

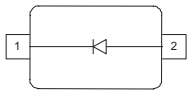
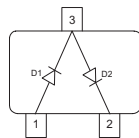
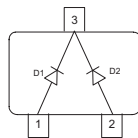
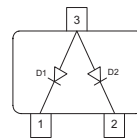


**THE DATASHEET OF  
BAR6306E6327HTSA1**



**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<sup>1)</sup>


**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

<sup>1)</sup>BAR63-02L 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	$V_R$	50	V
Forward current	$I_F$	100	mA
Total power dissipation BAR63-02L, $T_S \leq 118^\circ\text{C}$ BAR63-02V, -02W, BAR63-03W, $T_S \leq 115^\circ\text{C}$ BAR63-04...BAR63-06, $T_S \leq 55^\circ\text{C}$ BAR63-04S, $T_S \leq 115^\circ\text{C}$ BAR63-04W...BAR63-06W, $T_S \leq 105^\circ\text{C}$	$P_{\text{tot}}$	250 250 250 250 250	mW
Junction temperature	$T_j$	150	°C
Operating temperature range	$T_{\text{op}}$	-55 ... 125	
Storage temperature	$T_{\text{stg}}$	-55 ... 150	

**Thermal Resistance**

Parameter	Symbol	Value	Unit
Junction - soldering point <sup>1)</sup> BAR63-02L BAR63-02V, BAR63-02W BAR63-03W BAR63-04...BAR63-06 BAR63-04S BAR63-04W...BAR63-06W	$R_{\text{thJS}}$	$\leq 125$ $\leq 140$ $\leq 155$ $\leq 380$ $\leq 180$ $\leq 180$	K/W

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

Parameter	Symbol	Values			Unit
		min.	typ.	max.	

**DC Characteristics**

Breakdown voltage $I_{(\text{BR})} = 5 \mu\text{A}$	$V_{(\text{BR})}$	50	-	-	V
Reverse current $V_R = 35 \text{ V}$	$I_R$	-	-	10	nA
Forward voltage $I_F = 100 \text{ mA}$	$V_F$	-	0.95	1.2	V

<sup>1)</sup>For calculation of  $R_{\text{thJA}}$  please refer to the Technical Information

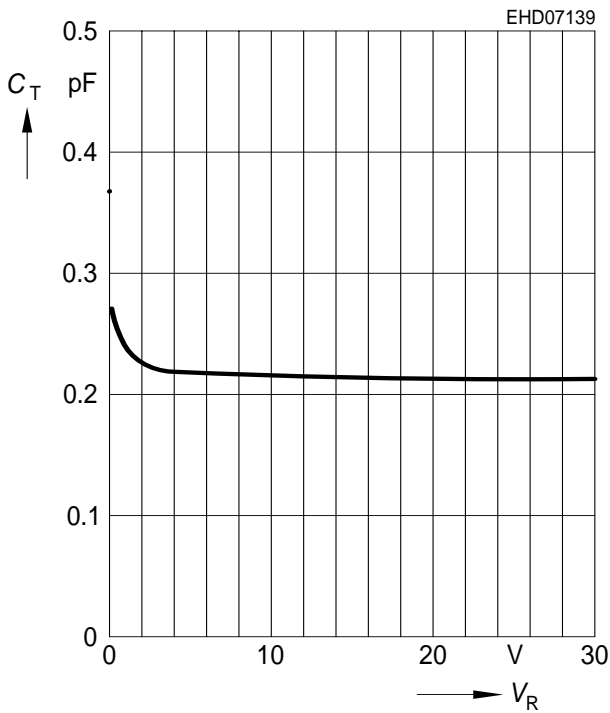
**Electrical Characteristics at  $T_A = 25^\circ\text{C}$ , unless otherwise specified**

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
<b>AC Characteristics</b>					
Diode capacitance $V_R = 5\text{ V}$ , $f = 1\text{ MHz}$ $V_R = 0\text{ V}$ , 100 MHz ... 1.8 GHz	$C_T$	- -	0.21 0.3	0.3 -	pF
Reverse parallel resistance $V_R = 0\text{ V}$ , $f = 100\text{ MHz}$ $V_R = 0\text{ V}$ , $f = 1\text{ GHz}$ $V_R = 0\text{ V}$ , $f = 1.8\text{ GHz}$	$R_P$	- - -	500 15 5	- - -	k $\Omega$
Forward resistance $I_F = 5\text{ mA}$ , $f = 100\text{ MHz}$ $I_F = 10\text{ mA}$ , $f = 100\text{ MHz}$	$r_f$	- -	1.2 1	2 -	$\Omega$
Charge carrier life time $I_F = 10\text{ mA}$ , $I_R = 6\text{ mA}$ , measured at $I_R = 3\text{ mA}$ , $R_L = 100\ \Omega$	$\tau_{rr}$	-	75	-	ns
I-region width	$W_I$	-	4.5	-	$\mu\text{m}$
Insertion loss <sup>1)</sup> $I_F = 1\text{ mA}$ , $f = 1.8\text{ GHz}$ $I_F = 5\text{ mA}$ , $f = 1.8\text{ GHz}$ $I_F = 10\text{ mA}$ , $f = 1.8\text{ GHz}$	$l_L$	- - -	0.15 0.11 0.1	- - -	dB
Isolation <sup>1)</sup> $V_R = 0\text{ V}$ , $f = 0.9\text{ GHz}$ $V_R = 0\text{ V}$ , $f = 1.8\text{ GHz}$ $V_R = 0\text{ V}$ , $f = 2.45\text{ GHz}$	$l_{SO}$	- - -	17.9 12.3 10	- - -	
Series inductance	$L_S$	-	-	-	

