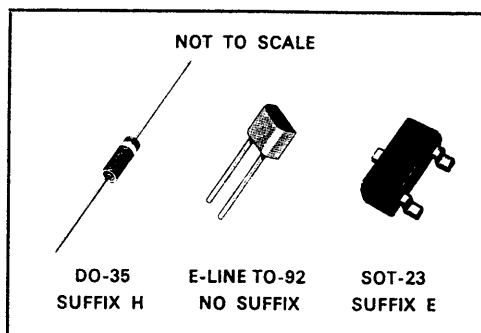


Schottky Barrier Diodes

FEATURES

- Available in three packages:
Economical Plastic E-line
Microminiature SOT-23
High Reliability Glass DO-35
- Low Leakage Current
- Low Forward Voltage
- Ultra High Speed Switching



DESCRIPTION

The construction of these epitaxial, planar, passivated diodes utilises a Schottky barrier resulting in devices which have a high breakdown voltage and ultra fast switching capabilities.

Applications under pulsed conditions include ultra high speed switching, clamping sampling gates and pulse shaping. R.F. operation applications include low noise mixers, large and small signal detectors, limiters and discriminators.

ABSOLUTE MAXIMUM RATINGS (DO-35, SOT-23 and E-line).

Parameter	Symbol	ZC2800, ZC2810 ZC2811, ZC5800	Unit
Power Dissipation *	P_{tot}	250	mW
Operating Temperature	T_{amb}	-65 to +200	°C
Storage Temperature	T_{stg}	-65 to +200	°C

*Derate to zero at 200°C and measured using an infinite heat sink.

STANDARD MATCHING SPECIFICATIONS:

ZC2800 - ZC5800

Max. $\Delta V = 20$ mV, $I_F = 0.5$ to 5.0 mA
Max. $\Delta C = 0.2$ pF, $V_R = 0$ V

ZC2810 - ZC2811

Max. $\Delta V = 20$ mV, $I_F = 1$ to 10 mA
Max. $\Delta C = 0.2$ pF, $V_R = 0$ V

ZC2800/2810/2811/5800

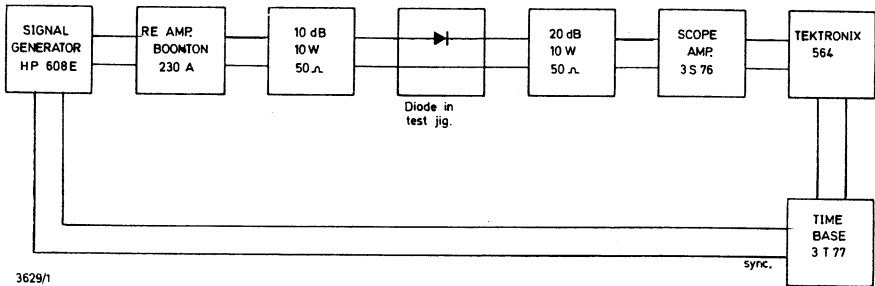
CHARACTERISTICS (at 25°C ambient temperature).

Parameter	Type	Symbol	Min.	Max.	Unit	Test Conditions
Breakdown voltage	ZC2800 ZC2810 ZC2811 ZC5800	V_{BR}	70 20 15 50	— — — —	V V V V	$I_R = 10 \mu A$
Reverse leakage current	ZC2800 ZC2810 ZC2811 ZC5800	I_R	— — — —	200 100 100 200	nA nA nA nA	$V_R = 50V$ $V_R = 15V$ $V_R = 10V$ $V_R = 35V$
Forward voltage	ZC2800 ZC2810 ZC2811 ZC5800	V_F	— — — —	410 410 410 410	mV mV mV mV	$I_F = 1 mA$
Forward current	ZC2800 ZC2810 ZC2811 ZC5800	I_F	15 35 20 15	— — — —	mA mA mA mA	$V_F = 1V$
Capacitance	ZC2800 ZC2810 ZC2811 ZC5800	C_T	— — — —	2.0 1.2 1.2 2.0	pF pF pF pF	$V_R = 0V$ $f = 1 MHz$
Effective minority lifetime	ZC2800 ZC2810 ZC2811 ZC5800	τ	— — — —	100 100 100 100	ps ps ps ps	See test diagram

