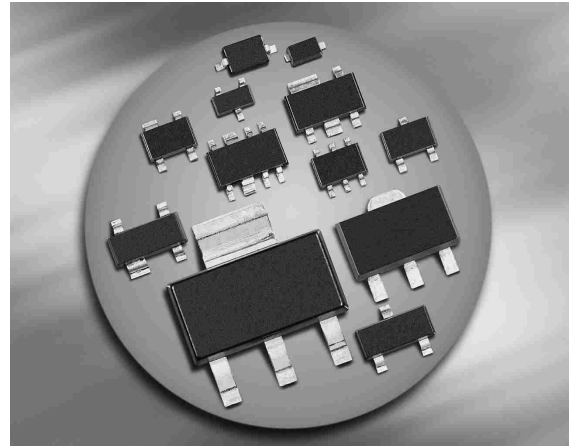
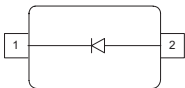


Silicon PIN Diode

- Optimized for antenna switches in hand held applications
- Very low capacitance at zero volts reverse bias at frequencies above 1GHz (typ. 0.19 pF)
- Low forward resistance (typ. $0.8\Omega @ I_F = 10\text{mA}$)
- Very low signal distortion


BAR89-02L


| Type | Package | Configuration | L_S (nH) | Marking |
|-----------|----------|------------------|------------|---------|
| BAR89-02L | TSLP-2-1 | single, leadless | 0.4 | RS |

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

| Parameter | Symbol | Value | Unit |
|---|------------------|-------------|------|
| Diode reverse voltage | V_R | 80 | V |
| Forward current | I_F | 100 | mA |
| Total power dissipation $T_S \leq 133^\circ\text{C}$ | P_{tot} | 250 | mW |
| Junction temperature | T_j | 150 | °C |
| Operating temperature range | T_{op} | -55 ... 125 | |
| Storage temperature | T_{stg} | -55 ... 150 | |

Thermal Resistance

| Parameter | Symbol | Value | Unit |
|--|-------------------|-----------|------|
| Junction - soldering point ¹⁾ , BAR89-02L | R_{thJS} | ≤ 65 | K/W |

¹For 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 $I_{(BR)} = 5 \mu\text{A}$ | $V_{(BR)}$ | 80 | - | - | V |
| Reverse current $V_R = 60 \text{ V}$ | I_R | - | - | 50 | nA |
| Forward voltage $I_F = 10 \text{ mA}$ $I_F = 100 \text{ mA}$ | V_F | - - | 0.83 0.95 | 0.9 1.1 | V |

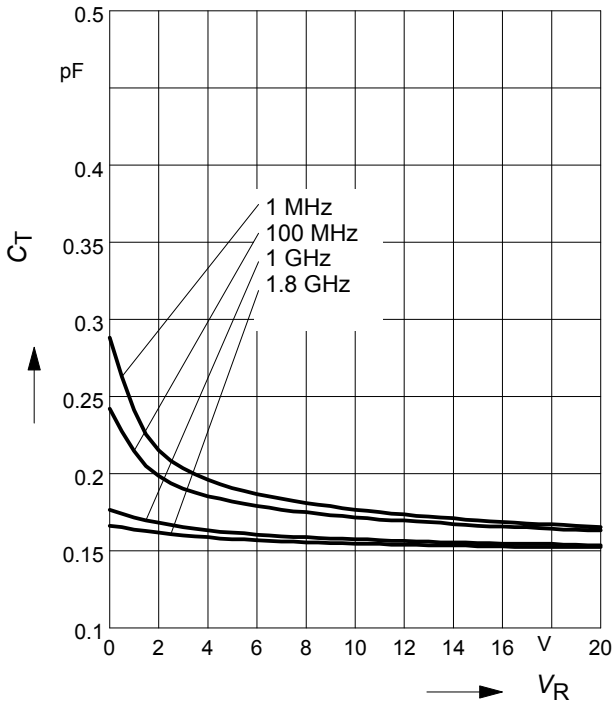
Electrical Characteristics at $T_A = 25^\circ\text{C}$, unless otherwise specified

