

Silicon Switching Diode

- For high-speed switching applications
- Pb-free (RoHS compliant) package ¹⁾
- Qualified according AEC Q101



BAS16
BAS16W

BAS16-02L
BAS16-02V
BAS16-02W
BAS16-03W

BAS16S
BAS16U

BAS16-07L4



| Type | Package | Configuration | Marking |
|-------------|----------|-------------------------|---------|
| BAS16 | SOT23 | single | A6s |
| BAS16-02L* | TSLP-2-1 | single, leadless | A6 |
| BAS16-02V | SC79 | single | 6 |
| BAS16-02W | SCD80 | single | A6 |
| BAS16-03W | SOD323 | single | white B |
| BAS16-07L4* | TSLP-4-4 | parallel pair, leadless | 6A |
| BAS16S | SOT363 | parallel triple | A6s |
| BAS16U | SC74 | parallel triple | A6s |
| BAS16W | SOT323 | single | A6s |

* Preliminary Data

¹Pb-containing package may be available upon special request

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

| Parameter | Symbol | Value | Unit |
|---|-----------|-------------|------|
| Diode reverse voltage | V_R | 80 | V |
| Peak reverse voltage | V_{RM} | 85 | |
| Forward current | I_F | | mA |
| BAS16 | | 250 | |
| BAS16-02L, -07L4 | | 200 | |
| BAS16-02V, -02W | | 200 | |
| BAS16-03W | | 250 | |
| BAS16S | | 200 | |
| BAS16U | | 200 | |
| BAS16W | | 250 | |
| Non-repetitive peak surge forward current | I_{FSM} | | A |
| $t = 1\ \mu\text{s}$, BAS16/ S/ U/ W/ -03W | | 4.5 | |
| $t = 1\ \mu\text{s}$, BAS16-02L/ -02V/ -02W/ -07L4 | | 2.5 | |
| $t = 1\ \text{s}$ | | 0.5 | |
| Total power dissipation | P_{tot} | | mW |
| BAS16, $T_S \leq 54\text{ °C}$ | | 370 | |
| BAS16-02L, -07L4, $T_S \leq 130\text{ °C}$ | | 250 | |
| BAS16-02V, -02W, $T_S \leq 120\text{ °C}$ | | 250 | |
| BAS16-03W, $T_S \leq 116\text{ °C}$ | | 250 | |
| BAS16S, $T_S \leq 85\text{ °C}$ | | 250 | |
| BAS16U, $T_S \leq 113\text{ °C}$ | | 250 | |
| BAS16W, $T_S \leq 119\text{ °C}$ | | 250 | |
| Junction temperature | T_j | 150 | °C |
| Storage temperature | T_{stg} | -65 ... 150 | |

Thermal Resistance

| Parameter | Symbol | Value | Unit |
|--|------------|-------|------|
| Junction - soldering point ¹⁾ | R_{thJS} | | K/W |
| BAS16, BAS16S | | ≤ 260 | |
| BAS16-02L, -07L4 | | ≤ 80 | |
| BAS16-02V, -02W | | ≤ 120 | |
| BAS16-03W | | ≤ 135 | |
| BAS16U | | ≤ 150 | |
| BAS16W | | ≤ 125 | |

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

| Parameter | Symbol | Values | | | Unit |
|---|------------|--------|------|------------------------------------|---------------|
| | | min. | typ. | max. | |
| DC Characteristics | | | | | |
| Breakdown voltage $I_{(BR)} = 100 \mu\text{A}$ | $V_{(BR)}$ | 85 | - | - | V |
| Reverse current $V_R = 75 \text{ V}$ $V_R = 25 \text{ V}, T_A = 150^\circ\text{C}$ $V_R = 75 \text{ V}, T_A = 150^\circ\text{C}$ | I_R | - | - | 1 30 50 | μA |
| Forward voltage $I_F = 1 \text{ mA}$ $I_F = 10 \text{ mA}$ $I_F = 50 \text{ mA}$ $I_F = 100 \text{ mA}$ $I_F = 150 \text{ mA}$ | V_F | - | - | 715 855 1000 1200 1250 | mV |
| Forward recovery voltage $I_F = 10 \text{ mA}, t_P = 20 \text{ ns}$ | V_{fr} | - | - | 1.75 | V |

