



100W 81C 00076 D
SILICON DIFFUSED JUNCTION
VOLTAGE REGULATORS
8.2-100V
BREAKDOWN VOLTAGES

ZC700
SERIES

The ZC700 series voltage regulators are case rated, silicon diffused junction stud-mounted devices designed for a maximum power dissipation of 100W. The voltage regulators are characterised by very sharp voltage breakdown characteristics and have a nominal tolerance of $\pm 5\%$ on the breakdown voltage. They comply with BS SO-47 outline, the top connection being made to a male Lucar connector in accordance with BS AU151 Series 375. The voltage regulators are available with studs of either polarity, reverse polarity versions being denoted by the addition of the suffix A to the type number.

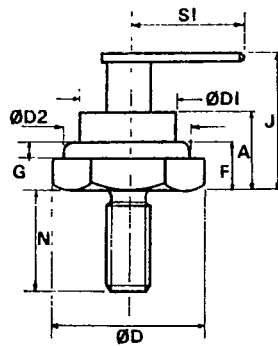
QUICK REFERENCE DATA

V_{znom} at $T_{stud} = 25^\circ C$
 P_{totmax} at $T_{stud} = 100^\circ C$
 $I_F(AV)$ at $T_{stud} = 100^\circ C$

8.2-100V
 100W
 25A

MECHANICAL DETAILS

Ref.	DIMENSIONS				Notes
	Millimetres		Inches		
	Min.	Max.	Min.	Max.	
A		14.73		0.580	
$\varnothing D$		21.99		0.866	2
$\varnothing D1$		14.48		0.570	
$\varnothing D2$	18.85	18.97	0.742	0.747	
F	5.33	7.11	0.210	0.280	
G	0.71	2.41	0.028	0.095	
J	18.80	20.32	0.740	0.800	
N	12.19	13.20	0.480	0.520	3
S1		18.41		0.725	4, 5



Notes:

1. The voltage regulators comply with BS SO-47 outline.
2. This zone has a $\frac{3}{4}$ in hexagon: 0.742 in (18.85 mm) min. 0.750 in (19.05 mm) max.
3. Thread $\frac{1}{4}$ - 28 UNF - 2A.
4. Connector blade to BS AU151 Series 375.
5. The axis of the connector blade is oriented parallel to two hexagon flats.
6. The millimetre dimensions are derived from the inch dimensions.

Weight 26 grammes
 Weight with nut and washer 29 grammes
 In the interest of improved product design, changes to this specification may be made at any time.

LUCAS

RATINGS 81C 00077 D

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The ratings quoted are limiting values of operating and environmental conditions and are in accordance with the absolute maximum rating system defined in BS 3494 (Part 1) and IEC Publication 134. They apply for the frequency range of 50Hz to 400Hz. Simultaneous application of all ratings is implied unless otherwise stated.

Current Rating

$I_{F(AV)}$ Mean forward current at $T_{stud} = 100^{\circ}C$ 25A

Power Ratings

P_{tot} Total continuous power dissipation at $T_{stud} = 100^{\circ}C$ 100W
PRM Peak reverse power dissipation (100 μs) 1250W

Thermal Ratings

T_{amb} Operating ambient temperature range $-55^{\circ}C$ to $+175^{\circ}C$
 T_{stg} Storage temperature range $-55^{\circ}C$ to $+175^{\circ}C$
 T_j Maximum junction temperature $+175^{\circ}C$

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8.2-100V BREAKDOWN VOLTAGES**

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**CHARACTERISTICS
Electrical Characteristics**

Type	Breakdown voltage* at T _{stud} = 25°C				Slope resistance at T _{stud} = 25°C				Temperature coefficient S _z typ. %/deg C
	V _{znom.} V	V _{zmin.} V	V _{zmax.} V	I _z A	r _{zmax.} Ω	I _z A	r _{zmax.} Ω	I _z mA	
ZC708	8.2	7.7	8.7	2	0.09	2	2.0	100	0.048
ZC709	9.1	8.6	9.6	2	0.1	2	2.0	100	0.05
ZC710	10	9.4	10.6	2	0.1	2	2.0	100	0.054
ZC711	11	10.4	11.6	2	0.11	2	2.0	100	0.055
ZC712	12	11.4	12.6	2	0.12	2	2.0	100	0.06
ZC713	13	12.4	14.1	2	0.13	2	2.0	100	0.064
ZC715	15	13.9	15.6	2	0.15	2	2.0	100	0.067
ZC716	16	15.4	17.1	2	0.16	2	2.0	100	0.07
ZC718	18	16.9	19.1	2	0.18	2	2.0	100	0.074
ZC720	20	18.9	21.2	1	0.35	1	4.0	50	0.076
ZC722	22	20.8	23.3	1	0.38	1	4.5	50	0.078
ZC724	24	22.7	25.9	1	0.4	1	5.0	50	0.082
ZC727	27	25.1	28.9	1	0.45	1	5.5	50	0.084
ZC730	30	28.0	32.0	1	0.5	1	6.0	50	0.086
ZC733	33	31.0	35.0	1	0.55	1	6.5	50	0.087
ZC736	36	34.0	38.0	1	0.6	1	7.0	50	0.088
ZC739	39	37.0	41.0	0.50	1.0	0.50	19.0	25	0.089
ZC743	43	40.0	45.0	0.50	1.1	0.50	22	25	0.09
ZC747	47	44.0	50.0	0.50	1.2	0.50	25	25	0.091
ZC751	51	48.0	54.0	0.50	1.4	0.50	30	25	0.091
ZC756	56	53.0	60.0	0.50	1.5	0.50	35	25	0.091
ZC762	62	58.0	66.0	0.50	1.7	0.50	45	25	0.091
ZC768	68	64.0	72.0	0.50	1.8	0.50	65	25	0.092
ZC775	75	71.0	79.0	0.50	2.0	0.50	70	25	0.092
ZC782	82	77.0	87.0	0.25	5.6	0.25	400	12.5	0.092
ZC791	91	86.0	96.0	0.25	6.0	0.25	600	12.5	0.093
ZC799	100	94.0	106.0	0.25	7.0	0.25	900	12.5	0.094

