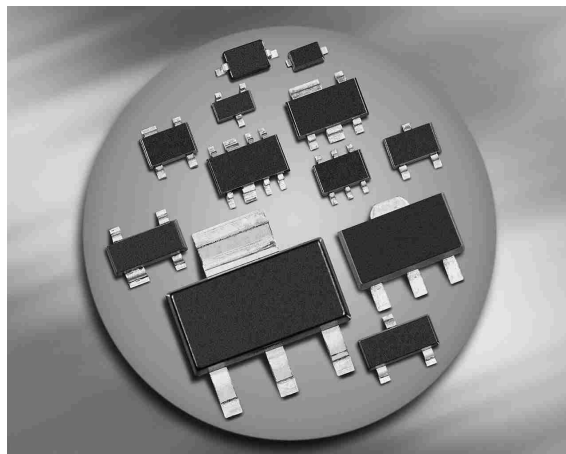
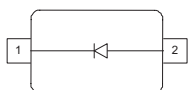


Silicon PIN Diode

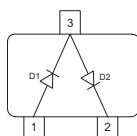
- High voltage current controlled RF resistor for RF attenuator and switches
- Frequency range above 1 MHz up to 6 GHz
- Very low capacitance at zero volt reverse bias at frequencies above 1 GHz (typ. 0.17 pF)
- Low forward resistance (typ. 2.1 Ω @ 10 mA)
- Very low signal distortion
- Pb-free (RoHS compliant) package
- Qualified according AEC Q101¹⁾



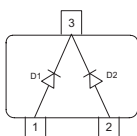
BAR64-02EL
BAR64-02V
BAR64-03W



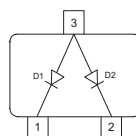
BAR64-04
BAR64-04W



BAR64-05
BAR64-05W



BAR64-06
BAR64-06W



Type	Package	Configuration	L_S (nH)	Marking
BAR64-02EL*	TSLP-2-19	single, leadless	0.4	OE
BAR64-02V	SC79	single	0.6	O
BAR64-03W	SOD323	single	1.8	blue 2
BAR64-04	SOT23	series	1.8	PPs
BAR64-04W	SOT323	series	1.4	PPs
BAR64-05	SOT23	common cathode	1.8	PRs
BAR64-05W	SOT323	common cathode	1.4	PRs
BAR64-06	SOT23	common anode	1.8	PSs
BAR64-06W	SOT323	common anode	1.4	PSs

¹⁾BAR64-02EL is not qualified according AEC Q101

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

Parameter	Symbol	Value	Unit
Diode reverse voltage	V_R	150	V
Forward current	I_F	100	mA
Total power dissipation	P_{tot}		mW
BAR64-02EL, $T_S \leq 135^\circ\text{C}$		250	
BAR64-02V, $T_S \leq 125^\circ\text{C}$		250	
BAR64-03W, $T_S \leq 25^\circ\text{C}$		250	
BAR64-04, -05, -06, $T_S \leq 65^\circ\text{C}$		250	
BAR64-04W, -05W, -06W, $T_S \leq 115^\circ\text{C}$		250	
Junction temperature	T_j	150	$^\circ\text{C}$
Operating temperature range	T_{op}	-55 ... 125	
Storage temperature	T_{stg}	-55 ... 150	

Thermal Resistance

Parameter	Symbol	Value	Unit
Junction - soldering point ¹⁾	R_{thJS}		K/W
BAR64-02EL		≤ 60	
BAR64-02V, -04W, -05W, -06W		≤ 140	
BAR64-03W		≤ 370	
BAR64-04, -05, -06		≤ 340	

¹⁾For calculation of R_{thJA} please refer to Application Note AN077 (Thermal Resistance Calculation)

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

Parameter	Symbol	Values			Unit
		min.	typ.	max.	

DC Characteristics

Breakdown voltage	$V_{(\text{BR})}$	150	-	-	V
$I_{(\text{BR})} = 5 \mu\text{A}$					
Forward voltage	V_F	-	-	1.1	
$I_F = 50 \text{ mA}$					

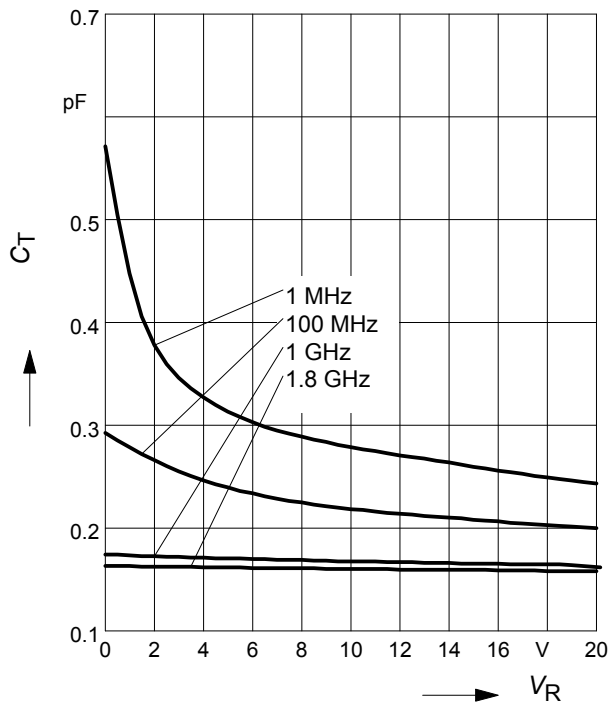
Electrical Characteristics at $T_A = 25^\circ\text{C}$, unless otherwise specified

