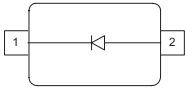


Silicon Schottky Diodes

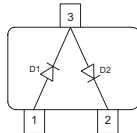
- Low barrier type for DBS mixer applications up to 12 GHz, phase detectors and modulators
- Low noise figure



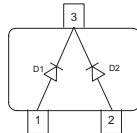
BAT15-02L/V
BAT15-03W



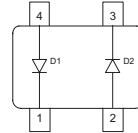
BAT15-04W



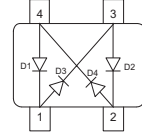
BAT15-05W



BAT15-099



BAT15-099R



ESD: Electrostatic discharge sensitive device, observe handling precaution!

| Type | Package | Configuration | L_S (nH) | Marking |
|------------|----------|--------------------|------------|---------|
| BAT15-02L* | TSLP-2-1 | single, leadless | 0.4 | NP |
| BAT15-02V | SC79 | single | 0.6 | n |
| BAT15-03W | SOD323 | single | 1.8 | P white |
| BAT15-04W | SOT323 | series | 1.4 | S8s |
| BAT15-05W | SOT323 | common cathode | 1.4 | S5s |
| BAT15-099 | SOT143 | anti-parallel pair | 2 | S5s |
| BAT15-099R | SOT143 | crossover ring | 2 | S6s |

* target data

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

| Parameter | Symbol | Value | Unit |
|---|------------------|-------------|------|
| Diode reverse voltage | V_R | 4 | V |
| Forward current | I_F | 110 | mA |
| Total power dissipation | P_{tot} | | mW |
| BAT15-02L, $T_S \leq 76^\circ\text{C}$ | | 100 | |
| BAT15-02V, $T_S \leq 72^\circ\text{C}$ | | 100 | |
| BAT15-03W, $T_S \leq 70^\circ\text{C}$ | | 100 | |
| BAT15-04W, $T_S \leq 68^\circ\text{C}$ | | 100 | |
| BAT15-05W, $T_S \leq 65^\circ\text{C}$ | | 100 | |
| BAT15-099, $T_S \leq 48^\circ\text{C}$ | | 100 | |
| BAT15-099R, $T_S \leq 67^\circ\text{C}$ | | 100 | |
| Junction temperature | T_j | 150 | °C |
| Operating temperature range | T_{op} | -55 ... 150 | |
| Storage temperature | T_{stg} | -55 ... 150 | |

Thermal Resistance

| Parameter | Symbol | Value | Unit |
|--|-------------------|-------------|------|
| Junction - soldering point ¹⁾ | R_{thJS} | | K/W |
| BAT15-02L, BAT15-02V | | ≤ 780 | |
| BAT15-03W | | ≤ 795 | |
| BAT15-04W | | ≤ 820 | |
| BAT15-05W | | ≤ 850 | |
| BAT15-099 | | ≤ 1020 | |
| BAT15-099R | | ≤ 830 | |

¹⁾For calculation of R_{thJA} please refer to Application Note Thermal Resistance

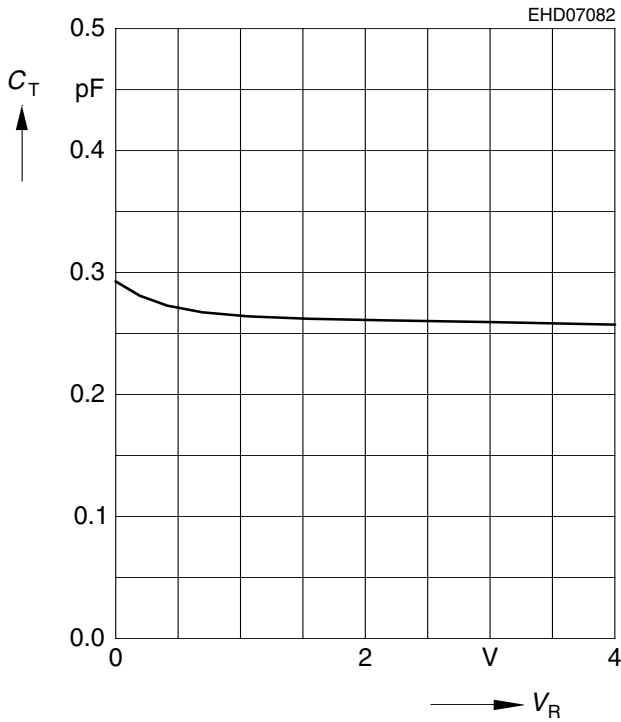
Electrical Characteristics at $T_A = 25^\circ\text{C}$, unless otherwise specified

| Parameter | Symbol | Values | | | Unit |
|--|--------------|--------------|--------------|--------------|----------|
| | | min. | typ. | max. | |
| DC Characteristics | | | | | |
| Breakdown voltage $I_{(BR)} = 100 \mu\text{A}$ | $V_{(BR)}$ | 4 | - | - | V |
| Forward voltage $I_F = 1 \text{ mA}$ $I_F = 10 \text{ mA}$ | V_F | 0.16 0.25 | 0.23 0.32 | 0.32 0.41 | |
| Forward voltage matching ¹⁾ $I_F = 10 \text{ mA}$ | ΔV_F | - | - | 20 | mV |
| AC Characteristics | | | | | |
| Diode capacitance $V_R = 0 \text{ V}, f = 1 \text{ MHz}$ | C_T | - | - | 0.35 | pF |
| Differential forward resistance $I_F = 10 \text{ mA} / 50 \text{ mA}$ | R_F | - | 5.5 | - | Ω |

¹⁾ ΔV_F is the difference between lowest and highest V_F in a multiple diode component.

