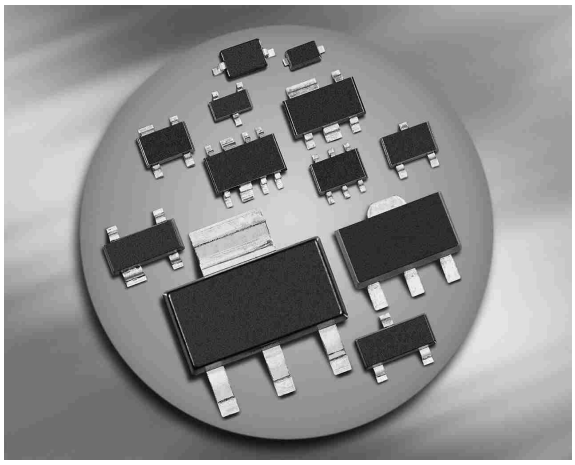
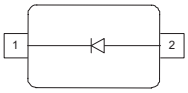
Silicon PIN Diodes

- PIN diode for high speed switching of RF signals
- Very low forward resistance (low insertion loss)
- Very low capacitance (high isolation)
- For frequencies up to 3GHz
- Pb-free (RoHS compliant) package
- Qualified according AEC Q101[1)]

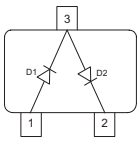


AEC Qualified RoHS

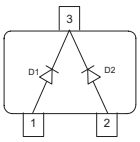
BAR63-02..
BAR63-03W



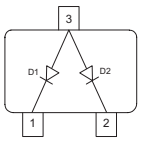
BAR63-04
BAR63-04W



BAR63-05
BAR63-05W



BAR63-06
BAR63-06W



Type	Package	Configuration	L_S(nH)	Marking
BAR63-02L*	TSLP-2-1	single, leadless	0.4	G
BAR63-02V	SC79	single	0.6	G
BAR63-02W	SCD80	single	0.6	GG
BAR63-03W	SOD323	single	1.8	white G
BAR63-04	SOT23	series	1.8	G4s
BAR63-04W	SOT323	series	1.4	G4s
BAR63-05	SOT23	common cathode	1.8	G5s
BAR63-05W	SOT323	common cathode	1.4	G5s
BAR63-06	SOT23	common anode	1.8	G6s
BAR63-06W	SOT323	common anode	1.4	G6s

[1)]*BAR63-02L is not qualified according AEC Q101

Maximum Ratings at T_A = 25°C, unless otherwise specified

Parameter	Symbol	Value	Unit
Diode reverse voltage	V_R	50	V
Forward current	I_F	100	mA
Total power dissipation	P_{tot}		mW
BAR63-02L, $T_S \leq 118$°C		250	
BAR63-02V, -02W, BAR63-03W, $T_S \leq 115$°C		250	
BAR63-04...BAR63-06, $T_S \leq 55$°C		250	
BAR63-04S, $T_S \leq 115$°C		250	
BAR63-04W...BAR63-06W, $T_S \leq 105$°C		250	
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)]	R_{thJS}		K/W
BAR63-02L		≤ 125	
BAR63-02V, BAR63-02W		≤ 140	
BAR63-03W		≤ 155	
BAR63-04...BAR63-06		≤ 380	
BAR63-04S		≤ 180	
BAR63-04W...BAR63-06W		≤ 180	

Electrical Characteristics at T_A = 25°C, unless otherwise specified

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
DC Characteristics					
Breakdown voltage $I_{(BR)}$ = 5 µA	$V_{(BR)}$	50	-	-	V
Reverse current V_R = 35 V	I_R	-	-	10	nA
Forward voltage I_F = 100 mA	V_F	-	0.95	1.2	V

[1]For calculation of R_{thJA} please refer to the Technical Information

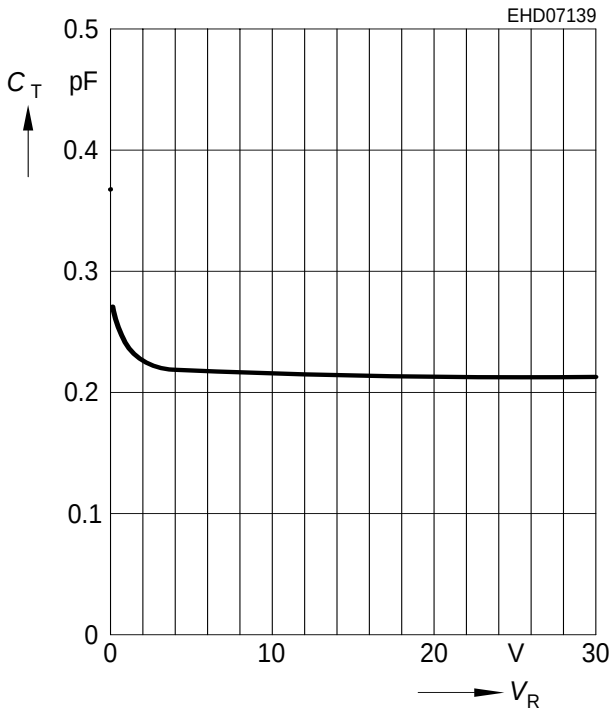
Electrical Characteristics at T_A = 25°C, unless otherwise specified