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
AC Characteristics					
Diode capacitance $V_R = 20\text{ V}$, $f = 1\text{ MHz}$ $V_R = 0\text{ V}$, $f = 100\text{ MHz}$ $V_R = 0\text{ V}$, $f = 1\ldots 1.8\text{ GHz}$, BAR64-02EL $V_R = 0\text{ V}$, $f = 1\ldots 1.8\text{ GHz}$, all other	C_T	- - - -	0.23 0.3 0.13 0.17	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	- - -	10 4 3	- - -	kΩ
Forward resistance $I_F = 1\text{ mA}$, $f = 100\text{ MHz}$ $I_F = 10\text{ mA}$, $f = 100\text{ MHz}$ $I_F = 100\text{ mA}$, $f = 100\text{ MHz}$	r_f	- - -	12.5 2.1 0.85	20 2.8 1.35	Ω
Charge carrier life time $I_F = 10\text{ mA}$, $I_R = 6\text{ mA}$, measured at $I_R = 3\text{ mA}$, $R_L = 100\text{ }\Omega$	τ_{rr}	-	1550	-	ns
I-region width	W_I	-	50	-	μm
Insertion loss ¹⁾ $I_F = 3\text{ mA}$, $f = 1.8\text{ GHz}$ $I_F = 5\text{ mA}$, $f = 1.8\text{ GHz}$ $I_F = 10\text{ mA}$, $f = 1.8\text{ GHz}$	I_L	- - -	0.32 0.23 0.16	- - -	dB
Isolation ¹⁾ $V_R = 0\text{ V}$, $f = 0.9\text{ GHz}$ $V_R = 0\text{ V}$, $f = 1.8\text{ GHz}$ $V_R = 0\text{ V}$, $f = 2.45\text{ GHz}$ $V_R = 0\text{ V}$, $f = 5.6\text{ GHz}$	I_{SO}	- - - -	22 17 14.5 8.5	- - - -	

¹⁾BAR64-02EL in series configuration, $Z = 50\text{ }\Omega$

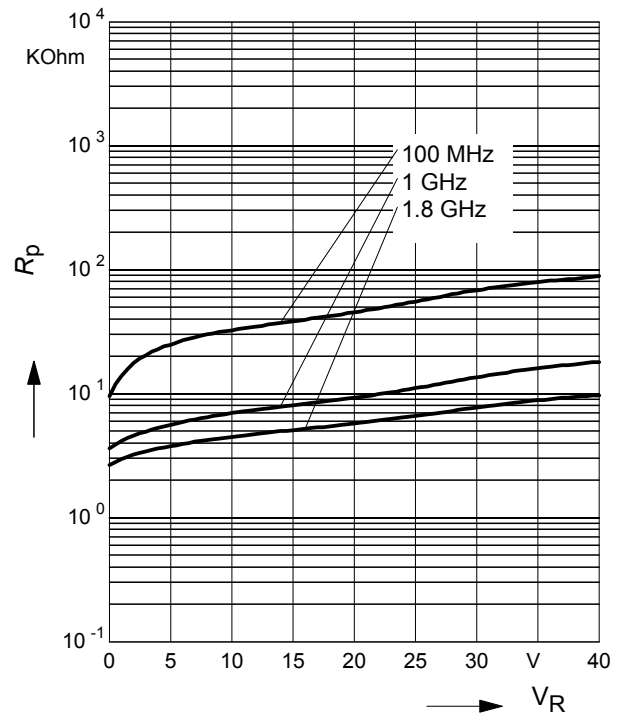
Diode capacitance $C_T = f(V_R)$

$f = \text{Parameter}$



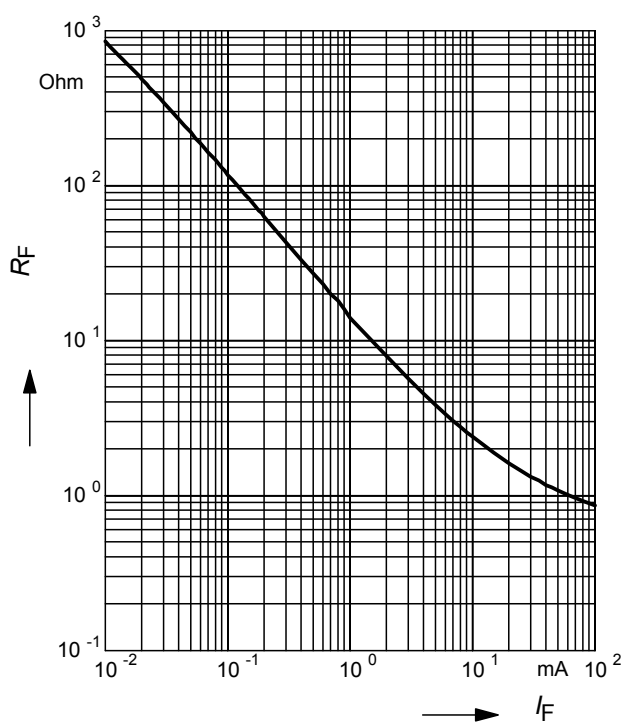
Reverse parallel resistance $R_P = f(V_R)$