| Parameter | Symbol | Values | | | Unit |
|---|--------------|------------------|------------------------------|---------------------|---------------|
| | | min. | typ. | max. | |
| AC Characteristics | | | | | |
| Diode capacitance $V_R = 1\text{ V}, f = 1\text{ MHz}$ $V_R = 0\text{ V}, f = 100\text{ MHz}$ $V_R = 0\text{ V}, f = 1\text{ GHz}$ $V_R = 0\text{ V}, f = 1.8\text{ GHz}$ | C_T | - - - - | 0.25 0.25 0.19 0.18 | 0.35 - - - | pF |
| Reverse parallel resistance $V_R = 0\text{ V}, f = 100\text{ MHz}$ $V_R = 0\text{ V}, f = 1\text{ GHz}$ $V_R = 0\text{ V}, f = 1.8\text{ GHz}$ | R_P | - - - | 35 5 3.5 | - - - | k Ω |
| Forward resistance $I_F = 1\text{ mA}, f = 100\text{ MHz}$ $I_F = 5\text{ mA}, f = 100\text{ MHz}$ $I_F = 10\text{ mA}, f = 100\text{ MHz}$ | r_f | - - - | 3 1.2 0.8 | - - 1.5 | Ω |
| Charge carrier life time $I_F = 10\text{ mA}, I_R = 6\text{ mA}$, measured at $I_R = 3\text{ mA}$, $R_L = 100\ \Omega$ | τ_{rr} | - | 800 | - | ns |
| I-region width | W_I | - | 19 | - | μm |
| Insertion loss ¹⁾ $I_F = 1\text{ mA}, f = 1.8\text{ GHz}$ $I_F = 5\text{ mA}, f = 1.8\text{ GHz}$ $I_F = 10\text{ mA}, f = 1.8\text{ GHz}$ | $ S_{21} ^2$ | - - - | -0.23 -0.1 -0.08 | - - - | dB |
| Isolation ¹⁾ $V_R = 0\text{ V}, f = 0.9\text{ GHz}$ $V_R = 0\text{ V}, f = 1.8\text{ GHz}$ $V_R = 0\text{ V}, f = 2.45\text{ GHz}$ | $ S_{21} ^2$ | - - - | -19 -14 -11 | - - - | |

¹BAR89-02L in series configuration, $Z = 50\ \Omega$

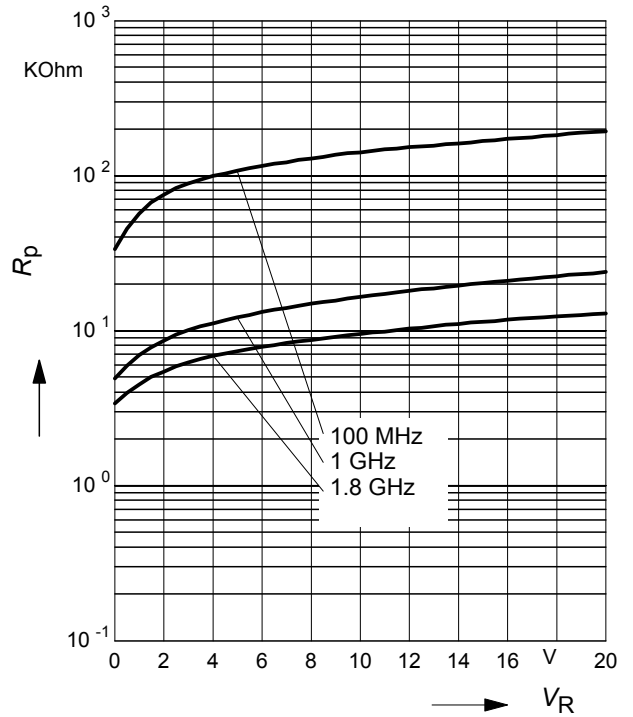
Diode capacitance $C_T = f(V_R)$

$f =$ Parameter



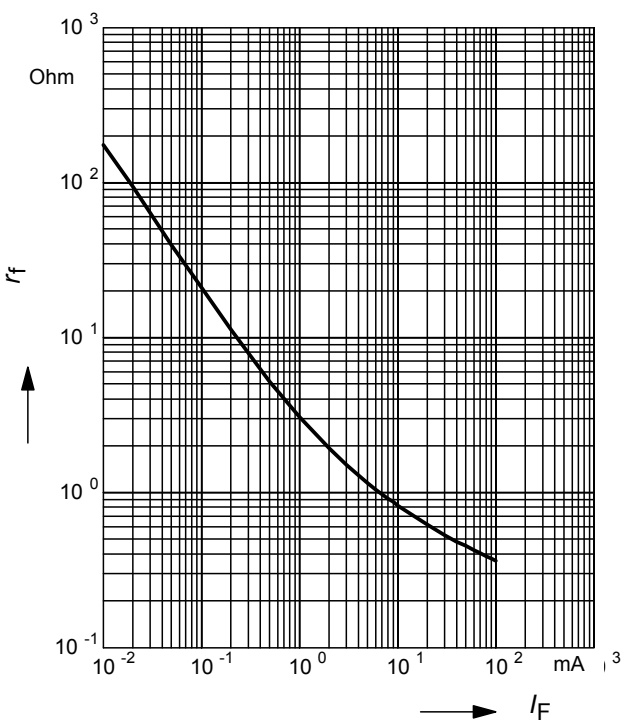
Reverse parallel resistance $R_P = f(V_R)$