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
AC Characteristics					
Diode capacitance	C_T				pF
V_R = 5 V, f = 1 MHz		-	0.21	0.3	
V_R = 0 V, 100 MHz ... 1.8 GHz		-	0.3	-	
Reverse parallel resistance	R_P				kΩ
V_R = 0 V, f = 100 MHz		-	500	-	
V_R = 0 V, f = 1 GHz		-	15	-	
V_R = 0 V, f = 1.8 GHz		-	5	-	
Forward resistance	r_f				Ω
I_F = 5 mA, f = 100 MHz		-	1.2	2	
I_F = 10 mA, f = 100 MHz		-	1	-	
Charge carrier life time	τ_{rr}	-	75	-	ns
I_F = 10 mA, I_R = 6 mA, measured at I_R = 3 mA, R_L = 100 Ω					
I-region width	W_I	-	4.5	-	µm
Insertion loss[1)]	I_L				dB
I_F = 1 mA, f = 1.8 GHz		-	0.15	-	
I_F = 5 mA, f = 1.8 GHz		-	0.11	-	
I_F = 10 mA, f = 1.8 GHz		-	0.1	-	
Isolation[1)]	I_{SO}				
V_R = 0 V, f = 0.9 GHz		-	17.9	-	
V_R = 0 V, f = 1.8 GHz		-	12.3	-	
V_R = 0 V, f = 2.45 GHz		-	10	-	
Series inductance	L_S	-	-	-	

[1]BAR63-02L in series configuration, Z = 50Ω

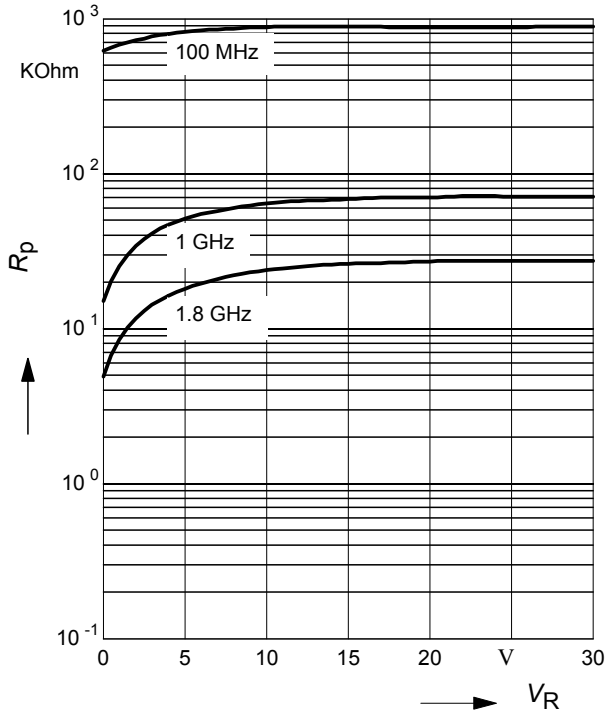
Diode capacitance $C_T = f(V_R)$

f = 1MHz - 1.8GHz



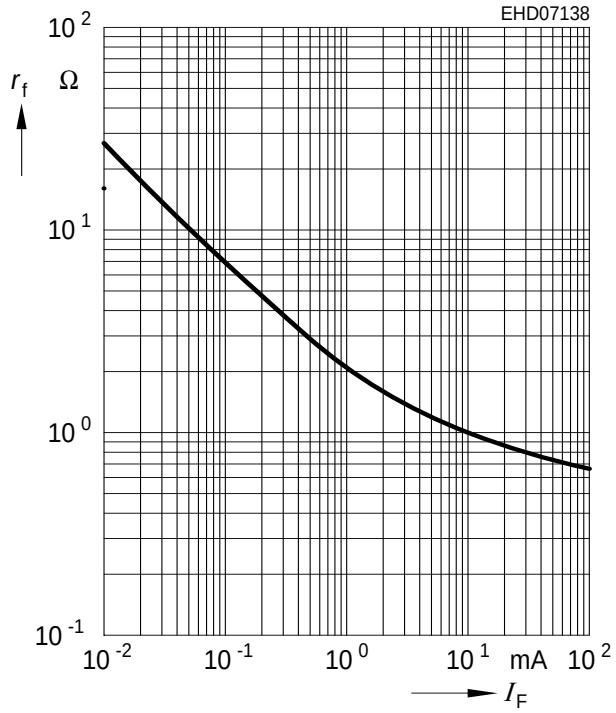
Reverse parallel resistance $R_P = f(V_R)$

