576

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The **Tektronix 576** is a curve tracer introduced in 1969 at $2,125. It uses plug-in fixture modules such as the 172 and 176.

Specifications

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Construction

Except for the cathode ray tube (CRT), the 576 is all-solid-state. It came out during the last four production years of the Type 575, which used the then-current 500-series technology of ceramic strips for circuit tie points. The 576 used updated construction much in the same style as that of the 453 and 454 portable oscilloscopes, using printed circuit boards. In fact, the 576 and 453 began life at about the same time. The only reason the Type 575 remained in production was because the 176 pulsed high-current fixture had not yet been developed for the 576, and the Type 575 coupled with its Type 175 pulsed high-current fixture filled requirement for power semiconductors. An interesting side note is that the 453 was introduced the same year as the 576; the 453A and 454A were introduced at the same time as the 176 pulsed high-current adaptor for the 576.

The 576 is unequaled in performance and durability. In physical volume, it is smaller than the Type 575, mostly due to a cabinet that slopes downward toward the back. Its sloping front panel and sloping “front porch” where the various adaptors are installed make it much a more comfortable instrument to use. In addition, the 576 sports an internal graticule and a larger display area. Because of the power it is able to deliver to solid-state power semiconductors under test, it is a surprisingly heavy instrument for its smaller size, and despite its solid-state design, weighs in at 70-1/2 pounds vs. the 66-1/4 pound weight of the Type 575.

Display and Readout

The display is large at 10 × 10 cm with an internal, parallax-free graticule. Along the right side of the CRT is an alphanumeric readout which puts the important front panel settings where they can be photographed along with the displayed semiconductor curve. This display is a complex unit of fiber optic light-guides driven by incandescent lamps to provide alphabetic, numeric and Greek characters. Given the front panel settings, the display automatically calculates beta/DIV. The same readout modules were used in the short-lived 5030/5031 scope series. The 576 was designed before the 7000-series scopes, and by a different engineering group, or they might have shared information and technology to provide all of this as on-screen readout like the 7000-series, and for less money than the technology they used. Surprisingly, this fiber-optic unit has not proved to be the least bit troublesome, considering all of the incandescent lamps required to implement the design. Wise operators will keep the display illumination at a lower level to prolong lamp life.

Display positioning in both the horizontal and vertical dimensions is via a switch which moves the beam a calibrated number of divisions and a potentiometer for fine control. The little brother tracer, the 577, introduced at a later date, does not have this feature.

Accessory Modules

The interface connections to the accessory modules are made through the same style of blue robust Amphenol 26-xxx-xx connectors as used with the plug-ins on the 500-series oscilloscope line.

The collector measurement range is from 100 nA/Div to 2 A/Div. Base voltage can be swept from zero to 1500 V in four ranges. The three higher ranges require the safety cover to be closed. Because so many used 576s do not come with safety covers, most users defeat the safety interlock mechanically or electrically. If this is done, the operator should be especially cautious as the 576 is capable of producing lethal voltages and currents, up to 1500 V at up to 100 mA continuous.

A calibration fixture, the 067-0599-00, was produced for the 576.

The standard fixture for the 576 is the 390-0098-00.

Uses

The instrument has uses other than displaying semiconductor curves. The vertical system can be adjusted for high current sensitivities in the nanoamp region and with the availability of 1500 volts and DC operation vs. collector supply sweeping, can provide measurement of capacitor leakage currents that few other instruments can achieve. This is handy for checking ceramic high voltage filter capacitors in defective supplies.

The 576 is capable of displaying curves for bipolar transistors, field-effect transistors, silicon-controlled rectifiers, triacs, diacs, diodes and rectifiers, zener diodes, tunnel diodes … nearly any semiconductor imaginable. If one constructs simple adaptors, the 576 can be used to check optocouplers and transistor arrays as well. It is capable of pouring 20 amperes through a device up to a power level of 220 watts.

The demise of the original 575 came in 1971 when the 575's companion 175 pulsed high-current unit was no longer sold, replaced by the 576 with its new 176 pulsed high-current adaptor. The 575 itself disappeared from the catalog about a year later.

When production ended with its final appearance in the 1990 catalog, the sales price of the 576 had escalated to a stunning $18,040, replaced by the 370 and 371 models selling for just a little bit more.

The 576 now sells on the eBay on-line auction site for anywhere from about $300 to over $2000, usually offered without the safety shield or any adaptors and often without the standard test fixture which sellers seem to enjoy offering separately. Many are sold with only the 176 pulsed high-current adaptor installed. The small transistor adaptors are selling for nearly their original catalog price. On average, the 576 is being sold on the used market for about 1/12 its last catalog price – or at about half the price when it first appeared in 1969. Overall, the instrument has held its value and popularity very well.

Many vacuum-tube enthusiasts are using the 576 along with a heater supply to test vacuum tubes, which it can do very well. By designing a switched heater supply and socket pairs into a metal project box, this would essentially replace the “ancient” Type 570 vacuum-tube curve tracer, which was last sold somewhere around 1966. The home-made accessory would work very well for matching triode pairs. The long-antiquated 570 is in great demand among vacuum-tube enthusiasts and “audiophools” (hobbyists who trust their ears more than any test equipment measurements), which is very surprising.

On a different subject, it might be noted here that the introduction of the 576 marked the approximate time that Tektronix began moving from using the word “Type” in front of its model numbers (e.g., Type 545B) to simply using the model number only.

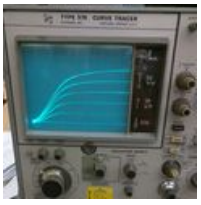
Prices

Year	1969	1990
Catalog price	$2,125	$18,040
2014 value	$13,700	$32,675

Links

- Tek 576 @ amplifier.cd (http://www.amplifier.cd/Test_Equipment/Tektronix/Tektronix_other/576.html) (including repair report, mostly in German)
- Tektronix 576, King of the curvetracers (http://www.pa4tim.nl/?p=2175) @ PA4TIM

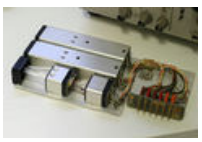
Pictures



I-V Curves of a BJT at Low Collector Voltages

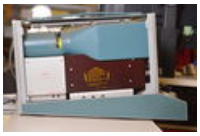
Tektronix 576

DUT Adapters



Detail of fiberoptic readout module

Front View



Left Internal

Max Peak Volts Switch and Series Resistors

High-Voltage Power Supply

Right Internal View

Bottom Internal View

Plug-in Bay

Standard Fixture, Internal View

576 with clear plastic fixture cover

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- This page was last modified on 17 August 2017, at 18:35.
- This page has been accessed 12,410 times.