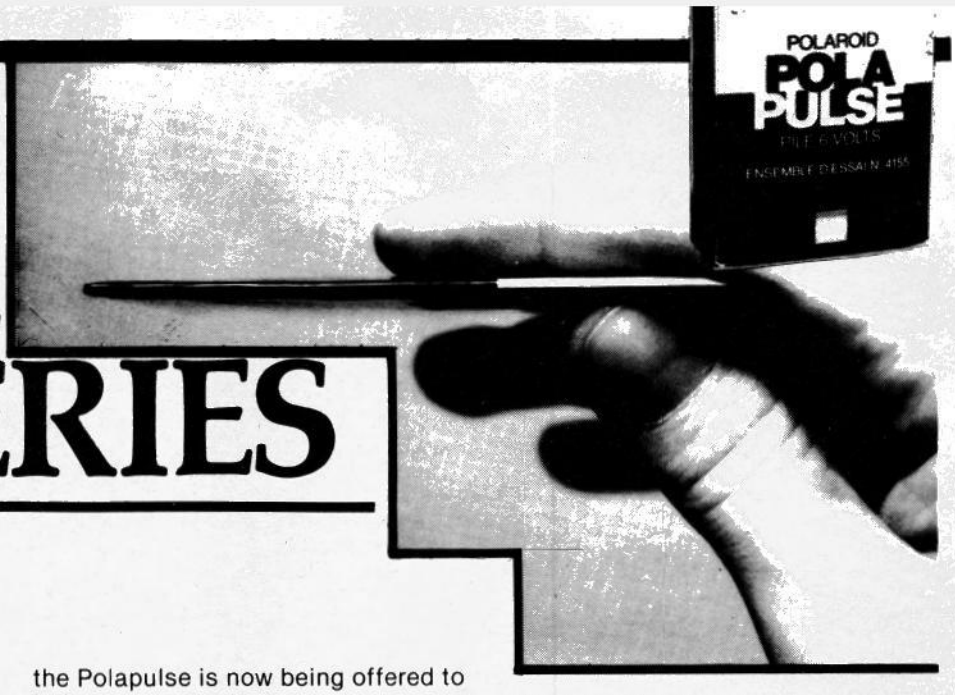
POLA PULSE BATTERIES



Tired of penlight cells powering your projects? Impress your friends with flat power. John Van Lierde reports.

FOR ALL ITS marvels and accomplishments, our much beloved electronics really only does one thing; manipulate electric current. Where that current comes from can be as much a design problem as the piece of gear being powered.

Among their other features, semiconductors made light portable equipment a practical reality. Dozens of varieties of batteries have been developed in dozens of shapes to power watches, toys, calculators, radios, etc.

Instant Dilemma

There are, however, instances where a designer finds that the products on the market do not quite satisfy his particular application. In such cases a company's R & D group might consider development of that one part for whatever purpose they might have in mind. Such was the situation Polaroid Corporation found itself in during the development of the SX70 camera.

The intention was to include the battery with the film so that the camera would never run out of power. The battery would power the light meter and the tiny motors used to spit the picture out. Additionally, the battery would have to supply the 2.5A surge for the camera's ranging system and focussing motor. The battery had to be able to supply high currents to ensure proper operation while maintaining a sufficiently constant voltage for the metering system.

Polapulse Power

To meet these needs, Polaroid developed the Polapulse, a wafer thin 6 volt battery that fitted nicely into the film pack. After some eight years, the Polapulse is now being offered to industry.

The Polapulse P100 6V battery (figure 1) measures some 9.5cm by 8cm and is only 0.5cm thick. It weighs 27gms (less than an ounce). The two terminals are on the same side. The actual battery itself is sealed in a plastic bag to prevent leakage. The cells consist of alternate layers of electrolyte impregnated gauze and electrodes. This results in a large electrode surface area, and is probably a major contributing factor in the P100 surge current capabilities. More about this later.

While the dimensions of the P100 are unusual, its electrical characteristics are downright amazing. A fresh battery can deliver an instantaneous surge of 26A into a 0.05 ohm load. This compares favourably with the 20A four AA Nicad cells (used in my electronic flash) can put out just off the charger. Furthermore, under this sort of treatment the Nicads got hot, the P100 didn't even get warm. Figure 2 shows various discharge currents versus time plots for the P100. Note that these bear an uncanny resemblance to regular Leclanche plots. Yes, it is odd. . . .

Figure 3 is Polaroid's way of showing that the P100 is superior to any type of AA cell under high load current conditions. This is not a life plot of the cells, but rather an indication of how well the P100 can maintain its voltage under high loads.

Having A Play

Figure 4 depicts a Polaroid Designer's Kit No.4155. In it, one finds 5 Polapulse batteries, a battery holder and an application note (from which we lifted Fig. 2 & 3). This is basically all you need to get started.

Fig. 1. The most unusual aspect of a P100 battery is its height, or lack of it.

