Manuals+ — User Manuals Simplified.

PEAK DCA55 Semiconductor Component Analyser User Guide

**Semiconductor Component Analyser
User Guide**

Contents

Semiconductor Component Analyser

Want to use it now?
We understand that you want to use your DCA55 right now. The unit is ready to go and you should have little need to refer to this user guide, but please make sure that you ot least take a look at the notices on page 4!
This user guide has been written to accompany the DCA55 with revision 4.1 firmware. Other revisions of firmware may differ in operation, features and specifications. The irmware version is displayed briefly upon power-up.

Introduction

The Peak Atlas DCA55 is an intelligent semiconductor analyser that offers great features together with refreshing simplicity. The DCA55 brings a world of component data our fingertips.
**Summary Features:**

- Automatic component type identification
  - Bipolar transistors
  - Darlington transistors
  - Enhancement Mode MOSFETs
  - Depletion Mode MOSFETs
  - Junction FETs
  - Low power sensitive Triacs
  - Low power sensitive Thyristors
  - Light Emitting Diodes
  - Bicolour LEDs
  - Diodes
  - Diode networks
- Automatic pinout identification, just connect any way round. (only the gate is identified on JFETs)
- Special feature identification such as diode protection and resistor shunts.
- Gain measurement for bipolar transistors.
- Leakage current measurement for bipolar transistors.
- Silicon and Germanium detection for bipolar transistors.

- Gate threshold measurement for Enhancement Mode MOSFETs.
- Semiconductor forward voltage measurement for diodes, LEDs and transistor Base-Emitter junctions.
- Automatic and manual power-off.

Important Considerations

Please observe the following guidelines:

- This instrument must NEVER be connected to powered equipment/components or equipment/components with any stored energy (e.g. charged capacitors). Failure to comply with this warning may result in personal injury, damage to the equipment under test, damage to the DCA55 and invalidation of the manufacturer's warranty.
- The DCA55 is designed to analyse semiconductors that are not in-circuit, otherwise complex circuit effects will result in erroneous measurements.
- Avoid rough treatment or hard knocks.
- This unit is not waterproof.
- Only use a good quality battery (details on page 23).
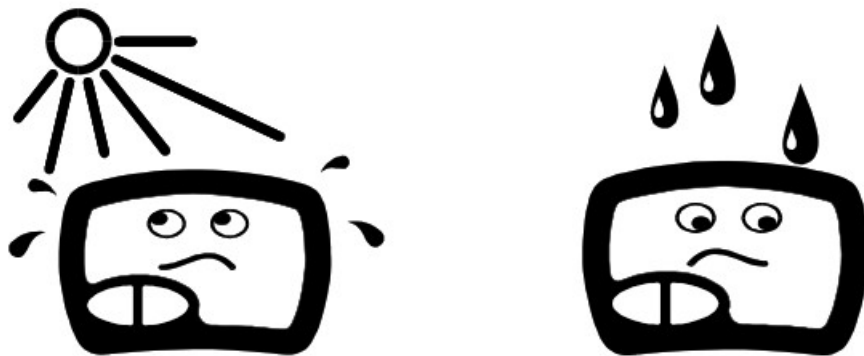
Analysing Components
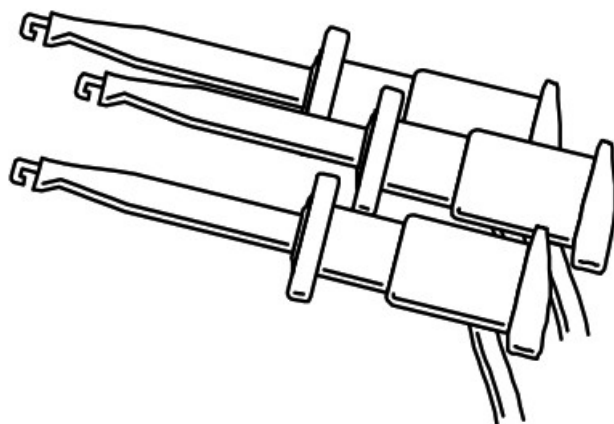
The DCA55 is designed to analyse discrete, unconnected, unpowered components. This ensures that external connections don't influence the measured parameters. The three test probes can be connected to the component any way round. If the component has only two terminals, then any pair of the three test probes can be used.

```
┌─────────────────────────────┐
│                             │
│    Peak Atlas DCA           │
│    model DCA55 Rx.x         │
│                             │
└─────────────────────────────┘
```

The DCA55 will start component analysis when the on-test button is pressed.

Depending on the component type, analysis may take a few seconds to complete, after which, the results of the analysis are displayed. Information is displayed a "page" at a ime, each page can be displayed by briefly pressing the scroll-off button.

