

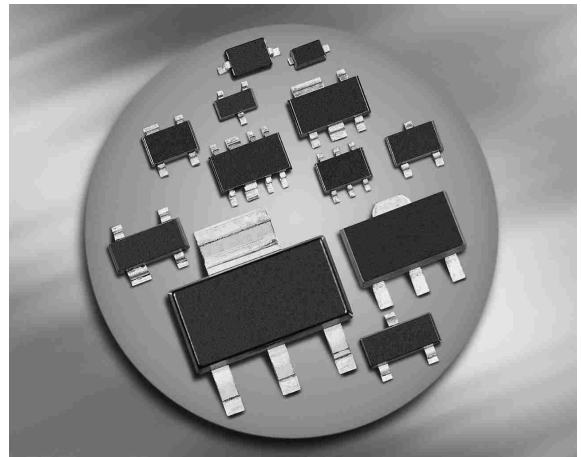


**THE DATASHEET OF  
BAR6503WE6327HTSA1**

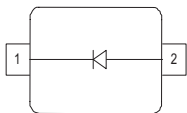


**Silicon PIN Diode**

- Series diode for mobile communication in low loss transmit-receiver switches
- Band switch for TV-tuners
- Very low forward resistance (typ.  $0.65 \Omega @ 5 \text{ mA}$ )
- Low capacitance (typ.  $0.5 \text{ pF} @ 0\text{V}$ )
- Fast switching applications
- Pb-free (RoHS compliant) package



**BAR65-02L**  
**BAR65-02V**  
**BAR65-03W**



Type	Package	Configuration	$L_S$ (nH)	Marking
BAR65-02L*	TSLP-2-1	single, leadless	0.4	NN
BAR65-02V	SC79	single	0.6	N
BAR65-03W	SOD323	single	1.8	blue M

\* Preliminary Data

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

Parameter	Symbol	Value	Unit
Diode reverse voltage	$V_R$	30	V
Forward current	$I_F$	100	mA
Total power dissipation	$P_{\text{tot}}$		mW
BAR65-02L, $T_S \leq 128^\circ\text{C}$		250	
BAR65-02V, $T_S \leq 118^\circ\text{C}$		250	
BAR65-03W, $T_S \leq 113^\circ\text{C}$		250	
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>	$R_{thJS}$		K/W
BAR65-02L		≤ 90	
BAR65-02V		≤ 130	
BAR65-03W		≤ 145	

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

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
<b>DC Characteristics</b>					
Reverse current $V_R = 20\text{ V}$	$I_R$	-	-	20	nA
Forward voltage $I_F = 100\text{ mA}$	$V_F$	-	0.93	1	V

<sup>1)</sup>For calculation of  $R_{thJA}$  please refer to Application Note Thermal Resistance

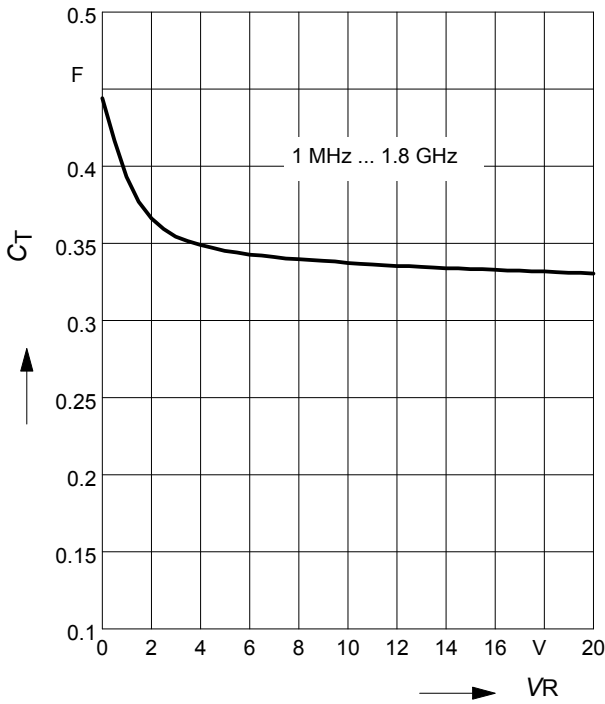
**Electrical Characteristics at  $T_A = 25^\circ\text{C}$ , unless otherwise specified**