f = Parameter



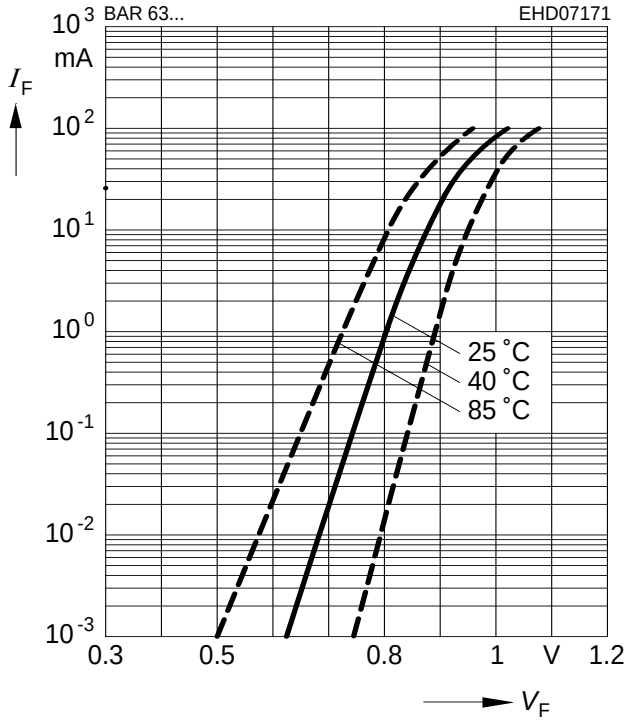
Forward resistance $r_f = f(I_F)$

f = 100MHz

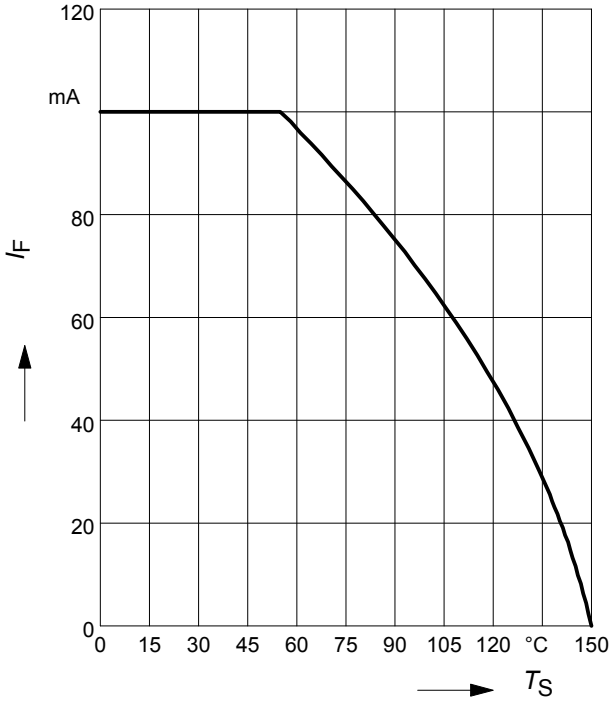


Forward current $I_F = f(V_F)$

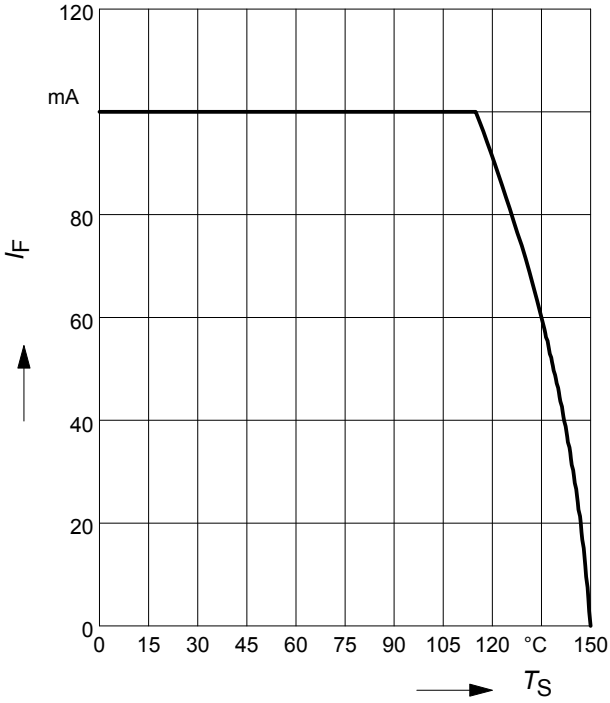
T_A = Parameter



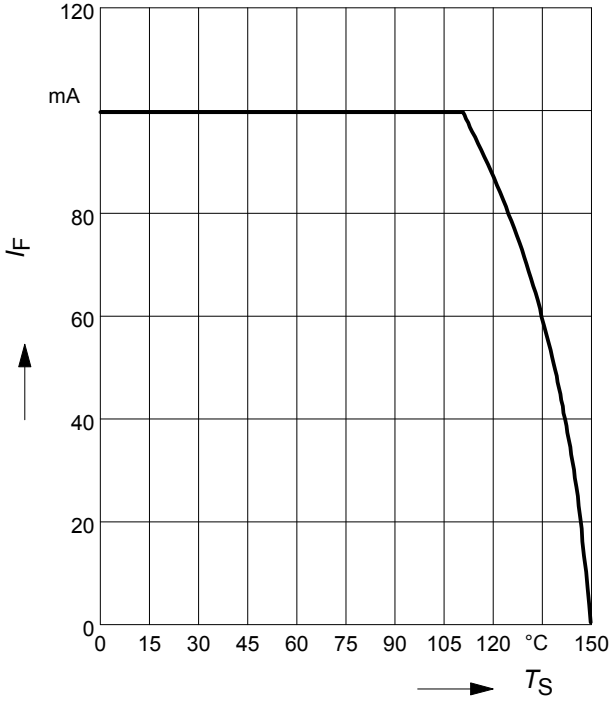
Forward current $I_F = f(T_S)$
BAR63-04...BAR63-06



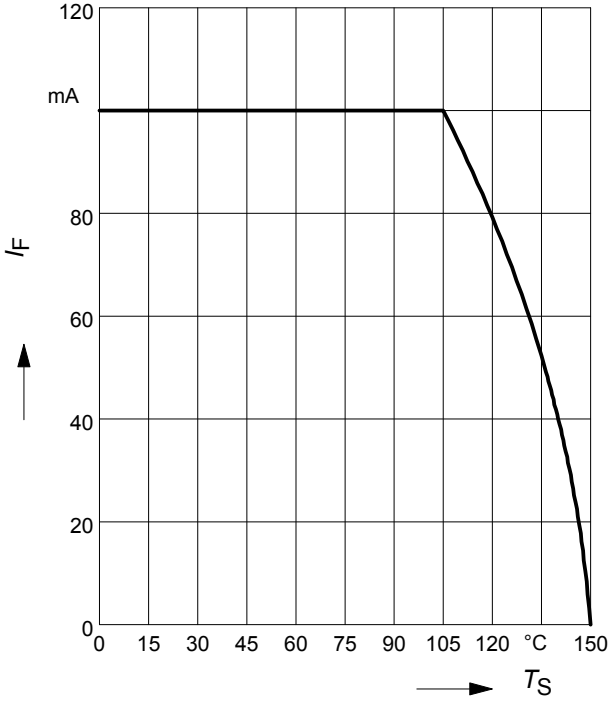
Forward current $I_F = f(T_S)$
BAR63-02V, BAR63-02W