The arrow symbol on the display indicates that more pages are available to be viewed.

Although the DCA55 will switch itself off if left unattended, you can manually switch the unit off by holding down the scroll-off button for a couple of seconds.

If the DCA55 cannot detect any component between any of the test probes, the following message will be displayed:

```
┌─────────────────────────────┐
│                             │
│    No component             │
│    detected                 │
│                             │
└─────────────────────────────┘
```

```
┌─────────────────────────────┐
│                             │
│    Unknown/Faulty           │
│    component                │
│                             │
└─────────────────────────────┘
```

```
┌─────────────────────────────┐
│                             │
│    Short circuit on         │
│    Green Blue               │
│                             │
└─────────────────────────────┘
```

```
┌─────────────────────────────┐
│                             │
│    Short circuit on         │
│    Red   Green   Blue       │
│                             │
└─────────────────────────────┘
```

If the DCA55 cannot detect any component between any of the test probes, the following message will be displayed: If the component is not a supported component type, a faulty component or a component that is being tested incircuit, the analysis may result in the following message being displayed: Some components may be faulty due to a shorted junction between a pair of the probes. If this is the case, the following message (or similar) will be displayed: If all three probes are shorted (or very low resistance) then the following message will be displayed:

It is possible that the DCA55 may detect one or more diode junctions or other component type within an unknown or faulty part. This is because many semiconductors   omprise of PN (diode) junctions. Please refer to the section on diodes and diode networks for more information.

Diodes
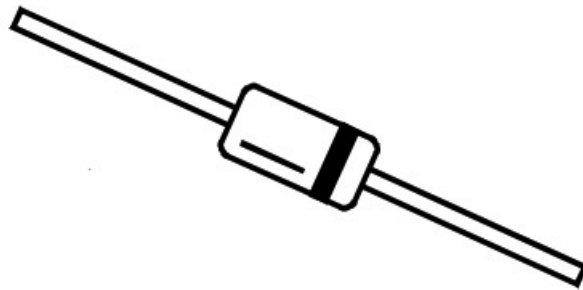
The DCA55 will analyse almost any type of diode. Any pair of the three test clips can be connected to the diode, any way round. If the unit detects a single diode, the ollowing message will bdisplayed:

```
Diode or diode
junction(s)
```

```
RED GREEN BLUE
Anod Cath
```

```
Forward voltage
Vf=0.677V
```

```
Test current
If=4.300mA
```

Pressing the scroll-off button will then display the pinout for the diode.
In this example, the Anode of the diode is connected to the Red test clip and the Cathode is connected to the

Green test clip, additionally, the Blue test clip is unconnected. The forward voltage drop is then displayed, this gives an indication of the diode technology. In this example, it is likely that the diode is a silicon diode. A germanium or Schottky diode may yield a forward voltage of about 0.25V. The current at which the diode was tested is also displayed.

Note that the DCA55 will detect only one diode even if two diodes are connected in series when the third test clip is not connected to the junction between the diodes. The orward voltage drop displayed however will be the voltage across the whole series combination.

The DCA55 will determine that the diode(s) under test is an LED if the measured forward voltage drop exceeds 1.50V. Please refer to the section on LED analysis for more nformation.
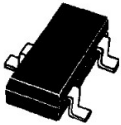
Diode Networks

The DCA55 will intelligently identify popular types of three terminal diode networks. For three terminal devices such as SOT-23 diode networks, the three test clips must all e connected, any way round. The instrument will identify the type of diode network and then display information regarding each detected diode in sequence. The following ypes of diode networks are automatically recognised by the DCA55:

Common cathode diode network		Both cathodes connected together, such as the BAV70 device.
Common anode diode network		Anodes of each diode are connected together, the BAW56W is an example.
Series diode network		Here, each diode is connected in series. An example is the BAV99.

Following the component identification, the details of each diode in the network will be displayed.
Firstly, the pinout for the diode is displayed, followed by the electrical information, forward voltage drop and the current at which the diode was tested. The value of the test urrent depends on the measured forward voltage drop of the diode.

```
┌─────────────────────────────┐
│                             │
│  Pinout for D1...           │
│                             │
│                             │
└─────────────────────────────┘

┌─────────────────────────────┐
│                             │
│  RED GREEN BLUE             │
│  Cath Anod                  │
│                             │
└─────────────────────────────┘

┌─────────────────────────────┐
│                             │
│  Forward voltage            │
│  D1 Vf=0.642V               │
│                             │
└─────────────────────────────┘
```

Following the display of all the details for the first diode, the details of the second diode will then be displayed.