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. | |
| AC Characteristics | | | | | |
| Diode capacitance $V_R = 0\text{ V}, f = 1\text{ MHz}$ | C_T | - | - | 2 | pF |
| Reverse recovery time $I_F = 10\text{ mA}, I_R = 10\text{ mA}$, measured at $I_R = 1\text{ mA}$, $R_L = 100\ \Omega$ | 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: $R = 50\ \Omega$, $t_r = 0.35\text{ ns}$, $C = 0.05\text{ pF}$

Reverse current $I_R = f(T_A)$

$V_R =$ Parameter



Forward Voltage $V_F = f(T_A)$

$I_F =$ Parameter



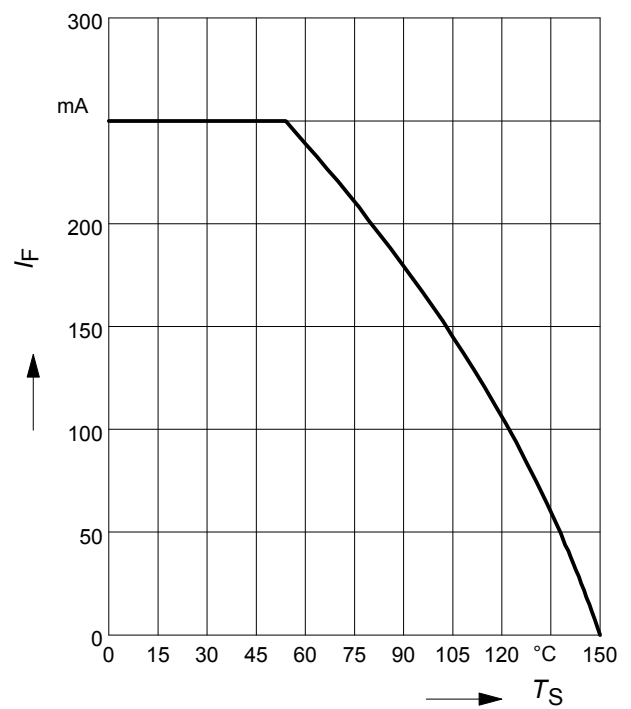
Forward current $I_F = f(V_F)$

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



Forward current $I_F = f(T_S)$

BAS16



Forward current $I_F = f(T_S)$

BAS16-02L, -07L4



Forward current $I_F = f(T_S)$

BAS16-02V, -02W



Forward current $I_F = f(T_S)$

BAS16-03W



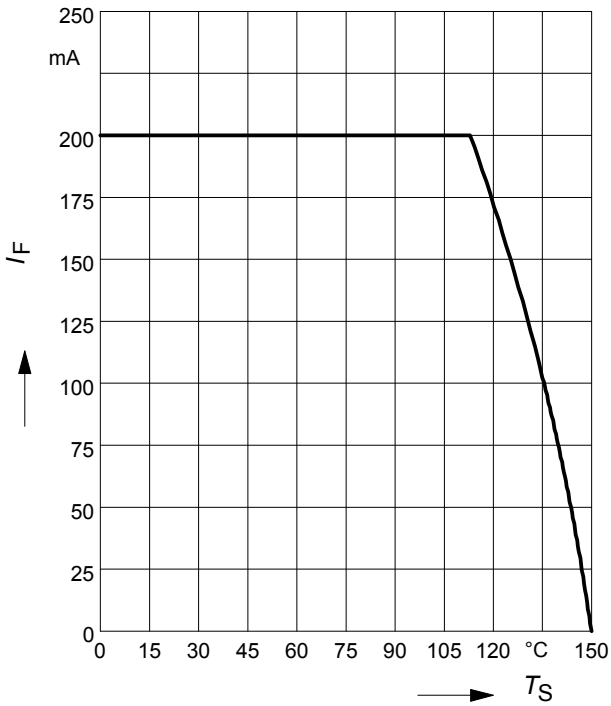
Forward current $I_F = f(T_S)$

BAS16S



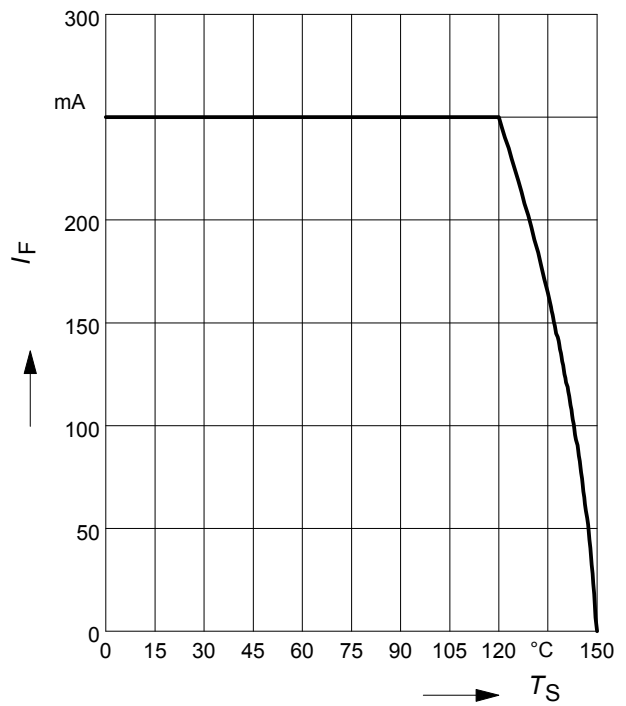
Forward current $I_F = f(T_S)$

BAS16U



Forward current $I_F = f(T_S)$

BAS16W



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

BAS16



Permissible Pulse Load

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

BAS16



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

BAS16-02L, -07L4



Permissible Pulse Load

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

BAS16-02L, -07L4



