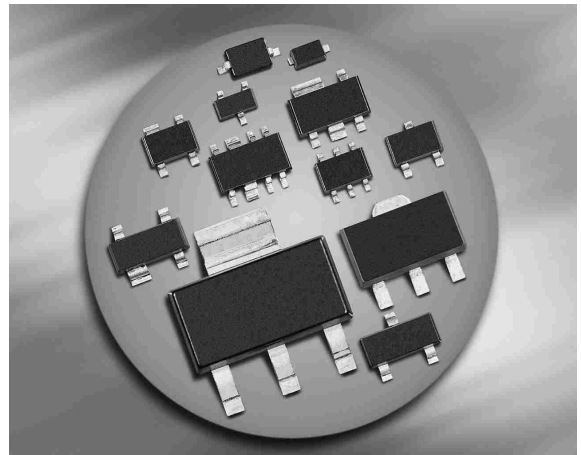
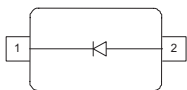


Silicon PIN Diode

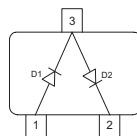
- High voltage current controlled RF resistor for RF attenuator and switches
- Frequency range above 1 MHz up to 6 GHz
- Very low capacitance at zero volt reverse bias at frequencies above 1 GHz (typ. 0.17 pF)
- Low forward resistance (typ. 2.1 Ω @ 10 mA)
- Very low signal distortion
- Pb-free (RoHS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



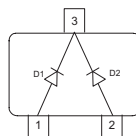
BAR64-02EL
BAR64-02V
BAR64-03W



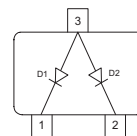
BAR64-04
BAR64-04W



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}		
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 = Parameter



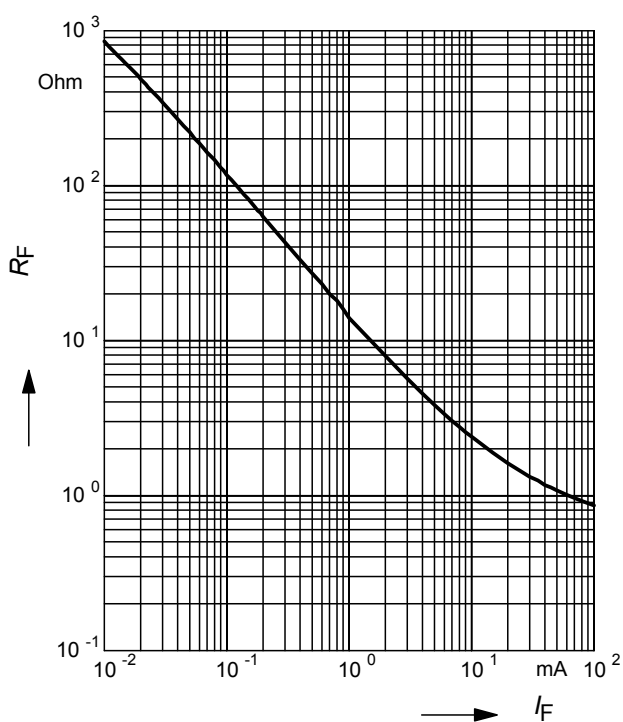
Reverse parallel resistance $R_P = f(V_R)$