$f = \text{Parameter}$



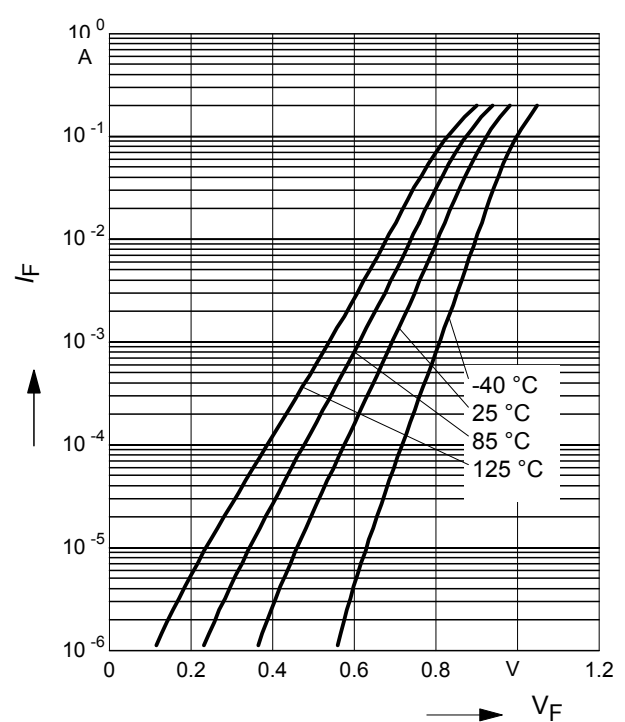
Forward resistance $r_f = f(I_F)$

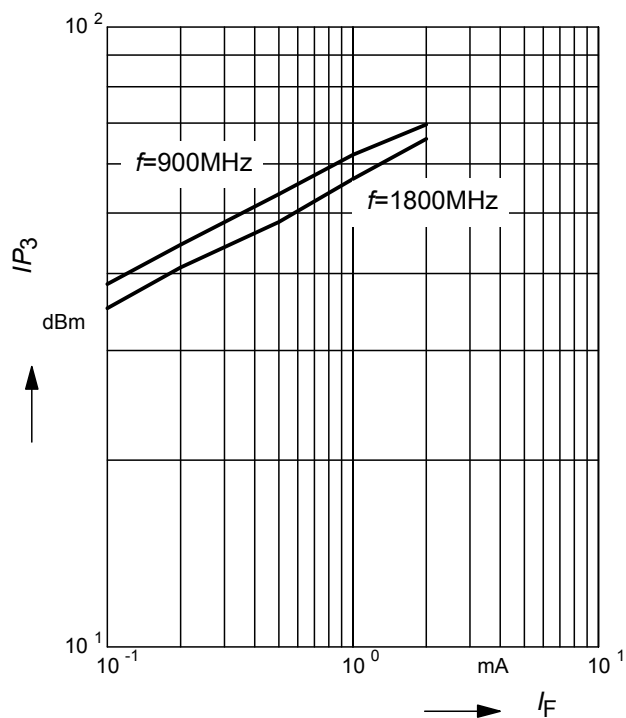
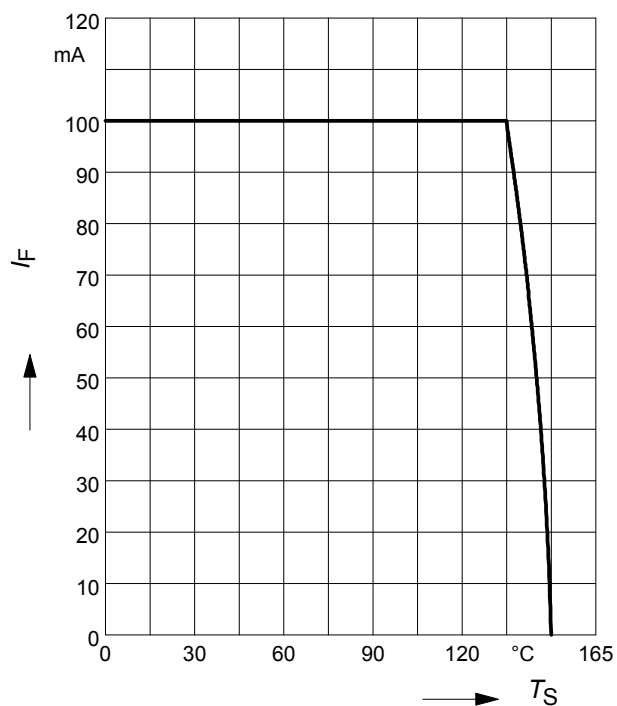
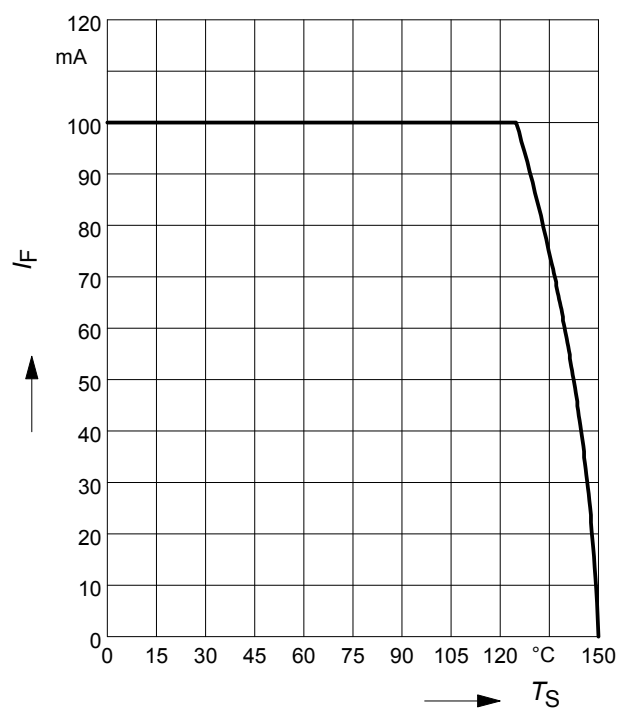
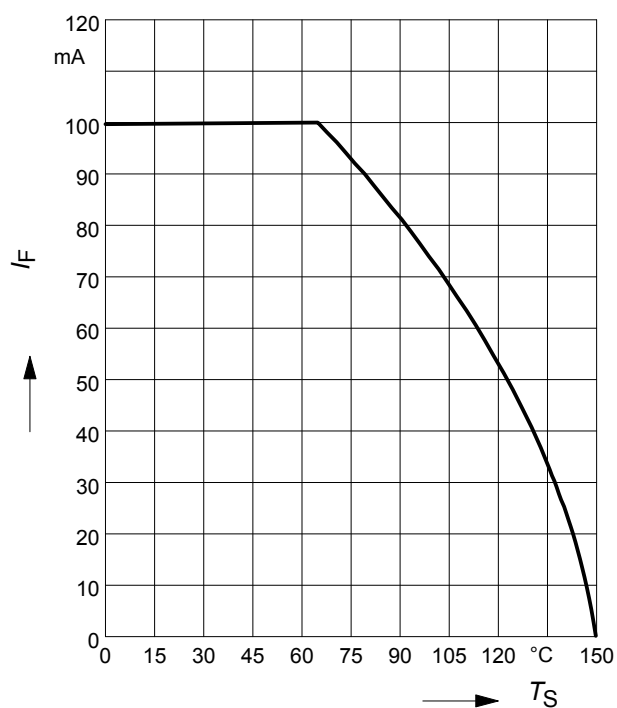
$f = 100\text{MHz}$