*Breakdown voltage at the test reverse current I_z measured at T_{stud} = 25°C within 100ms of application of the current.

Thermal Characteristic

R_{th(j-case)} Thermal resistance (junction to case) 0.75 deg C/W max.

INSTALLATION NOTES

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Maximum diameter of hole in heat sink 0.270 in (6.86 mm)

To ensure good thermal contact between the voltage regulator and heat sink:

- (a) Remove all burrs from the edge of the heat sink clearance hole.
- (b) Use a small amount of silicone grease between the voltage regulator and heat sink.
- (c) Apply the correct torque to the nut on assembly.

Maximum torque	28 lbf in (3.14 Nm)
Minimum torque for good thermal contact	24 lbf in (2.69 Nm)

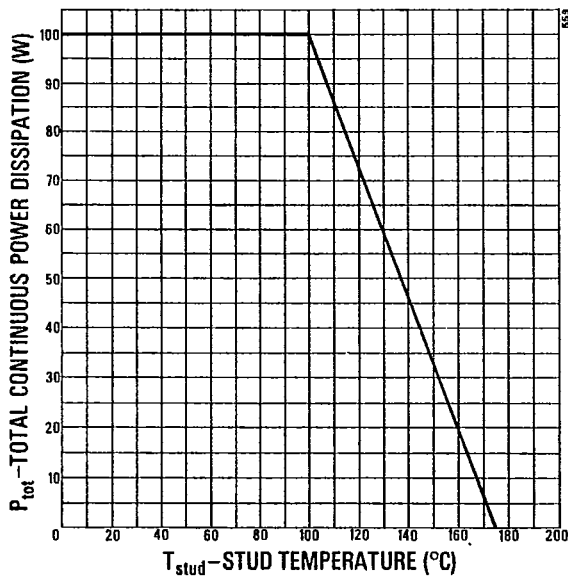
Voltage regulator polarity. Stud polarity is indicated by a conventional diode symbol on the voltage regulator case. Stud polarity is also denoted by the voltage regulator type number: anode stud types have a suffix A to their type numbers while cathode stud types do not have a suffix letter.

For applications which require the voltage regulator case to be electrically insulated from the heat sink, use insulating kit number 54006146.

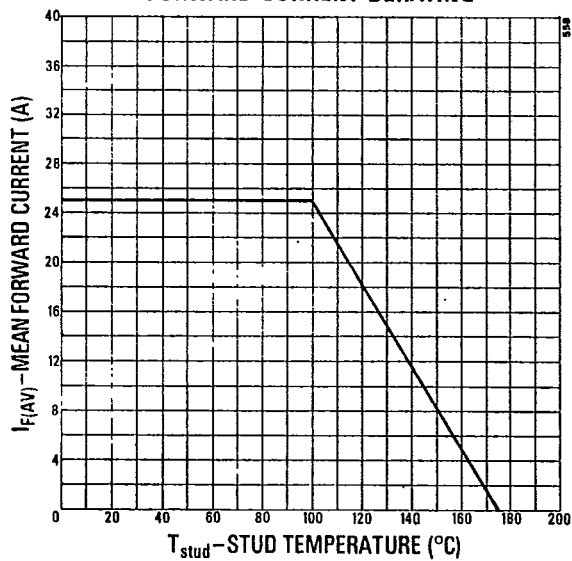
Details regarding the fitting of Lucar connectors and insulating covers to cables will be found in Publication number 3800/17.