f = Parameter



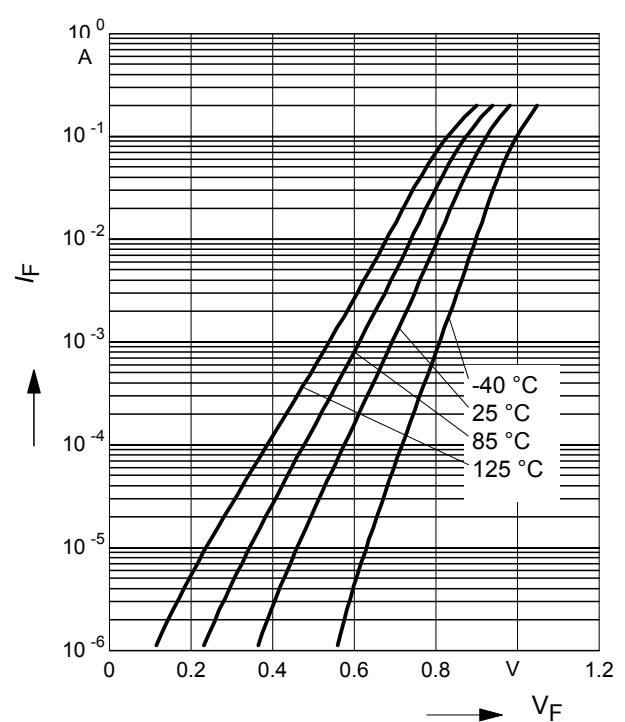
Forward resistance $r_f = f(I_F)$

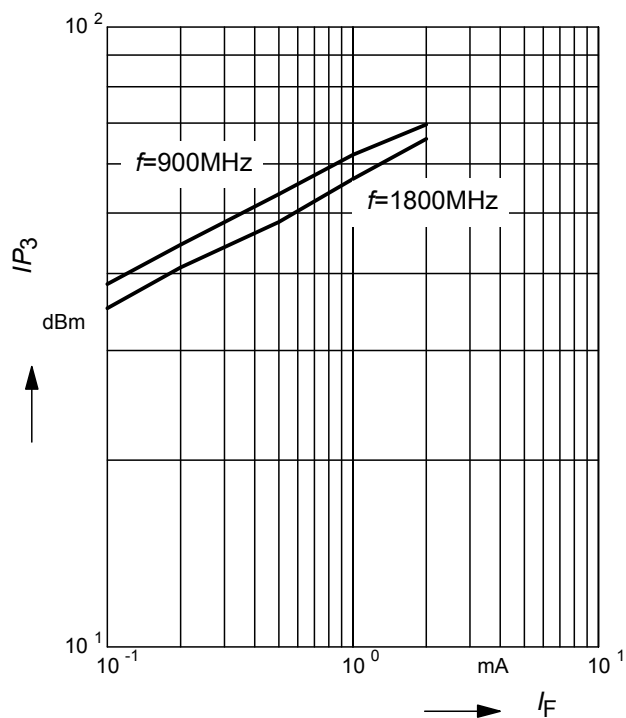