<sup>1)</sup>BAR63-02L in series configuration,  $Z = 50\ \Omega$

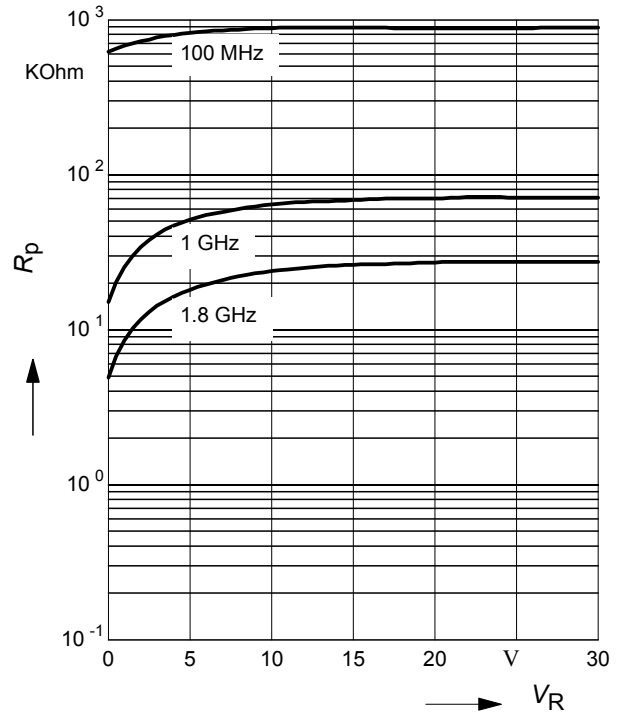
**Diode capacitance  $C_T = f(V_R)$**

$f = 1\text{MHz} - 1.8\text{GHz}$



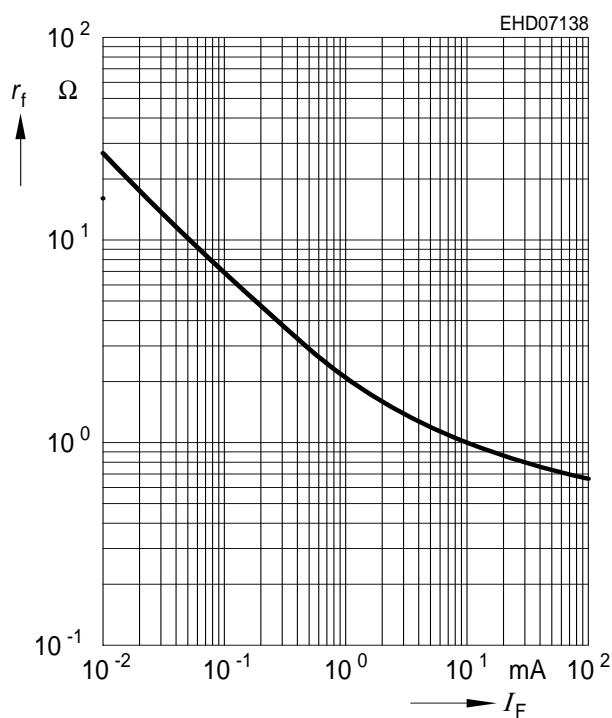
**Reverse parallel resistance  $R_P = f(V_R)$**

