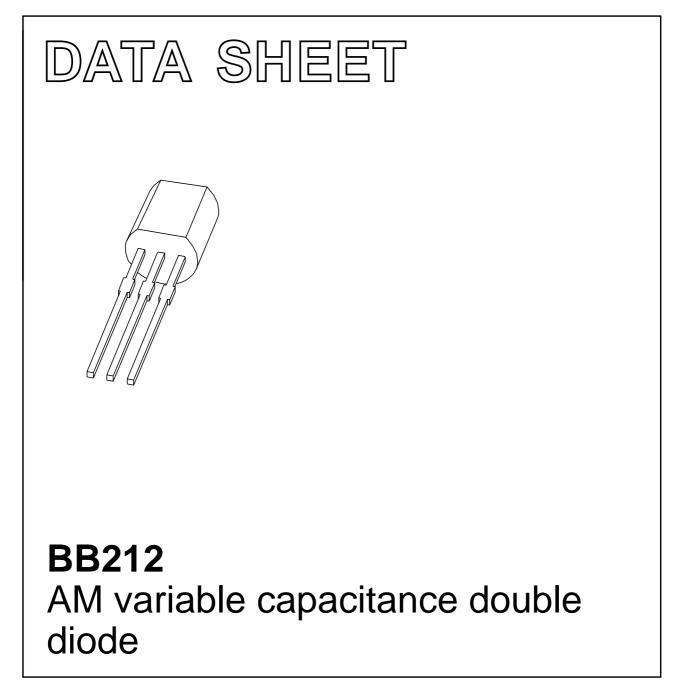
DISCRETE SEMICONDUCTORS



Product specification Supersedes data of April 1992 File under Discrete Semiconductors, SC01 1996 May 03



PINNING

BB212

FEATURES

- Leaded plastic package
- C8: 19 pF; ratio: 29.

APPLICATIONS

- Electronic tuning in AM radio applications
- VCO.

DESCRIPTION

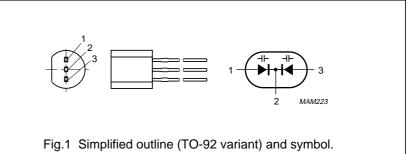
The BB212 is a variable capacitance double diode with a common cathode, fabricated in planar technology, and encapsulated in the TO-92 variant leaded plastic package.

LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 134).

SYMBOL	PARAMETER	MIN.	MAX.	UNIT			
Per diode							
V _R	continuous reverse voltage	_	12	V			
I _F	continuous forward current	_	100	mA			
T _{stg}	storage temperature	-55	+100	°C			
Tj	operating junction temperature	-55	+85	°C			

PINDESCRIPTION1anode (a1)2common cathode3anode (a2)



BB212

ELECTRICAL CHARACTERISTICS

 $T_i = 25 \ ^{\circ}C$; unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT			
Per diode									
I _R	reverse current	V _R = 10 V; see Fig.3	-	-	50	nA			
		V_R = 10 V; T _j = 85 °C; see Fig.3	-	-	300	nA			
r _s	diode series resistance	f = 500 MHz; note 1			2.5	Ω			
C _d	diode capacitance	see Figs 2 and 4							
		V _R = 0.5 V; f = 1 MHz	500	-	620	pF			
		V _R = 3 V; f = 1 MHz	140	-	280	pF			
		V _R = 5.5 V; f = 1 MHz	40	-	90	pF			
		V _R = 8 V; f = 1 MHz	-	-	22	pF			
$\frac{C_{d(0.5V)}}{C_{d(8V)}}$	capacitance ratio	f = 1 MHz	22.5	-	-				
U d (8V)									

Note

1. V_R is the value at which $C_d = 500$ pF.

MATCHING PROPERTIES

The capacitance of the two diodes in their common package may differ within certain limits. The total, relative capacitance difference between the two diodes in one package may be found in Fig.5. The anode a1 or a2 with the higher capacitance at $V_R = 3$ V, is identified by a white dot.