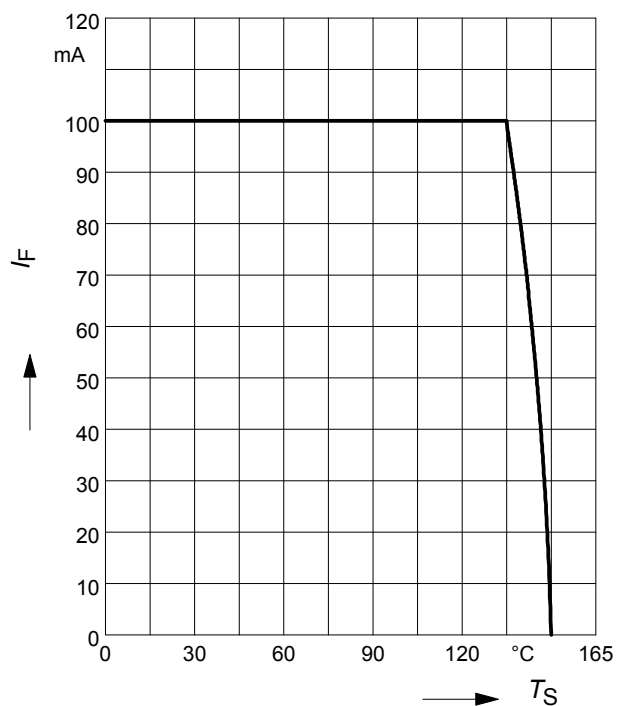
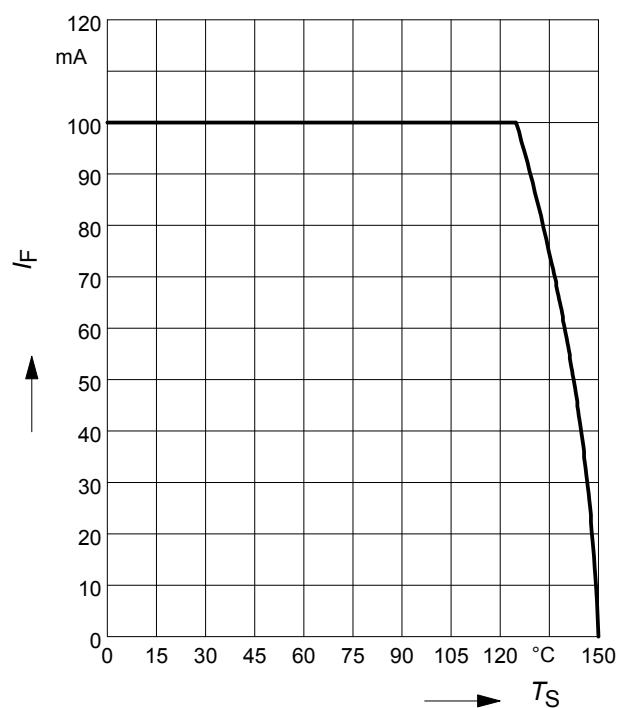
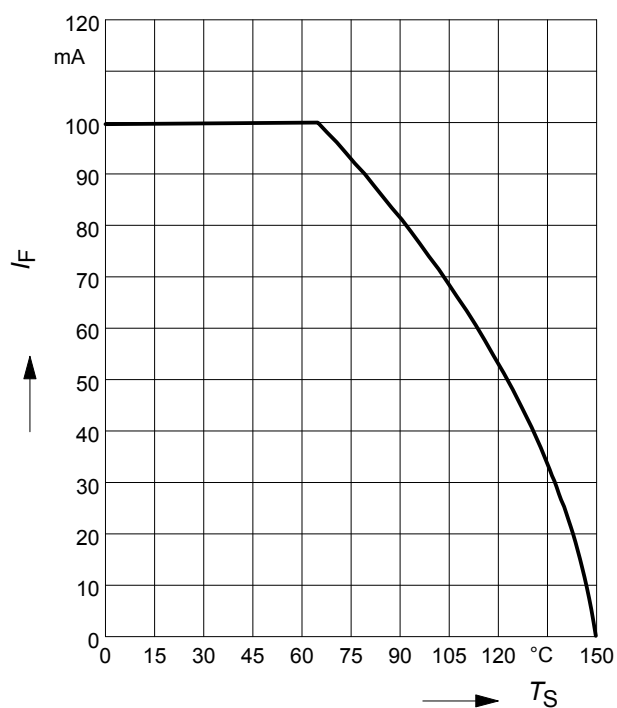
f = 100MHz