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
<b>AC Characteristics</b>					
Diode capacitance $V_R = 1\text{ V}, f = 1\text{ MHz}$ $V_R = 3\text{ V}, f = 1\text{ MHz}$ $V_R = 0\text{ V}, f = 100\text{ MHz} \dots 1.8\text{ GHz}$	$C_T$	- - -	0.45 0.4 0.5	0.9 0.8 -	pF
Reverse parallel resistance $V_R = 0\text{ V}, f = 100\text{ MHz}$ $V_R = 0\text{ V}, f = 1\text{ GHz}$ $V_R = 0\text{ V}, f = 1.8\text{ GHz}$	$R_P$	- - -	700 10 5	- - -	k $\Omega$
Forward resistance $I_F = 1\text{ mA}, f = 100\text{ MHz}$ $I_F = 5\text{ mA}, f = 100\text{ MHz}$ $I_F = 10\text{ mA}, f = 100\text{ MHz}$	$r_f$	- - -	1 0.65 0.56	- 0.95 0.9	$\Omega$
Charge carrier life time $I_F = 10\text{ mA}, I_R = 6\text{ mA}$ , measured at $I_R = 3\text{ mA}$ , $R_L = 100\ \Omega$	$\tau_{rr}$	-	80	-	ns
I-region width	$W_I$	-	3.5	-	$\mu\text{m}$
Insertion loss <sup>1)</sup> $I_F = 1\text{ mA}, f = 1.8\text{ GHz}$ $I_F = 5\text{ mA}, f = 1.8\text{ GHz}$ $I_F = 10\text{ mA}, f = 1.8\text{ GHz}$	$I_L$	- - -	0.08 0.06 0.05	- - -	dB
Isolation <sup>1)</sup> $V_R = 0\text{ V}, f = 0.9\text{ GHz}$ $V_R = 0\text{ V}, f = 1.8\text{ GHz}$ $V_R = 0\text{ V}, f = 2.45\text{ GHz}$	$I_{SO}$	- - -	12 7 5	- - -	

<sup>1</sup>BAR65-02L in series configuration,  $Z = 50\ \Omega$

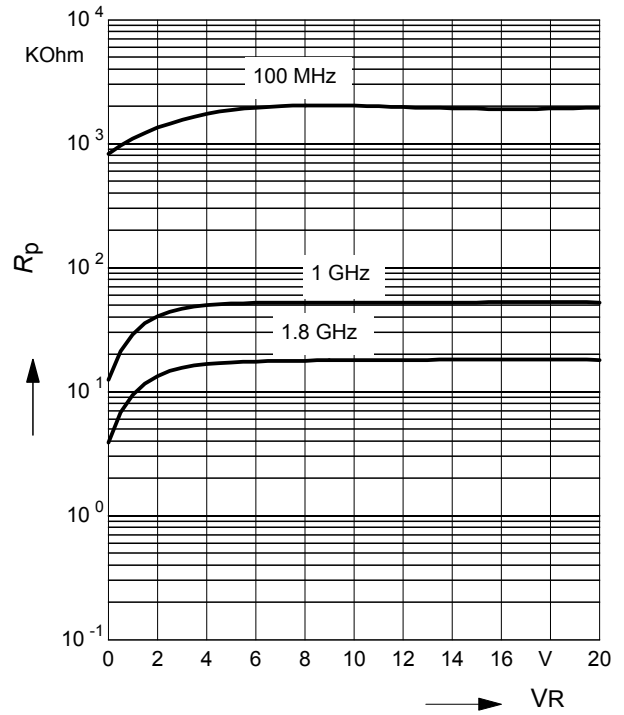
**Diode capacitance  $C_T = f(V_R)$**

$f = \text{Parameter}$



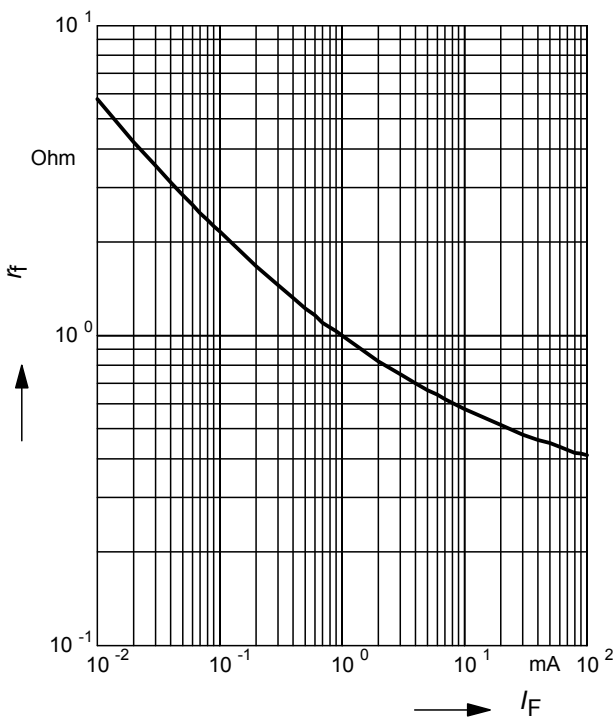
**Reverse parallel resistance  $R_P = f(V_R)$**

