

### Silicon Tuning Diodes

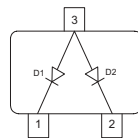
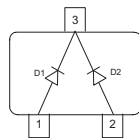
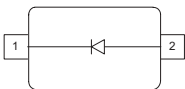
- Excellent linearity
- High Q hyperabrupt tuning diode
- Low series resistance
- Designed for low tuning voltage operation for VCO's in mobile communications equipment
- For low frequency control elements such as TCXOs and VCXOs
- Very low capacitance spread
- Pb-free (RoHS compliant) package<sup>1)</sup>
- Qualified according AEC Q101



**BBY58-02L/V**  
**BBY58-02W**  
**BBY58-03W**

**BBY58-05W**

**BBY58-06W**



Type	Package	Configuration	$L_S$ (nH)	Marking
BBY58-02L	TSLP-2-1	single, leadless	0.4	88
BBY58-02V	SC79	single	0.6	8
BBY58-02W	SCD80	single	0.6	88
BBY58-03W	SOD323	single	0.6	8 yel.
BBY58-05W	SOT323	common cathode	1.4	B5s
BBY58-06W	SOT323	common anode	1.4	B6s

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

Parameter	Symbol	Value	Unit
Diode reverse voltage	$V_R$	10	V
Forward current	$I_F$	20	mA
Operating temperature range	$T_{op}$	-55 ... 150	°C
Storage temperature	$T_{stg}$	-55 ... 150	

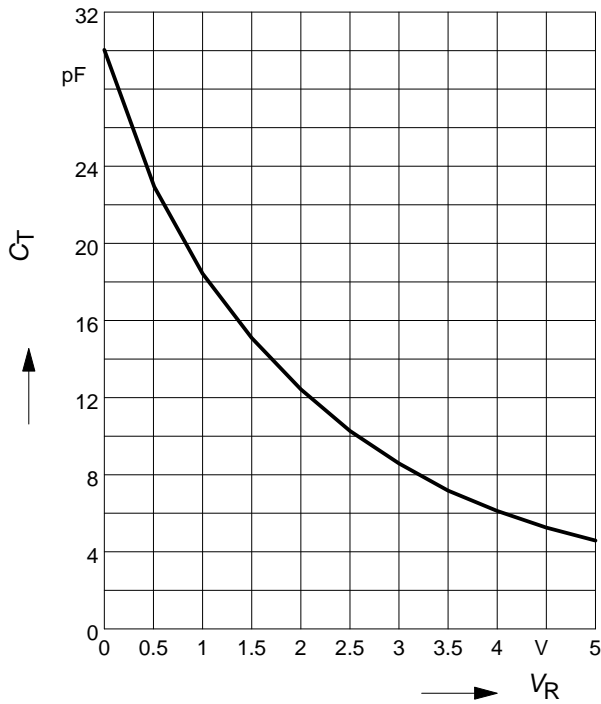
<sup>1)</sup>Pb-containing package may be available upon special request

**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	$I_R$				nA
$V_R = 8\text{ V}$		-	-	10	
$V_R = 8\text{ V}, T_A = 85^\circ\text{C}$		-	-	100	
<b>AC Characteristics</b>					
Diode capacitance	$C_T$				pF
$V_R = 1\text{ V}, f = 1\text{ MHz}$		17.5	18.3	19.3	
$V_R = 2\text{ V}, f = 1\text{ MHz}$		11.4	12.35	13.3	
$V_R = 3\text{ V}, f = 1\text{ MHz}$		7.8	8.6	9.3	
$V_R = 4\text{ V}, f = 1\text{ MHz}$		5.5	6	6.6	
$V_R = 6\text{ V}, f = 1\text{ MHz}$		3.8	4.7	5.5	
Capacitance ratio	$C_{T1}/C_{T3}$	1.9	2.15	2.4	-
$V_R = 1\text{ V}, V_R = 3\text{ V}, f = 1\text{ MHz}$					
Capacitance ratio	$C_{T1}/C_{T4}$	2.7	3.05	3.5	
$V_R = 1\text{ V}, V_R = 4\text{ V}, f = 1\text{ MHz}$					
Capacitance ratio	$C_{T4}/C_{T6}$	1.15	1.3	1.45	
$V_R = 4\text{ V}, V_R = 6\text{ V}, f = 1\text{ MHz}$					
Series resistance	$r_S$				$\Omega$
$V_R = 1\text{ V}, f = 470\text{ MHz}, \text{BBY58-02L}, -07\text{L4}$		-	0.3	-	
$V_R = 1\text{ V}, f = 470\text{ MHz}, \text{all other}$		-	0.25	-	