Forward current $I_F = f(T_S)$
BAR63-03W

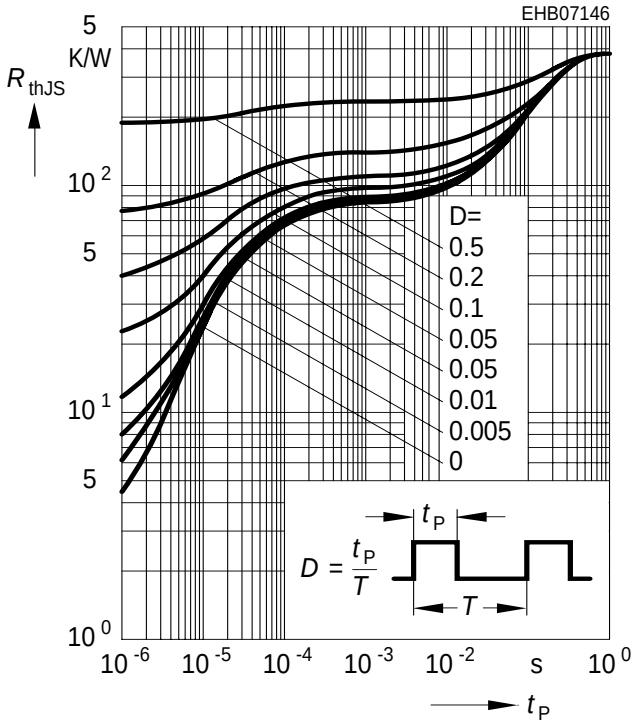


Forward current $I_F = f(T_S)$
BAR63-04W...BAR63-06W



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

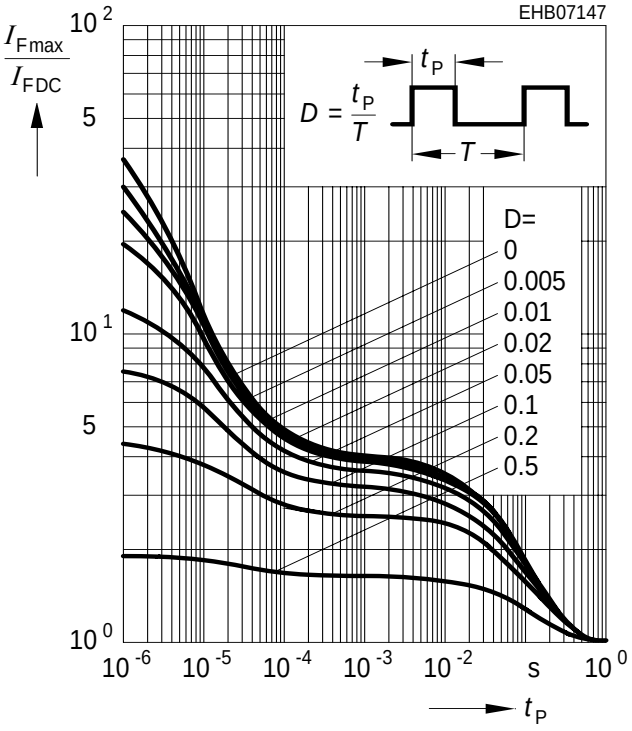
BAR63-04...BAR63-06



Permissible Pulse Load

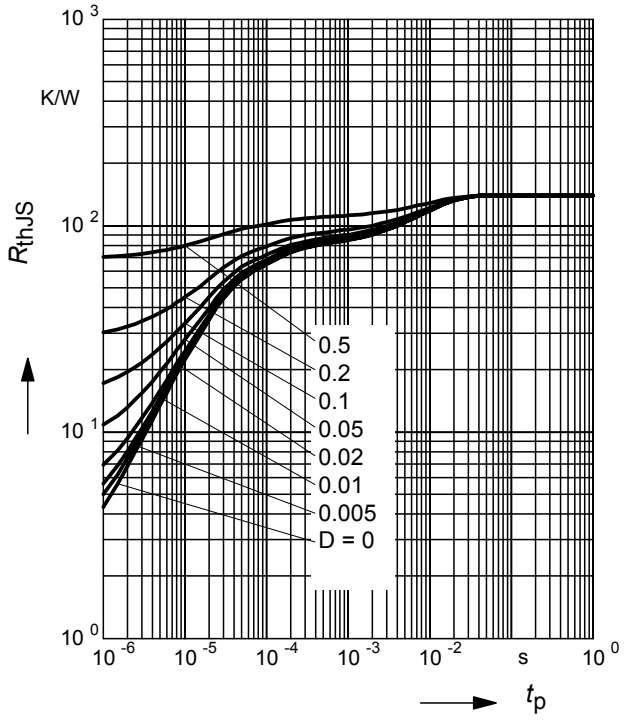
$I_{Fmax}/ I_{FDC} = f(t_p)$

BAR63-04...BAR63-06



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

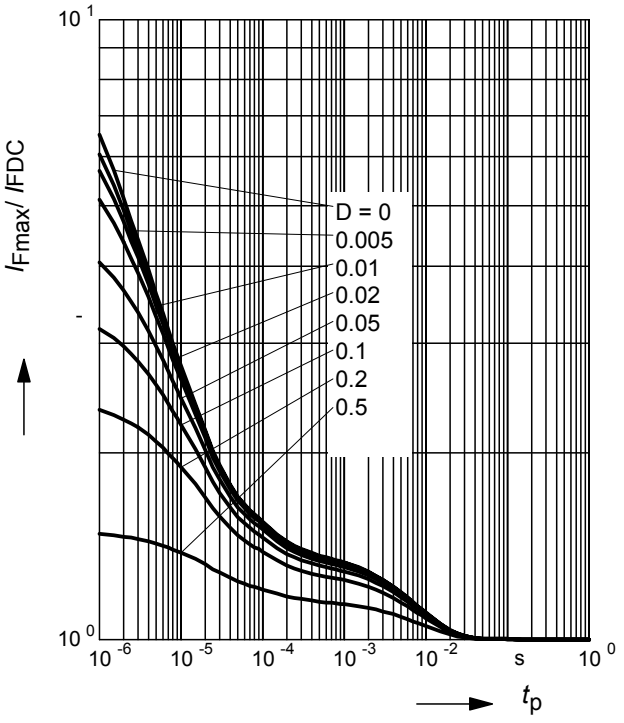
BAR63-02V, BAR63-02W



Permissible Pulse Load