Forward current $I_F = f(V_F)$

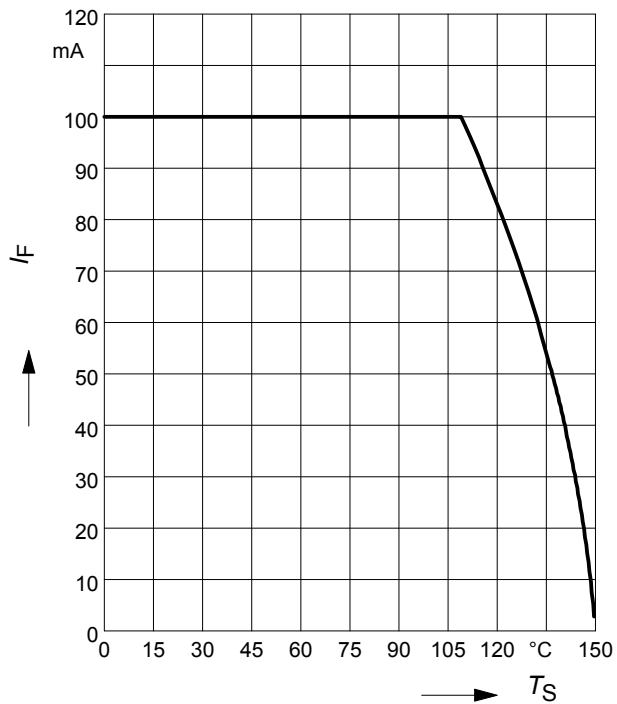
$T_A = \text{Parameter}$



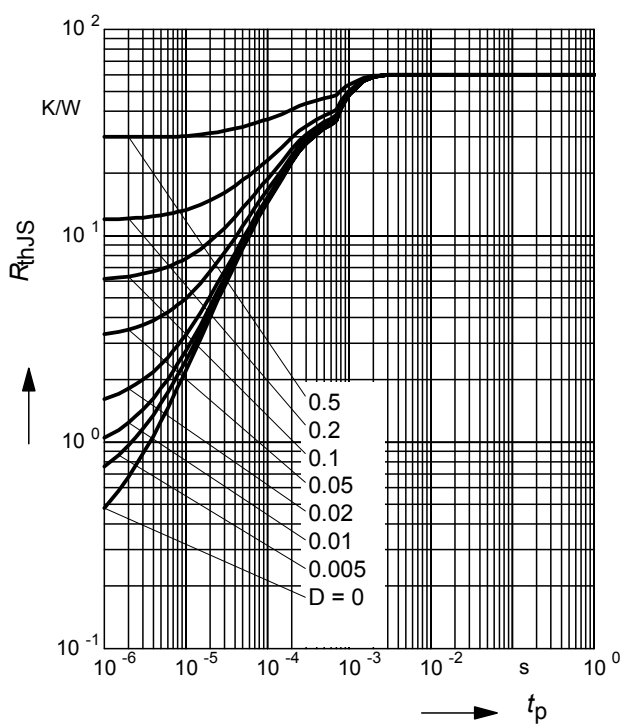
Intermodulation intercept point
 $IP_3 = f(I_F); f = \text{Parameter}$