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

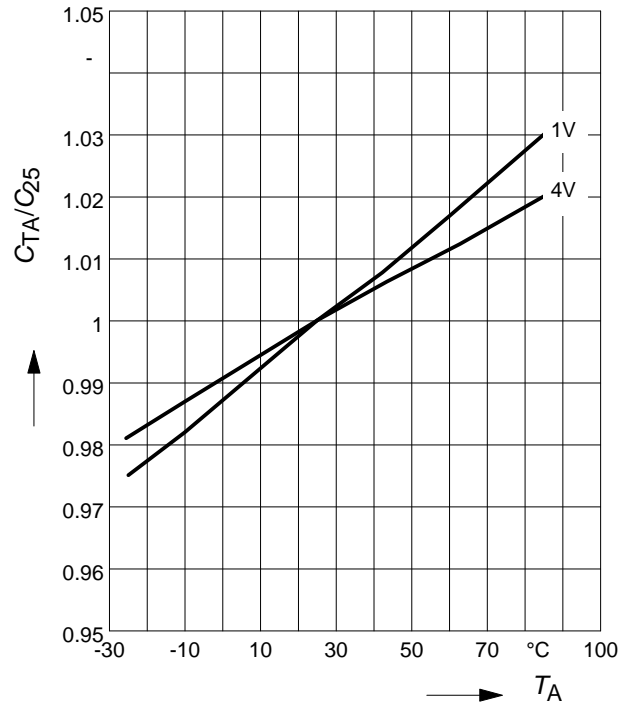
$f = 1\text{MHz}$



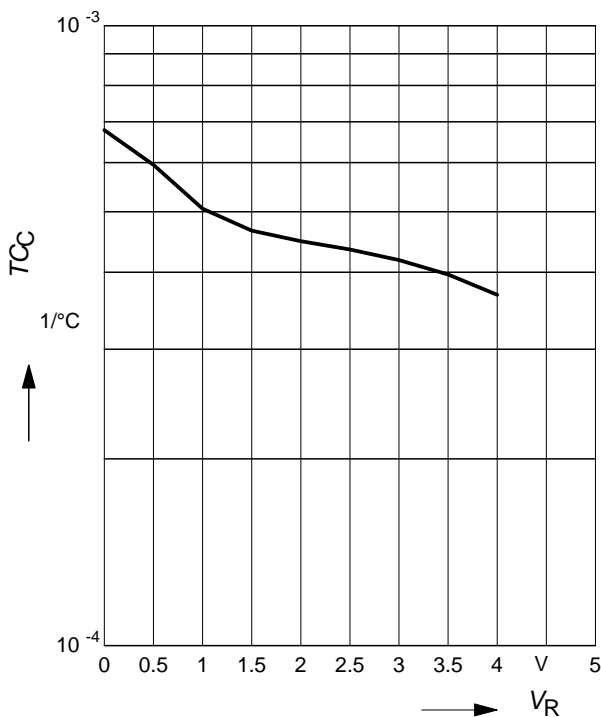
**Normalized diode capacitance**

$C_{(T_A)}/C_{(25^\circ\text{C})} = f(T_A)$

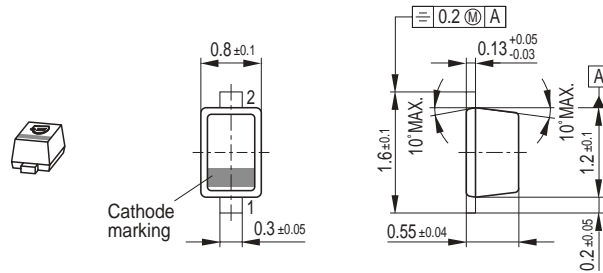
$f = 1\text{MHz}, V_R = \text{Parameter}$



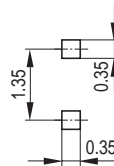
**Temperature coefficient of the diode capacitance  $T_{CC} = f(V_R)$**



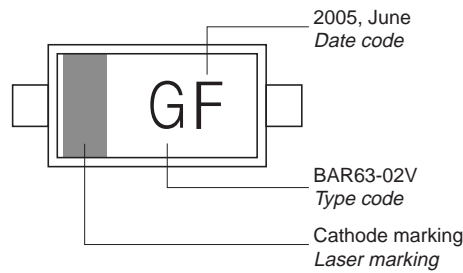
Package Outline



Foot Print

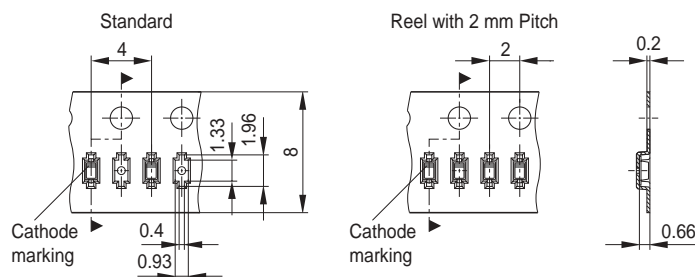


Marking Layout (Example)