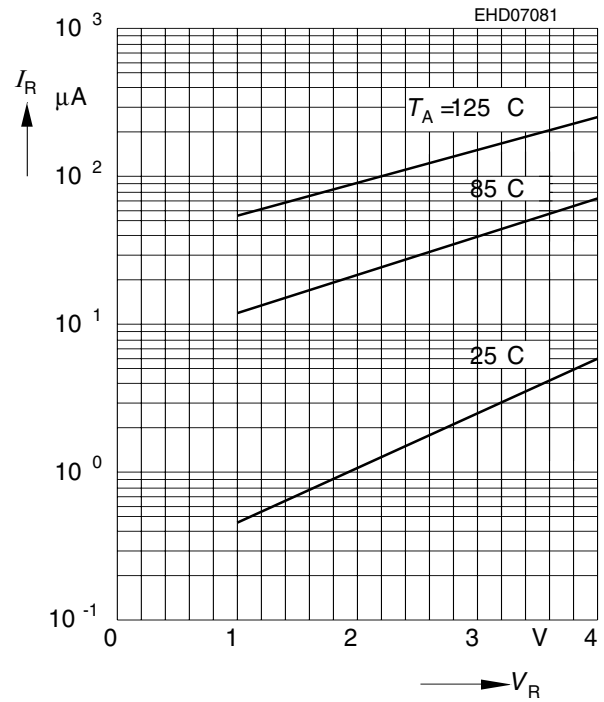
Diode capacitance $C_T = f(V_R)$

$f = 1\text{MHz}$



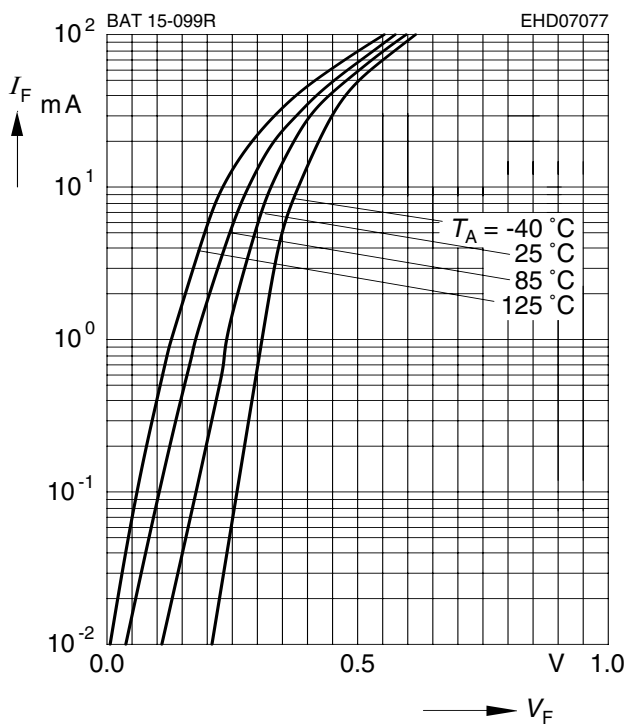
Reverse current $I_R = f(V_R)$

$T_A = \text{Parameter}$



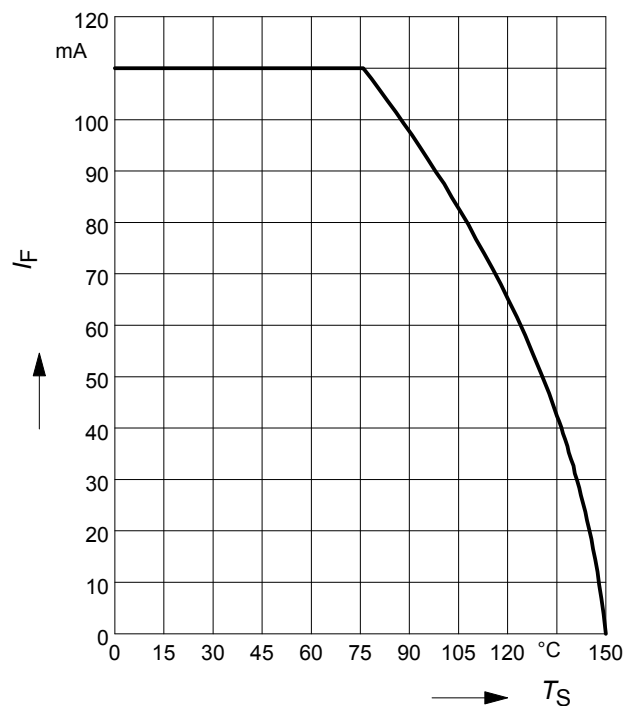
Forward current $I_F = f(V_F)$

$T_A = \text{Parameter}$



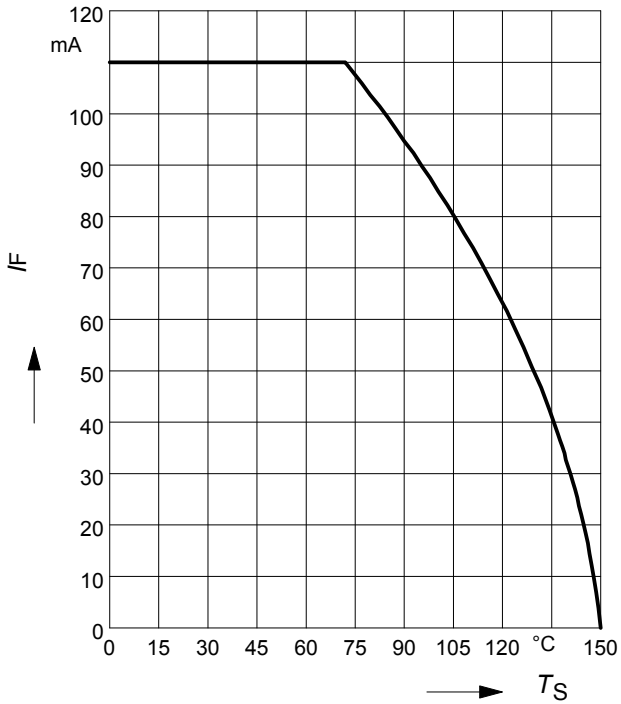
Forward current $I_F = f(T_S)$

BAT15-02L



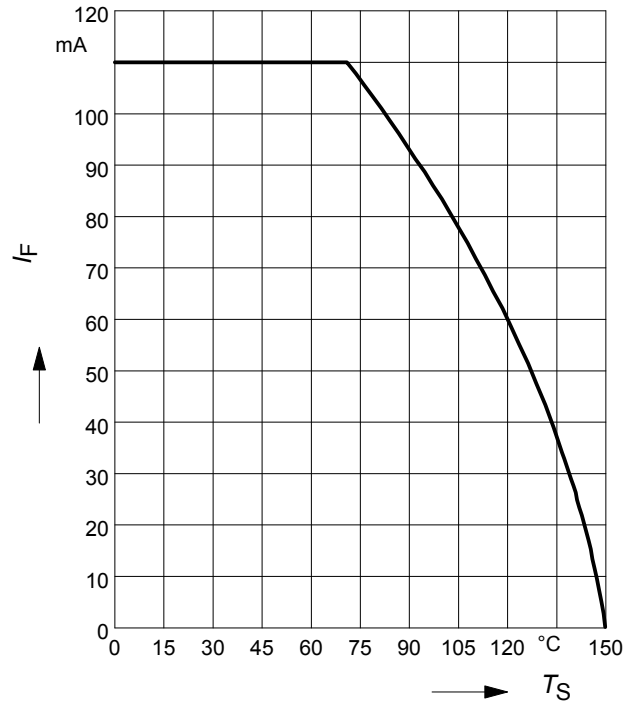
Forward current $I_F = f(T_S)$

BAT15-02V



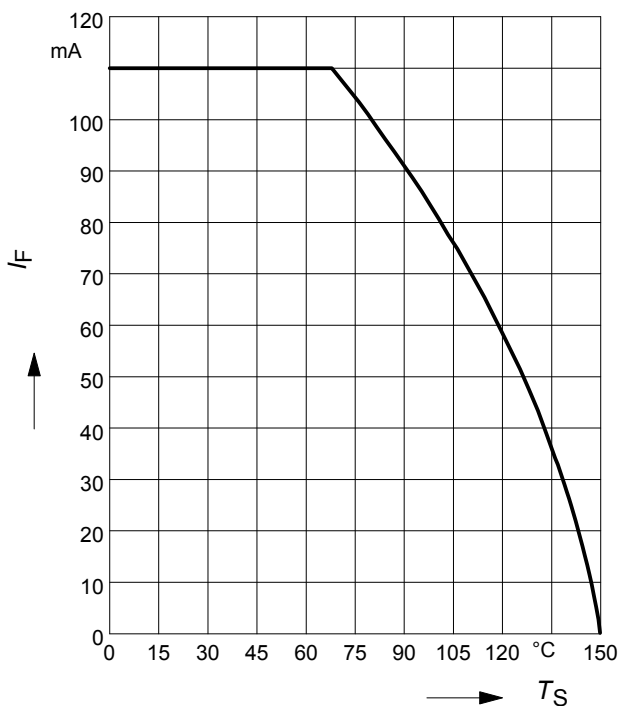
Forward current $I_F = f(T_S)$

BAT15-03W



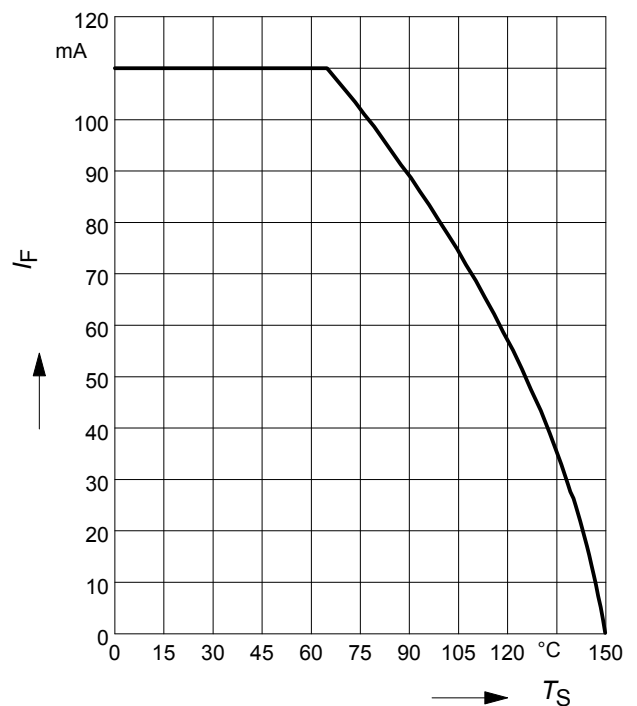