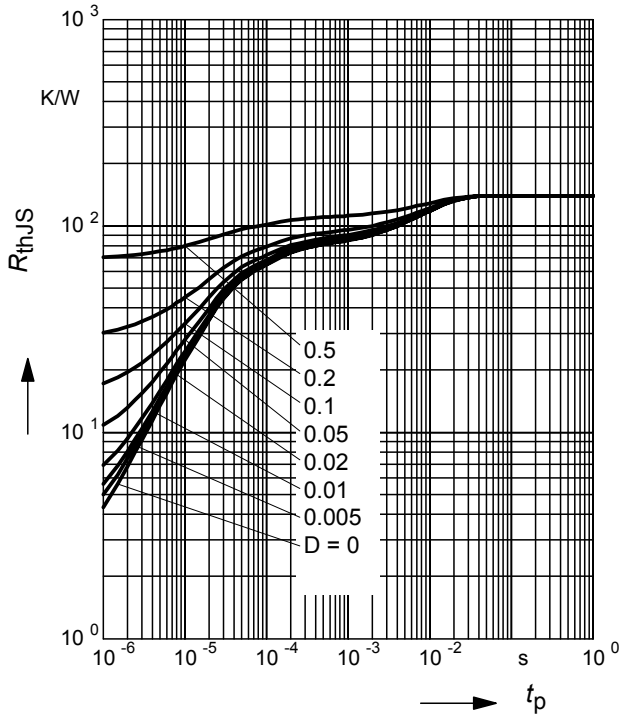
$I_{Fmax}/ I_{FDC} = f(t_p)$

BAR63-02V, BAR63-02W



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

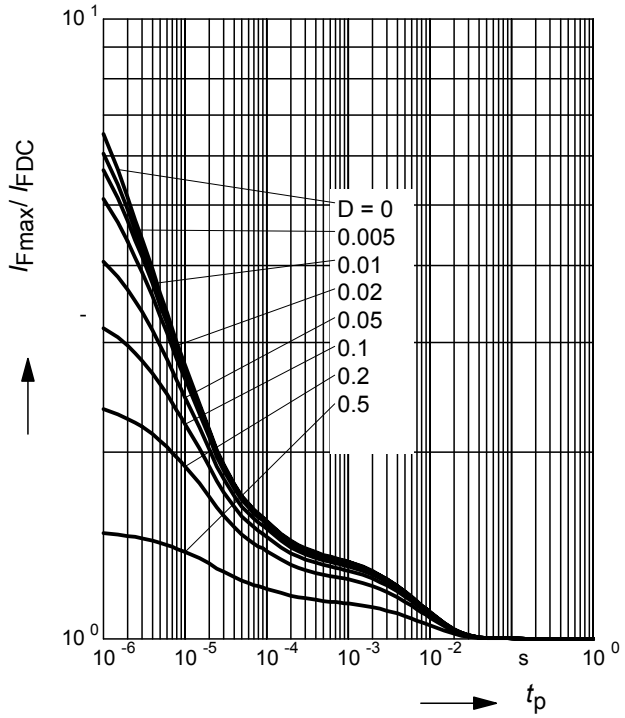
BAR63-03W



Permissible Pulse Load

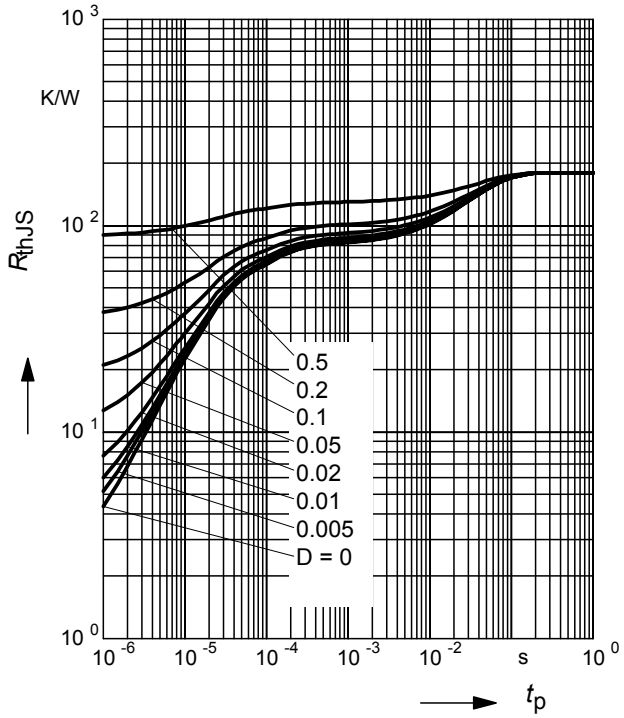
$I_{Fmax}/ I_{FDC} = f(t_p)$

BAR63-03W



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

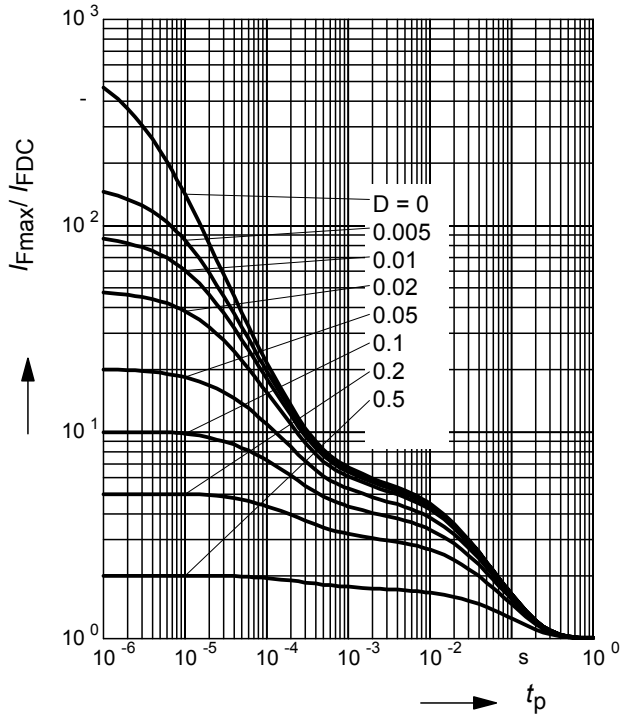
BAR63-04W...BAR63-06W



Permissible Pulse Load

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

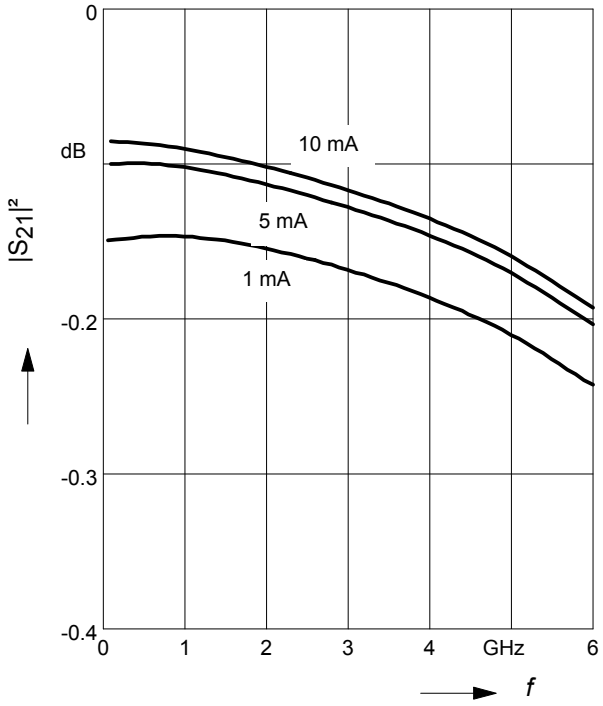