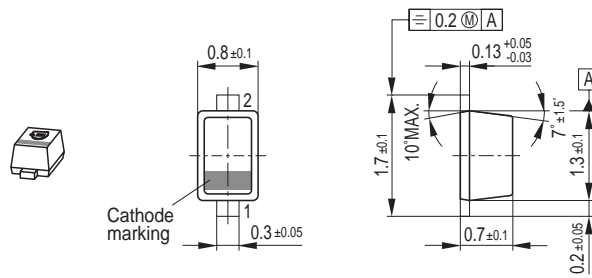


Standard Packing

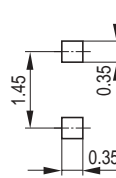
Reel  $\varnothing$ 180 mm = 3.000 Pieces/Reel  
 Reel  $\varnothing$ 180 mm = 8.000 Pieces/Reel (2 mm Pitch)  
 Reel  $\varnothing$ 330 mm = 10.000 Pieces/Reel



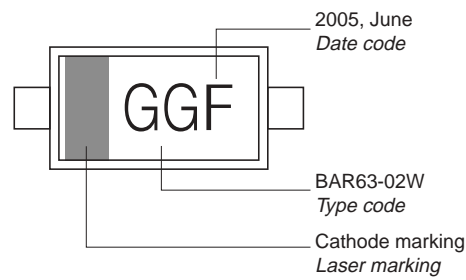
Package Outline



Foot Print

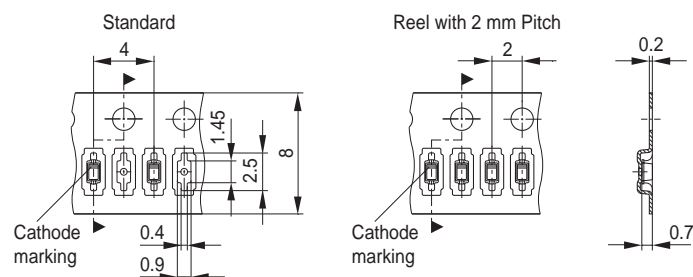


Marking Layout (Example)



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

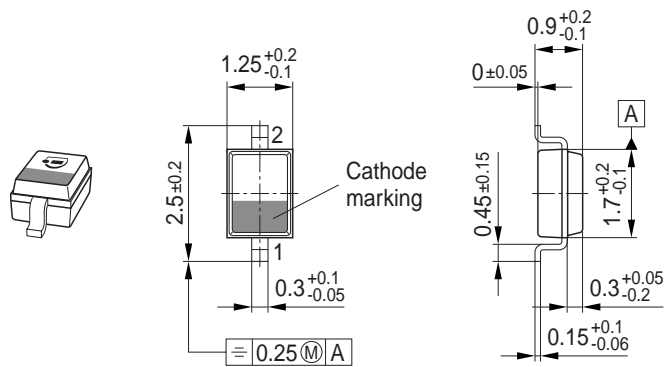


Date Code marking for discrete packages with one digit (SCD80, SC79, SC75<sup>1)</sup>) CES-Code

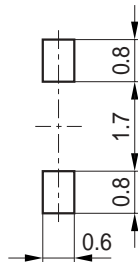
Month	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
01	a	p	A	P	a	p	A	P	a	p	A	P
02	b	q	B	Q	b	q	B	Q	b	q	B	Q
03	c	r	C	R	c	r	C	R	c	r	C	R
04	d	s	D	S	d	s	D	S	d	s	D	S
05	e	t	E	T	e	t	E	T	e	t	E	T
06	f	u	F	U	f	u	F	U	f	u	F	U
07	g	v	G	V	g	v	G	V	g	v	G	V
08	h	x	H	X	h	x	H	X	h	x	H	X
09	j	y	J	Y	j	y	J	Y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