The potential of the holder is pretty wide. It can be attached to any flat surface using adhesive pads. Vigorous shaking and jarring will not make the battery pop out. Also, the battery contacts are staggered in such a fashion as to prevent reverse polarity conditions.

So where would one want to use them? Obviously, P100 batteries will shine in any applications requiring momentary high current drains. These would include virtually any transmitter application: pocket transceivers; garage door openers; television remote controls and so on. Printing calculators could become slimmer and faster, and how about a cigarette case with integral lighter?

It's unlikely that the P100 will be available at the retail level for some time and experimenters are limited to two sources, the Designer's kit and used SX70 film packs. The Designer's kit is the pricey way to go, at $20.00, each battery will cost $4.00. The SX70 batteries are not quite the same shape as P100s, but electrically they are similar. Our experience has proved that orphaned SX70 batteries are for all intents and purposes as powerful as when they are fresh.

The Polapulse Designer's kit is available for $20.00 from Polaroid. For more information, write to Polaroid Corporation of Canada Ltd., Business and Professional Products Division, 350 Carlingview Drive, Rexdale, Ontario M9W 5G6. My thanks to Ann Snider of Polaroid for making the Designer's Kit available to me.

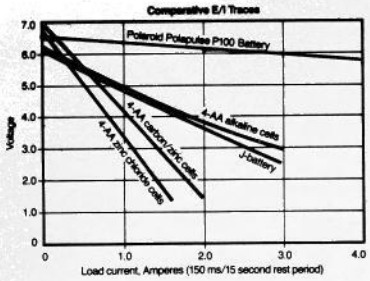
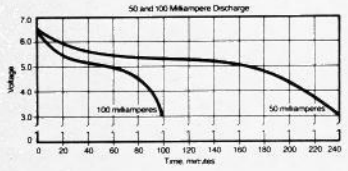
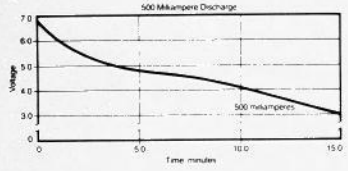
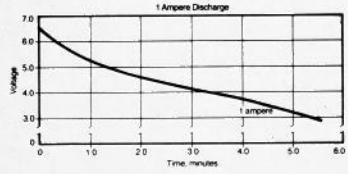


Fig. 3. A comparison of the P100 against other batteries under intermittent load conditions. Our tests showed that you could subject a P100 to several 25A loads without significantly degrading subsequent performance. Other types of batteries go downhill very quickly under such treatment.







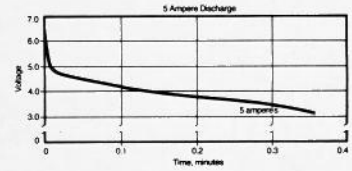


Fig. 2. Plots of continuous discharge characteristics of the Polaroid P100. Under these conditions, performance is equivalent to standard carbon-zinc AA cells.

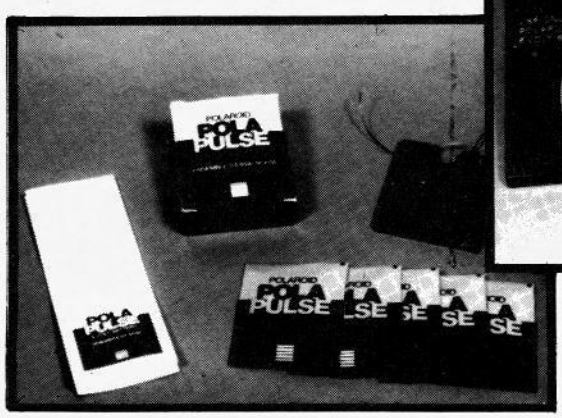


Fig. 4. The complete battery Designer's Kit.

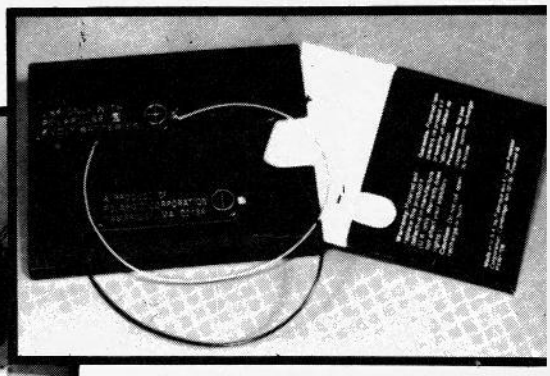


Fig. 5. The Designer's Kit comes with this nifty battery holder.

Who Do You Buy From?

Buying electronic parts in Canada can be a nuisance, nobody knows this more than we do. To help some of our more isolated readers we are compiling a list of stores in Canada for inclusion in the magazine in a future issue.

Tell us who you shop from. By doing so, you'll be helping readers like yourself and the stores you patronize.