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

BAS16-02V, -02W



Permissible Pulse Load

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

BAS16-02V, -02W



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

BAS16-03W



Permissible Pulse Load

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

BAS16-03W



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

BAS16S



Permissible Pulse Load

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

BAS16S



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

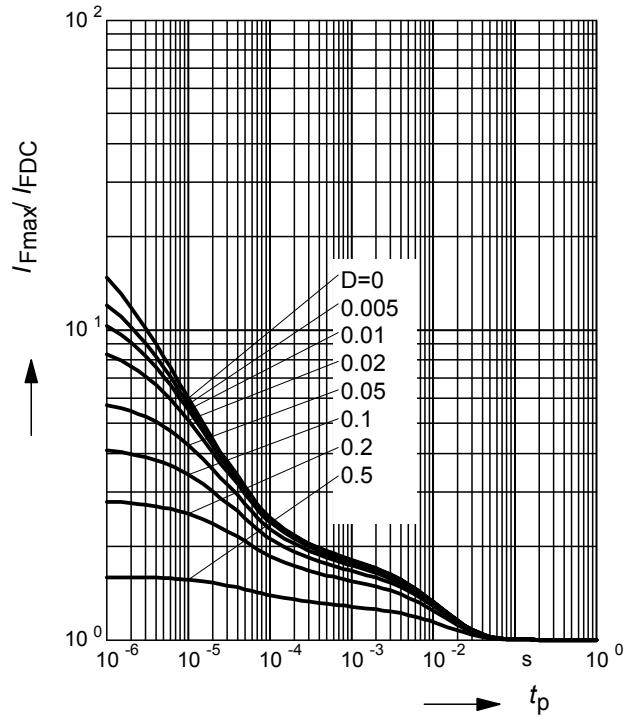
BAS16U



Permissible Pulse Load

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

BAS16U



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

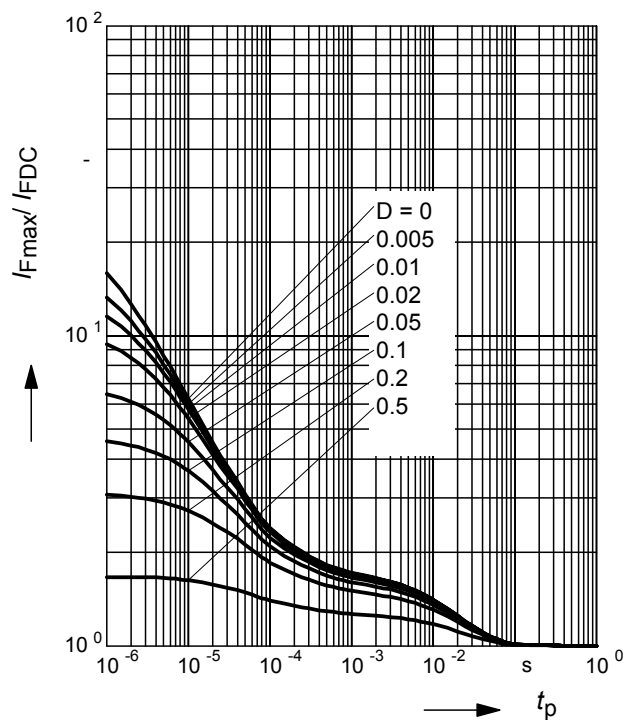
BAS16W



Permissible Pulse Load

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

BAS16W



Package Outline



Foot Print



Marking Layout (Example)

Small variations in positioning of Date code, Type code and Manufacture are possible.



Standard Packing

Reel \varnothing 180 mm = 3.000 Pieces/Reel
 Reel \varnothing 330 mm = 10.000 Pieces/Reel

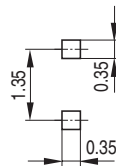
For symmetric types no defined Pin 1 orientation in reel.



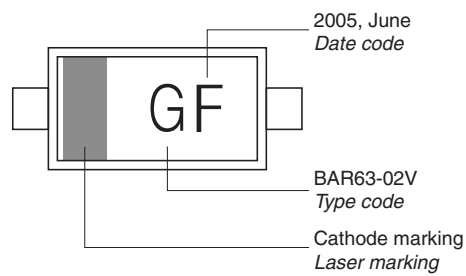
Package Outline



Foot Print



Marking Layout (Example)



Standard Packing

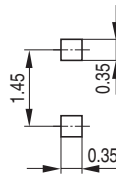