$f = \text{Parameter}$



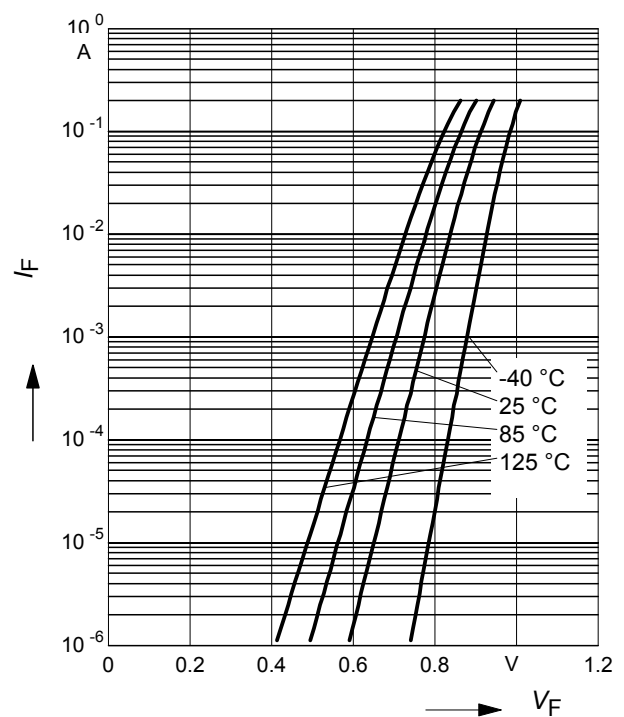
**Forward resistance  $r_f = f(I_F)$**

$f = 100\text{MHz}$



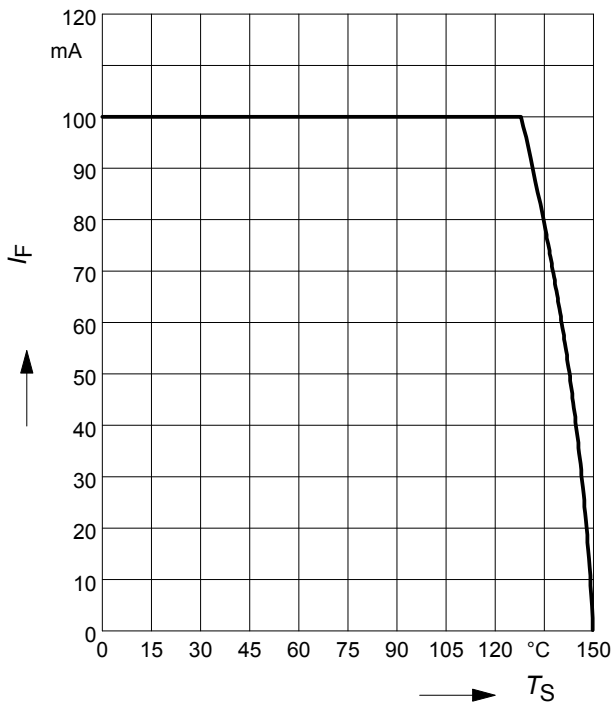
**Forward current  $I_F = f(V_F)$**

$T_A = \text{Parameter}$



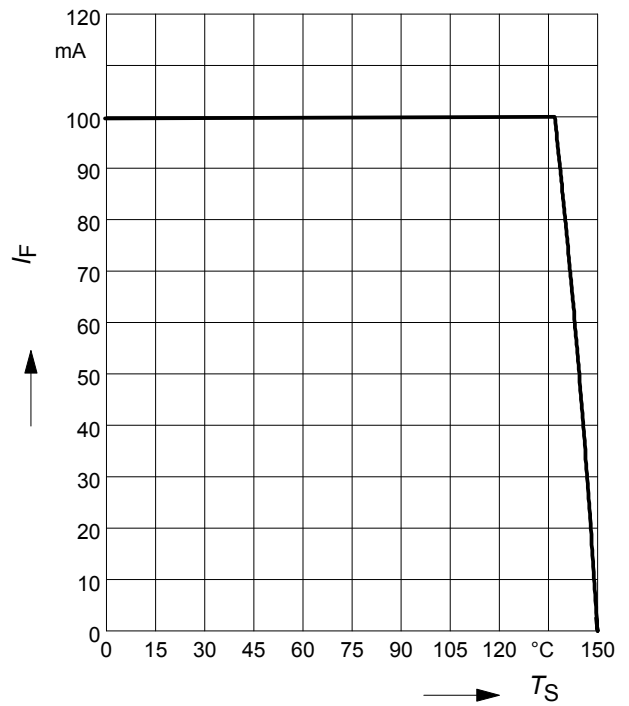
**Forward current  $I_F = f(T_S)$**

BAR65-02L



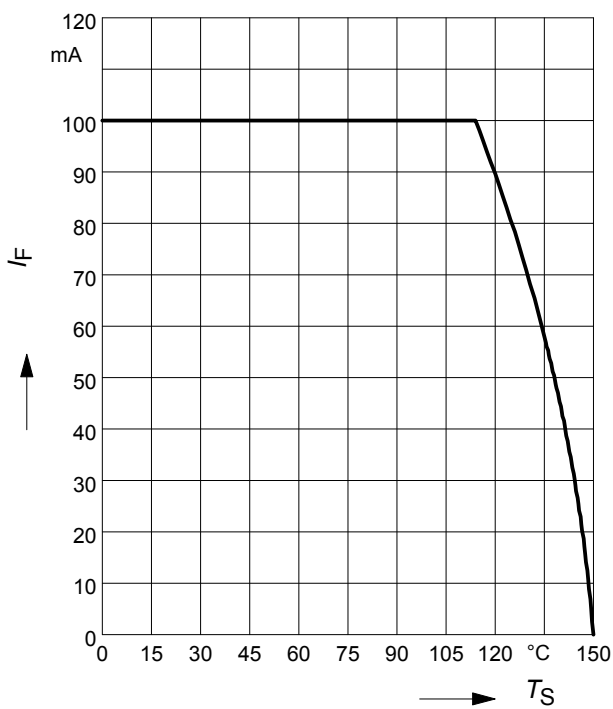
**Forward current  $I_F = f(T_S)$**

BAR65-02V