Forward current $I_F = f(V_F)$

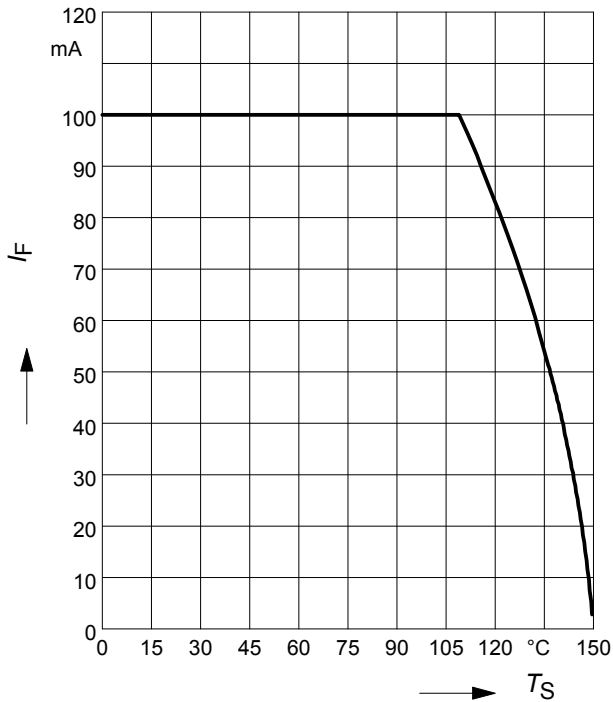
T_A = Parameter



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


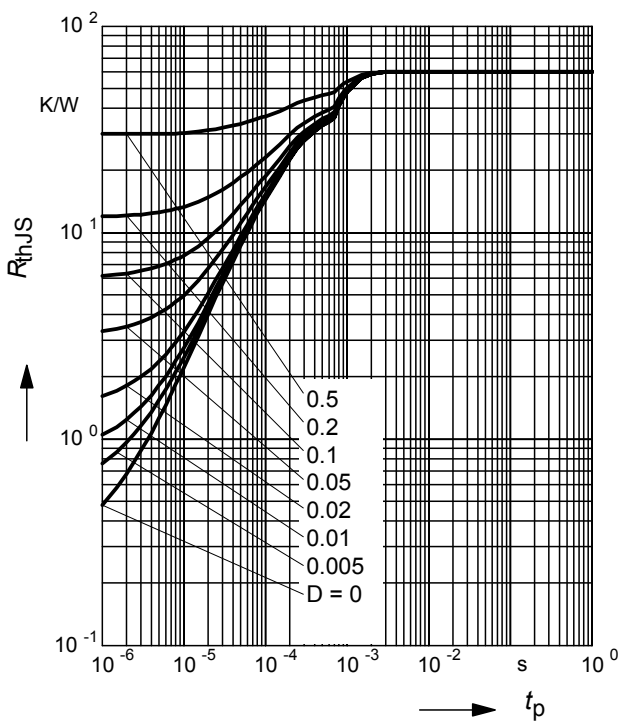
Forward current $I_F = f(T_S)$

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



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

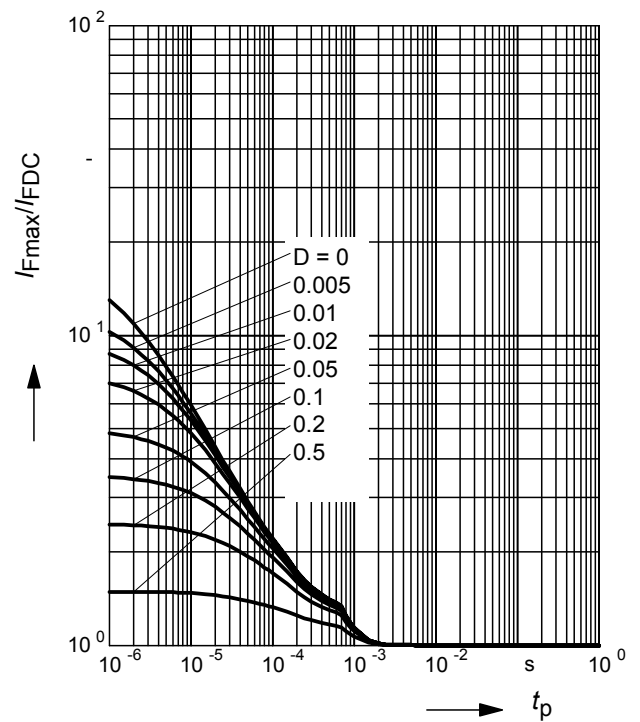
BAR64-02EL



Permissible Pulse Load

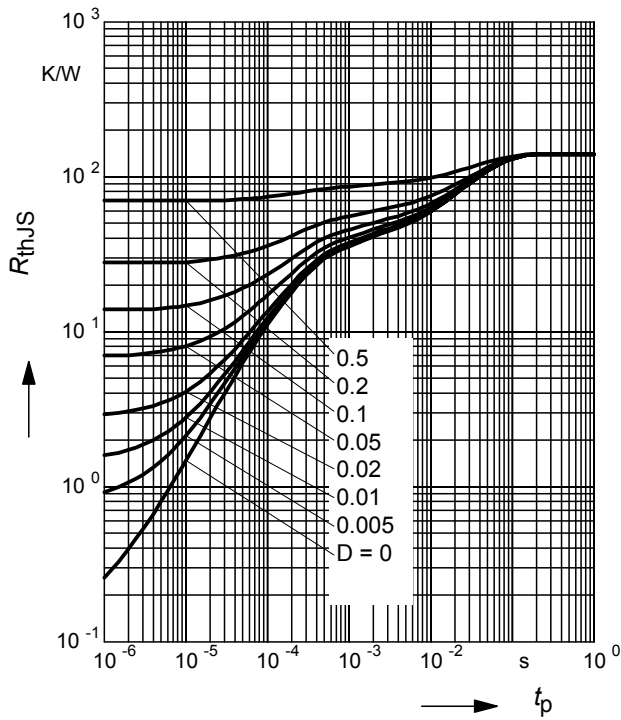
$$I_{Fmax}/I_{FDC} = f(t_p)$$

BAR64-02EL



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

BAR64-02V



Permissible Pulse Load

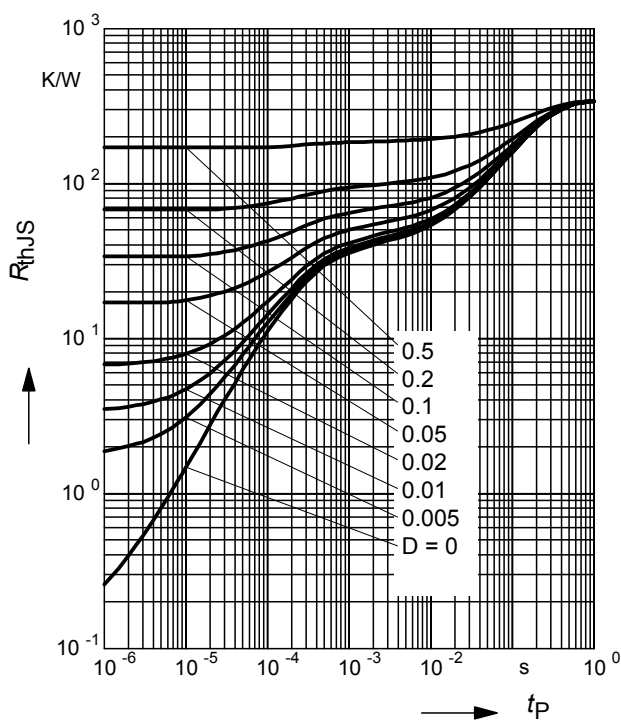
$$I_{Fmax} / I_{FDC} = f(t_p)$$

BAR64-02V



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