Reel ø180 mm = 3.000 Pieces/Reel
 Reel ø180 mm = 8.000 Pieces/Reel (2 mm Pitch)
 Reel ø330 mm = 10.000 Pieces/Reel



Package Outline



Foot Print



Marking Layout (Example)



Standard Packing

Reel \varnothing 180 mm = 3.000 Pieces/Reel
 Reel \varnothing 180 mm = 8.000 Pieces/Reel (2 mm Pitch)
 Reel \varnothing 330 mm = 10.000 Pieces/Reel



Date Code marking for discrete packages with one digit (SCD80, SC79, SC75¹⁾) CES-Code

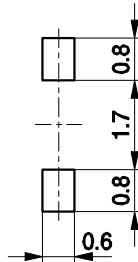
| Month | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 |
|-------|------|------|------|------|------|------|------|------|------|------|------|------|
| 01 | a | p | A | P | a | p | A | P | a | p | A | P |
| 02 | b | q | B | Q | b | q | B | Q | b | q | B | Q |
| 03 | c | r | C | R | c | r | C | R | c | r | C | R |
| 04 | d | s | D | S | d | s | D | S | d | s | D | S |
| 05 | e | t | E | T | e | t | E | T | e | t | E | T |
| 06 | f | u | F | U | f | u | F | U | f | u | F | U |
| 07 | g | v | G | V | g | v | G | V | g | v | G | V |
| 08 | h | x | H | X | h | x | H | X | h | x | H | X |
| 09 | j | y | J | Y | j | y | J | Y | j | y | J | Y |
| 10 | k | z | K | Z | k | z | K | Z | k | z | K | Z |
| 11 | l | 2 | L | 4 | l | 2 | L | 4 | l | 2 | L | 4 |
| 12 | n | 3 | N | 5 | n | 3 | N | 5 | n | 3 | N | 5 |

1) New Marking Layout for SC75, implemented at October 2005.