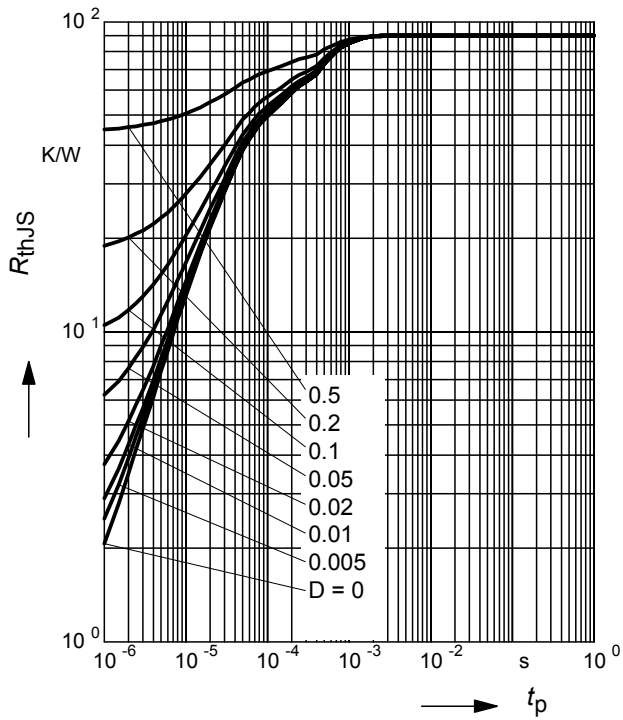
**Forward current  $I_F = f(T_S)$**

BAR65-03W



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

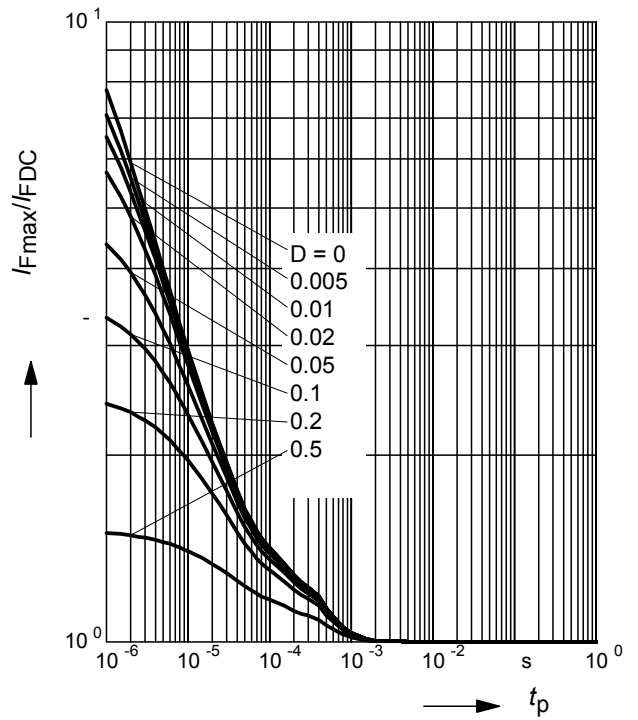
BAR65-02L



**Permissible Pulse Load  $I_{Fmax}/I_{FDC} = f(t_p)$**

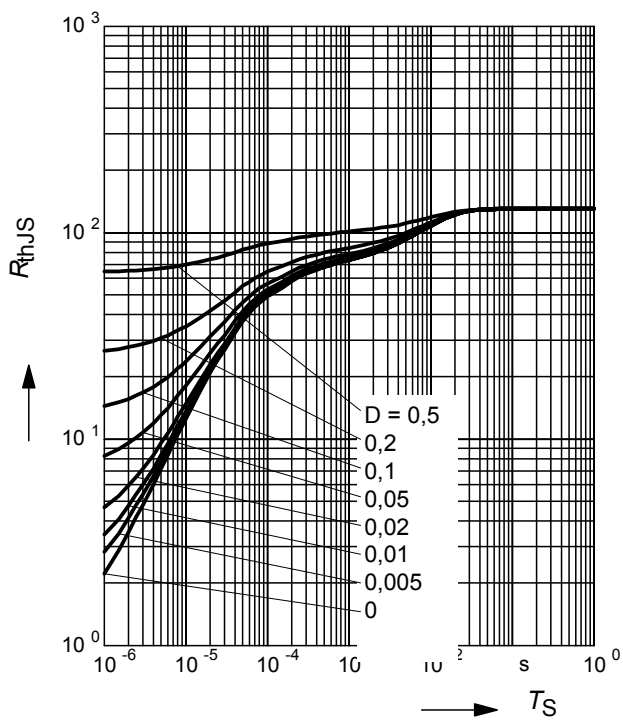
$I_{Fmax}/I_{FDC} = f(t_p)$

BAR65-02L



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