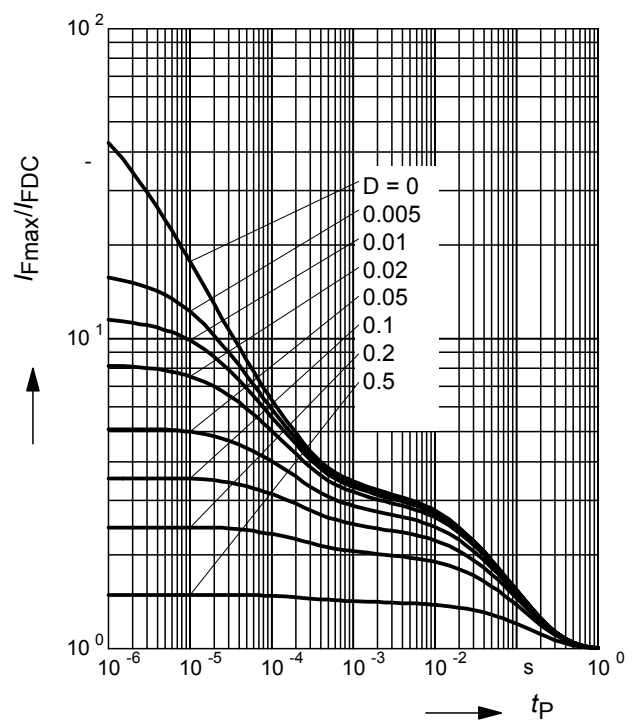
BAR64-04, BAR64-05, BAR64-06



Permissible Pulse Load

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

BAR64-04, BAR64-05, BAR64-06



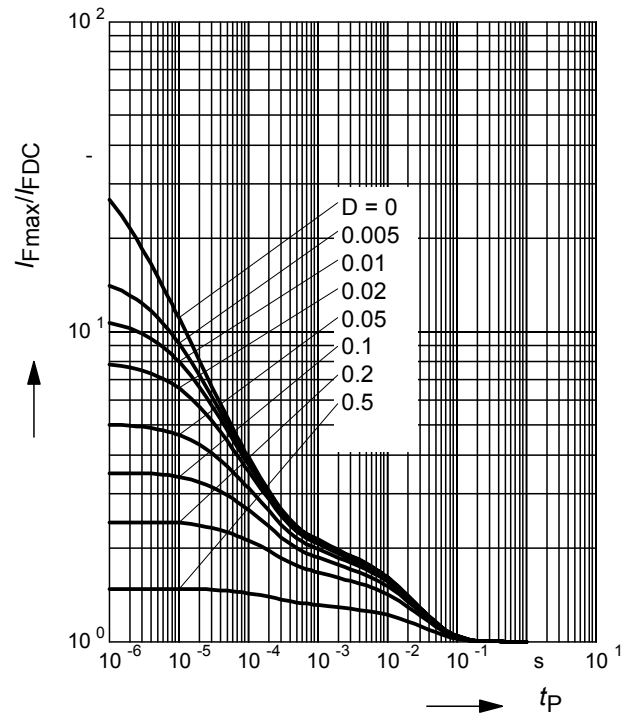
Permissible Puls Load $R_{thJS} = f(t_p)$

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


Permissible Pulse Load

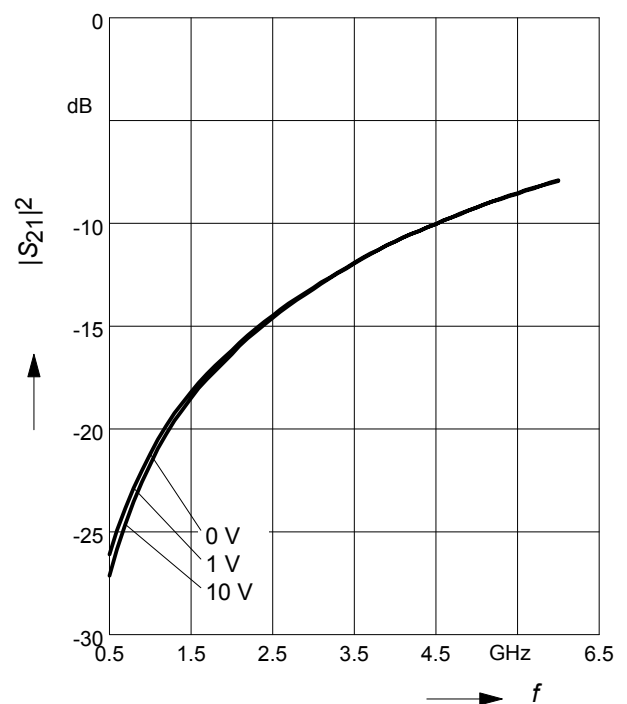
$$I_{Fmax}/I_{FDC} = f(t_p)$$

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, $Z = 50\Omega$


1.35
0.35

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 component with a width of 4, a height of 8, and a pitch of 1.33. It features two circular cathode markings and two rectangular cathode marking areas. The distance between the cathode markings is 1.96. The distance between the cathode marking areas is 0.4. The distance from the cathode marking area to the edge is 0.93. The second drawing, labeled 'Reel with 2 mm Pitch', shows a component with a width of 2, a height of 8, and a pitch of 1.33. It features two circular cathode markings and two rectangular cathode marking areas. The distance between the cathode markings is 1.96. The distance between the cathode marking areas is 0.4. The distance from the cathode marking area to the edge is 0.93. The third drawing shows a side view of the component with a thickness of 0.2 and a height of 0.66. It also features a circular cathode marking and a rectangular cathode marking area.