BAR63-04W...BAR63-06W



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

I_F = Parameter

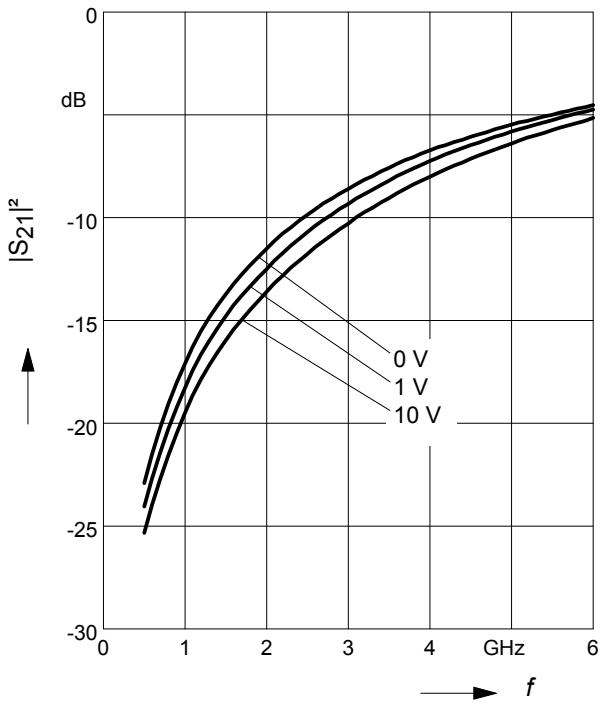
BAR63-02L in series configuration, $Z = 50\Omega$



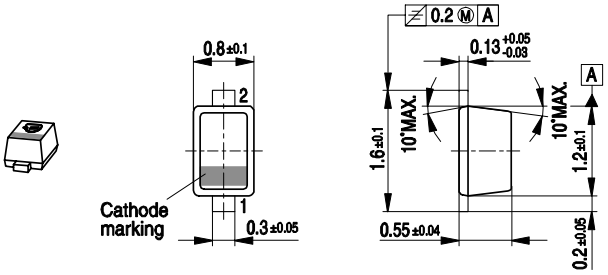
Isolation $I_{SO} = -|S_{21}|^2 = f(f)$

V_R = Paramter

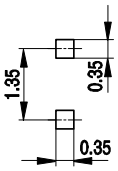
BAR63-02L in series configuration, $Z = 50\Omega$



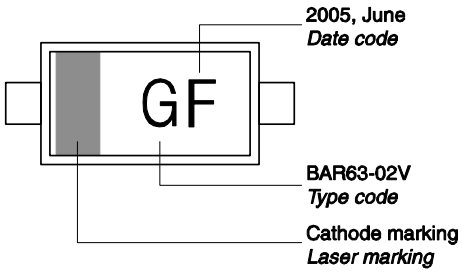
Package Outline



Foot Print

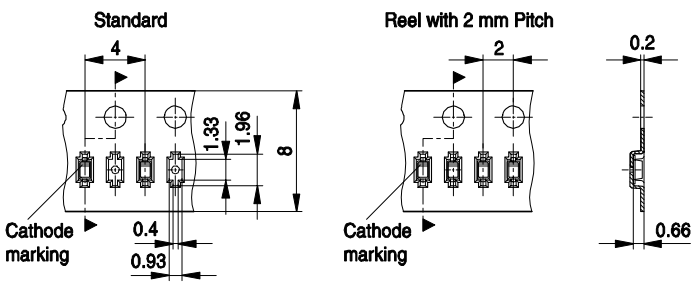


Marking Layout (Example)