$f = \text{Parameter}$



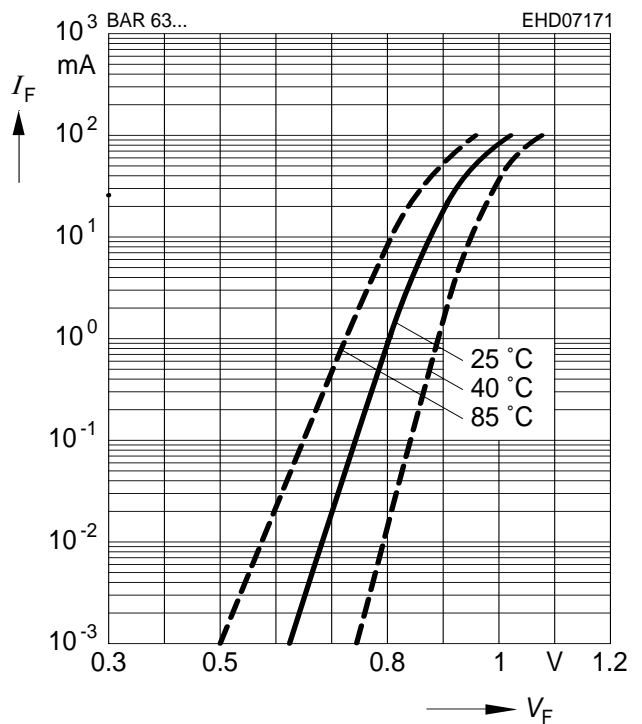
**Forward resistance  $r_f = f(I_F)$**

$f = 100\text{MHz}$



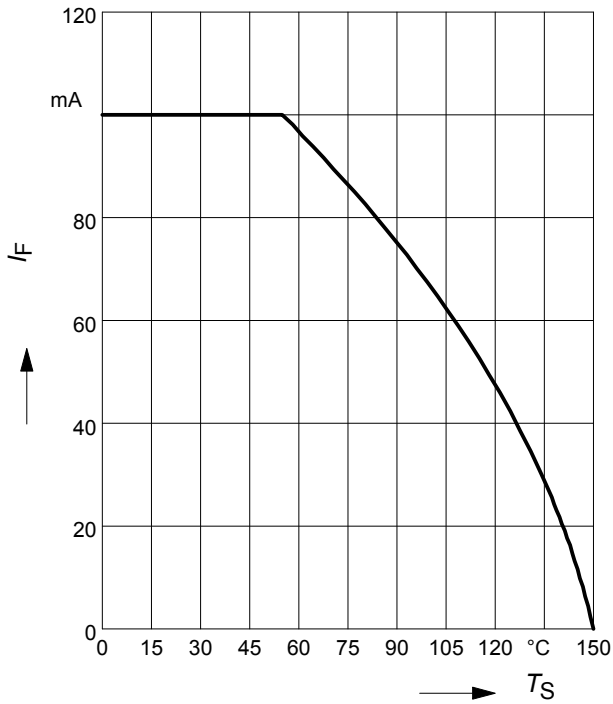
**Forward current  $I_F = f(V_F)$**

$T_A = \text{Parameter}$



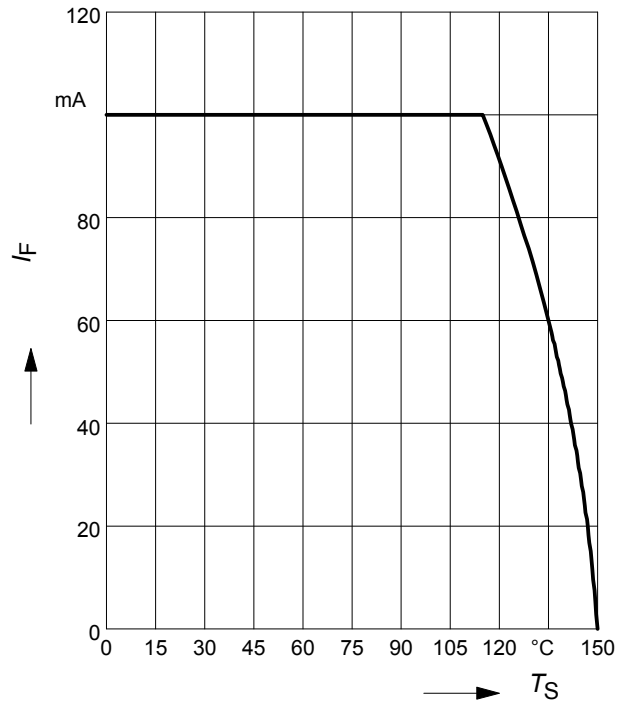
**Forward current  $I_F = f(T_S)$**

BAR63-04...BAR63-06



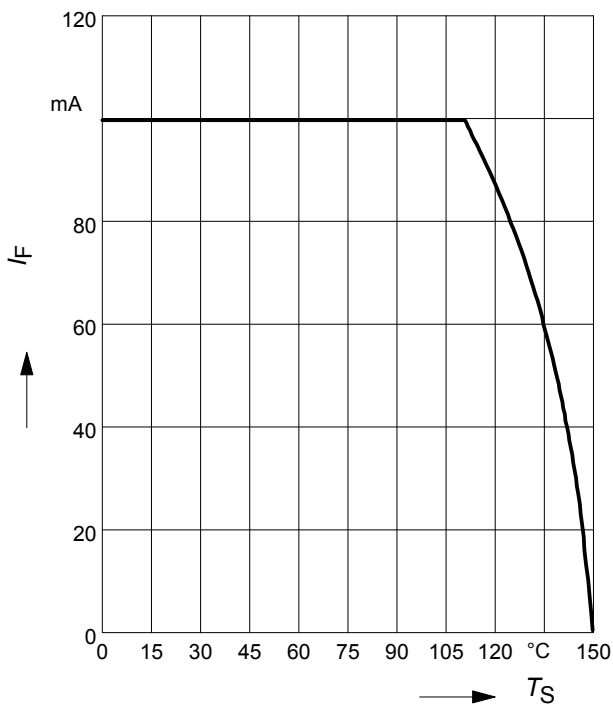
**Forward current  $I_F = f(T_S)$**

BAR63-02V, BAR63-02W



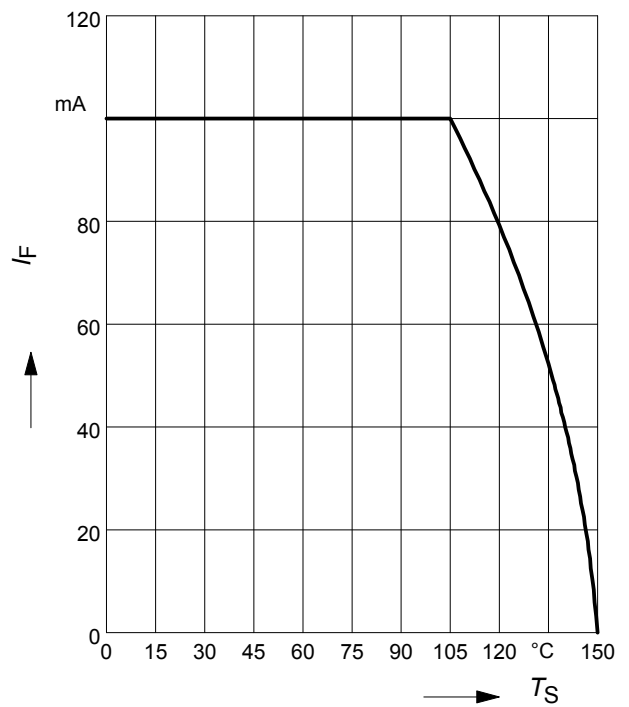
**Forward current  $I_F = f(T_S)$**

BAR63-03W



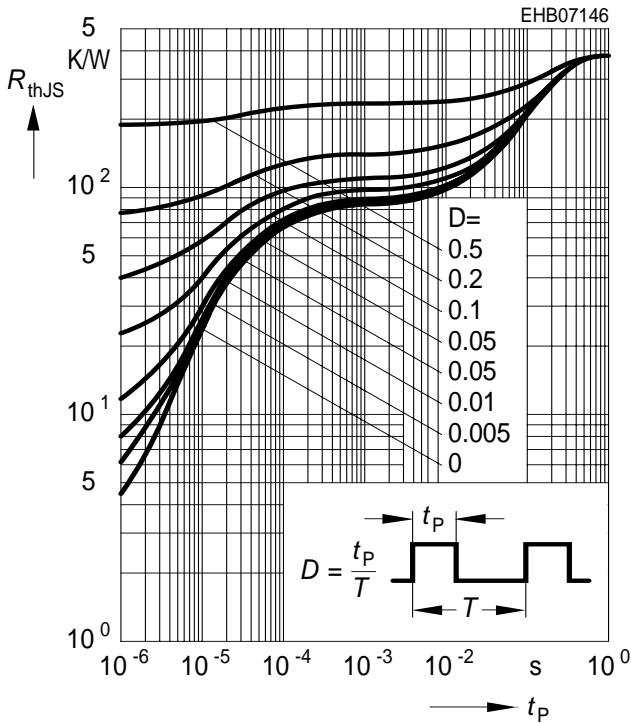