BASIC TOLERANCE

The relative deviation of the capacitance value at V_{R} = 0.5 V is maximum 3.5%.

$$k = \left| \frac{C_1 (0.5V) - C_2 (0.5 V)}{C_2 (0.5 V)} \right| = <3.5\%$$

ADDITIONAL TOLERANCE (see Fig.5)

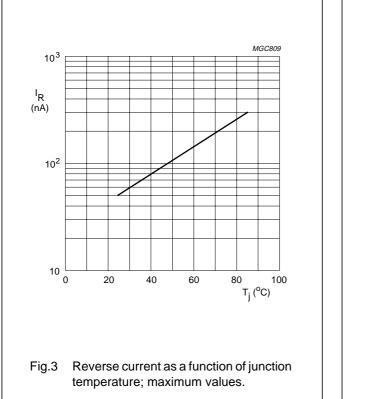
In the range of $V_R = 0.5$ V to 8 V the following additional tolerances are valid.

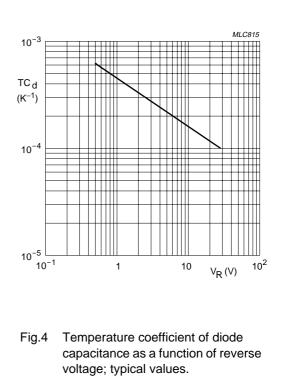
$$S = \left| \left(\frac{C_1}{C_2} \right) V_R - \left(\frac{C_1}{C_2} \right) 0.5 V \right|$$

 $\begin{array}{l} S < 2\% \mbox{ for } V_R = 0.5 \mbox{ to } 3 \mbox{ V} \\ S < 4\% \mbox{ for } V_R = 3 \mbox{ to } 5.5 \mbox{ V} \\ S < 6\% \mbox{ for } V_R = 5.5 \mbox{ to } 8 \mbox{ V}. \end{array}$

 C_1 is the capacitance of a1 when a1 > a2. C_1 is the capacitance of a2 when a2 > a1.

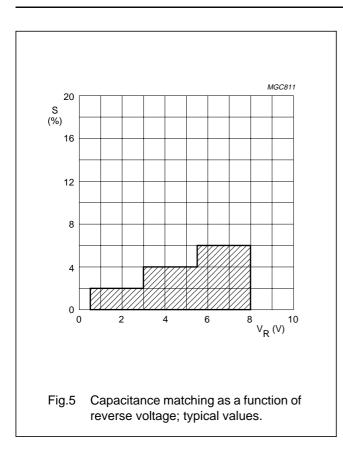
$f_{(p)}^{f_0}$ $f_{(p)}^{f_0$





GRAPHICAL DATA

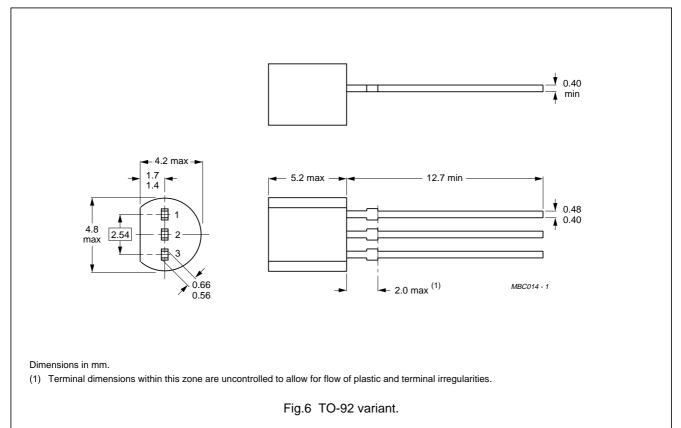
BB212



BB212

BB212

PACKAGE OUTLINE



DEFINITIONS

Data sheet status				
Objective specification	This data sheet contains target or goal specifications for product development.			
Preliminary specification	This data sheet contains preliminary data; supplementary data may be published late			
Product specification	This data sheet contains final product specifications.			
Limiting values				
Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 134). Stress above one or more of the limiting values may cause permanent damage to the device. These are stress ratings only and operation of the device at these or at any other conditions above those given in the Characteristics sections of the specification is not implied. Exposure to limiting values for extended periods may affect device reliability.				
Application information				

Where application information is given, it is advisory and does not form part of the specification.

LIFE SUPPORT APPLICATIONS

These products are not designed for use in life support appliances, devices, or systems where malfunction of these products can reasonably be expected to result in personal injury. Philips customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify Philips for any damages resulting from such improper use or sale.