**100W SILICON DIFFUSED JUNCTION
VOLTAGE REGULATORS 81C 00080 D T-11-19 ZC700
8.2-100V BREAKDOWN VOLTAGES SERIES**

POWER DERATING



FORWARD CURRENT DERATING



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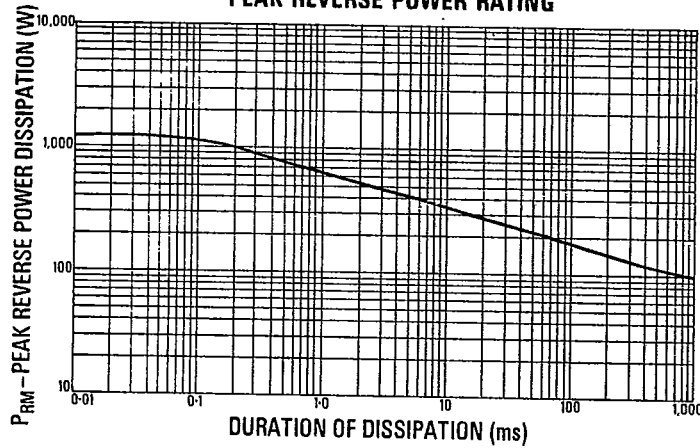
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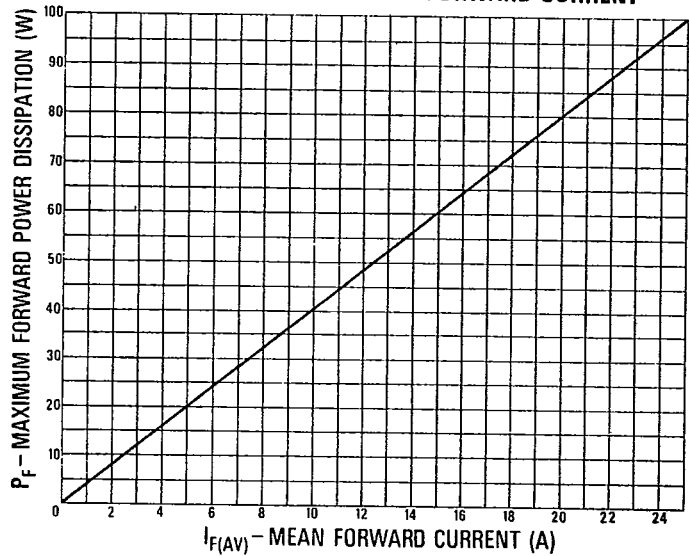
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PEAK REVERSE POWER RATING



POWER LOSS AGAINST MEAN FORWARD CURRENT



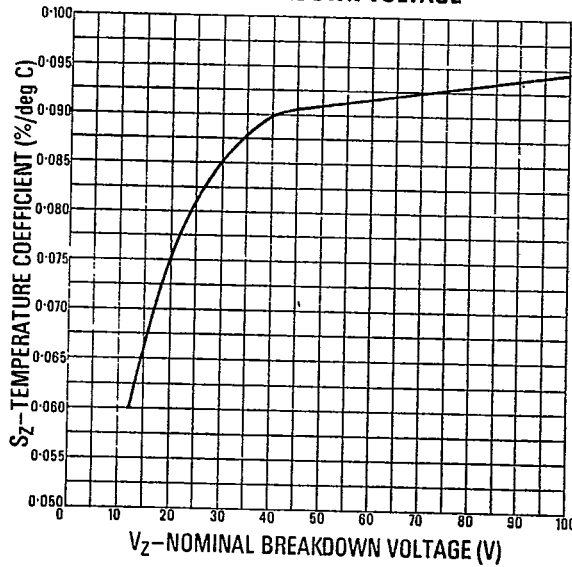
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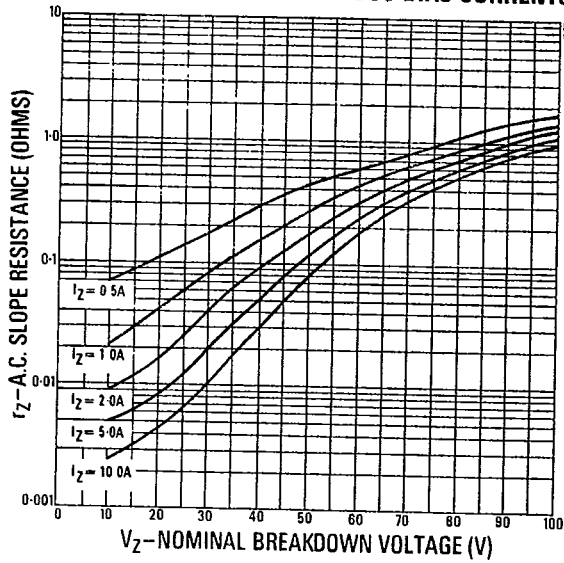
81C 00082 D

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**TYPICAL TEMPERATURE COEFFICIENT
OF BREAKDOWN VOLTAGE**



**TYPICAL A.C. SLOPE RESISTANCE AGAINST
BREAKDOWN VOLTAGE AT VARIOUS BIAS CURRENTS**



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