LEDs

An LED is really just another type of diode, however, the DCA55 will determine that an LED or LED network has been detected if the measured forward voltage drop is larger than 1.5V. This also enables the DCA55 to intelligently identify bicolour LEDs, both two-terminal and three-terminal varieties.

```
┌─────────────────────────────┐
│                             │
│  LED or diode               │
│  junction(s)                │
│                             │
└─────────────────────────────┘

┌─────────────────────────────┐
│                             │
│  RED GREEN BLUE             │
│          Cath Anod          │
│                             │
└─────────────────────────────┘

┌─────────────────────────────┐
│                             │
│  Forward voltage            │
│  Vf=1.936V                  │
│                             │
└─────────────────────────────┘

┌─────────────────────────────┐
│                             │
│  Test current               │
│  If=3.047mA                 │
│                             │
└─────────────────────────────┘
```

Like the diode analysis, the pinout, the forward voltage drop and the associated test current is displayed.
Here, the Cathode (-ve) LED terminal is connected to the Green test clip and the Anode (+ve) LED terminal is connected to the Blue test clip. In this example, a simple green LED yields a forward voltage drop of 1.936V.
The test current is dependant on the forward voltage drop of the LED, here the test current is measured as 3.047mA.

Some blue LEDs (and their cousins, white LEDs) require high forward voltages and may not be detected by the DCA55.

Bicolour LEDs
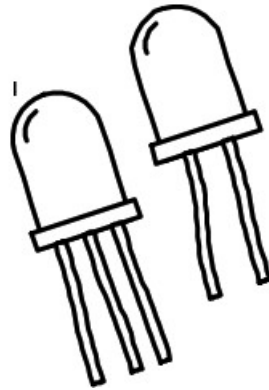
Bicolour LEDs are automatically identified. If your LED has 3 leads then ensure they are all connected, in any order.
A two terminal bicolour LED consists of two LED chips which are connected in inverse parallel within the LED body. Three terminal bicolour LEDs are made with either Common anodes or common cathodes.

Here a two terminal LED has been detected.
This message will be displayed if the unit has detected a three terminal LED.
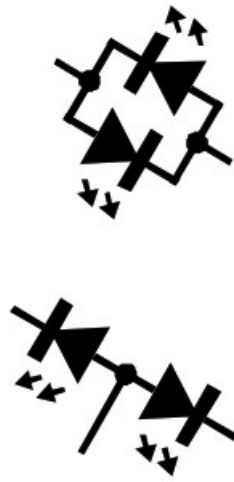
The details of each LED in the package will then be displayed in a similar way to the diode networks detailed earlier.

The pinout for the 1 st LED is displayed. Remember that this is the pinout for justone of the two LEDs in the package.

Interestingly, the voltage drop for eachLED (loosely) relates to the different colours within the bicolour LED. It maytherefore be possible to determinewhich lead is connected to each colourLED within the device. Red LEDs oftenhave the lowest forward voltage drop,followed by yellow LEDs, green LEDsand finally, blue LEDs.

```
Pinout for D1...



RED GREEN BLUE
      Anod Cath


Forward voltage
D1 Vf=1.950V


Test current
D1 If=3.033mA
```

Bipolar Junction Transistors (BJTs)
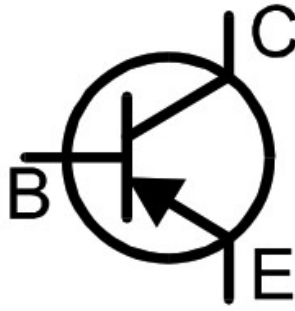
Bipolar Junction Transistors are simply "conventional" transistors, although variants of these do exist such as Darlingtons, diode protected (free-wheeling diode), resistor shunted types and combinations of these types. All of these variations are automatically identified by the DCA55.

Bipolar Junction Transistors are available in two main types, NPN and PNP. In this example, the unit has detected a Silicon PNP transistor.

```
PNP Silicon
Transistor
```

The unit will determine that the transistor is Germanium only if the base-emitter voltage drop is less than 0.55V.

```
PNP Germanium
Transistor
```

 If the device is a Darlington transistor (two BJTs connected together), the unit will display a similar message to this:

```
NPN Darlington
Transistor
```

Note that the DCA55 will determine that the transistor under test is a Darlington type if the base-emitter voltage drop is greater than 1.00V for devices with a base-emitter hunt resistance of greater than 60k or if the base-emitter voltage drop is greater than 0.80V for devices with a base-emitter shunt resistance of less than 60k. The easured base-emitter voltage drop is displayed as detailed later in this section.