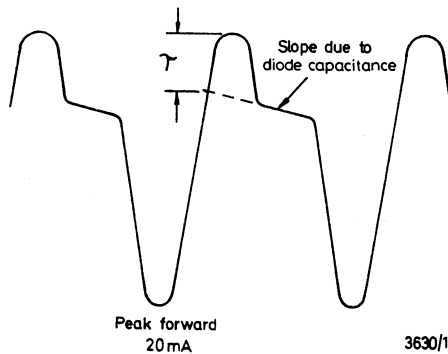
Note : Matched pairs or quads of diodes can be supplied on request.

ZC2800/2810/2811/5800

EFFECTIVE CARRIER LIFETIME (τ) TEST



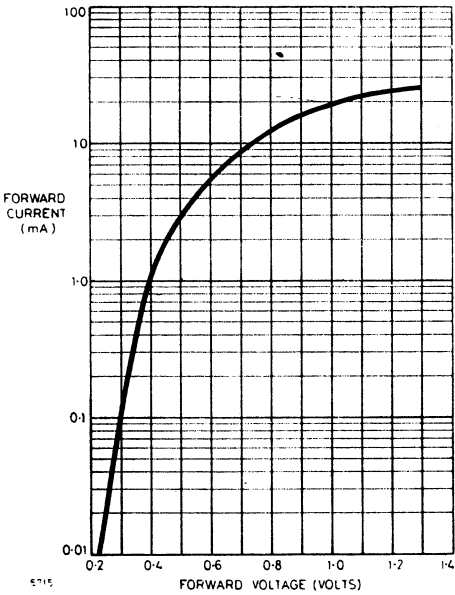
The signal generator is set to 54 MHz and the sampling scope is set to 20 mV/cm. The R.F. amplifier output is adjusted to give 5 cm. peak forward deflection, corresponding to a peak forward current through the diode of 20 mA. Under these conditions the waveform appearing on the oscilloscope will be as shown below.



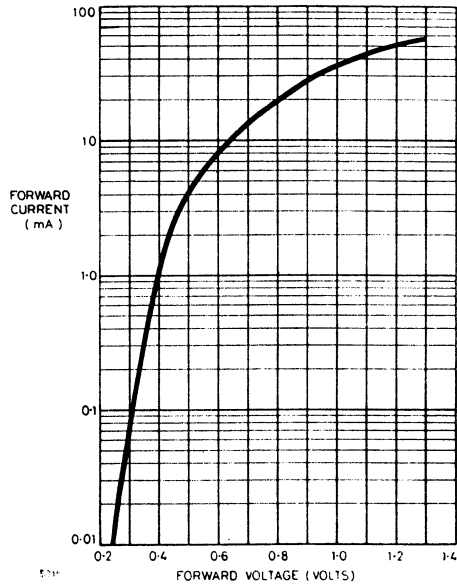
The amplitude τ is directly related to effective minority lifetime, with 1 cm. of amplitude corresponding to 500 ps lifetime.