**Forward current  $I_F = f(T_S)$**

BAR63-04W...BAR63-06W



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

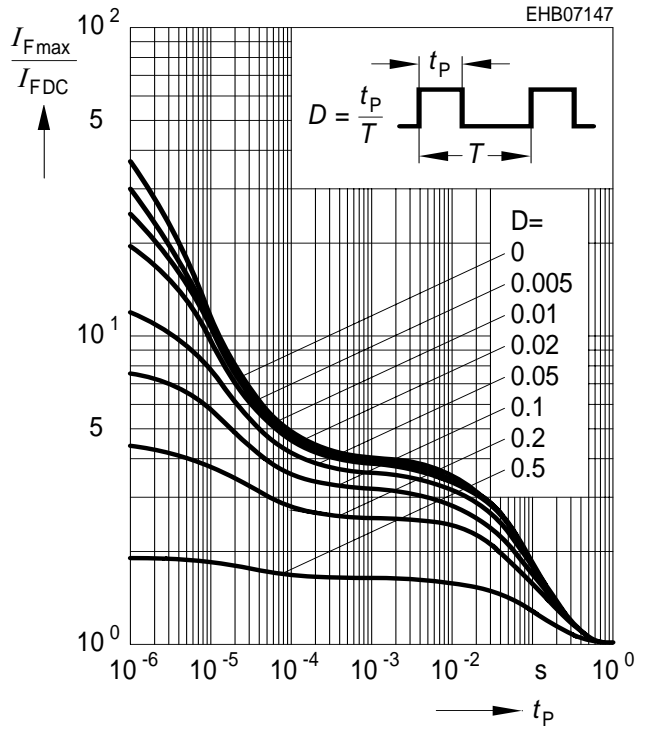
BAR63-04...BAR63-06



**Permissible Pulse Load**

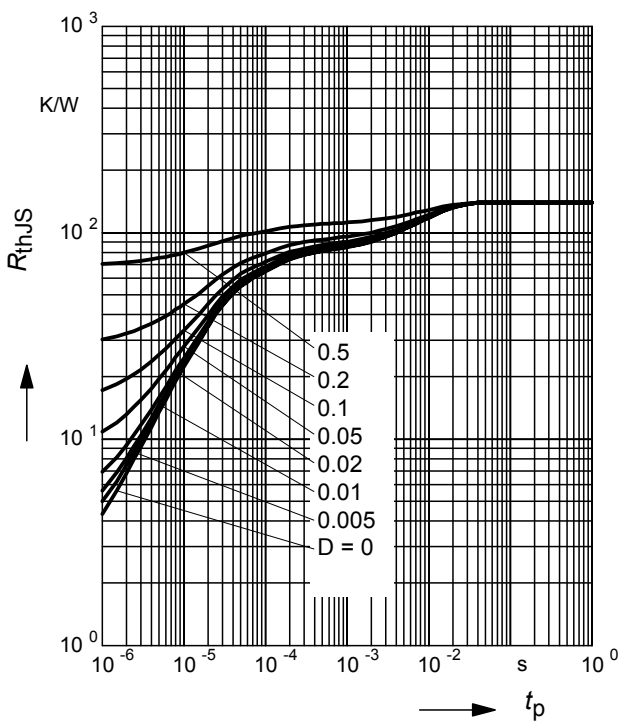
$I_{Fmax} / I_{FDC} = f(t_p)$

BAR63-04...BAR63-06



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

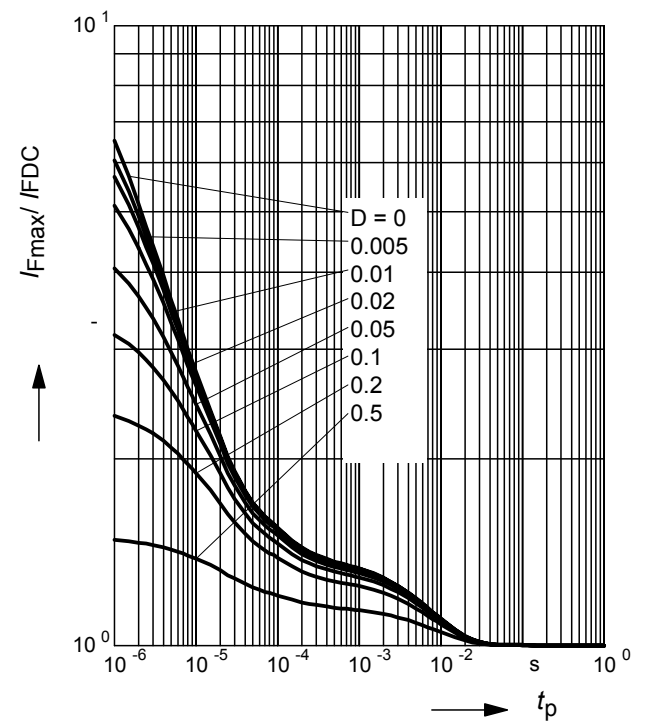
BAR63-02V, BAR63-02W



**Permissible Pulse Load**

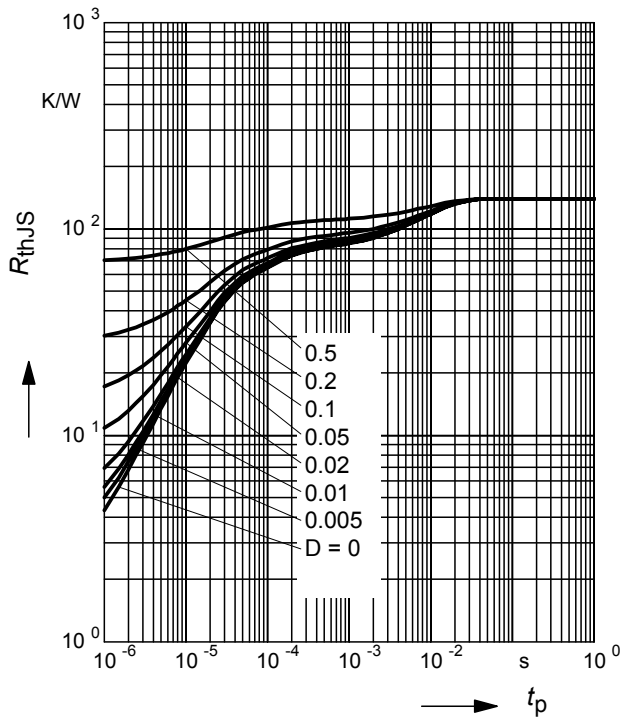
$I_{Fmax} / I_{FDC} = f(t_p)$

BAR63-02V, BAR63-02W



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