Pressing the scroll-off button will result in the transistor's pinout being displayed. Here, the instrument has identified that the Base is connected to the Red test clip, the ollector is connected to the Green test clip and the Emitter is connected to the Blue test clip.

```
RED GREEN BLUE
Drn  Gate Srce
```

Transistor Special Features

Many modern transistors contain additional special features. If the DCA55 has detected any special features, then the details of these features are displayed next after pressing the scroll-off button. If there are no special features detected then the next screen will be the transistor's current gain.

Some transistors, particularly CRT deflection transistors and many large Darlingtons have a protection diode inside their package connected between the collector and mitter.

```
Depletion mode
N-Ch MOSFET
```

The Philips BU505DF is a typical example of a diode protected bipolar transistor. Remember that protection diodes are always internally connected between the collector and he emitter so that they are normally reverse biased.

For NPN transistors, the anode of the diode is connected to the emitter of the transistor. For PNP transistors, the anode of the diode is connected to the collector of the transistor.

Additionally, many Darlingtons and a few non-Darlington transistors also have a resistor shunt network between the base and emitter of the device.

The DCA55 can detect the resistor shunt if it has a resistance of typically less than 60k.
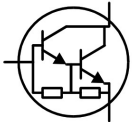
The popular Motorola TIP110 NPN Darlington transistor contains internal resistors between the base and emitter.

When the unit detects the presence of a resistive shunt between the base and emitter, the display will show:

```
Resistor shunt
between B-E
```

```
hFE not accurate
due to B-E res
```

Additionally, the DCA55 will warn you that the accuracy of gain measurement (hFE) has been affected by the shunt resistor.

📌 It is important to note that if a transistor does contain a base-emitter shunt resistor network, any measurements of current gain (hFE) will be very low at the test currents used by the DCA55. This is due to the resistors providing an additional path for the base current. The readings for gain however can still be used for comparing transistors of a similar type for the purposes of matching or gain band selecting. The DCA55 will warn you if such a condition arises as illustrated above.

Faulty or Very Low Gain Transistors
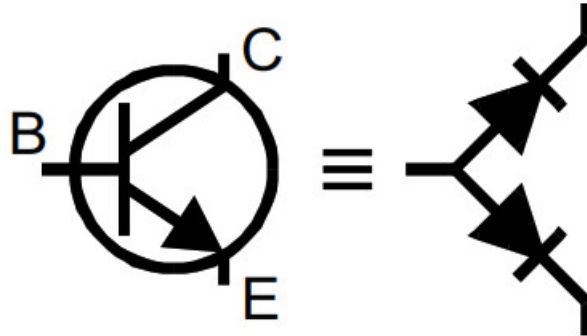
Faulty transistors that exhibit very low gain may cause the DCA55 to only identify one or more diode junctions within the device. This is because NPN transistors consist of structure of junctions that behave like a common anode diode network. PNP transistors can appear to be common cathode diode networks. The common junction epresents the base terminal. This is normal for situations where the current gain is so low that it is immeasurable at the test currents used by the DCA55.

```
Common anode
diode network
```

📌 Please note that the equivalent diode pattern may not be correctly identified by the DCA55 if your transistor is a darlington type or has additional diode(s) in its package such as a collector-emitter protection diode). This is due to multiple pn junctions that cannot be uniquely analysed.
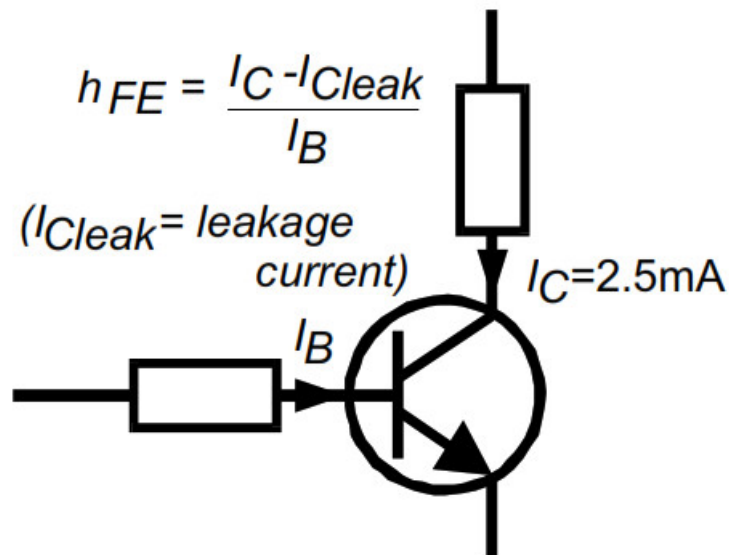
In some circumstances, the unit may not be able to deduce anything sensiblefrom the device at all, in which case you will see either of these messages:

```
Unknown/Faulty
component
```

```
No component
detected
```

Current Gain (hFE)
The DC current gain (hFE) is displayed after any special transistor features have been displayed.

$$h_{FE} = \frac{I_C - I_{Cleak}}{I_B}$$

(I_{Cleak}= leakage current)

I_C=2.5mA

I_B

DC current gain is simply the ratio of the collector current (less leakage) to the base current for a particular operating condition. The DCA55 measures hFE at a collector current of 2.50mA and a collector-emitter voltage of between 2V and 3V.