Forward current $I_F = f(T_S)$

BAT15-04W



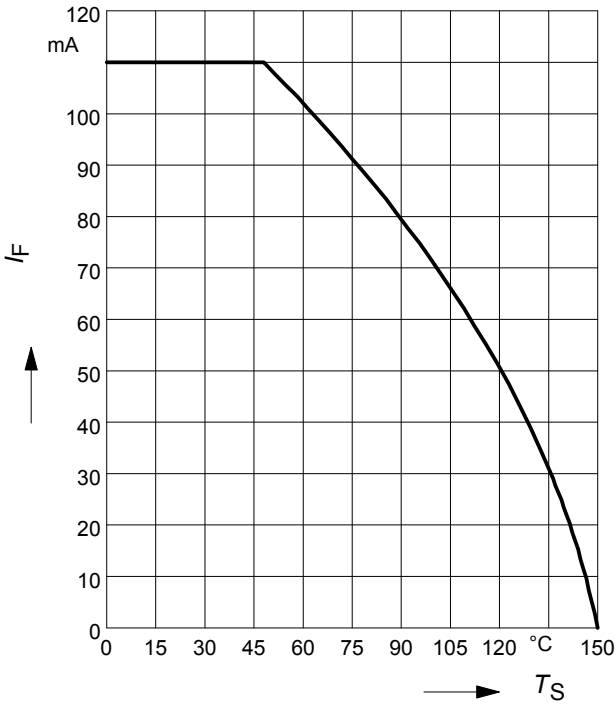
Forward current $I_F = f(T_S)$

BAT15-05W



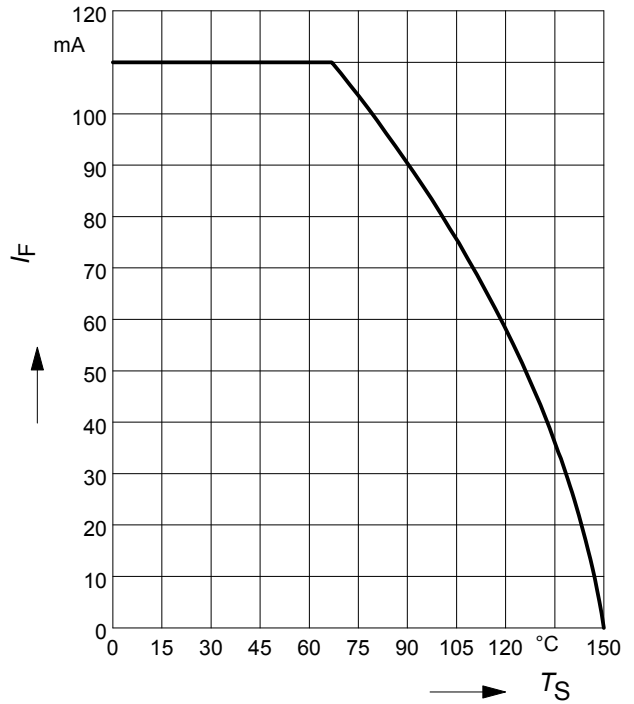
Forward current $I_F = f(T_S)$

BAT15-099



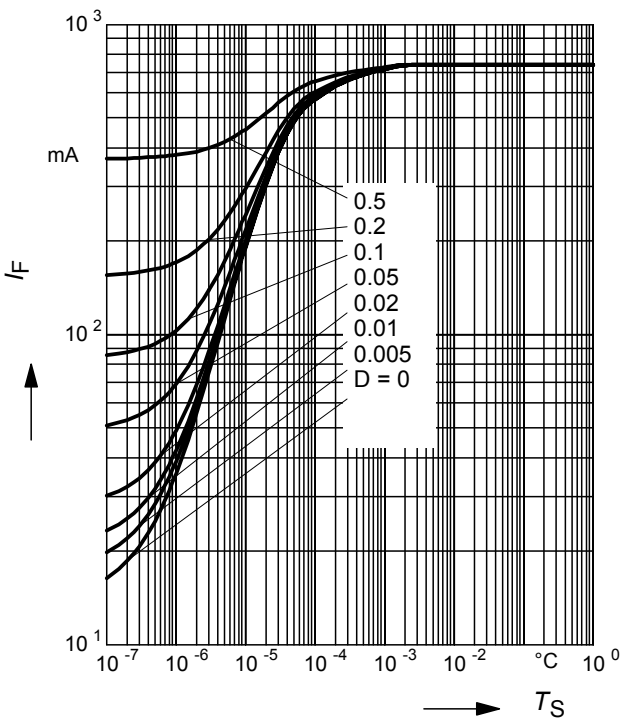
Forward current $I_F = f(T_S)$

BAT15-099R



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

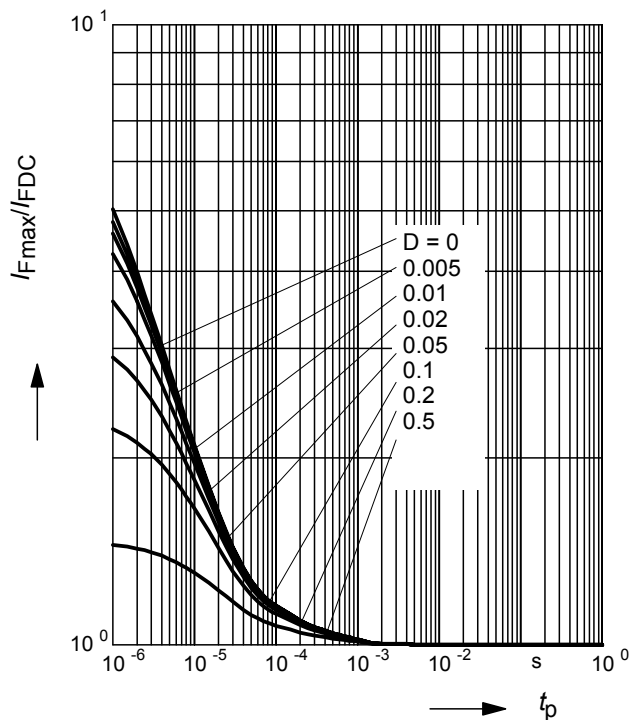
BAT15-02L



Permissible Pulse Load

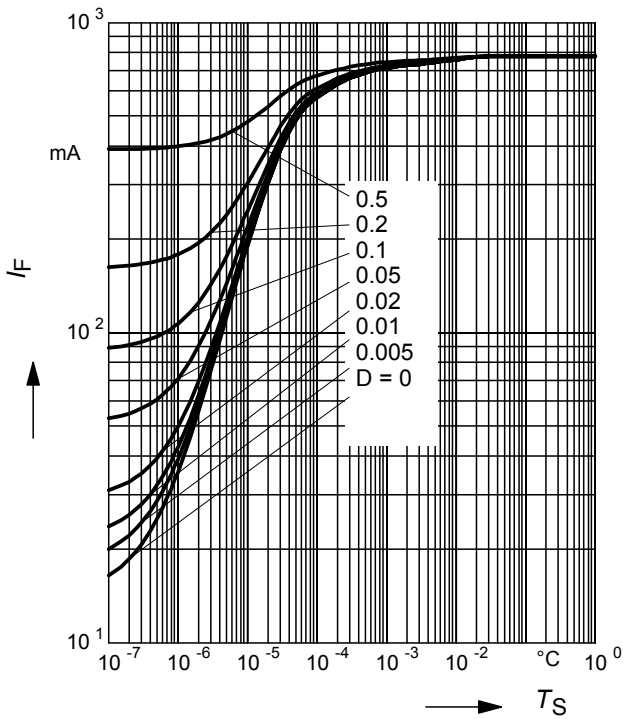
$I_{Fmax} / I_{FDC} = f(t_p)$

BAT15-02L



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