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

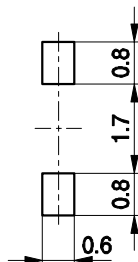
Month	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
01	a	p	A	P	a	p	A	P	a	p	A	P
02	b	q	B	Q	b	q	B	Q	b	q	B	Q
03	c	r	C	R	c	r	C	R	c	r	C	R
04	d	s	D	S	d	s	D	S	d	s	D	S
05	e	t	E	T	e	t	E	T	e	t	E	T
06	f	u	F	U	f	u	F	U	f	u	F	U
07	g	v	G	V	g	v	G	V	g	v	G	V
08	h	x	H	X	h	x	H	X	h	x	H	X
09	j	y	J	Y	j	y	J	Y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

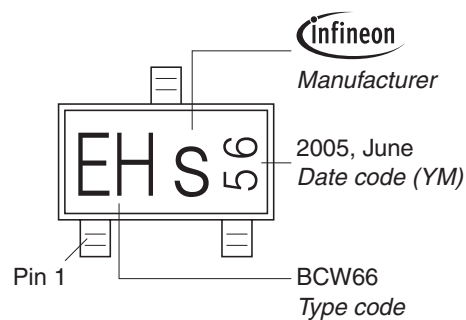


1) Lead width can be 0.6 max. in dambar area

Foot Print



Marking Layout (Example)

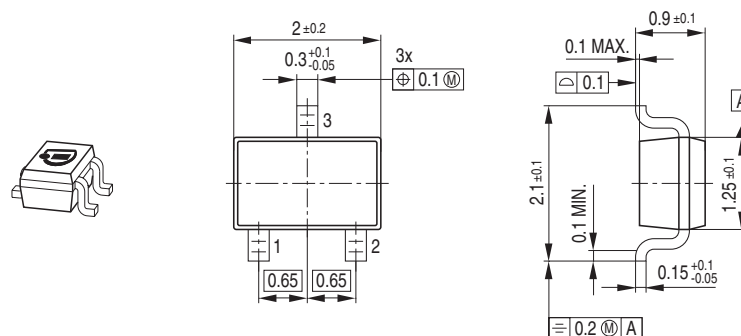


Standard Packing

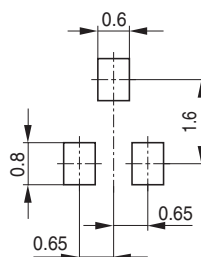
Reel ø180 mm = 3.000 Pieces/Reel
Reel ø330 mm = 10.000 Pieces/Reel



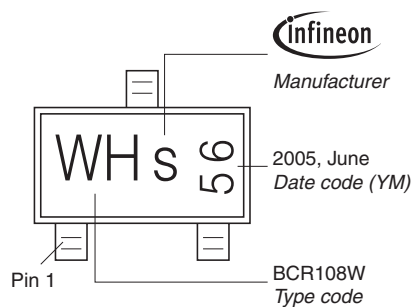
Package Outline



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



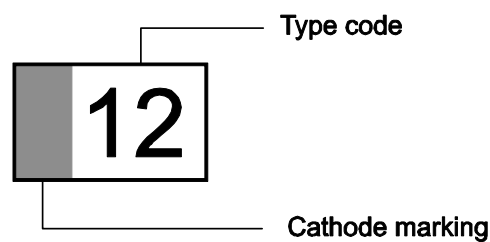
TSLP-2-19, -20-PO V01

Foot Print

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

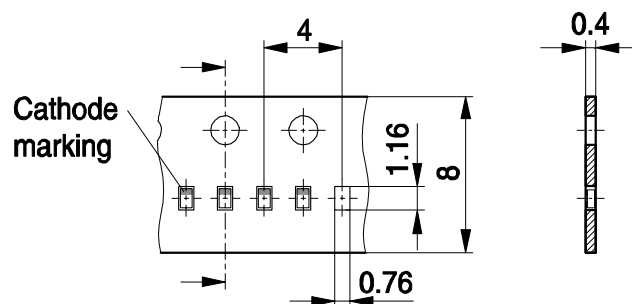


Marking layout (Example)



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

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