The gain of all transistors can vary considerably with collector current, collector voltage and also temperature. The displayed value for gain therefore may not represent the   ain experienced at other collector currents and voltages. This is particularly true for large devices.

```
Current gain
hFE=126
```

```
Test current
Ic=2.50mA
```

Darlington transistors can have very high gain values and more variation of gain will be evident as a result of this. Additionally, it is quite normal for transistors of the same type to have a wide range of gain values. For this reason, transistor circuits are often designed so that their operation as little dependence on the absolute value of current gain. he displayed value of gain is very useful however for comparing transistors of a similar type for the urposes of gain matching or fault finding.

Base Emitter Voltage Drop

The DC characteristics of the base-emitter junction are displayed, both the base-emitter forward voltage drop and the base current used for the measurement.
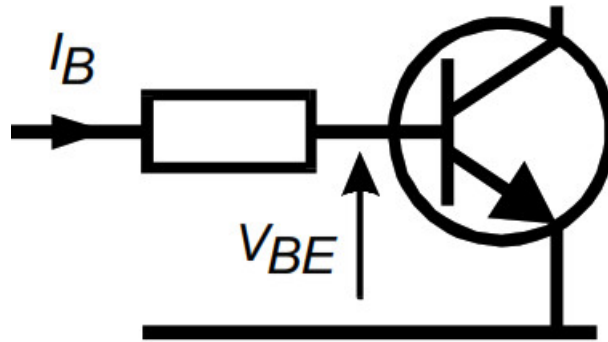
The forward base-emitter voltage drop can aid in the identification of silicon or germanium devices. Germanium devices can have base-emitter voltages as low as 0.2V, Silicon ypes exhibit readings of about 0.7V and Darlington transistors can exhibit readings of about 1.2V because of the multiple baseemitter junctions being measured.

```
B-E Voltage
Vbe=0.664V
```

```
Test current
Ib=4.312mA
```

📌 Base-Emitter voltage drop measurements can be useful when matching transistors.

📌 Note that the DCA55 does not perform the base-emitter tests at the same base current as that used for the current gain measurement.

Collector Leakage Current

The collector current that takes place when no base current is flowing is referred to as Leakage Current (ICEO). Most modern transistor exhibit extremely low values of leakage current, often less than 1µA, even for very high collector-emitter voltages.

$I_B = 0$ I_C Leakage
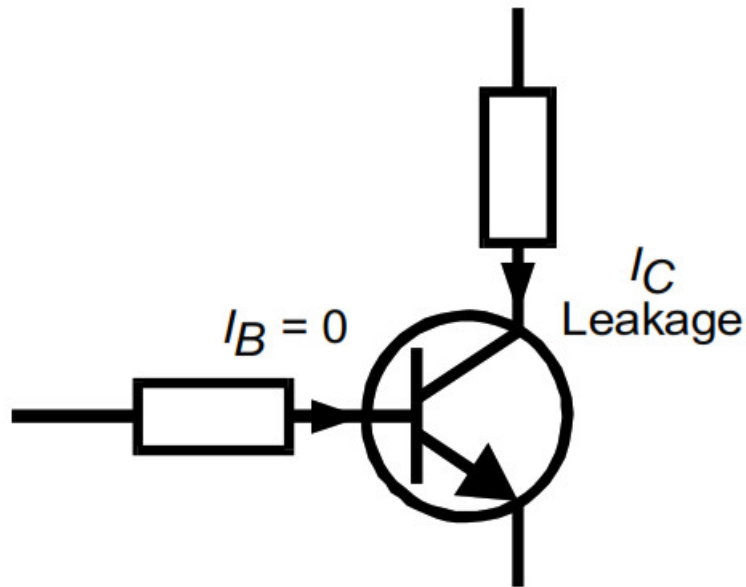
Older Germanium types however can suffer from significant collector leakage current, particular at high temperatures (leakage current can be very temperature dependant).


```
Leakage current
Ic=0.170mA
```

If your transistor is a Silicon type, you should expect to see a leakage current of close to 0.000mA unless the transistor is faulty.

The minimum leakage current that the DCA55 can measure is typically 10µA (0.010mA). For leakage currents higher than 10µA, the measurement resolution is typically 2µA (0.002mA). The maximum allowed leakage current for the DCA55 is 0.2mA for silicon devices and 1.75mA for germanium devices. If the leakage current is more than that llowed value then the DCA55 may not detect your device correctly.