ZC2800/2810/2811/5800

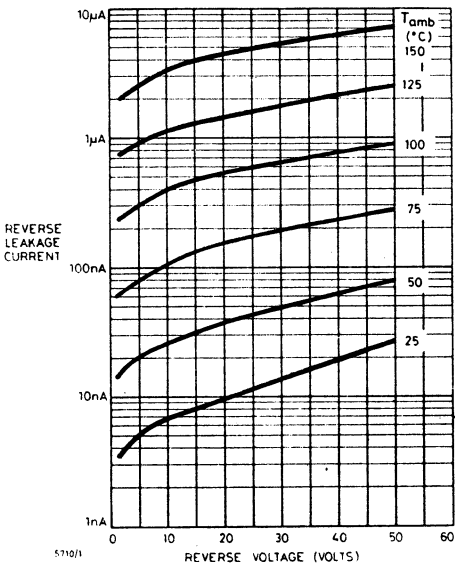
TYPICAL CHARACTERISTICS



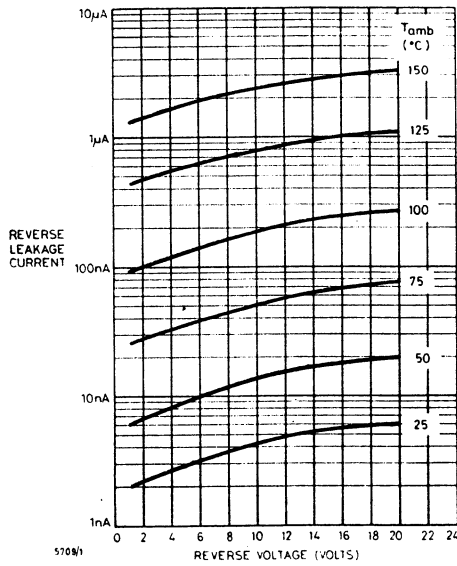
ZC2800 & ZC5800



ZC2810 & ZC2811

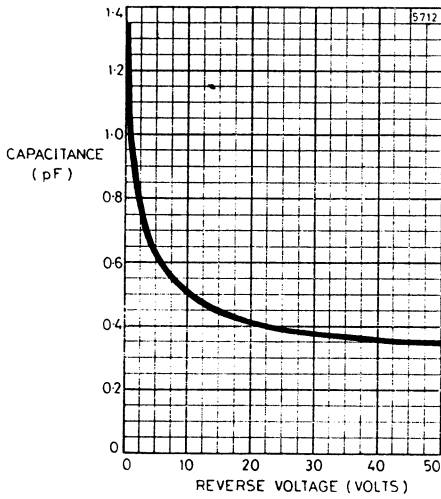


ZC2800 & ZC5800

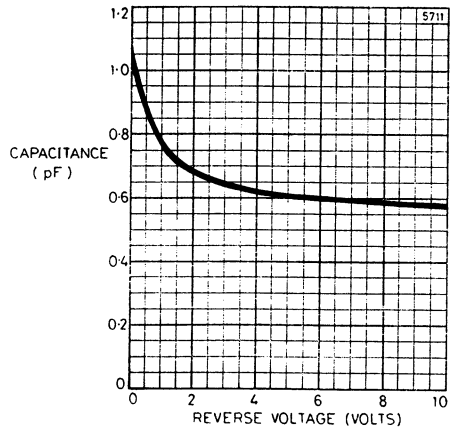


ZC2810 & ZC2811

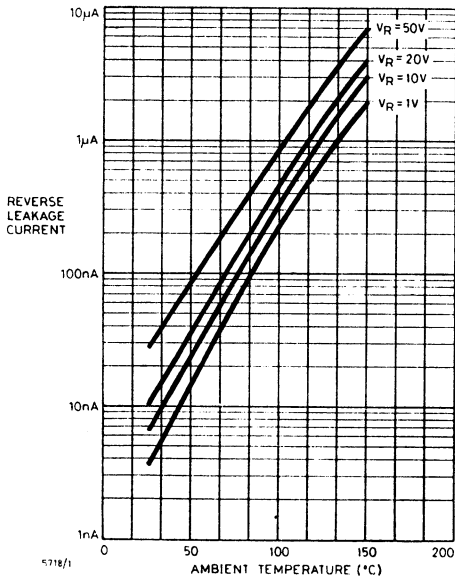
ZC2800/2810/2811/5800



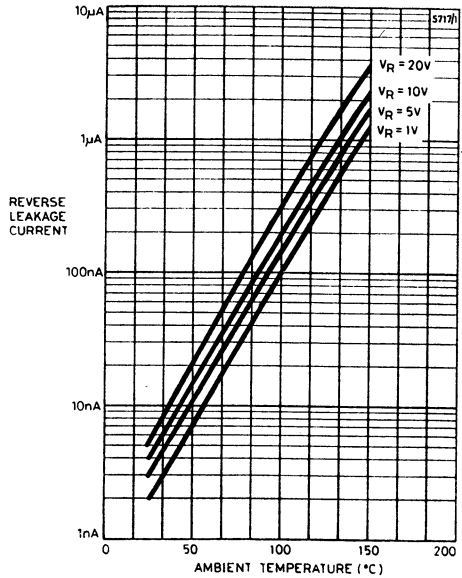
ZC2800 & ZC5800



ZC2810 & ZC2811