Forward current $I_F = f(T_S)$
BAR64-02EL

Forward current $I_F = f(T_S)$
BAR64-02V

Forward current $I_F = f(T_S)$
BAR64-04, BAR64-05, BAR64-06


Forward current $I_F = f(T_S)$

BAR64-04W, BAR64-05W, BAR64-06W

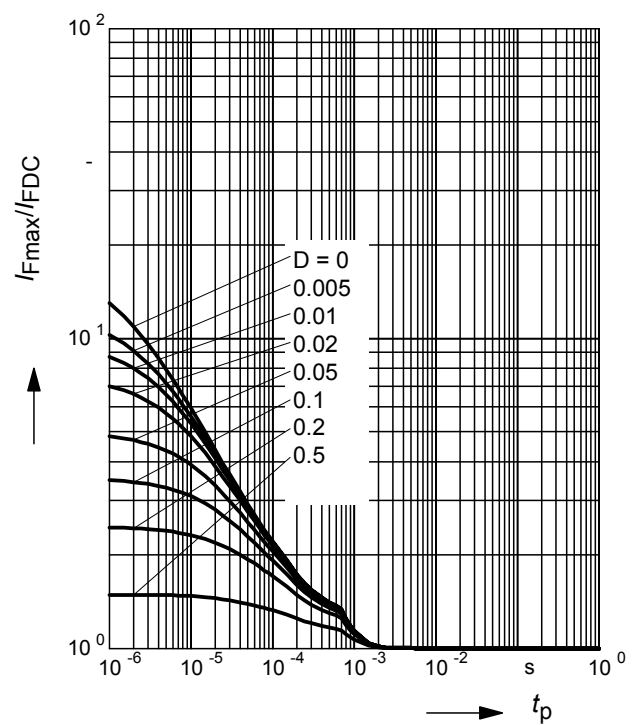

Permissible Puls Load $R_{thJS} = f(t_p)$

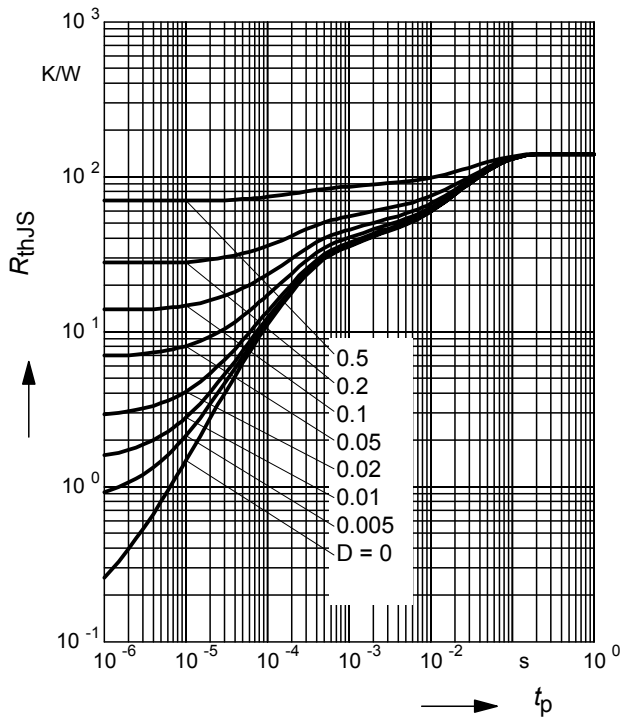
BAR64-02EL


Permissible Pulse Load

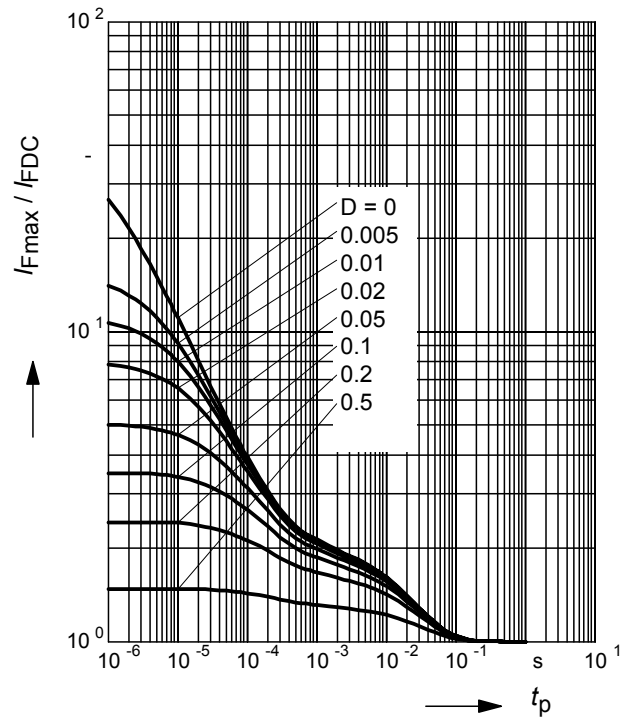
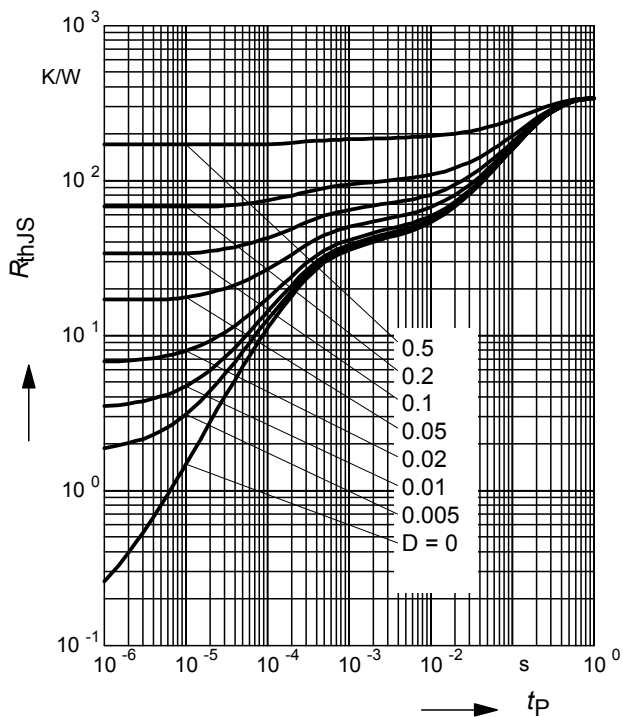
$$I_{Fmax}/I_{FDC} = f(t_p)$$