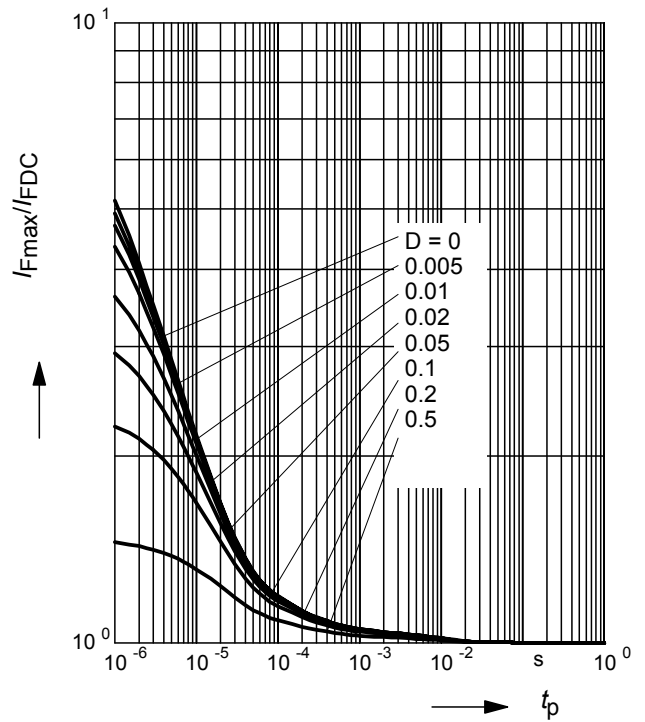
BAT15-02V



Permissible Pulse Load

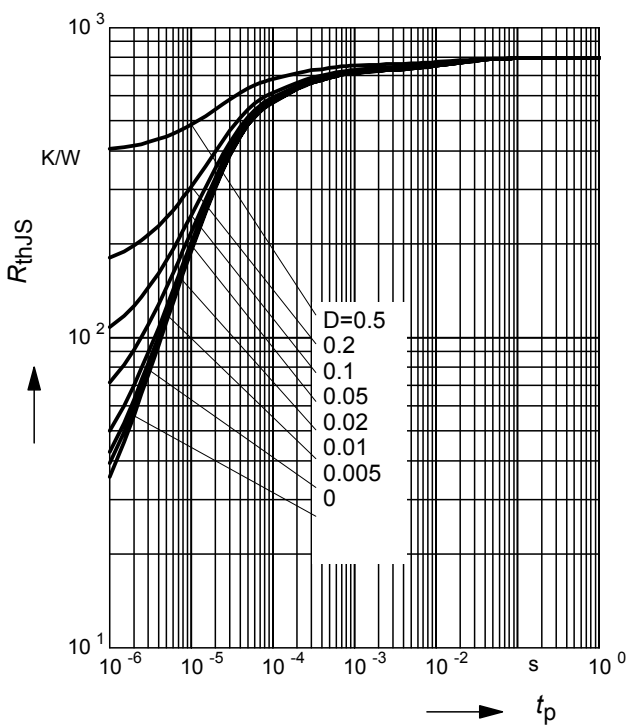
$I_{Fmax} / I_{FDC} = f(t_p)$

BAT15-02V



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

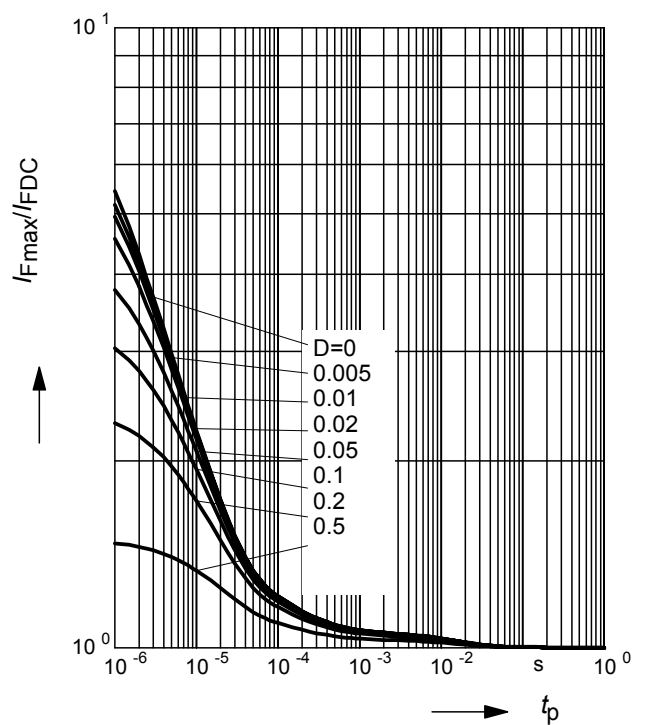
BAT15-03W



Permissible Pulse Load

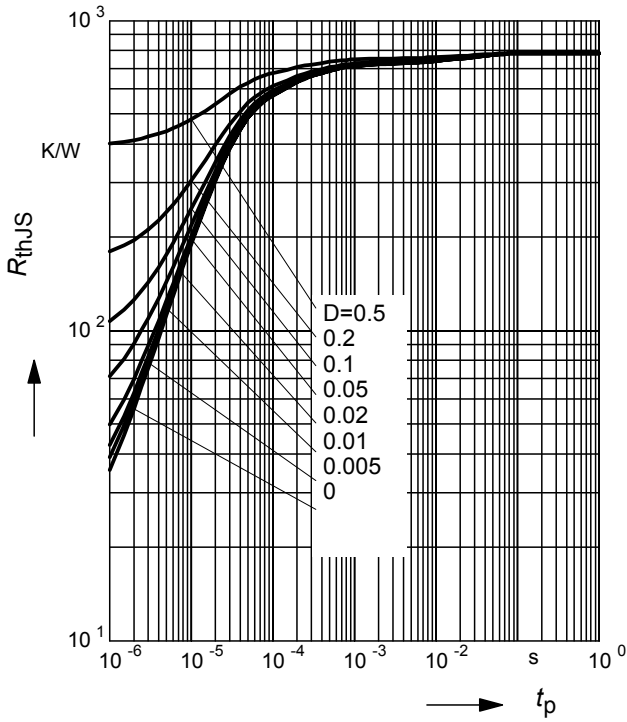
$I_{Fmax} / I_{FDC} = f(t_p)$

BAT15-03W



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

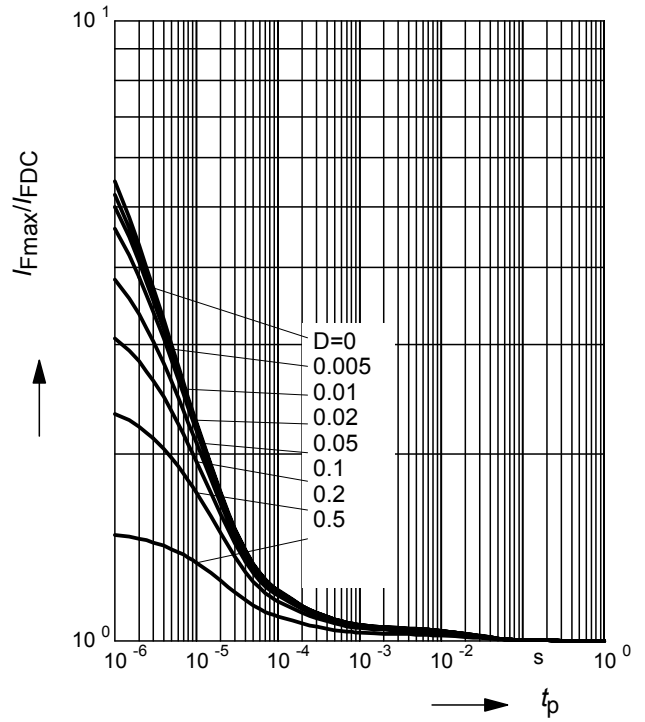
BAT15-04W



Permissible Pulse Load

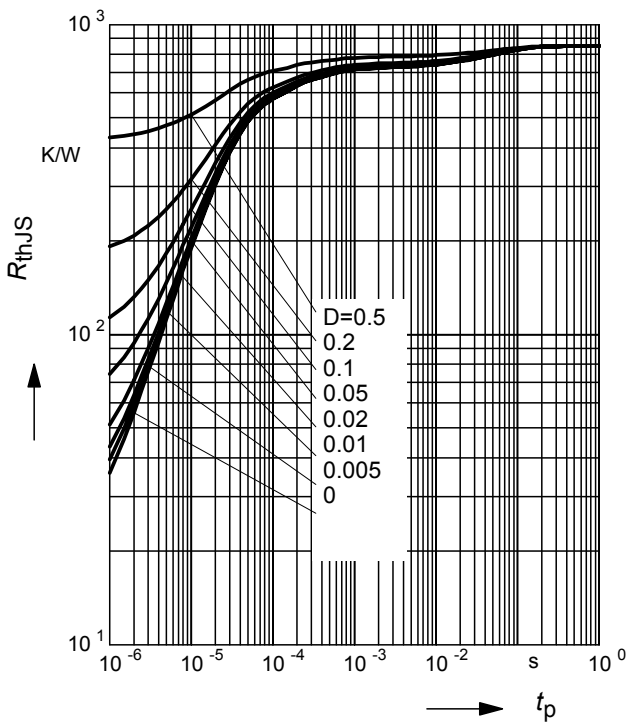