Package Outline



Foot Print



Marking Layout (Example)



Standard Packing

Reel ø180 mm = 3.000 Pieces/Reel
 Reel ø330 mm = 10.000 Pieces/Reel



Package Outline



1) Lead width can be 0.6 max. in dambar area

Foot Print



Marking Layout (Example)

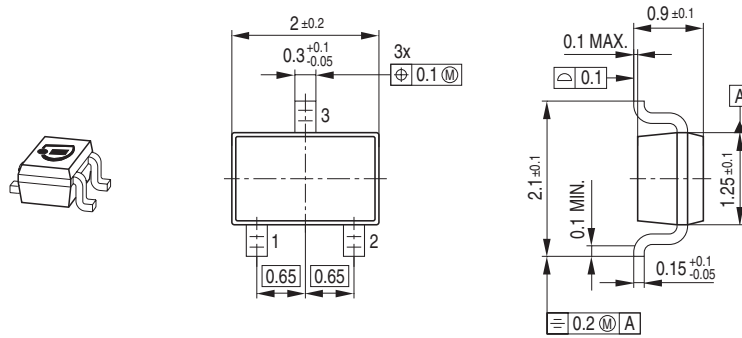


Standard Packing

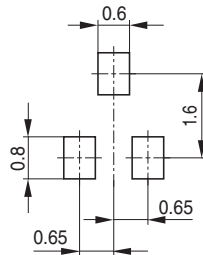
Reel \varnothing 180 mm = 3.000 Pieces/Reel
 Reel \varnothing 330 mm = 10.000 Pieces/Reel



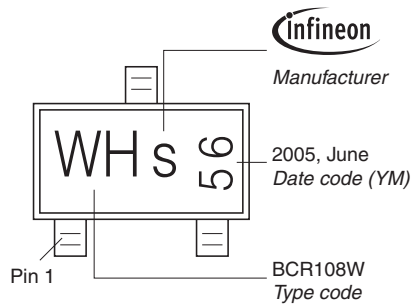
Package Outline



Foot Print

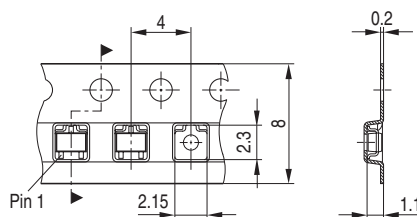


Marking Layout (Example)



Standard Packing

Reel \varnothing 180 mm = 3.000 Pieces/Reel
 Reel \varnothing 330 mm = 10.000 Pieces/Reel



Package Outline

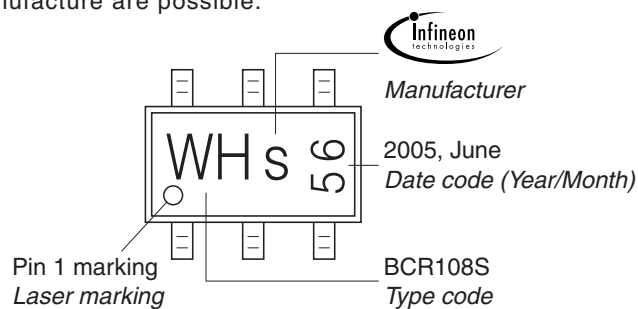


Foot Print



Marking Layout (Example)

Small variations in positioning of Date code, Type code and Manufacture are possible.



Standard Packing

Reel \varnothing 180 mm = 3.000 Pieces/Reel
 Reel \varnothing 330 mm = 10.000 Pieces/Reel

For symmetric types no defined Pin 1 orientation in reel.



Package Outline



1) Dimension applies to plated terminal

Foot Print

For board assembly information please refer to Infineon website "Packages"



■ Copper □ Solder mask

▨ Stencil apertures

Marking Layout (Example)



BAS16-02L
Type code

Cathode marking
Laser marking

Standard Packing

Reel \varnothing 180 mm = 15.000 Pieces/Reel
Reel \varnothing 330 mm = 50.000 Pieces/Reel (optional)



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