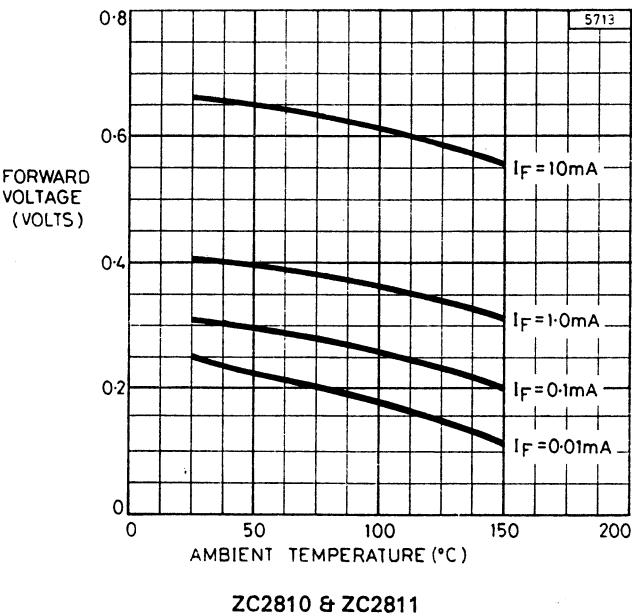
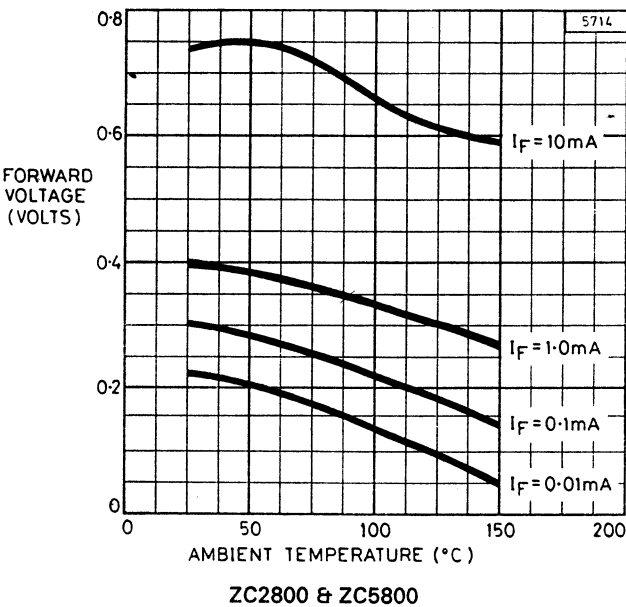


ZC2800 & ZC5800



ZC2810 & ZC2811

ZC2800/2810/2811/5800

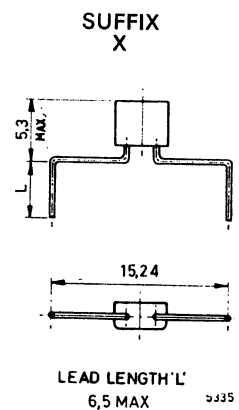
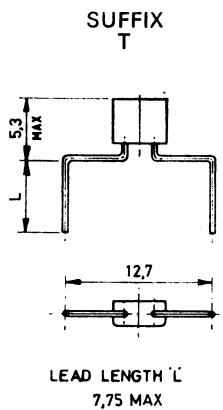
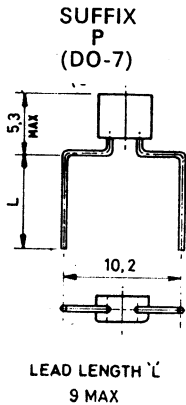
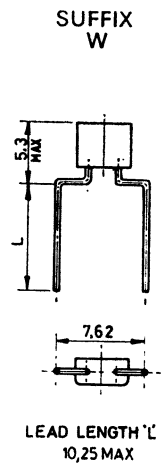
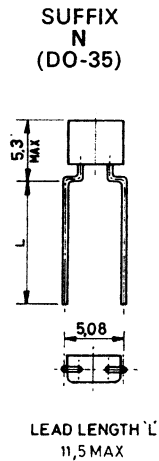
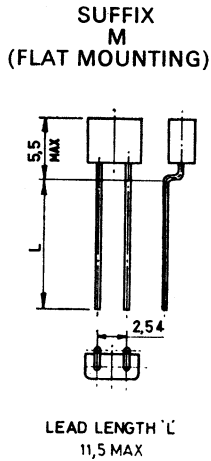
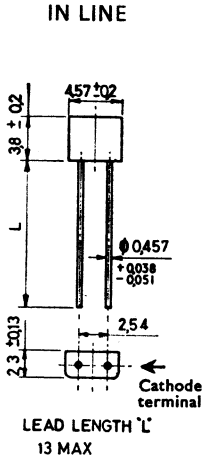