$I_{Fmax} / I_{FDC} = f(t_p)$

BAT15-04W



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

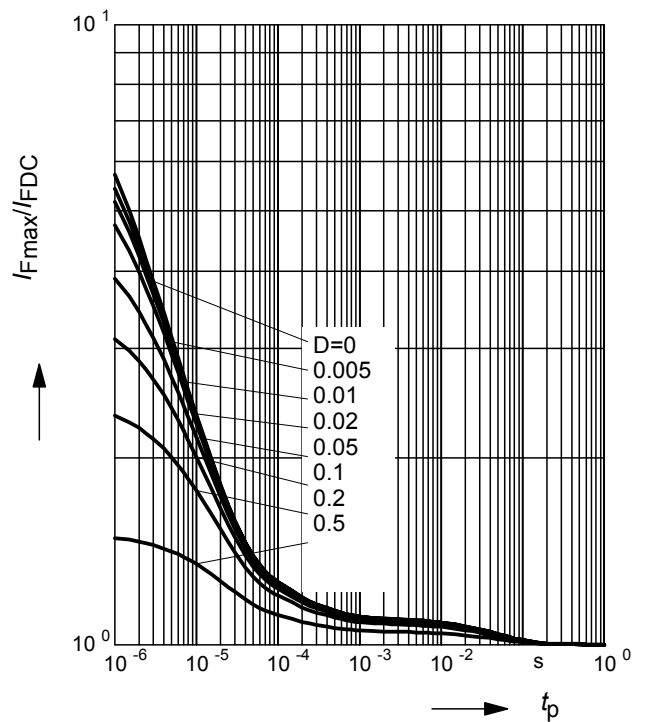
BAT15-05W



Permissible Pulse Load

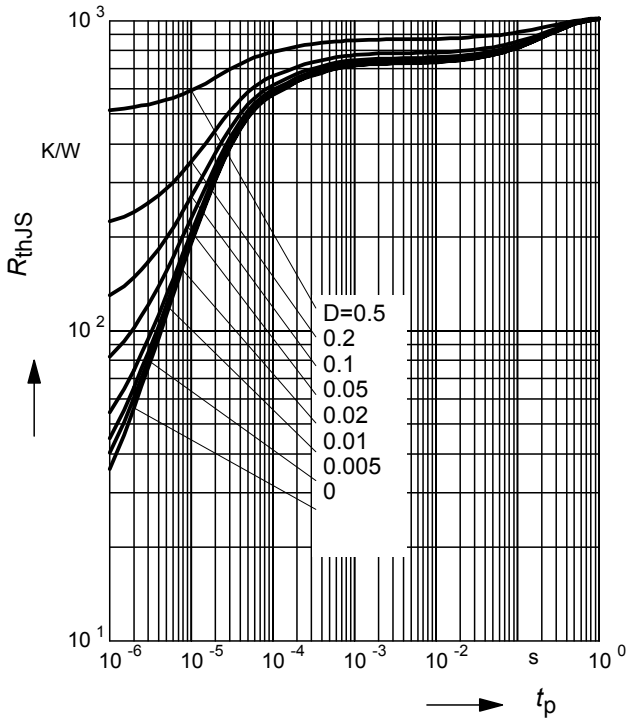
$I_{Fmax} / I_{FDC} = f(t_p)$

BAT15-05W



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

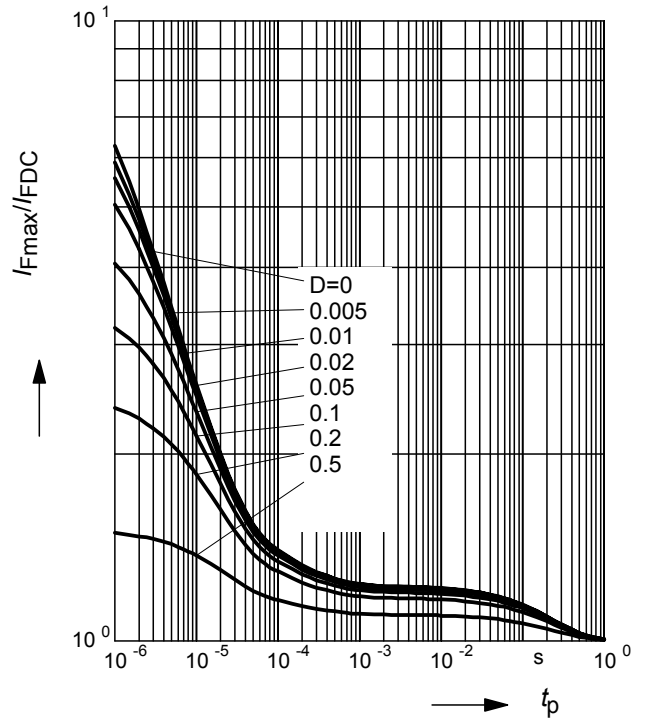
BAT15-099



Permissible Pulse Load

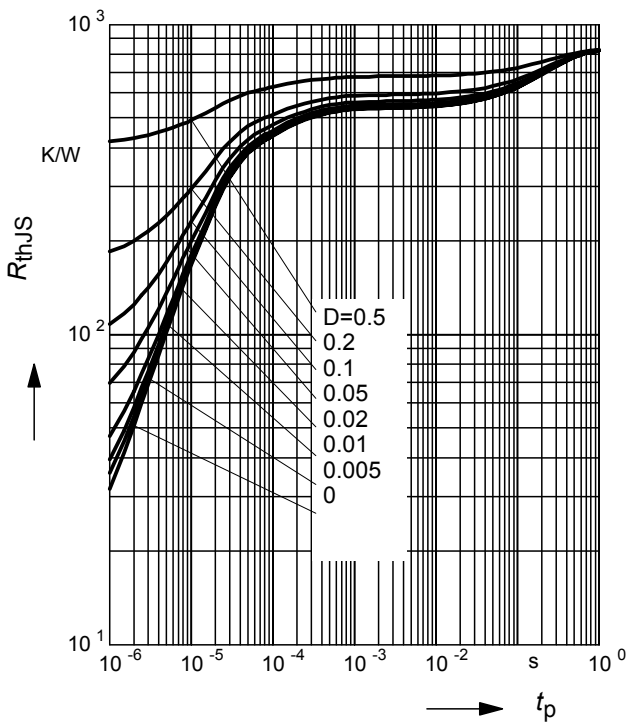
$I_{Fmax} / I_{FDC} = f(t_p)$

BAT15-099



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

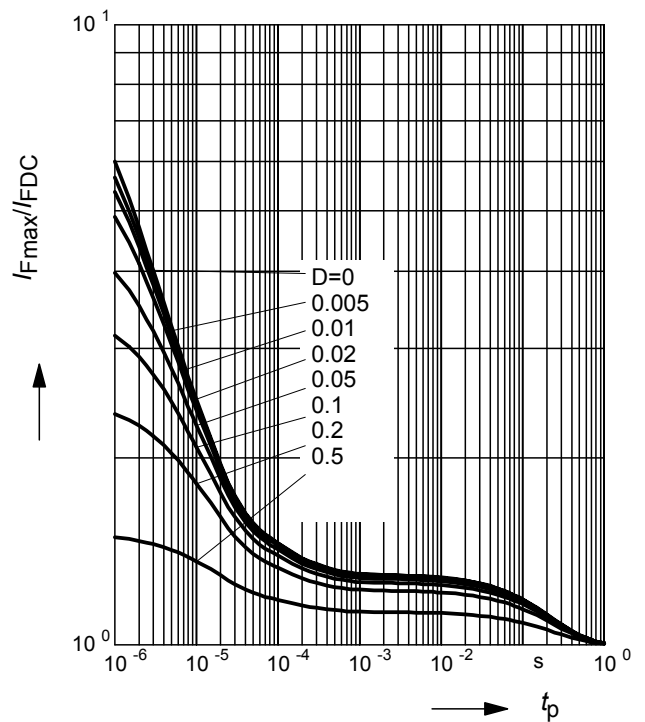
BAT15-099R