BAR64-02EL

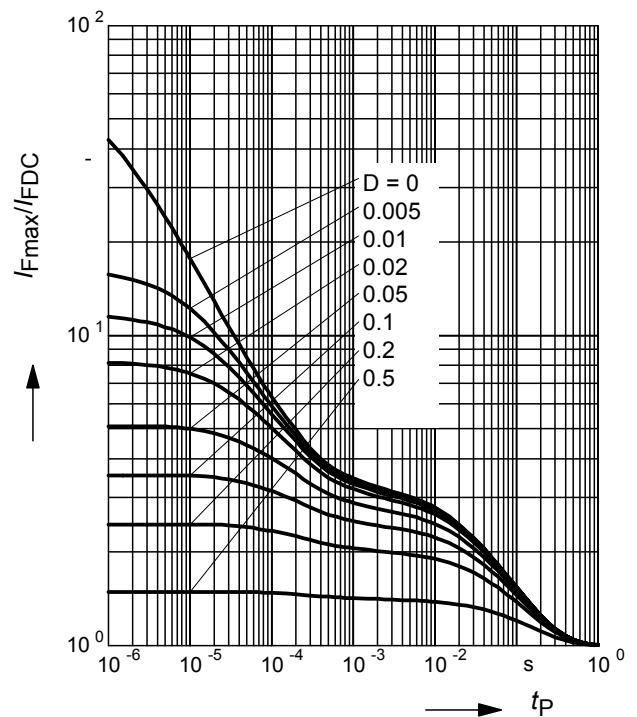


Permissible Puls Load $R_{thJS} = f(t_p)$
BAR64-02V

Permissible Pulse Load

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

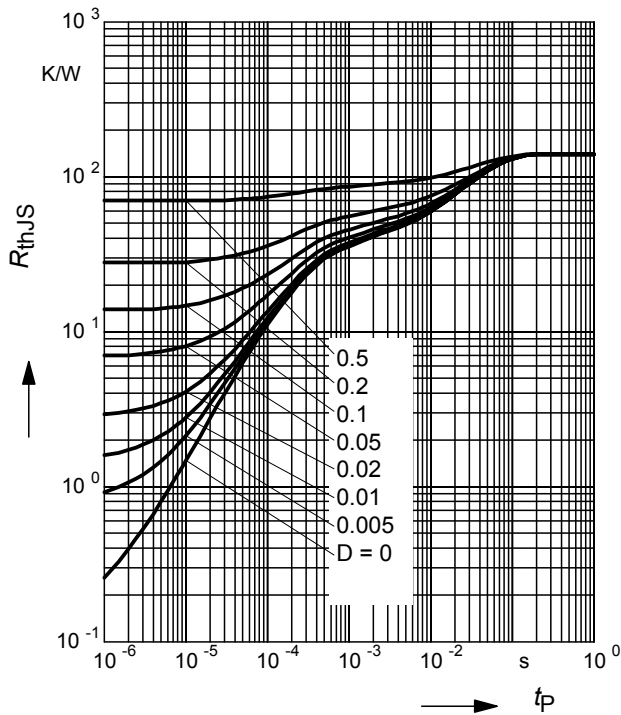
BAR64-02V

Permissible Puls Load $R_{thJS} = f(t_p)$
BAR64-04, BAR64-05, BAR64-06

Permissible Pulse Load

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

BAR64-04, BAR64-05, BAR64-06


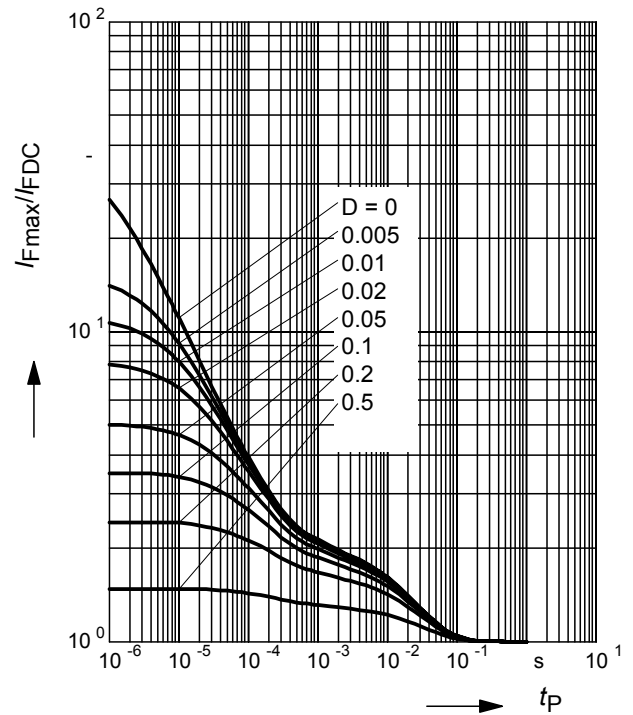
Permissible Puls Load $R_{thJS} = f(t_p)$

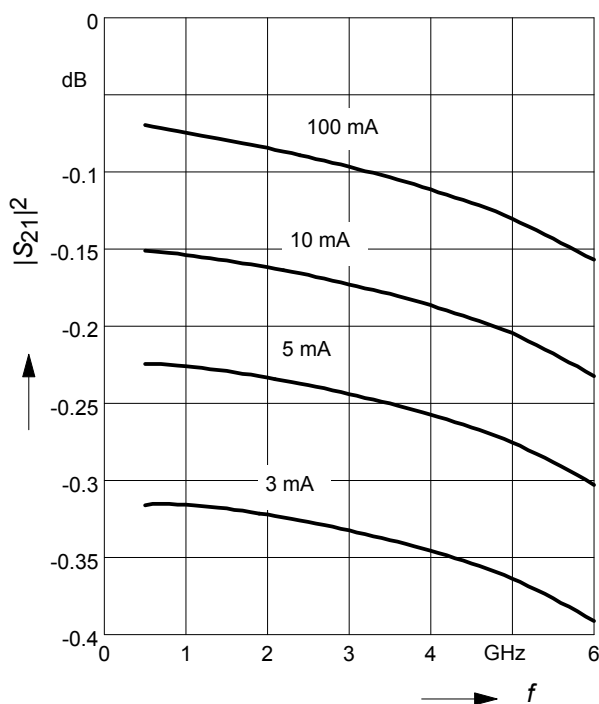
BAR64-04W, BAR64-05W, BAR64-06W

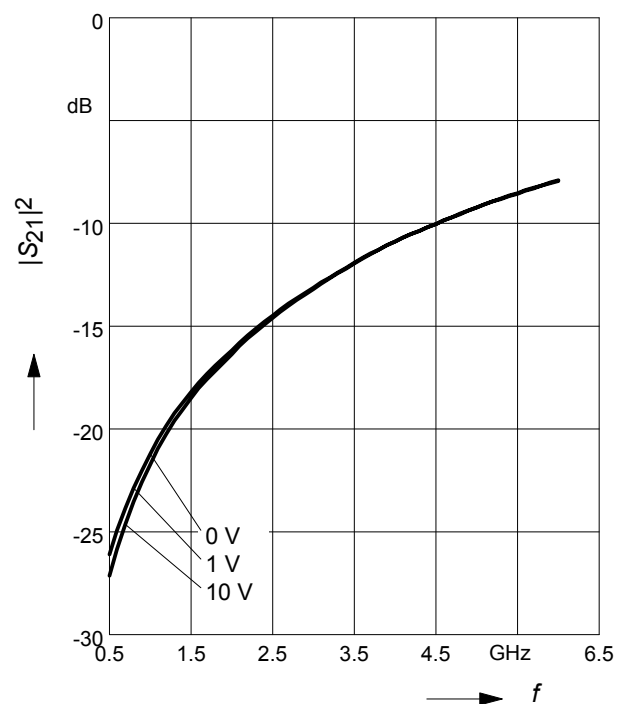

Permissible Pulse Load

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

BAR64-04W, BAR64-05W, BAR64-06W


Insertion loss $I_L = -|S_{21}|^2 = f(f)$
 I_F = Parameter

 BAR64-02EL in series configuration, $Z = 50\Omega$

Isolation $I_{SO} = -|S_{21}|^2 = f(f)$
 V_R = Parameter

 BAR64-02EL in series configuration, $Z = 50\Omega$


The mechanical drawing shows two views of the SMD package. The top view (left) indicates a square footprint with overall dimensions of 0.8 ± 0.1 mm by 0.8 ± 0.1 mm. A central square pad has a width of 0.3 ± 0.05 mm. A cathode marking is shown as a shaded area on one side of the pad. The side view (right) shows the package height with a maximum value of 10°MAX. . The total height from the base to the top of the package is 1.6 ± 0.1 mm. The height of the central pad is 0.55 ± 0.04 mm. The height of the side flange is 1.2 ± 0.1 mm. The thickness of the package body is 0.2 ± 0.05 mm. A dimension of $0.13^{+0.05}_{-0.03}$ mm is indicated for the distance between the center of the pad and the edge of the package body.