ZC2800/2810/2811/5800

PACKAGE DETAILS

E-LINE (ZC2800, ZC2810, ZC2811 & ZC5800).

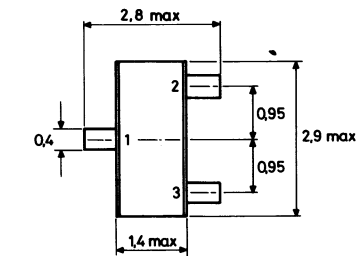
The devices can be supplied in an E-line package to the following lead configurations by using the indicated suffix.



Dimensions in millimetres

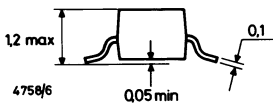
ZC2800/2810/2811/5800

SOT-23 (ZC2800E, ZC2810E, ZC2811E & ZC5800E).



Devices supplied in the SOT-23 package have an identification code stamped on the body of the device as follows :

ZC2800E	..	..	..	..	E6
ZC2810E	..	..	..	..	E7
ZC2811E	..	..	..	..	E8
ZC5800E	..	..	..	..	E9



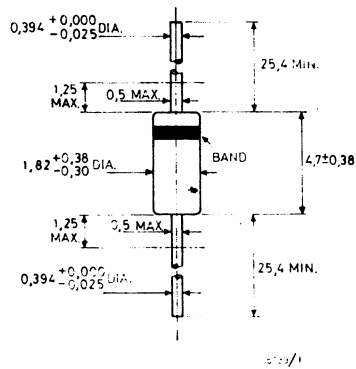
Dimensions in millimetres

DO-35 (ZC2800H, ZC2810H, ZC2811H & ZC5800H).

INSTALLATION

Flexible leads should not be bent at any point closer than 3.18 mm to the diode body.

No soldered connection should be made to any point on the flexible leads within 6.35 mm of the diode body. The wire should be held with a pair of pliers, or a similar device, between the body and the point of soldering in order to provide a heatsink. The heat sink should be kept in position until the connection has cooled.



Dimensions in millimetres

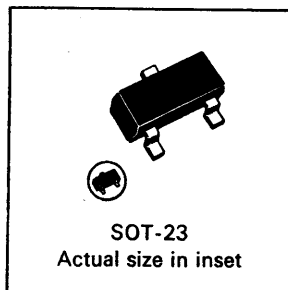
Silicon Variable Capacitance Diodes

DESCRIPTION

These silicon ion-implanted hyperabrupt tuning diodes are intended for use in HF, VHF and UHF electronic tuning and frequency control applications where large capacitance variations and high Q are required.

Encapsulated in the popular SOT-23 package these devices are designed specifically for use in thin and thick film hybrid circuits in both industrial and consumer applications.

The Ferranti SOT-23 package is formed by transfer moulding a **SILICONE** plastic specially selected to provide a rugged one piece encapsulation resistant to severe environments.



ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Value	Unit
Reverse Voltage	V_R	25	Volts
Forward Current	I_F	200	mA
Power Dissipation at $T_{amb} = 25^\circ\text{C}$	P_D^*	200	mW
Junction Temperature	T_J	125	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	-65 to +200.	$^\circ\text{C}$

*Maximum power dissipation is calculated assuming that the device is mounted on a ceramic substrate measuring $10 \times 8 \times 0.6$ mm.

ZC830A Series

ELECTRICAL CHARACTERISTICS (at 25°C ambient temperature).