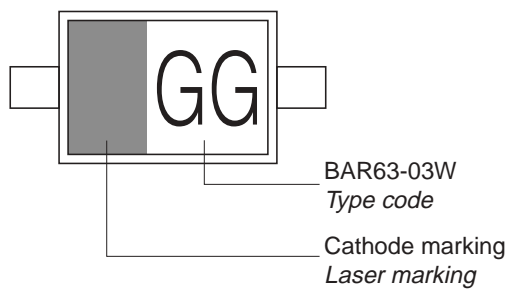
Package Outline



Foot Print

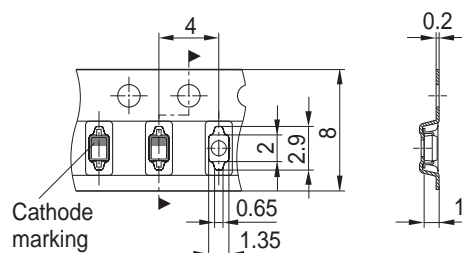


Marking Layout (Example)

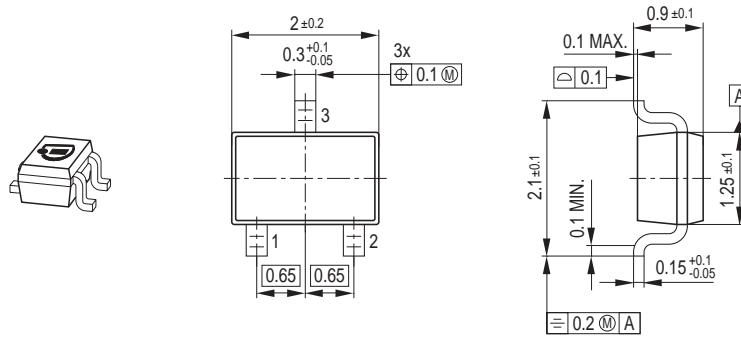


Standard Packing

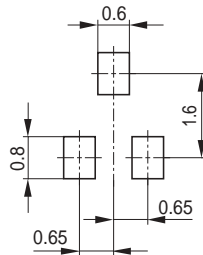
Reel  $\varnothing$ 180 mm = 3.000 Pieces/Reel  
 Reel  $\varnothing$ 330 mm = 10.000 Pieces/Reel



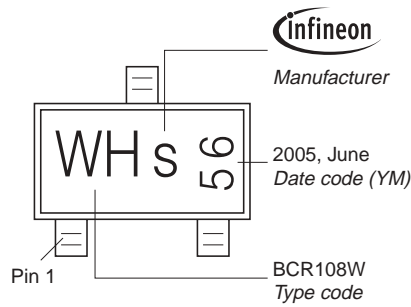
Package Outline



Foot Print

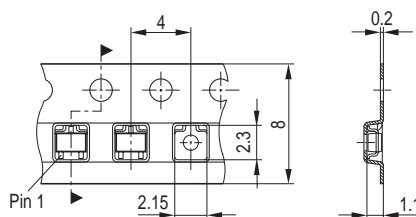


Marking Layout (Example)



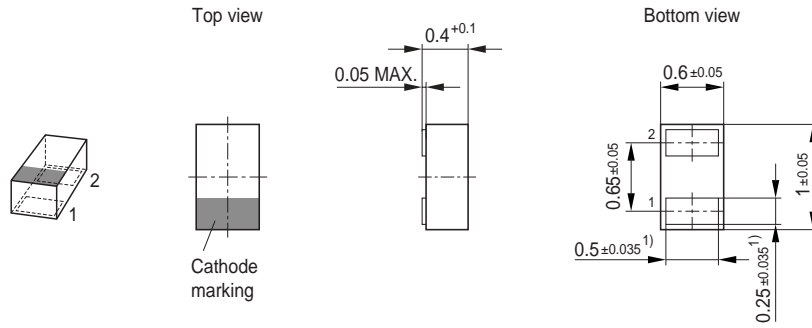
Standard Packing

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





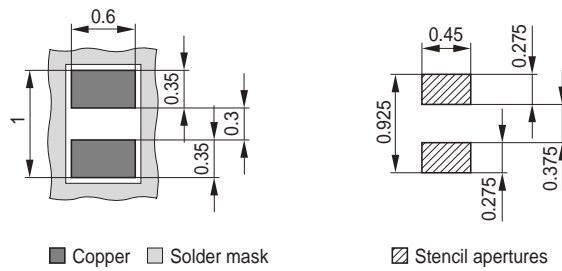
### Package Outline



1) Dimension applies to plated terminal

### Foot Print

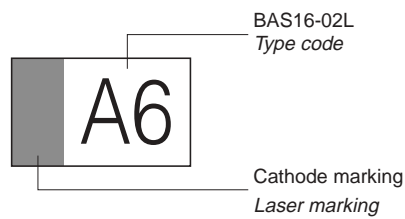
For board assembly information please refer to Infineon website "Packages"



■ Copper □ Solder mask

▨ Stencil apertures

### Marking Layout (Example)



BAS16-02L  
Type code

Cathode marking  
Laser marking

### Standard Packing

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

