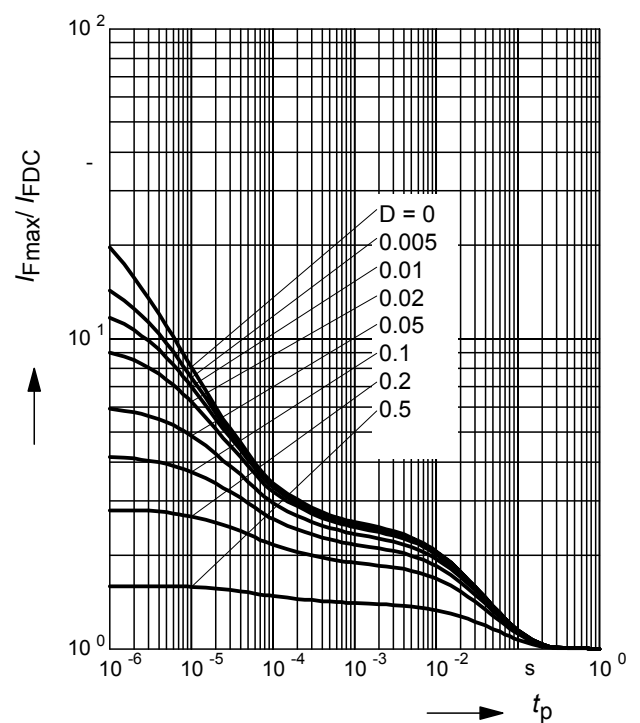
BAV99S



**Permissible Pulse Load**

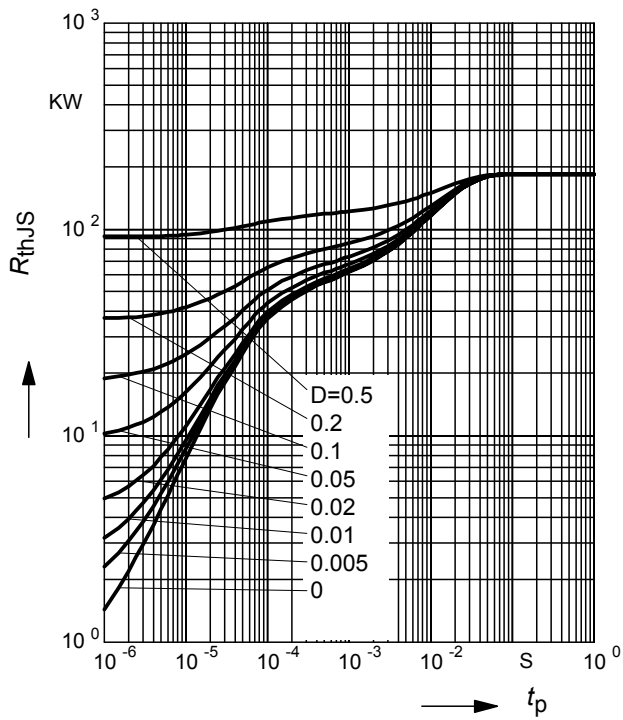
$$I_{Fmax}/I_{FDC} = f(t_p)$$

BAV99S



### Permissible Puls Load $R_{thJS} = f(t_p)$

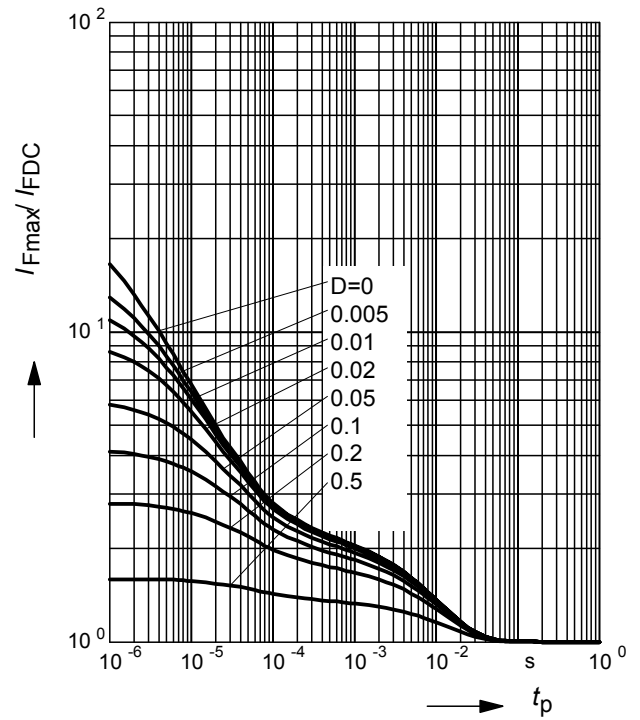
BAV99T



### Permissible Pulse Load

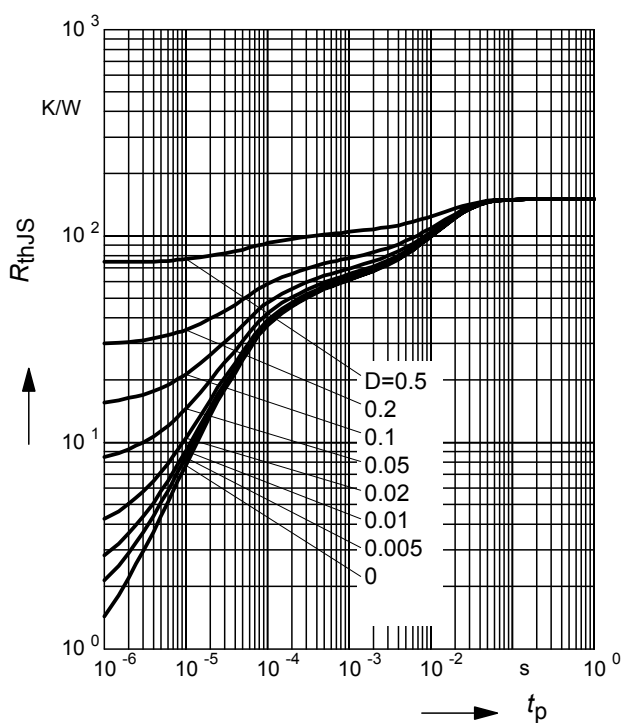
$$I_{Fmax}/I_{FDC} = f(t_p)$$