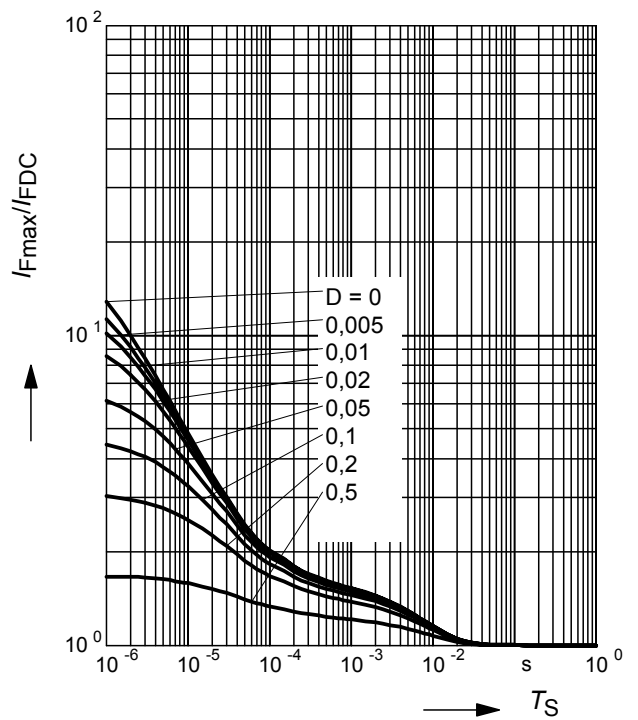
BAR65-02V



**Permissible Pulse Load  $I_{Fmax}/I_{FDC} = f(t_p)$**

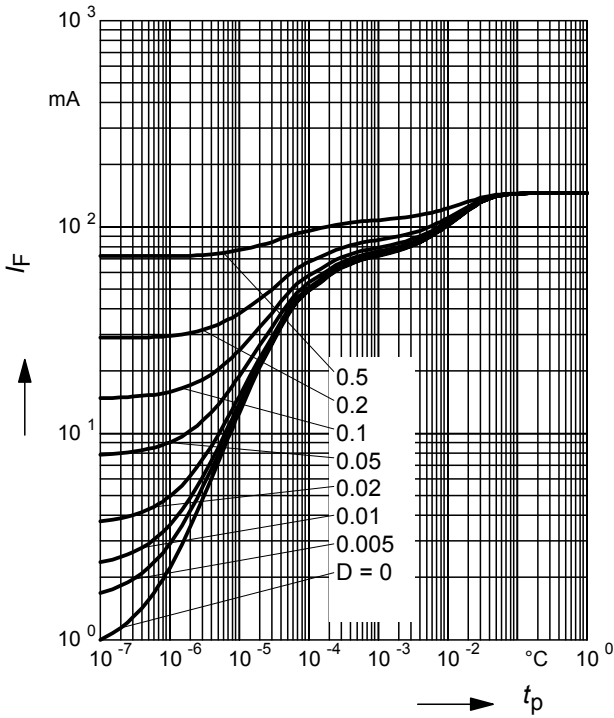
$I_{Fmax}/I_{FDC} = f(t_p)$

BAR65-02V



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

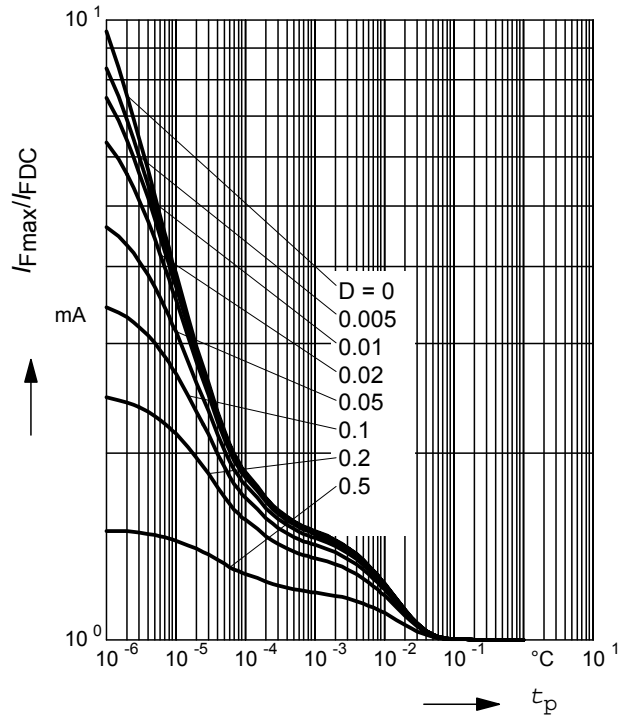
BAR65-03W



**Permissible Pulse Load**

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