$f =$ Parameter



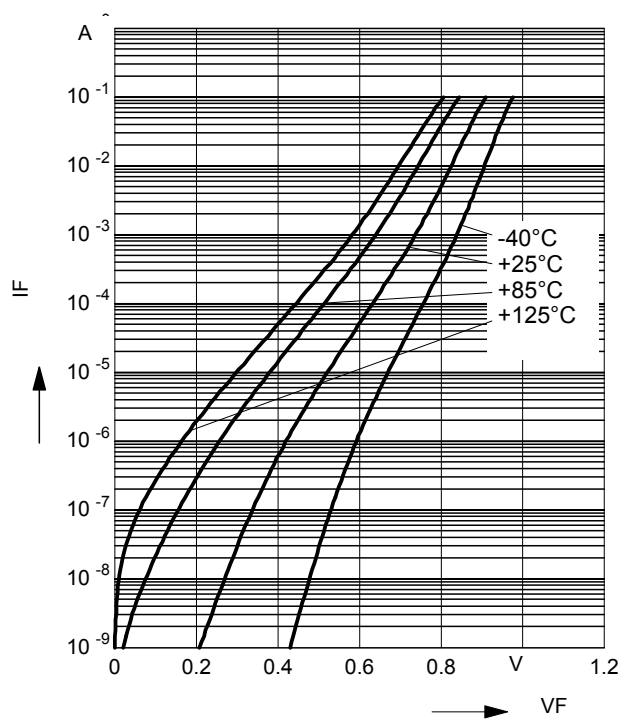
Forward resistance $r_f = f(I_F)$

$f = 100\text{MHz}$



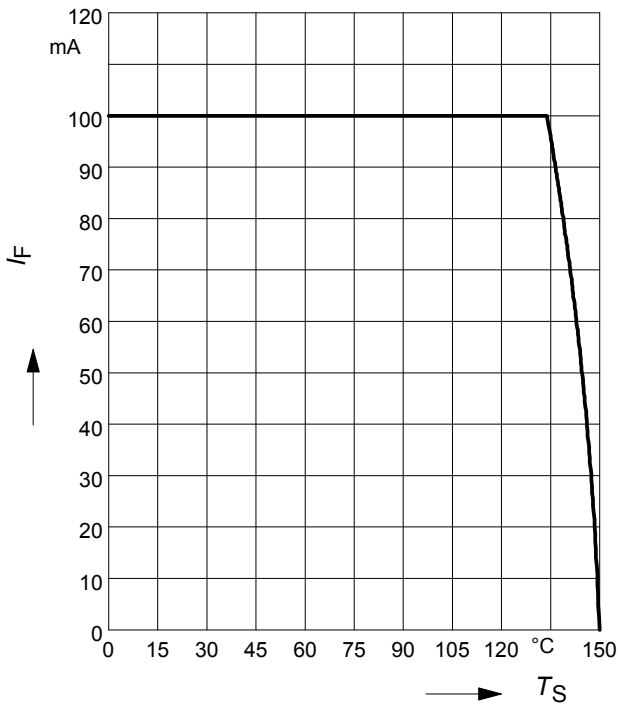
Forward current $I_F = f(V_F)$

$T_A =$ Parameter



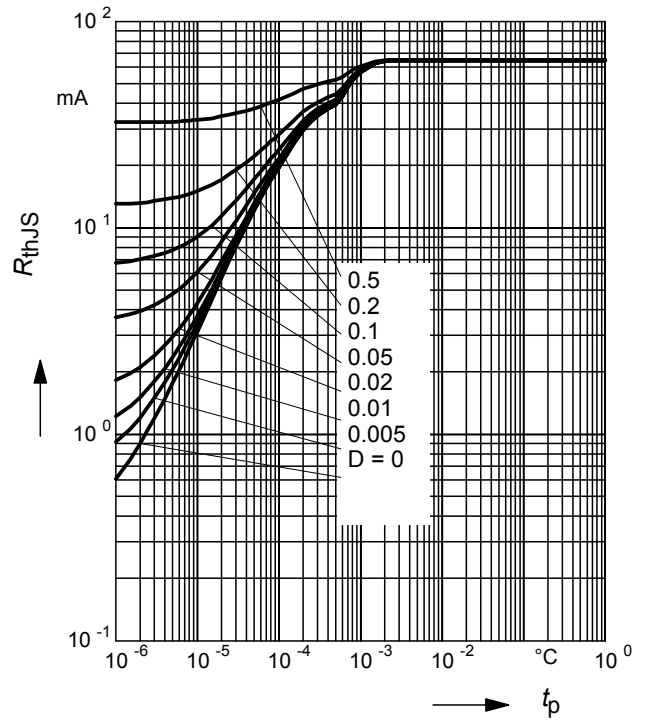
Forward current $I_F = f(T_S)$

BAR89-02L



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

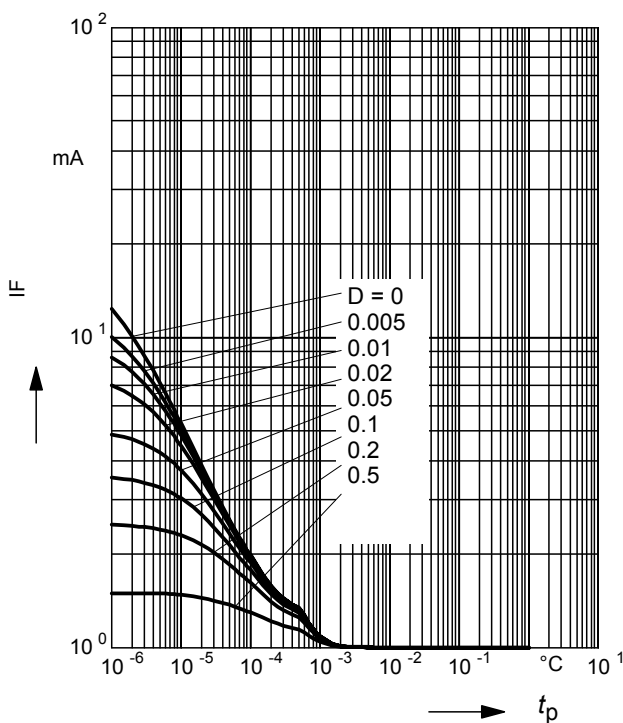
BAR89-02L



Permissible Pulse Load

