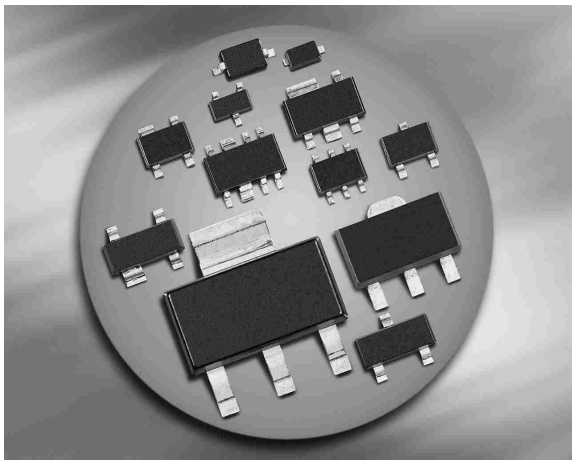
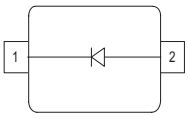
Silicon Variable Capacitance Diodes

- For tuning of extended frequency band in VHF TV / VTR tuners
- High capacitance ratio
- Low series inductance
- Low series resistance
- Excellent uniformity and matching due to "in-line" matching assembly procedure
- Pb-free (RoHS compliant) package



RoHS

BB639
BB659



Type	Package	Configuration	L_S(nH)	Marking
BB639	SOD323	single	1.8	yellow S
BB659	SCD80	single	0.6	DE

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

Parameter	Symbol	Value	Unit
Diode reverse voltage	V_R	30	V
Peak reverse voltage ($R \geq 5k\Omega$)	V_{RM}	35	
Forward current	I_F	20	mA
Operating temperature range	T_{op}	-55 ... 150	°C
Storage temperature	T_{stg}	-55 ... 150	

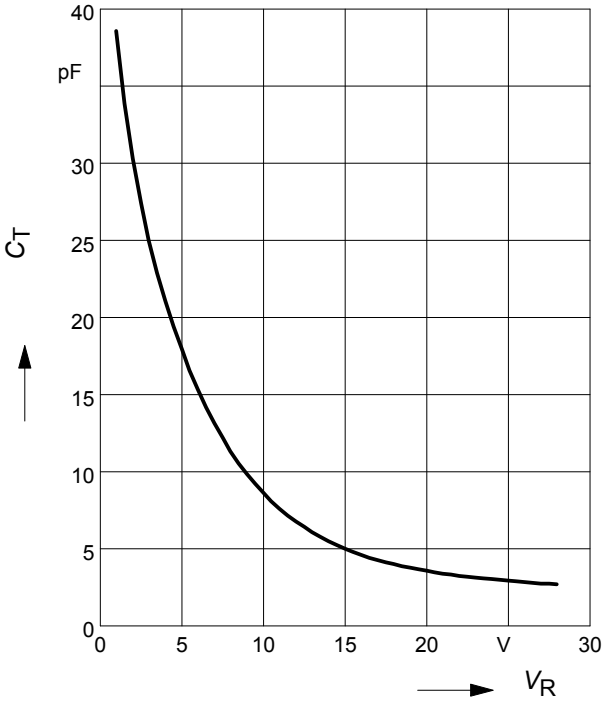
Electrical Characteristics at T_A = 25°C, unless otherwise specified

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
DC Characteristics					
Reverse current	I_R				nA
V_R = 30 V		-	-	10	
V_R = 30 V, T_A = 85 °C		-	-	200	
AC Characteristics					
Diode capacitance	C_T				pF
V_R = 1 V, f = 1 MHz		36	38.3	40	
V_R = 2 V, f = 1 MHz		27.7	29.75	31.8	
V_R = 25 V, f = 1 MHz		2.5	2.85	3.2	
V_R = 28 V, f = 1 MHz		2.4	2.6	2.9	
Capacitance ratio	C_{T1}/C_{T28}	13.5	14.7	-	
V_R = 1 V, V_R = 28 V, f = 1 MHz					
Capacitance ratio	C_{T2}/C_{T25}	9.8	10.4	-	
V_R = 2 V, V_R = 25 V, f = 1 MHz					
Capacitance matching[1)]	$\Delta C_T/C_T$				%
V_R = 1 V, V_R = 28 V, f = 1 MHz, **7** diode sequenc					
BB639		-	-	2.5	
V_R = 1 V, V_R = 28 V, f = 1 MHz, **4** diode sequenc					
BB659		-	0.3	1	
V_R = 1 V, V_R = 28 V, f = 1 MHz, **7** diode sequenc					
BB659		-	0.4	2	
Series resistance	r_S	-	0.65	0.7	Ω
V_R = 5 V, f = 470 MHz					