Permissible Pulse Load

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

BAT15-099R

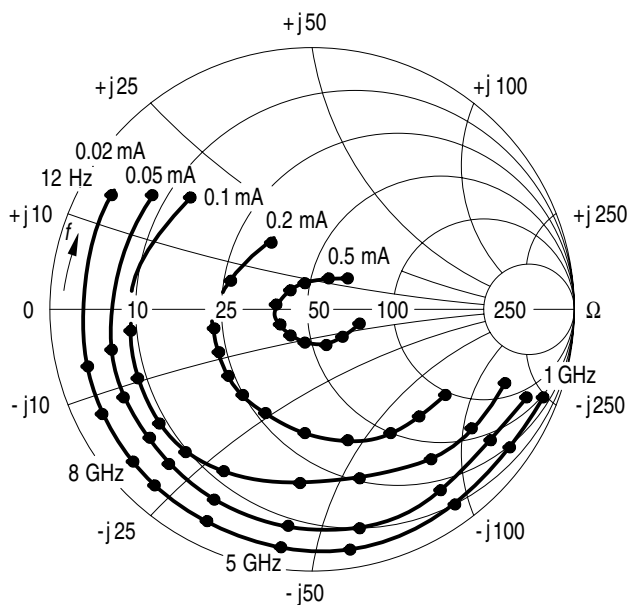


S₁₁-Parameters for BAT15-099

Typical impedance characteristics (with external bias *I* and Z_o = 50Ω)

| <i>f</i> | <i>I</i> = 0.02 mA | | <i>I</i> = 0.05 mA | | <i>I</i> = 0.1 mA | | <i>I</i> = 0.2 mA | | <i>I</i> = 0.5 mA | | |
|----------|--------------------|------|--------------------|------|-------------------|------|-------------------|------|-------------------|------|--------|
| | GHz | MAG | ANG | MAG | ANG | MAG | ANG | MAG | ANG | MAG | ANG |
