

FEATURES

- Instant output voltage readout
- Dose readout (on request)
- Support for all Varadis RADFETs
- Battery operated

ADDITIONAL INFO

The Varadis

RADFET READER PRO is a handheld, battery operated instrument designed for measuring the output voltage of the RADFETs manufactured by Varadis.

USER MANUAL RADFET READER PRO



Varadis

www.varadis.com

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INTRODUCTION

RADFET Reader PRO is a handheld, battery operated instrument designed for measuring the output voltage of the RADFETs manufactured by Varadis.

RADFET parts compatible with the reader are:

- VT01 / VT03 / VT05 – plastic part in a SOT-23-6 package and
- VT02 / VT04 / VT06 – ceramic part in a DIP-8 package.
- VT02-B / VT04-B / VT06-B / TY1001 – ceramic part in a DIP-14 package (currently available as a non-standard product)

This document describes the instrument and its operation.

If any additional information needed, please contact the manufacturer:

E-mail: sales@varadis.com

Address:

Tyndall National Institute
Lee Maltings Complex
Prospect Row
Cork
Ireland
T12R5C

INSTRUMENT DESCRIPTION

PACKAGE CONTENTS

The instrument is shipped in the package the contents of which are listed in Table 1.

No	Item Description	Qty
1	RADFET Reader PRO	1
2	1.5V AA Battery	2
3	Case	1

Table 1: List of package contents.

RADFET READOUT DETAILS

The instrument uses RADFET readout circuit shown in Figure 1.

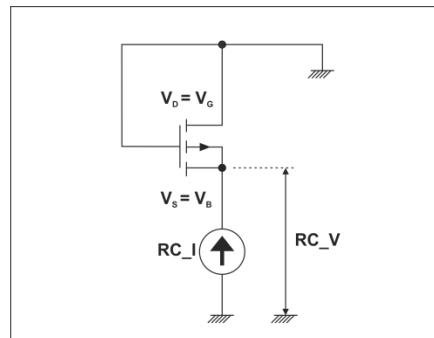


Figure 1: Reader circuit configuration.

RADFET Source and Bulk are tied together ($V_S=V_B$); Gate and Drain are tied to the ground ($V_G=V_D=0V$). The readout current RC_I is forced at Source/Bulk and the output voltage RC_V (also known as threshold voltage) measured at Source/Bulk and, upon instruction, displayed.

The readout current for the RADFET Reader PRO is set at $10\ \mu A$. This current can be adjusted to a different value in a $5 - 65\ \mu A$ range; please contact the manufacturer for details.

Maximum voltage that can be measured by the instrument is 25V.

The instrument can measure voltages of four individual transistors (#R1, #R2, #R3, and #R4) of RADFET part (VT02-B, VT04-B, VT06-B and TY1001), two transistors (#R1 and #R2) of (VT01, VT02, VT04 and VT06) and one transistor (#R1) of (VT03 and VT05). Pinouts of the parts are shown in Figure 2; for full datasheets please visit: www.varadis.com or contact support@varadis.com