2005, June
Date code

GF

BAR63-02V
Type code

Cathode marking
Laser marking

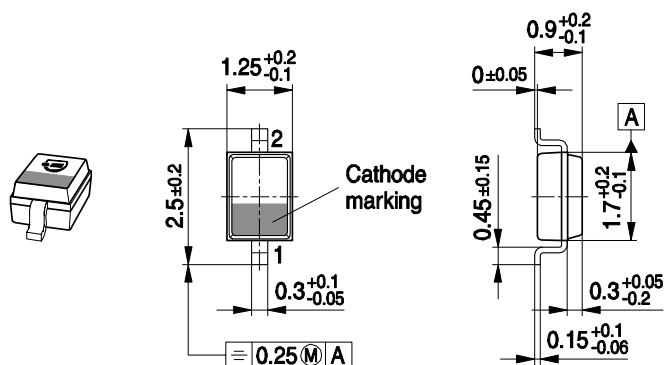
The image contains three technical drawings of cathode marking components. The first drawing, labeled 'Standard', shows a top view of a component with a width of 8 and a height of 4. It features two circular cathode markings, each with a diameter of 1.33. The distance between the centers of the markings is 1.96. The distance from the left edge to the center of the first marking is 0.4, and the distance from the center of the first marking to the right edge is 0.93. The second drawing, labeled 'Reel with 2 mm Pitch', shows a top view of a component with a width of 2. It features two circular cathode markings, each with a diameter of 1.33. The distance between the centers of the markings is 1.96. The distance from the left edge to the center of the first marking is 0.4, and the distance from the center of the first marking to the right edge is 0.93. The third drawing shows a side view of the component with a height of 0.66 and a width of 0.2.

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

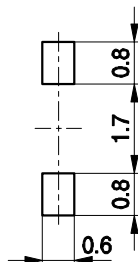
Month	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
01	a	p	A	P	a	p	A	P	a	p	A	P
02	b	q	B	Q	b	q	B	Q	b	q	B	Q
03	c	r	C	R	c	r	C	R	c	r	C	R
04	d	s	D	S	d	s	D	S	d	s	D	S
05	e	t	E	T	e	t	E	T	e	t	E	T
06	f	u	F	U	f	u	F	U	f	u	F	U
07	g	v	G	V	g	v	G	V	g	v	G	V
08	h	x	H	X	h	x	H	X	h	x	H	X
09	j	y	J	Y	j	y	J	Y	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.

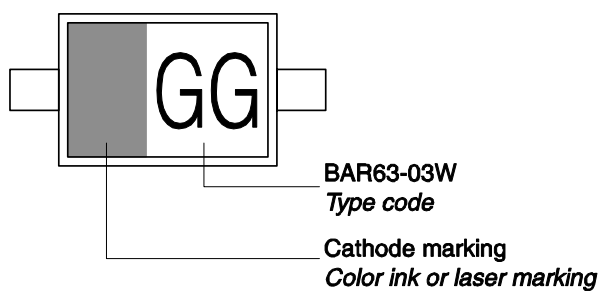
Package Outline



Foot Print

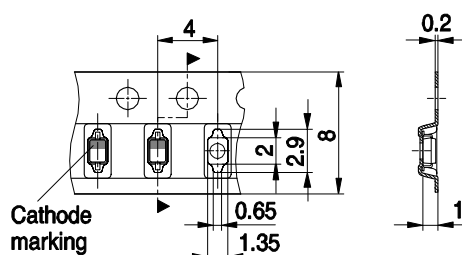


Marking Layout (Example)

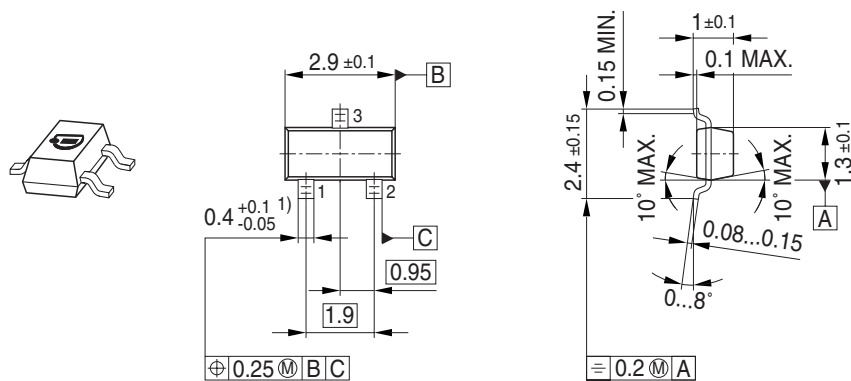


Standard Packing

Reel $\varnothing 180 \text{ mm}$ = 3.000 Pieces/Reel
Reel $\varnothing 330 \text{ mm}$ = 10.000 Pieces/Reel

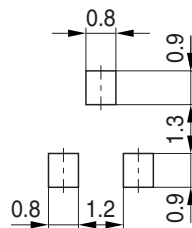


Package Outline

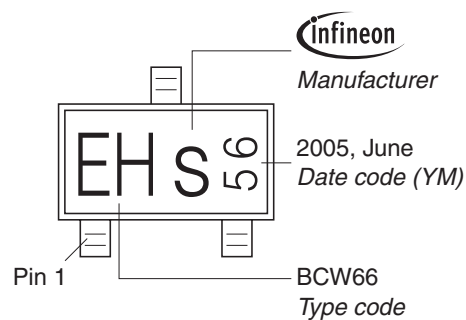


1) Lead width can be 0.6 max. in dambar area

Foot Print

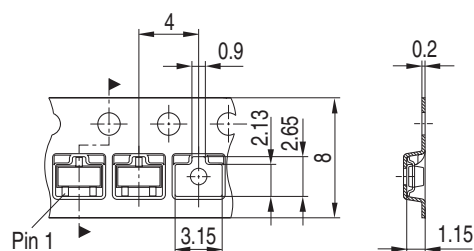


Marking Layout (Example)