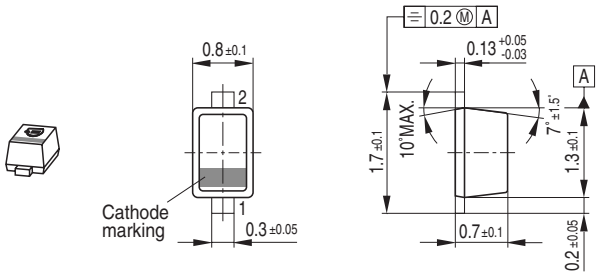


Standard Packing

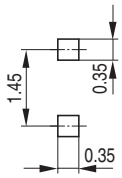
Reel ø180 mm = 3.000 Pieces/Reel
Reel ø180 mm = 8.000 Pieces/Reel (2 mm Pitch)
Reel ø330 mm = 10.000 Pieces/Reel



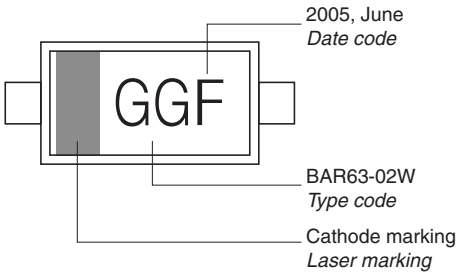
Package Outline



Foot Print

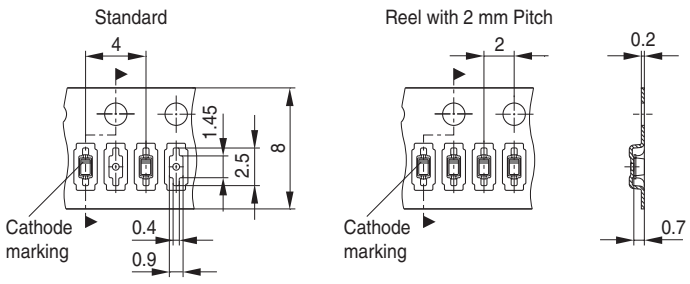


Marking Layout (Example)



Standard Packing

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

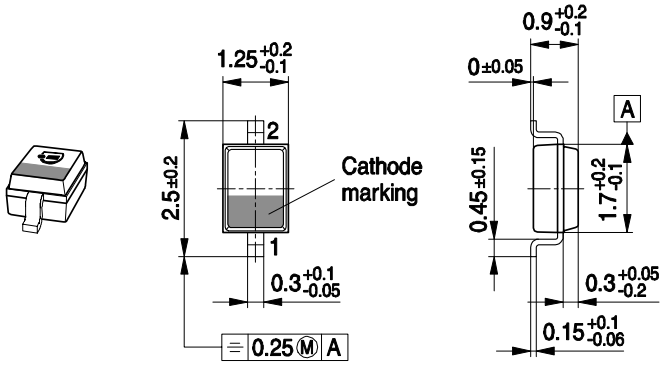


Date Code marking for discrete packages with one digit (SCD80, SC79, SC75[1]) CES-Code

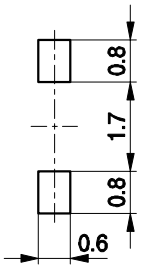
Month	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
01	a	p	A	P	a	p	A	P	a	p	A	P
02	b	q	B	Q	b	q	B	Q	b	q	B	Q
03	c	r	C	R	c	r	C	R	c	r	C	R
04	d	s	D	S	d	s	D	S	d	s	D	S
05	e	t	E	T	e	t	E	T	e	t	E	T
06	f	u	F	U	f	u	F	U	f	u	F	U
07	g	v	G	V	g	v	G	V	g	v	G	V
08	h	x	H	X	h	x	H	X	h	x	H	X
09	j	y	J	Y	j	y	J	Y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

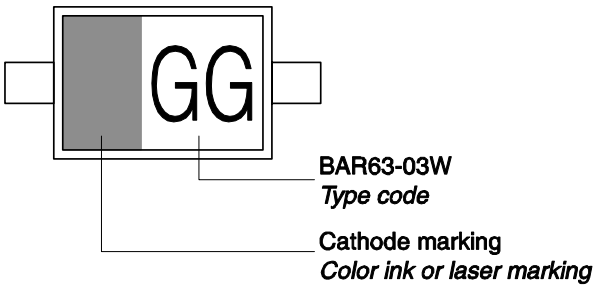
Package Outline



Foot Print

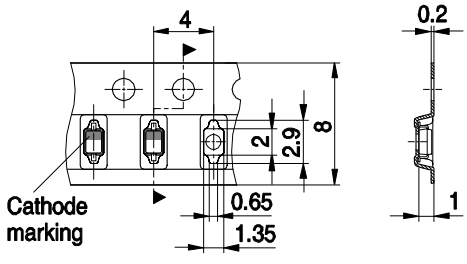


Marking Layout (Example)