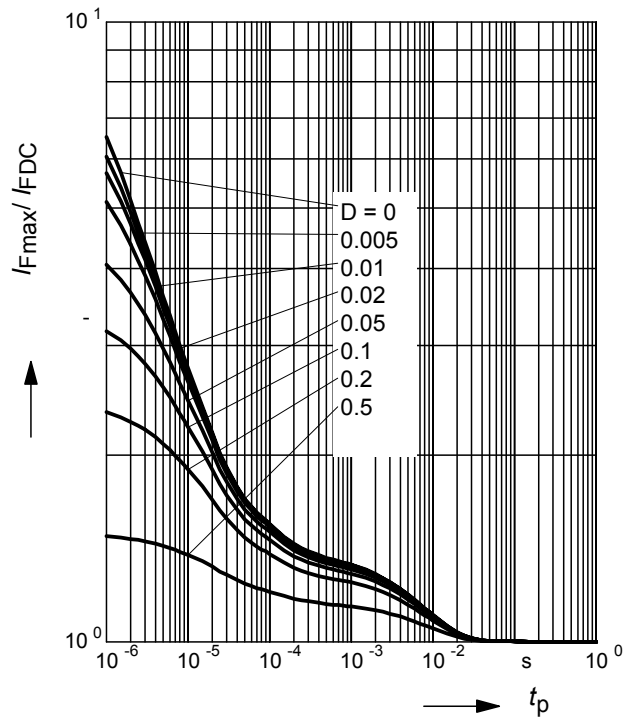
BAR63-03W



**Permissible Pulse Load**

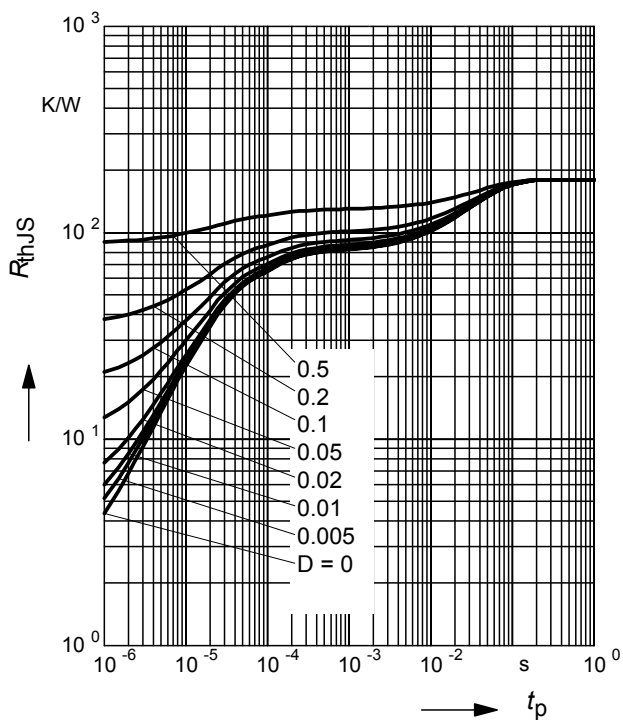
$I_{Fmax} / I_{FDC} = f(t_p)$

BAR63-03W



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

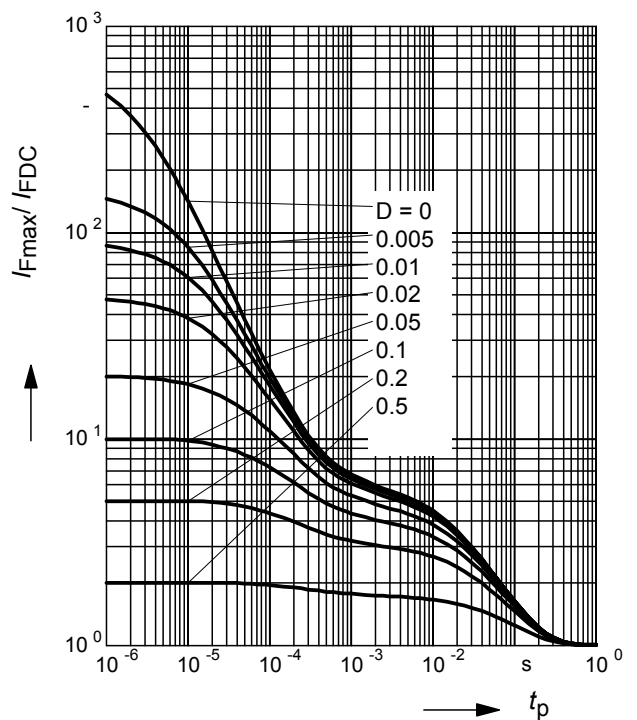
BAR63-04W...BAR63-06W



**Permissible Pulse Load**

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

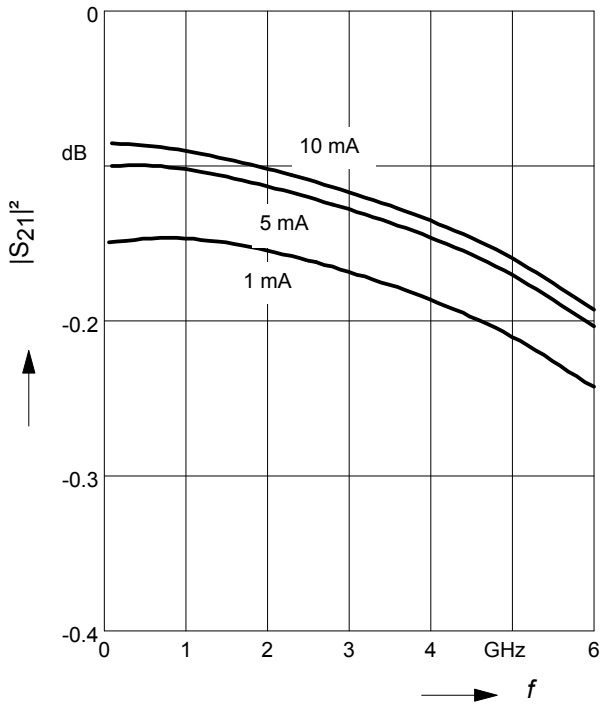
BAR63-04W...BAR63-06W



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

$I_F =$  Parameter

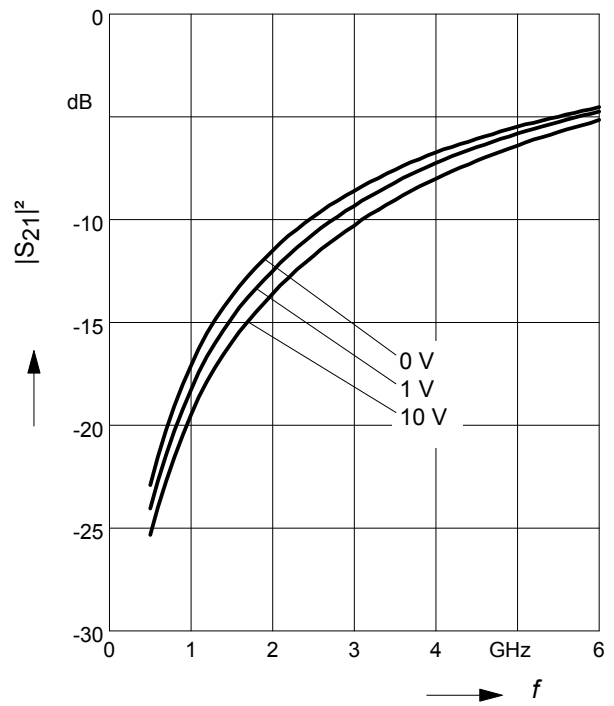