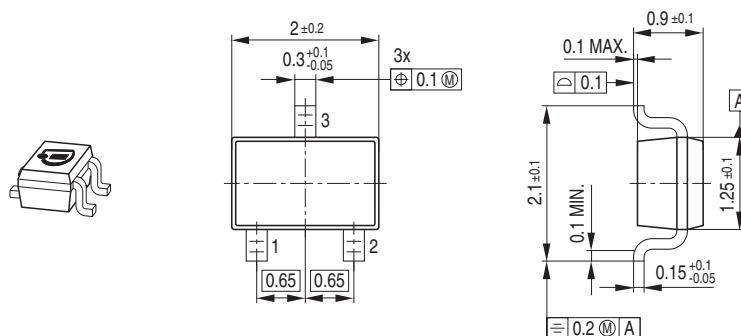


Standard Packing

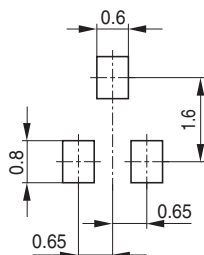
Reel ø180 mm = 3.000 Pieces/Reel
Reel ø330 mm = 10.000 Pieces/Reel



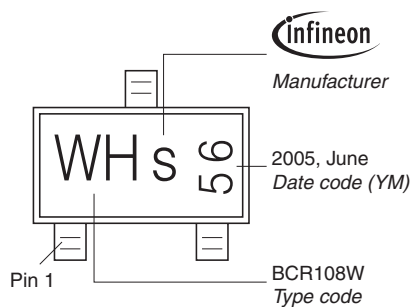
Package Outline



Foot Print

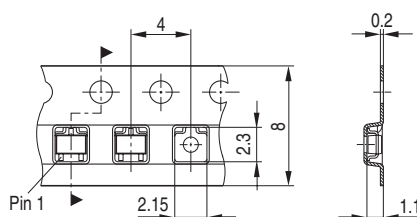


Marking Layout (Example)

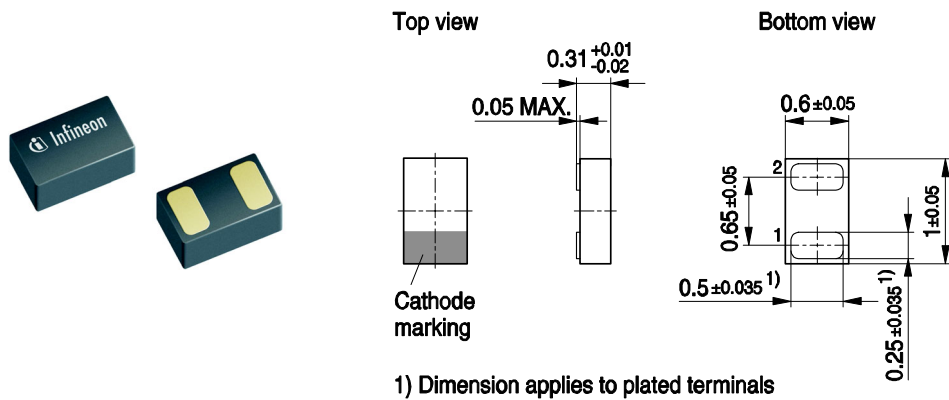


Standard Packing

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



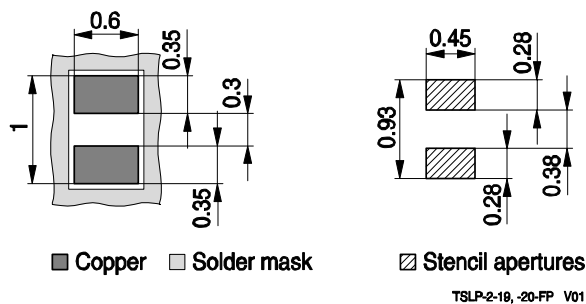
Package Outline



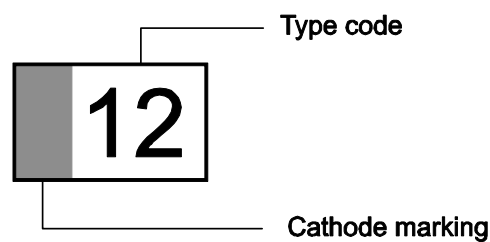
TSLP-2-19, -20-PO V01

Foot Print

For board assembly information please refer to Infineon website „Packages“

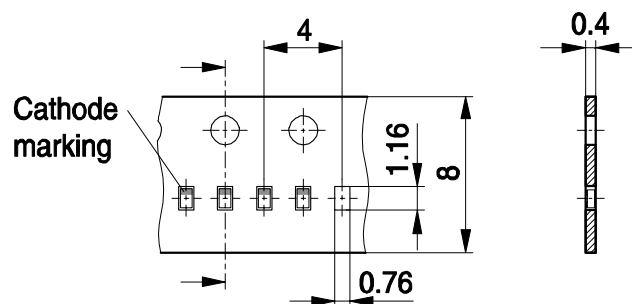


Marking layout (Example)



Standard Packing

Reel Ø 180 mm: 15.000 Pieces / Reel
 Reel Ø 330 mm: 6.000 Pieces / Reel
 Reel Ø 330 mm: 50.000 Pieces / Reel



TSLP-2-19, -20-TP V02

Edition 2009-11-16

**Published by
Infineon Technologies AG
81726 Munich, Germany**

**© 2009 Infineon Technologies AG
All Rights Reserved.**

Legal Disclaimer

The information given in this document shall in no event be regarded as a guarantee of conditions or characteristics. With respect to any examples or hints given herein, any typical values stated herein and/or any information regarding the application of the device, Infineon Technologies hereby disclaims any and all warranties and liabilities of any kind, including without limitation, warranties of non-infringement of intellectual property rights of any third party.

Information

For further information on technology, delivery terms and conditions and prices, please contact the nearest Infineon Technologies Office ([<www.infineon.com>](http://www.infineon.com)).

Warnings

Due to technical requirements, components may contain dangerous substances. For information on the types in question, please contact the nearest Infineon Technologies Office.

Infineon Technologies components may be used in life-support devices or systems only with the express written approval of Infineon Technologies, if a failure of such components can reasonably be expected to cause the failure of that life-support device or system or to affect the safety or effectiveness of that device or system. Life support devices or systems are intended to be implanted in the human body or to support and/or maintain and sustain and/or protect human life. If they fail, it is reasonable to assume that the health of the user or other persons may be endangered.