| 1 | | 0.94 | -16.4 | 0.84 | -16.6 | 0.77 | -16.4 | 0.59 | -17.2 | 0.19 | -16.7 |
| 2 | | 0.93 | -33.8 | 0.88 | -33.8 | 0.77 | -34.5 | 0.58 | -35.2 | 0.15 | -36.1 |
| 3 | | 0.92 | -53.8 | 0.86 | -54.5 | 0.75 | -54.1 | 0.58 | -56.1 | 0.13 | -64.8 |
| 4 | | 0.91 | -74.3 | 0.84 | -75.3 | 0.72 | -76.4 | 0.51 | -78.4 | 0.11 | -104.8 |
| 5 | | 0.91 | -96.6 | 0.84 | -97.6 | 0.72 | -99.1 | 0.53 | -102.3 | 0.15 | -135.7 |
| 6 | | 0.91 | -115.4 | 0.84 | -116.7 | 0.73 | -118.7 | 0.53 | -122.9 | 0.18 | -160.9 |
| 7 | | 0.91 | -131 | 0.84 | -132.3 | 0.73 | -134.1 | 0.54 | -138.1 | 0.2 | -168.8 |
| 8 | | 0.91 | -143 | 0.84 | -144.5 | 0.73 | -146.8 | 0.55 | -150.5 | 0.81 | 179.4 |
| 9 | | 0.91 | -155.6 | 0.83 | -150.2 | 0.71 | -159.7 | 0.53 | -163.9 | 0.18 | 179.4 |
| 10 | | 0.9 | -167.3 | 0.83 | -169.7 | 0.71 | -178.8 | 0.51 | -175.8 | 0.14 | 151.2 |
| 11 | | 0.89 | 175.5 | 0.8 | 172.6 | 0.7 | 170 | 0.45 | 164.9 | 0.09 | 105.5 |
| 12 | | 0.88 | 175.5 | 0.76 | 146.5 | 0.62 | 142.8 | 0.39 | 134.2 | 0.14 | 43.6 |

S₁₁ = (*f*, *I*) BAT15-099



EHD07083

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Datasheets for electronics components.