BAR63-02L in series configuration,  $Z = 50\Omega$



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

$V_R =$  Parameter

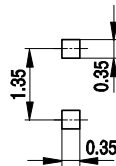
BAR63-02L in series configuration,  $Z = 50\Omega$



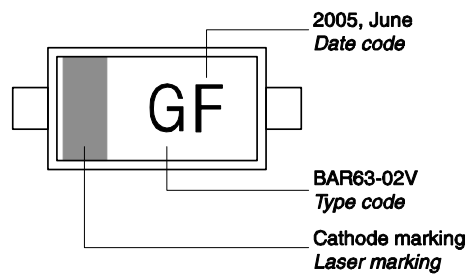
### Package Outline



### Foot Print

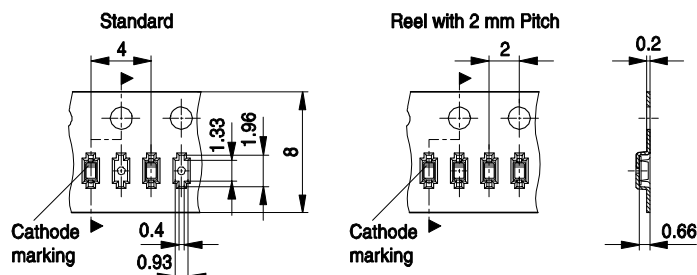


### Marking Layout (Example)

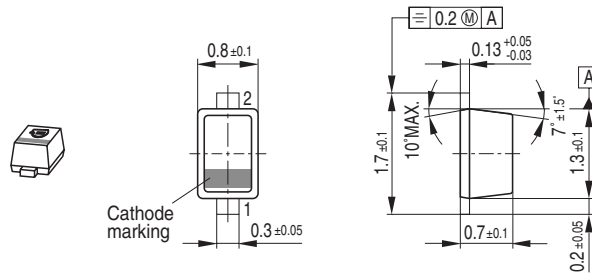


### Standard Packing

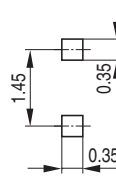
- Reel ø180 mm = 3.000 Pieces/Reel
- Reel ø180 mm = 8.000 Pieces/Reel (2 mm Pitch)
- Reel ø330 mm = 10.000 Pieces/Reel