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

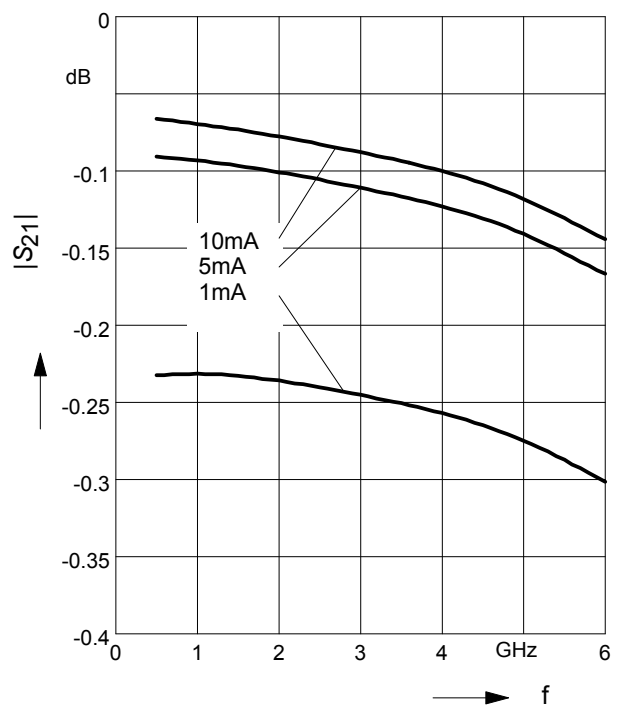
BAR89-02L



Insertion loss $|S_{21}|^2 = f(f)$

I_F = Parameter

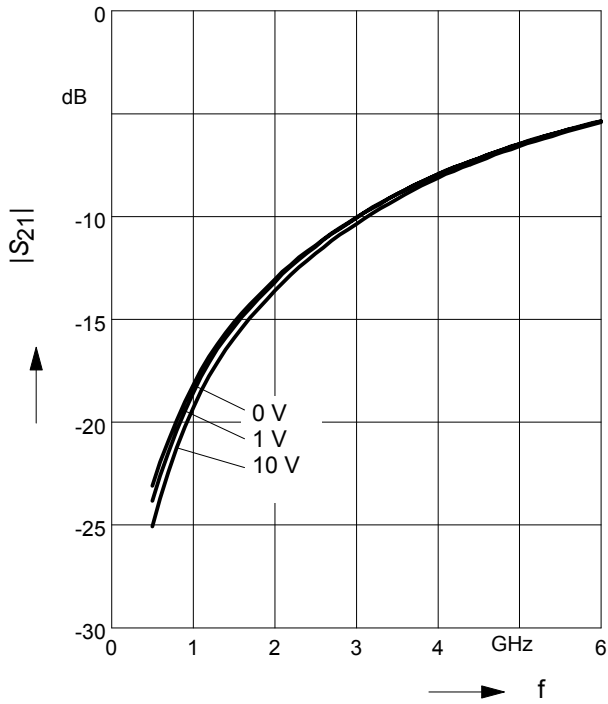
BAR89-02L in series configuration, $Z = 50\Omega$



Isolation $|S_{21}|^2 = f(f)$

V_R = Parameter

BAR89-02L in series configuration, $Z = 50\Omega$





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