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Reverse breakdown voltage	$V_{(BR)}$	25	—	—	V	$I_R = 10 \mu A$
Reverse leakage current	I_R	—	—	0.02	μA	$V_R = 20V$
Temperature coefficient of capacitance	η	—	0.03	0.04	% per °C	$V_R = 3V$ $f = 1 \text{ MHz}$

TUNING CHARACTERISTICS (at 25°C ambient temperature).

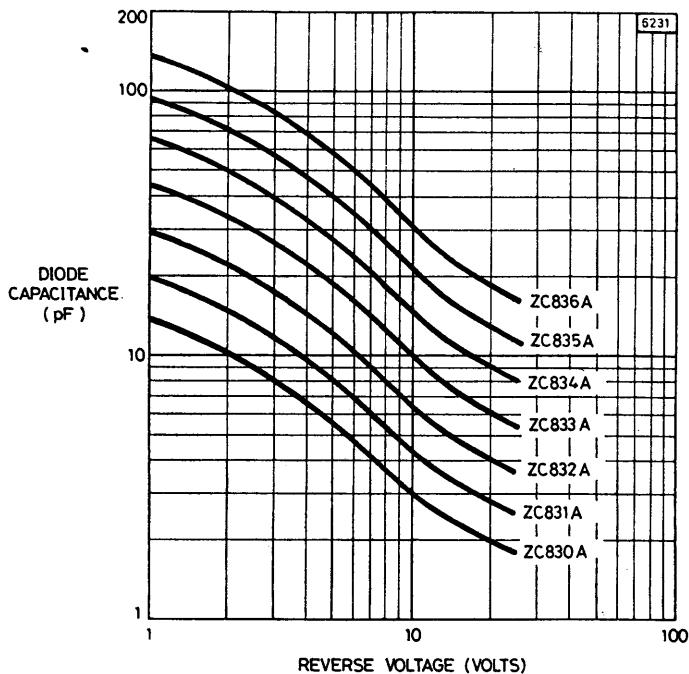
Type Number	Nominal capacitance (pF) ($V_R = 2V$, $f = 1 \text{ MHz}$)			Figure of Merit Minimum Q ($V_R = 3V$ $f = 50 \text{ MHz}$)	Tuning ratio, C_2/C_{20} ($f = 1 \text{ MHz}$)	
	Min.	Nom.	Max.		Min.	Max.
ZC830A	9.0	10	11.0	300	4.5	6.0
ZC831A	13.5	15	16.5	300	4.5	6.0
ZC832A	19.8	22	24.2	200	5.0	6.5
ZC833A	29.7	33	36.3	200	5.0	6.5
ZC834A	42.3	47	51.7	200	5.0	6.5
ZC835A	61.2	68	74.8	100	5.0	6.5
ZC836A	90.0	100	110.0	100	5.0	6.5

N.B. To order devices with a nominal diode capacitance of $\pm 5\%$ add suffix B to the type number, e.g. ZC836B.

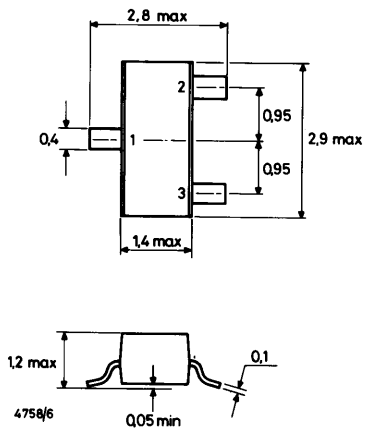
Tighter tolerance on diode capacitance or capacitance ratio can be supplied on request. Such devices can be supplied in matched sets with or without tracking tolerance as required.

ZC830A Series

DIODE CAPACITANCE



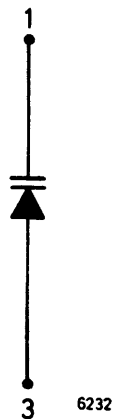
PACKAGE DETAILS



SOT-23

Dimensions in millimetres

PIN CONFIGURATION



ZC830A Series

Devices are identified by an identification code stamped on the body of the device as follows :

ZC830A	..	..	..	J1
ZC831A	..	..	..	J3
ZC832A	..	..	..	J4
ZC833A	..	..	..	A2
ZC834A	..	..	..	J5
ZC835A	..	..	..	J6
ZC836A	..	..	..	J7