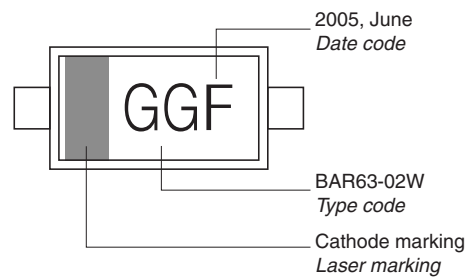
Package Outline



Foot Print

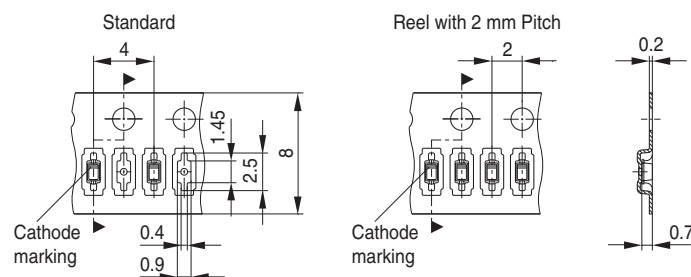


Marking Layout (Example)



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

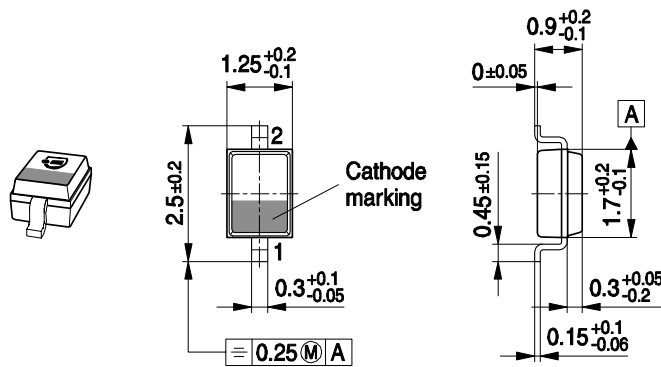


Date Code marking for discrete packages with one digit (SCD80, SC79, SC75<sup>1)</sup>) CES-Code

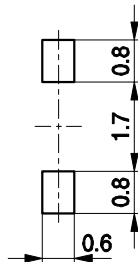
Month	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
01	a	p	A	P	a	p	A	P	a	p	A	P
02	b	q	B	Q	b	q	B	Q	b	q	B	Q
03	c	r	C	R	c	r	C	R	c	r	C	R
04	d	s	D	S	d	s	D	S	d	s	D	S
05	e	t	E	T	e	t	E	T	e	t	E	T
06	f	u	F	U	f	u	F	U	f	u	F	U
07	g	v	G	V	g	v	G	V	g	v	G	V
08	h	x	H	X	h	x	H	X	h	x	H	X
09	j	y	J	Y	j	y	J	Y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