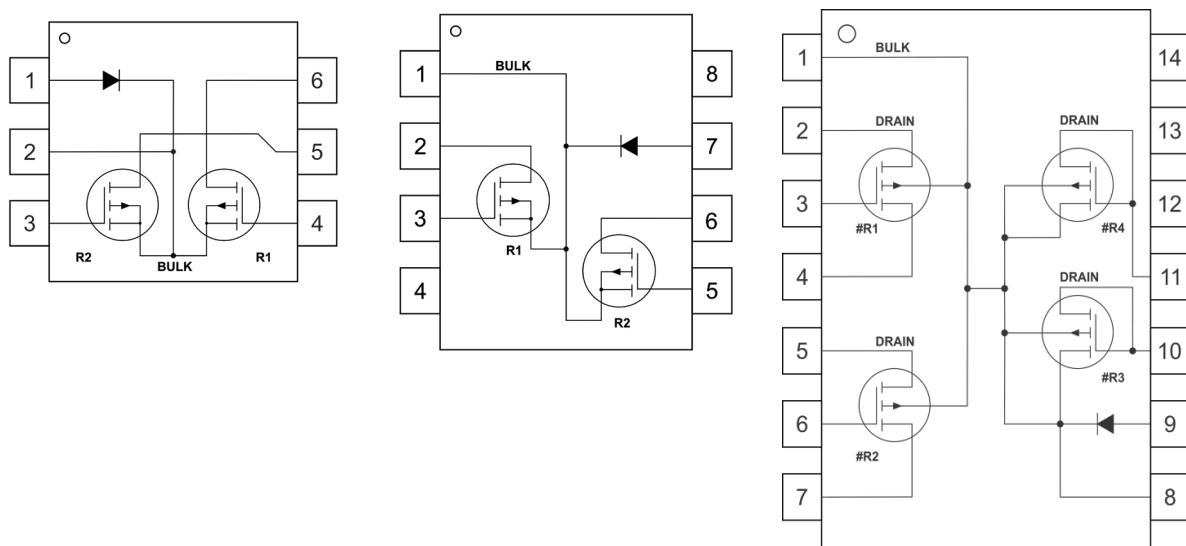


Figure 2: Pinout of SOT-23-6 parts, 8-pin and 14-pin RADFETs.

READER PARTS

Reader parts are shown in Figure 3. Parts 1-8 are on the front panel, and part 9 is on the back.