During the leakage current measurement, the base-emitter is automatically shunted with a 910k resistor to reduce the influence of stray pick-up on an otherwise floating base lead. Please note however that leakage current is influenced by the base circuitry. For example, in the target application, the collector-emitter leakage current can be reduced by having a lower value resistance across the base-emitter. The measured leakage current here however can be used to compare devices of the same type.

Digital Transistors
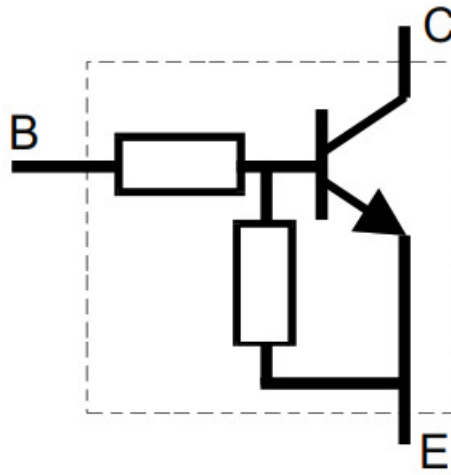
Digital transistors aren't really digital, they can act in both a linear or fully on/off mode. They're called "digital transistors" because they can be driven directly by digital utputs without the need for base current limiting resistors.

 These parts are most often found in surface mount packages and are becoming more common, particularly in mass produced electronic products.

The presence of the base resistor (andthe base-emitter shunt resistor) meansthat it isn't possible for the DCA55 tomeasure the gain of the device, so onlythe device polarity (NPN/PNP) andpinout is shown.

Enhancement Mode MOSFETs

 MOSFET stands for Metal Oxide Semiconductor Field Effect Transistor. Like bipolar transistors, MOSFETs are available in two main types, N-Channel and P-Channel. Most modern MOSFETs are of the Enhancement Mode type, meaning that the bias of the gate-source voltage is always positive (For N-Channel types). The other (rarer) type of MOSFET is the Depletion Mode type which is described in a later section.

MOSFETs of all types are sometimes known as IGFETs, meaning Insulated Gate Field Effect Transistor. This term describes a key feature of these devices, an insulated gate region that results in negligible gate current for both positive and negative gate-source voltages (up to the maximum allowed values of course, typically ±20V).

```
Enhancement mode
N-Ch MOSFET
```

```
RED GREEN BLUE
Gate Drn  Srce
```

```
Gate Threshold
Vgs=3.47V
```

```
Test current
Id=2.50mA
```

The first screen to be displayed gives information on the type of MOSFET detected. Pressing scroll-off will then result in the pinout of the MOSFET being displayed. The gate, source and drain are each identified. An important feature of a MOSFET is the gate-source threshold voltage, the gate-source voltage at which conduction between the source and drain starts. The gate threshold is displayed following the pinout information. The DCA55 detects that drain-source conduction has started when it reaches 2.50mA.

Depletion Mode MOSFETs
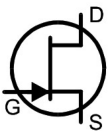
 The fairly rare Depletion Mode MOSFET is very similar to the conventional Junction FET (JFET) except that the gate terminal is insulated from the other two erminals. The input resistance of these devices can typically be greater than 1000M for negative and positive gate-source voltages.

Depletion Mode devices are characterised by the gate-source voltage required to control the drain-source current.

```
Diode protection
between C-E
```

Modern Depletion Mode devices are generally only available in N-Channel varieties and will conduct current between its drain and source terminals even with a zero voltage pplied across the gate and the source. The device can only be turned completely off by taking its gate significantly more negative than its source terminal, say –10V. It is this haracteristic that makes them so similar to conventional JFETs.

Pressing scroll-off will cause the pinout screen to be displayed.

```
RED GREEN BLUE
Base Coll Emit
```

Junction FETs (JFETs)

Junction FETs are conventional Field Effect Transistors. The voltage applied across the gate-source terminals controls current between the drain and source terminals. N-Channel JFETs require a negative voltage on their gate with respect to their source, the more negative the voltage, the less current can flow between the drain and source.

```
P-Channel
Junction FET
```

Unlike Depletion Mode MOSFETs, JFETs have no insulation layer on the gate. This means that although the input resistance between the gate and source is normally very high (greater than 100M), the gate current can rise if the semiconductor junction between the gate and source or between the gate and drain become forward biased. This can happen if the gate voltage becomes about 0.6V higher than either the drain or source terminals for N-Channel devices or 0.6V lower than the drain or source for P-Channel devices.

```
Drain and Source
not identified
```

```
RED GREEN BLUE
        Gate
```

The internal structure of JFETs is essentially symmetrical about the gate terminal, this means that the drain and source terminals are indistinguishable by the DCA55. The JFET type and the gate terminal are identified however.