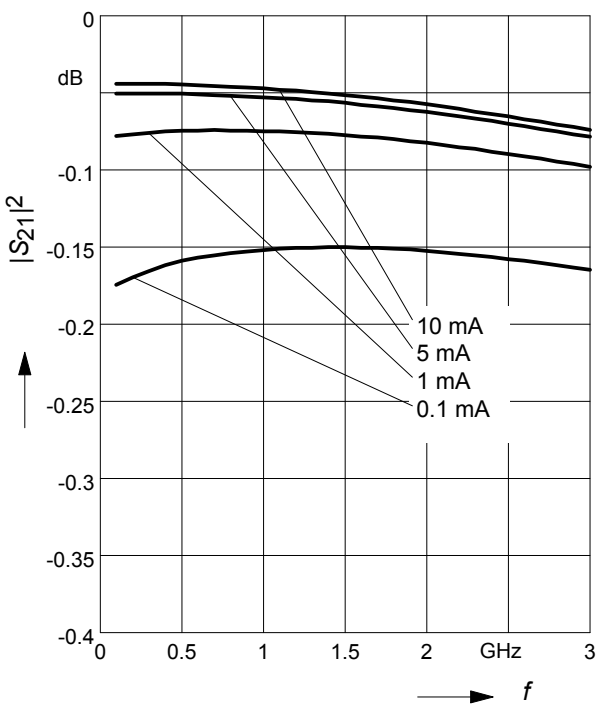
BAR65-03W



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

$I_F$  = Parameter

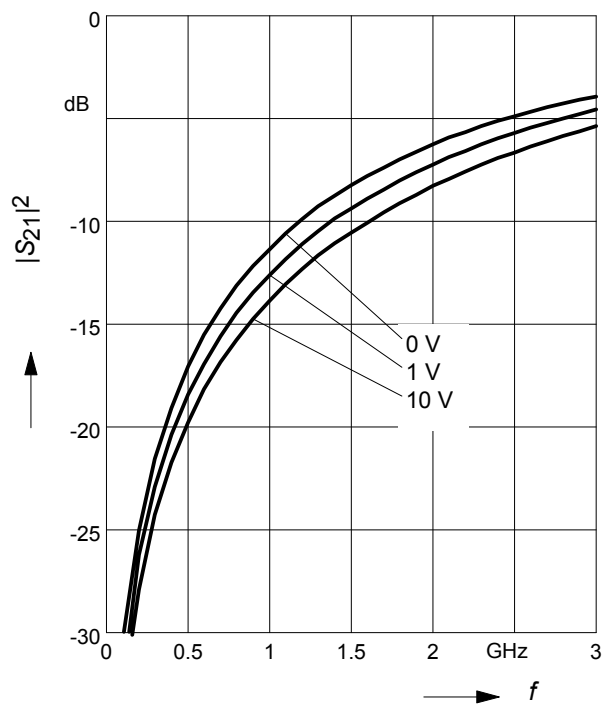
BAR65-02L in series configuration,  $Z = 50\Omega$



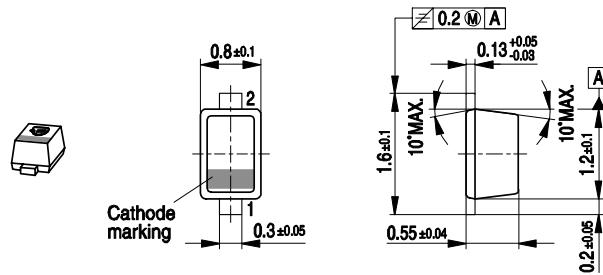
**Isolation  $I_{SO} = -|S_{21}|^2 = f(f)$**

$V_R$  = Parameter

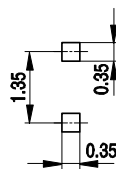