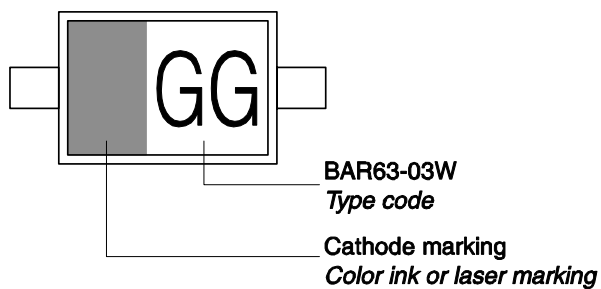
### Package Outline



### Foot Print

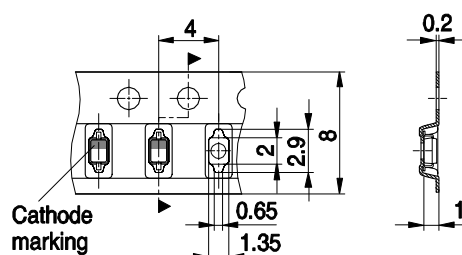


### Marking Layout (Example)

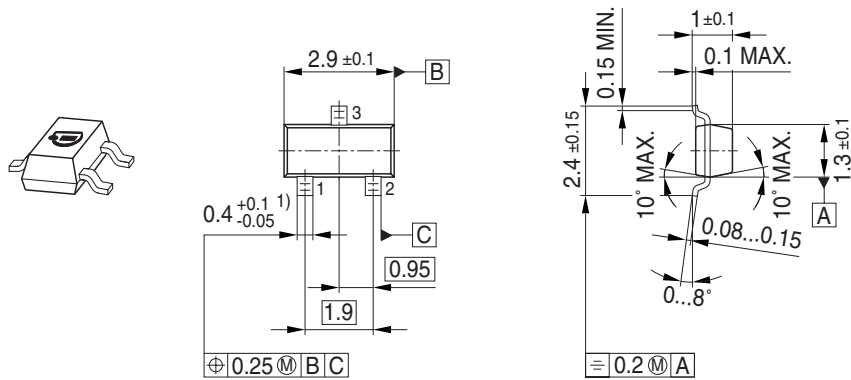


### Standard Packing

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

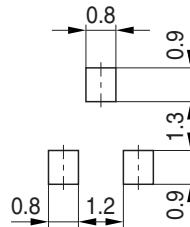


Package Outline

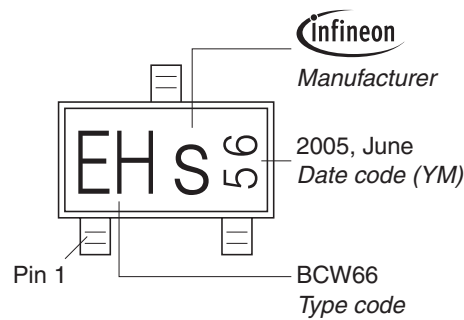


1) Lead width can be 0.6 max. in dambar area

Foot Print

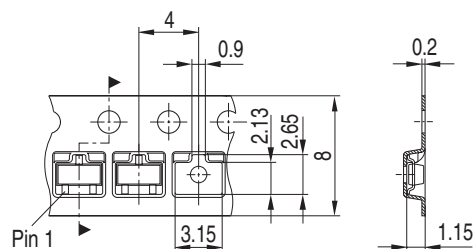


Marking Layout (Example)

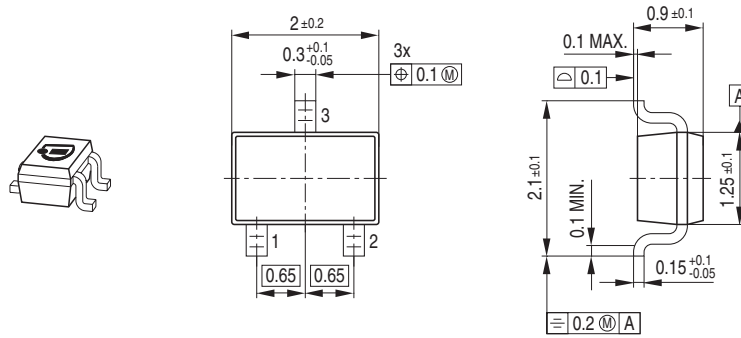


Standard Packing

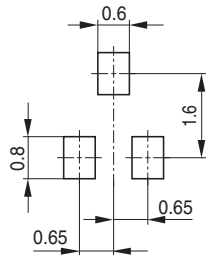
Reel  $\varnothing$ 180 mm = 3.000 Pieces/Reel  
 Reel  $\varnothing$ 330 mm = 10.000 Pieces/Reel



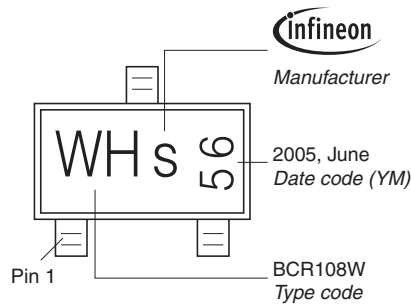
Package Outline



Foot Print

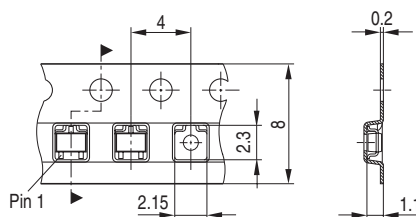


Marking Layout (Example)

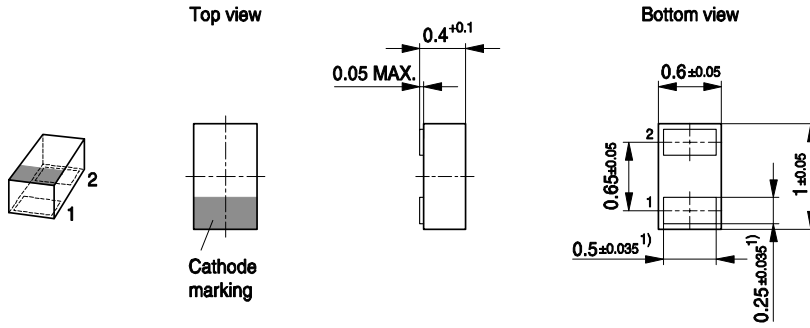


Standard Packing

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



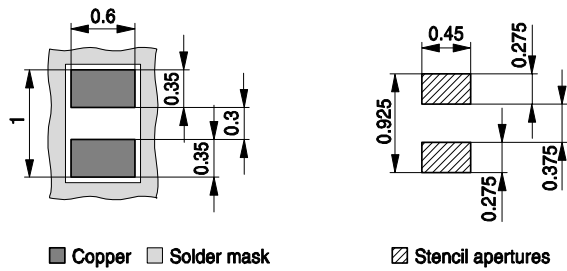
### Package Outline



1) Dimension applies to plated terminal

### Foot Print

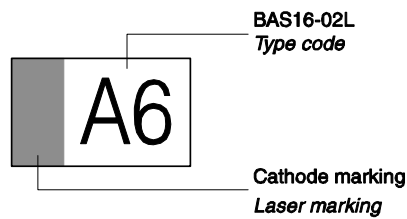
For board assembly information please refer to Infineon website "Packages"



■ Copper □ Solder mask

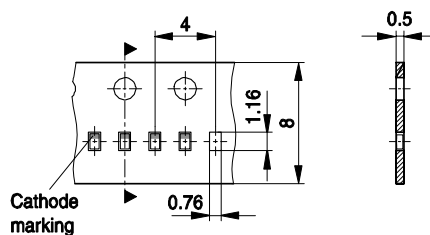
▨ Stencil apertures

### Marking Layout (Example)



### Standard Packing

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



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-  [Infineon Technologies Information](#)

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