Thyristors (SCRs) and Triacs
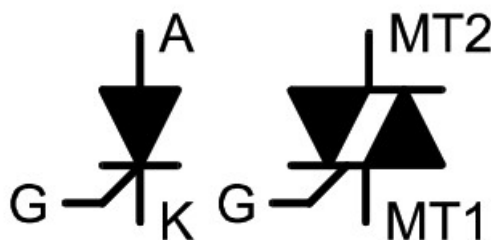
Sensitive low power thyristors (Silicon Controlled Rectifiers – SCRs) and triacs that require gate currents and holding currents of less than 5mA can be identified and analysed   ith the DCA55.

```
Sensitive or low
power thyristor
```

```
RED GREEN BLUE
Gate Anod Cath
```

Thyristor terminals are the anode, cathode and the gate. The pinout of the thyristor under test will be displayed on the next press of the scroll-off button.

Triac terminals are the MT1, MT2 (MTstanding for main terminal) and gateMT1 is the terminal with which gatecurrent is referenced.

```
Sensitive or low
power triac
```

```
RED GREEN BLUE
MT1  MT2  Gate
```

1. The unit determines that the device under test is a triac by checking the gate trigger quadrants that the device will reliably operate in. Thyristors operate in only one quadrant (positive gate current, positive anode current). Triacs can typically operate in three or four quadrants, hence their use in AC control applications.

2. The test currents used by the DCA55 are kept low (<5mA) to eliminate the possibility of damage to a vast range of component types. Some thyristors and triacs will not operate at low currents and these types cannot be analysed with this instrument. Note also that if only one trigger quadrant of a triac is detected then the unit will conclude that it has found a thyristor. Please see the technical specifications for more details.

Care of your DCA55
The DCA55 should provide many years of service if used in accordance with this user guide. Care should be taken not to expose your unit to excessive heat, shock or oisture. Additionally, the battery should be replaced at least every 12 months to reduce the risk of leak damage.
If a low battery warning message appears, immediate replacement of the battery is recommended.

```
** Warning **
Low Battery ▯
```

Depending on your variant, replace the battery with a good quality type that is identified on the rear label.

| Rear Label: AAA (1.5V)	Rear Label: 23A/MN21 (12V)
AAA cell (Alkaline, NiMh or LithiumIron-Disulphide)	L1028, 23A, V23A, GP23A, MN21 (Alkaline)

The battery can be replaced by placing your DCA55 face down on a smooth surface and removing the three screws from the rear of the unit.
After fitting of the new battery, carefully place the rear cover in position, taking care not to trap the test wires.
Do not over-tighten the screws.
Replacement batteries are available directly from Peak Electronic Design Limited and many good electronic/automotive outlets.

Self Test Procedure

Each time the DCA55 is powered up, a self test procedure is performed. In addition to a battery voltage test, the unit measures the performance of many internal functions such as the voltage and current sources, amplifiers, analogue to digital converters and test lead multiplexers. If any of these function measurements fall outside tight performance limits, a message will be displayed and the instrument will switch off automatically.

```
Self test failed
CODE: 5
```
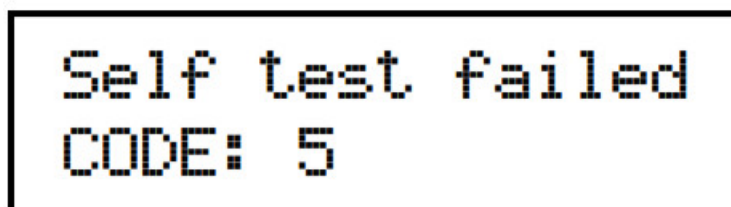
If the problem was caused by a temporary condition on the test clips, such as applying power to the test clips, then simply re-starting the DCA55 may clear the problem. If a persistent problem does arise, it is likely that damage has been caused by an external event such as excessive power being applied to the test clips or a large static discharge taking place.
If the problem persists, please contact us for further advice, quoting the displayed fault code.
If there is a low battery condition, the automatic self test procedure will not be performed. For this reason, it is highly recommended that the battery is replaced as soon as ossible following a "Low Battery" warning.