BAR65-02L in series configuration  $Z = 50\Omega$



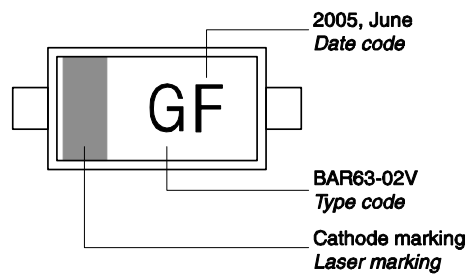
### Package Outline



### Foot Print

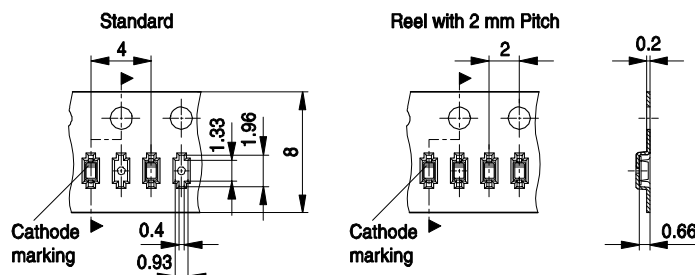


### Marking Layout (Example)



### 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

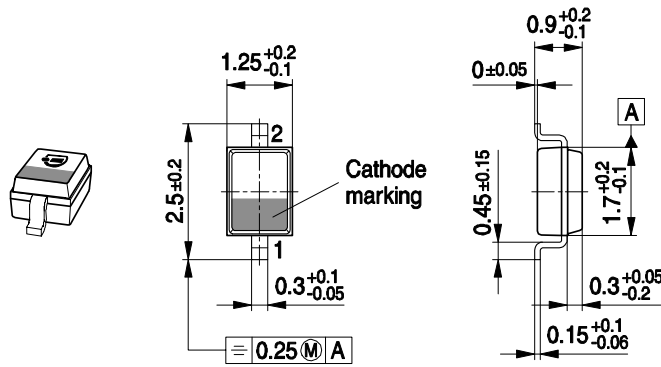


Date Code marking for discrete packages with one digit (SCD80, SC79, SC75<sup>1)</sup>) CES-Code