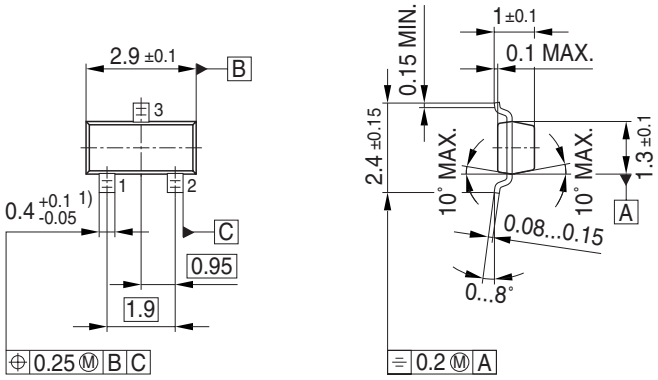
Standard Packing

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



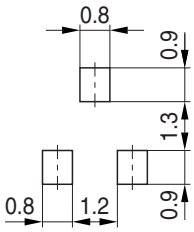
Package Outline



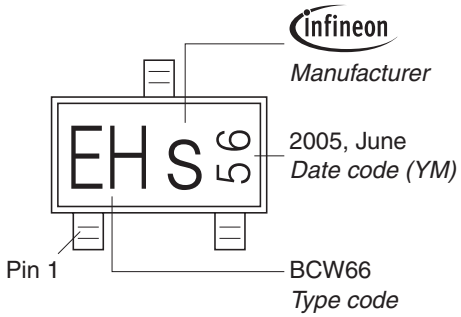


1) Lead width can be 0.6 max. in dambar area

Foot Print

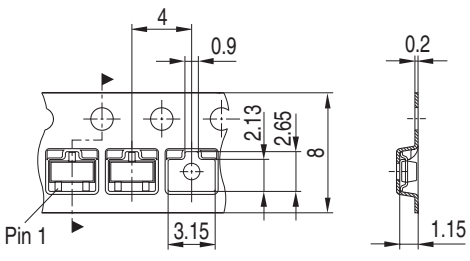


Marking Layout (Example)



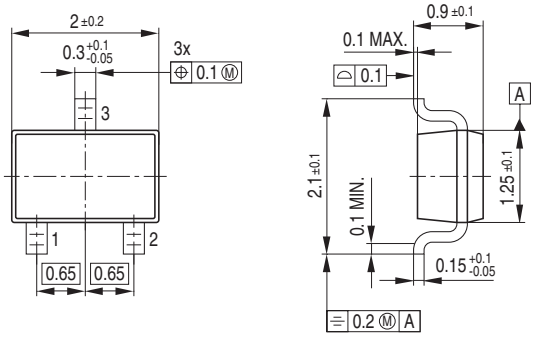
Standard Packing

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

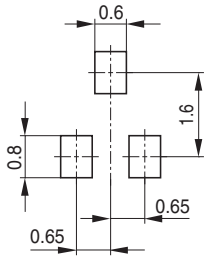


Package Outline

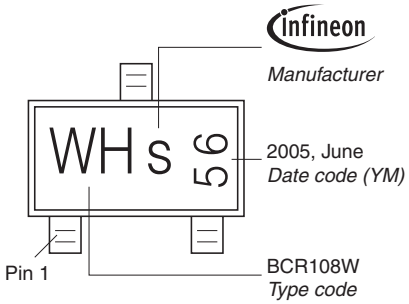




Foot Print

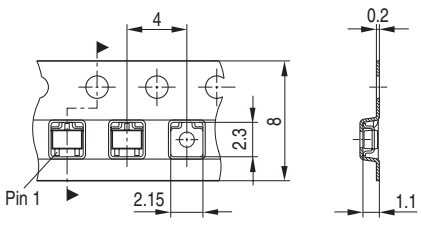


Marking Layout (Example)

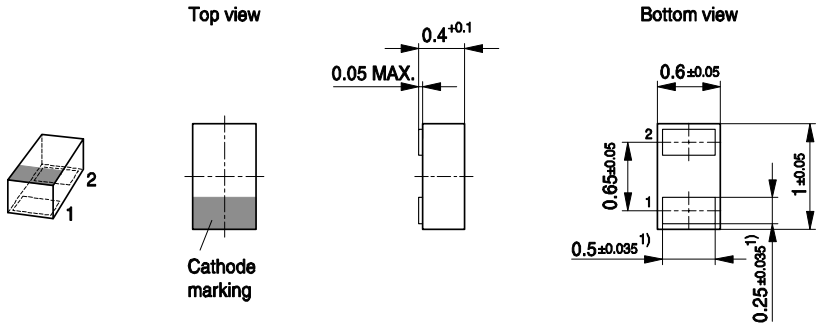


Standard Packing

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



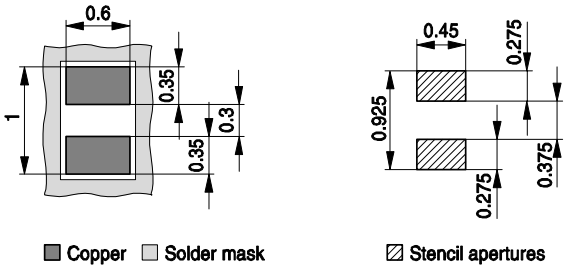
Package Outline



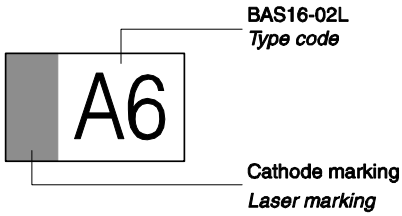
1) Dimension applies to plated terminal

Foot Print

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

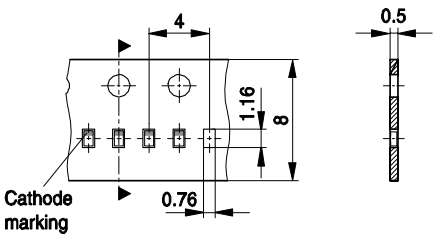


Marking Layout (Example)



Standard Packing

Reel ø180 mm = 15.000 Pieces/Reel
Reel ø330 mm = 50.000 Pieces/Reel (optional)



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>).

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.