Appendix A – Technical Specifications

Parameter	Min	Typ	Max	Note
Bipolar Junction Transistors				
Measurable gain range (hFE)	4		20000	2
Gain resolution		1 hFE	2 hFE	2,8

Gain accuracy	±3% ±4 hFE			2,8
Gain jitter (3σ)		±0.2%		2,9
Gain test voltage VCEO	2.0V		3.0V	2
Gain test collector current IC	2.50mA ±5%			2
Measurable VBE range	0V		1.80V	
VBE resolution		1mV	2mV	8
VBE accuracy	±2% ±4mV			
Darlington VBE range	0.95V	1.00V	1.80V	3
Darlington VBE range (shunted)	0.75V	0.80V	1.80V	4
Ge VBE range (ICLEAK<10µA)	0V		0.50V	
Ge VBE range (ICLEAK>10µA)	0V		0.55V	
Base-emitter shunt threshold	50kW	60kW	70kW	
Collector leakage test voltage	3.0V	4.0V	5.1V	
Collector leakage range	0.010mA		1.750mA	
Collector leakage resolution		1µA	2µA	
Collector leakage accuracy	±2% ±4µA			
Si Acceptable leakage	0mA		0.2mA	6
Ge Acceptable leakage	0mA		1.75mA	6
MOSFETs				
Gate threshold range	0.1V		5.0V	5
Gate threshold accuracy	±2% ±20mV			5
Gate threshold drain current	2.50mA ±5%			
Min. gate-source resistance		8kW		
Depletion drain test current	0.5mA		5.5mA	
Diodes/LEDs				
Diode test current			5.0mA	
VF resolution		1mV	2mV	
VF accuracy	±2% ±4mV			
VF for LED identification	1.50V		4.00V	

Appendix A – Technical Specifications continued
All values are at 20C unless otherwise specified.

Parameter	Min	Typ	Max	Note
JFETs				
Drain-source test current	0.5mA		5.5mA	
SCRs/Triacs				
Gate test current		4.5mA		7
Load test current		5.0mA		
General Specifications				
Peak test current into S/C	-5.5mA		5.5mA	1
Peak test voltage across O/C	-5.1V		5.1V	1
Short circuit threshold	5W	10W	15W	
Analysis duration	1 Sec	3 Secs	6 Secs	
Battery voltage range (AAA)	1.0V	1.5V	1.6V	
Battery voltage range (GP23)	8.0V	12V		
Inactivity power-down period		60 Secs		
Operating temperature range	15°C		35°C	10
	60°F		95°F	10
Battery warning threshold	1.1V (AAA Ver), 9.0V (GP23 Ver)			
Battery life	Typically ~1300 operations			11
Dimensions (body)	103 x 70 x 20 mm			
	4.1″ x 2.8″ x 0.8″			

Notes:

1. Between any pair of test clips.
2. Collector current of 2.50mA and hFE≤2000.
3. Resistance across reverse biased base-emitter > 60k.
4. Resistance across reverse biased base-emitter < 60k.
5. Drain-source current of 2.50mA.
6. VCE=4.0V±1.0V. Base automatically tied to emitter with 910k to reduce pickup.
7. Thyristor quadrant I, Triac quadrants I and III.
8. BJT with no shunt resistors.
9. Tested for Si BJT with hFE=1500.
10. Subject to acceptable LCD visibility.
11. Based on Alkaline AAA cell and 1 minute per operation.

Please note that specifications subject to revision.

DCA55 User Guide

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Appendix B is on the rear cover of this user guide.

Appendix B – Statutory Information

Peak Satisfaction Warranty If for any reason you are not completely satisfied with the DCA55, within 14 days of purchase, you may return the unit to your distributor. You will receive a refund covering the full purchase price if the unit is returned in perfect condition.

Statutory Warranty

The statutory warranty is valid for 24 months from date of purchase. This warranty covers the cost of repair or replacement due to defects in materials and/or manufacturing faults.

The warranty does not cover malfunction or defects caused by:

a) Operation outside the scope of the user guide.

b) Unauthorised access or modification of the unit (except for battery replacement).

c) Accidental physical damage or abuse.

d) Normal wear and tear.

The customer's statutory rights are not affected by any of the above. All claims must be accompanied by a proof of purchase.

WEEE (Waste of Electrical and Electronic Equipment), Recycling of Electrical and Electronic Products

It is not permissible to simply throw away electrical and electronic equipment. Instead, these products must enter the recycling process. Each country has implemented the WEEE regulations into national law in slightly different ways. Please follow your national law when you want to dispose of any electrical or electronic products. More details can be obtained from your national WEEE recycling agency.
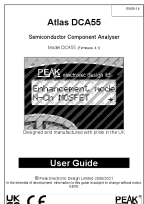
At Peak Electronic Design Ltd we are committed to continual product development and improvement.

The specifications of our products are therefore subject to change without notice.

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Documents / Resources

PEAK DCA55 Semiconductor Component Analyser [pdf] User Guide
DCA55 Semiconductor Component Analyser, DCA55, Semiconductor Component Analyser, Component Analyser

References

- **Welcome to Peak Electronic Design Limited**