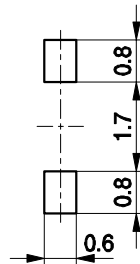
Month	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
01	a	p	A	P	a	p	A	P	a	p	A	P
02	b	q	B	Q	b	q	B	Q	b	q	B	Q
03	c	r	C	R	c	r	C	R	c	r	C	R
04	d	s	D	S	d	s	D	S	d	s	D	S
05	e	t	E	T	e	t	E	T	e	t	E	T
06	f	u	F	U	f	u	F	U	f	u	F	U
07	g	v	G	V	g	v	G	V	g	v	G	V
08	h	x	H	X	h	x	H	X	h	x	H	X
09	j	y	J	Y	j	y	J	Y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

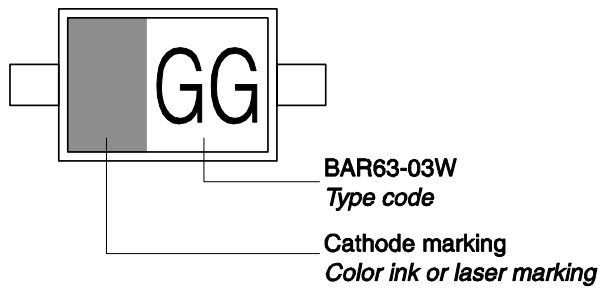
Package Outline



Foot Print

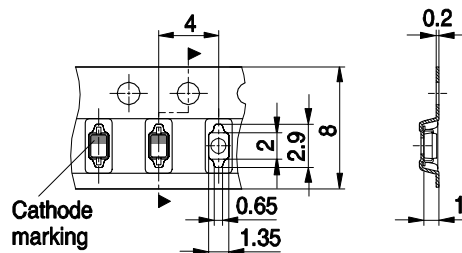


Marking Layout (Example)

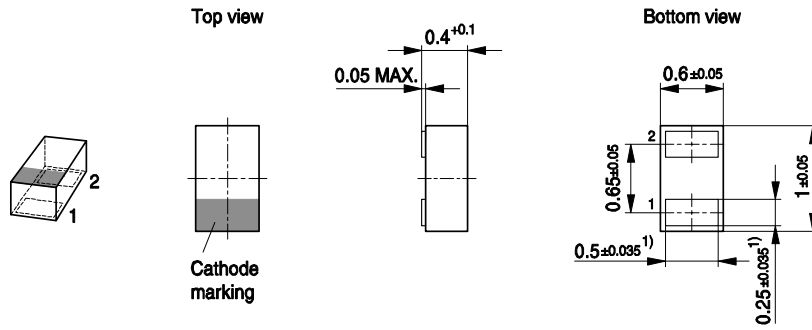


Standard Packing

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



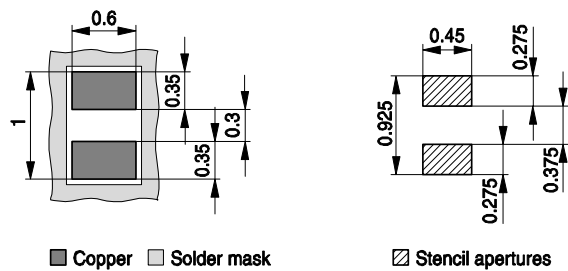
### Package Outline



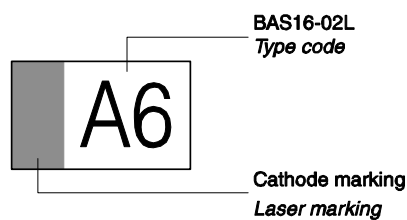
1) Dimension applies to plated terminal

### Foot Print

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

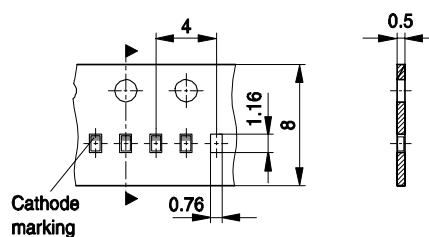


### Marking Layout (Example)



### Standard Packing

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



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