We have included a list of the stores that appeared in the January 1981 Directory. Please do not send us names that appear there, we already know about them. Please send store names and addresses to:

ETI

Stores Directory
c/o Electronics Today
Unit 6
25 Overlea Blvd.
Toronto, Ontario
M4H 1B1

STORES DIRECTORY

BRITISH COLUMBIA
Kamloops
Cam Gard Supply Limited
Trail
IUS Electronics Ltd.
Vancouver
Active Component Sales Corp.
Cam Gard Supply Ltd.
Conti-Electronics
Glenwood Trading Company Limited
Heath Company
Intek Electronics Ltd.
R-A-E Industrial Electronics Limited
Victoria
Queale Electronics Ltd.
ALBERTA
Calgary
Active Component Sales Corp.
B & E Electronic Supply Limited
Visions
Edmonton
Cardinal Industrial Electronics Ltd.
Heath Company
R-A-E Industrial Electronics
Medicine Hat
Base 2 Consulting Limited
SASKATCHEWAN
Moose Jaw
Sonic Supplies Ltd.
Regina
Radio Supply & Service (1977) Limited
Saskatoon
Cam Gard Supply Limited
Swift Current
G.W. Colortronics Ltd.
MANITOBA
Winnipeg
Cam Gard Supply Ltd.
Heathkit Electronic Center
J. & J. Electronics Limited
W.E.S. Electronics Limited
ONTARIO
Brampton
Bryan Electronics
Georgetown
Inventories Unlimited
Guelph
Neutron Electronics Limited
Kitchener-Waterloo
K-W Surplus Clearinghouse
Waterloo Electronic Supply Co. Inc
Computer Innovations Limited
London
R.J. Buckland Company
Forest City Surplus Ltd.
Mississauga
Atwater Electronics Limited
Heath Company
K.S.K. Associates
Ottawa
Active Component Sales Corp.
Compumart
Computer Innovations Limited
Gervais Electronics Limited
Heath Company
Kris Electronics
Videoland
Wackid Radio
Owen Sound
North Western Electronic Supply Limited
North Bay
Videoland
Sarnia
Videoland
Simcoe
Norfolk Electronics Limited
Toronto
A-1 Electronics
Active component Sales Corp.
Active Surplus Annex
Arkon Electronics Limited
Batteries Included
Cesco Electronics Ltd.
Dominion Radio and Electronics
Etsionscience Inc.
Electro Sonic Inc.
Electronics 2001
Exceltronix Components & Computing Incorporated
General Electronics
Gladstone Electronics
Home Computer Centre
House of Computers Inc.
M & W Computer Stores Inc.
Radio Trade Supply Limited
Videoland
Zenith Radio Canada Limited
Waterford
Copeland Electronics
QUEBEC
Blainville
Surplus Electro Quebec
Amtrex Electronique Inc.
Longueuil
Master Vox Ltd.
Monte-Joli
Distribution JMC Distribution Inc
Montreal
Active Component Sales Corp.
Addison Electronic Ltd.
Cite Electronique
Cesco Electronics Ltd.
Etco Electronics
Hamilton Avnet Electronics
Heath Company
North American Electronics Co. Limited
Payette radio
Radio Hovsep
Products Electroniques Ltee/ Electronic Wholesalers Co. Limited
Standard Electronics
Super Electronic
St. Romuald
Selco Electronics
Thetford Mines
Elektronicve Enr.
Trois Rivieres
Matteau Electronique
NEW BRUNSWICK
Moncton
Amphion Electronics Limited
NOVA SCOTIA
Halifax
Amphion Electronics Limited
Basic Computer Sales Ltd.
Cam Gard Supply Limited
Mini Comp Systems Limited
Sydney
Fisher Electronics Limited
PRINCE EDWARD ISLAND
Charlottetown
Island Radio Centre Limited
NEWFOUNDLAND
St. John's
Electronic Centre Limited

SX-70 BATTERIES

I look forward to every issue of your magazine as I have for the past ten years. As a hobbyist I particularly enjoy your hobby oriented projects. I would like to pass this item on to your other readers.

One asset other experimenters may have overlooked is the battery that comes with every pack of Polaroid SX-70 film. The battery measures 1/10" × 3½" × 4¼" and is easily removed from the disposable pack after the last picture has been taken. The 6-volt cell, in its own protective pack, has two openings where you can solder on leads. With two silicon diodes in series it provides 5 volts for digital IC work. Four batteries provide ±12 volts for op-amp projects. They can even be series-strung to replace expensive 22.5 and 67.5 volt batteries in tube and transistor applications.

One bonus they provide is that they come from the camera at a consistent 6.23 volts (checked with an accurate source) which provides for a calibration

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LETTERS

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check on test equipment. Their flat shape allows them to be used in many projects where standard batteries with their bulky holders would not fit. Their shelf life and current capacity make these a valuable power source that are presently being thrown in the garbage by the million.

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Goodfellow Air Force Base