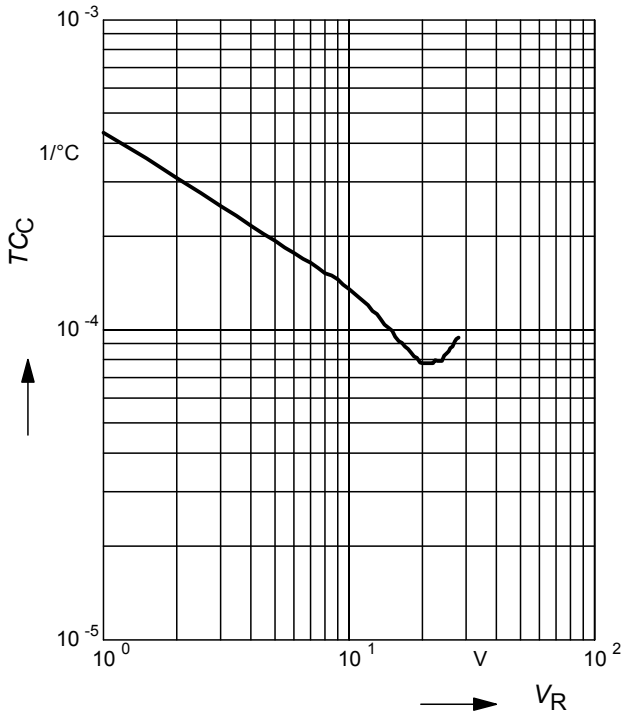
[1]For details please refer to Application Note 047.