BAV99T



### Permissible Puls Load $R_{thJS} = f(t_p)$

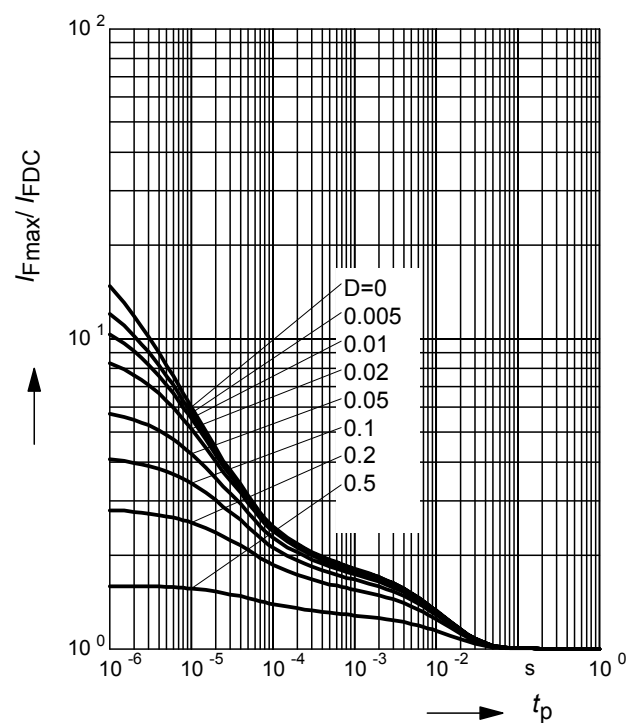
BAV99U



### Permissible Pulse Load

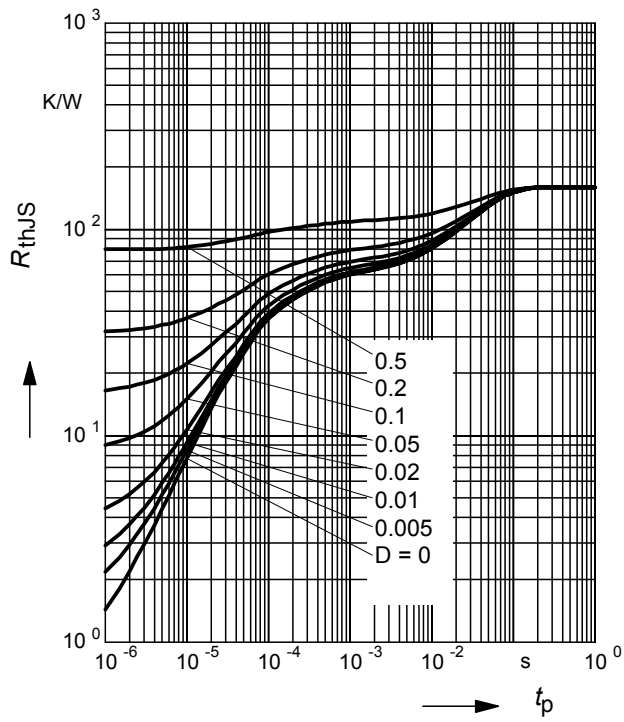
$$I_{Fmax}/I_{FDC} = f(t_p)$$

BAV99U



# Permissible Puls Load $R_{thJS} = f(t_p)$

BAV99W



# Permissible Pulse Load

$$I_{Fmax}/I_{FDC} = f(t_p)$$

BAV99W