Diode capacitance $C_T = f(V_R)$

f = 1MHz

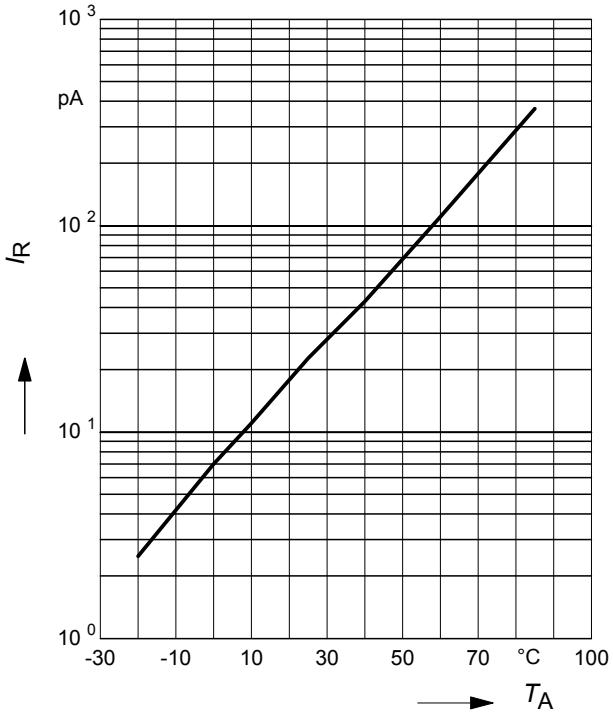


Temperature coefficient of the diode capacitance $T_{Cc} = f(V_R)$



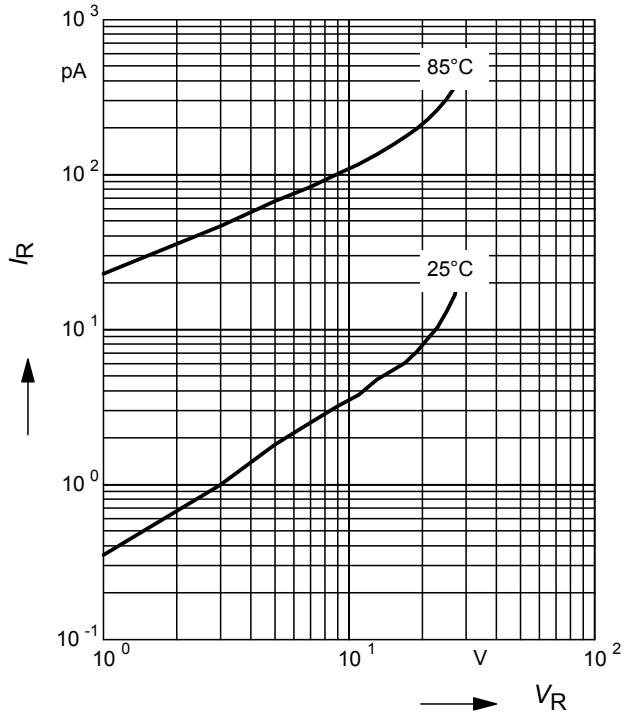
Reverse current $I_R = f(T_A)$

V_R = 28V

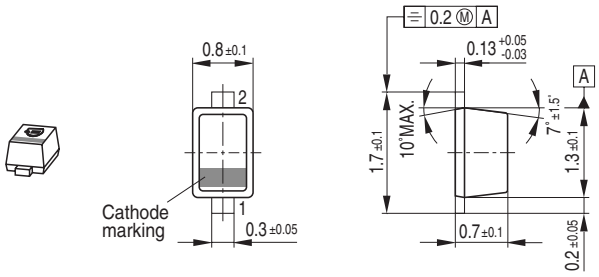


Reverse current $I_R = f(V_R)$

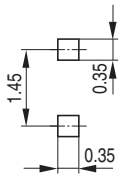
T_A = Parameter



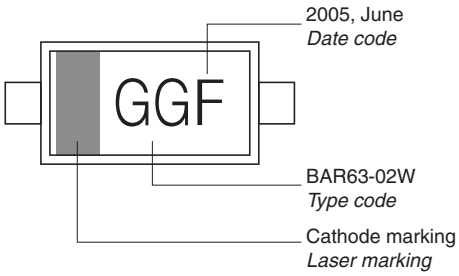
Package Outline



Foot Print

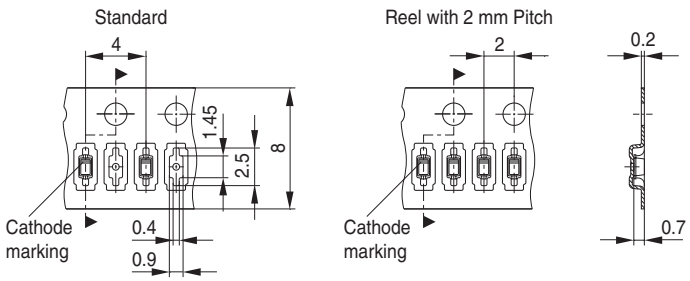


Marking Layout (Example)



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

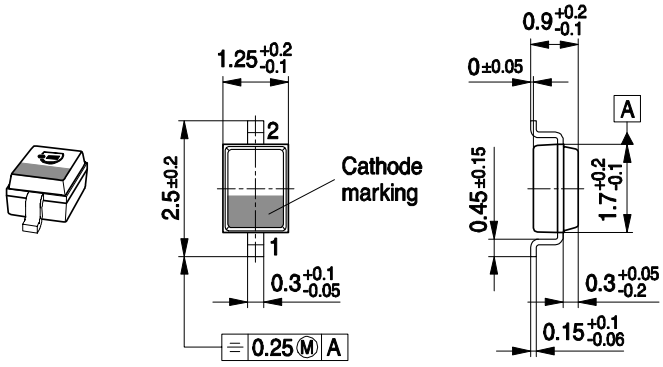


Date Code marking for discrete packages with one digit (SCD80, SC79, SC75[1]) CES-Code

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



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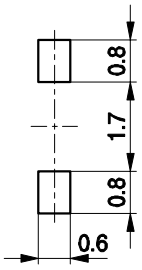
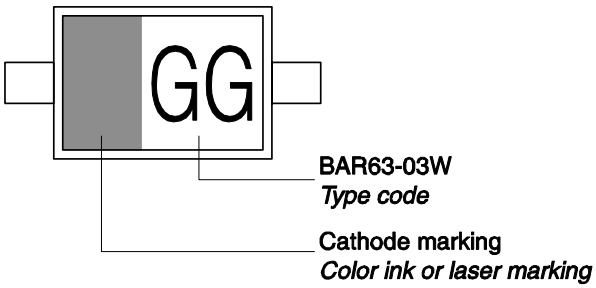


Marking Layout (Example)



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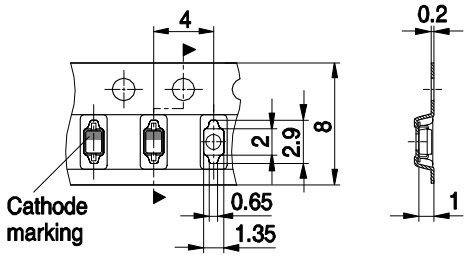

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