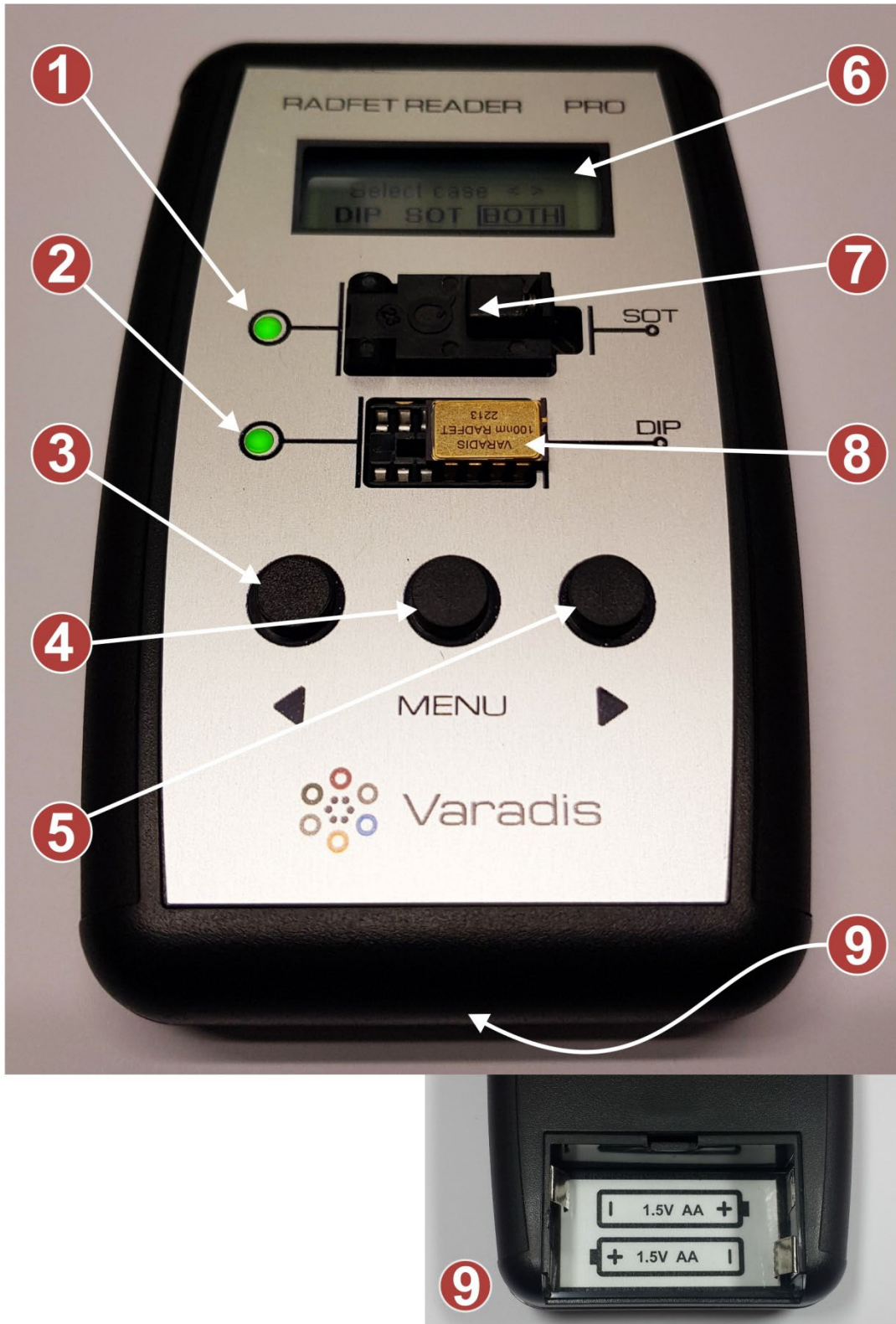


Figure 3: Reader parts.

Description of reader parts:

- ① LED indicating SOT-23-6 device (plastic part) is under test
- ② LED indicating DIP-14 / DIP-8 device (ceramic part) is under test
- ③ Push button (control: LEFT)
- ④ Push button (control: MENU)
- ⑤ Push button (control: RIGHT)
- ⑥ LCD screen
- ⑦ Socket for SOT-23-6 device (plastic part)
- ⑧ DIP-14 socket for DIP-14 / DIP-8 device (ceramic part)
- ⑨ Battery compartment

PERFORMING THE MEASUREMENT

After inserting two 1.5V AA batteries (instrument back ⑨), follow the steps below to perform the measurement.

[1] Switch ON the instrument by holding the MENU button for approximately 2 seconds.

The following message appears on the LCD screen:

Insert RADFET
and press MENU

[2] Insert the device(s) in the corresponding socket(s).

When inserting the device(s) for measurement, make sure that the devices are positioned correctly, otherwise the measurement will not be valid. Pin 1 of the SOT device should be on the top left side of the SOT socket, and pin 1 of the DIP-14/DIP-8 device should be on the top right side of the DIP socket; see Figure 4 (left).



Figure 4: Device positioning – sockets open (left), sockets closed (right). Arrows indicate Pin 1.

After the devices are inserted, clamp the lid of the SOT socket - see Figure 4 (right).

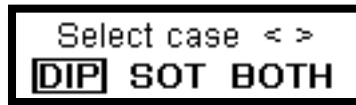
[3] Press MENU button to start the measurement selection.

The following screen appears:

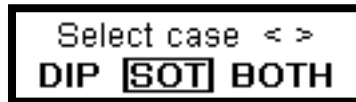
Select case < >
 DIP SOT BOTH

By pressing the LEFT button **3** or RIGHT button **5**, select one of the three options:

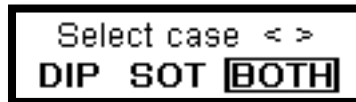
- Measure DIP device RADFETs (DIP LED is on):



- Measure SOT-23-6 device RADFETs (SOT LED is on):

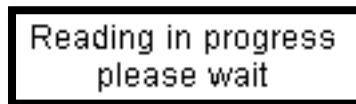


- Measure both devices (both DIP and SOT LEDs are on):

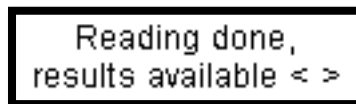


[4] Press MENU button to start the measurement.

LED(s) will flash during the measurement, the following screen appears:



When the measurement is finished, the following screen appears:

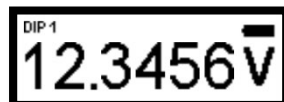


The reading is done, and the results are available.

[5] Press any button to display the results.

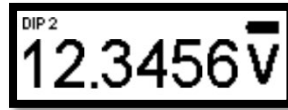
Toggle between readings by pressing RIGHT button **5** or LEFT button **3**. In the top-left corner of the screen the individual RADFET is indicated, and the voltage value is shown below, as follows.

- DIP1 represents the voltage of #R1 ceramic DIP-14/DIP-8 part:

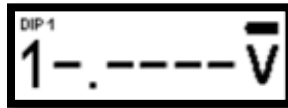


(Example: $V_{\#R1} = 12.3456 \text{ V}$)

- DIP2 represents the voltage of #R2 on DIP-14 part:

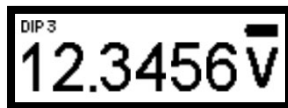


If ceramic DIP-8 part is inserted, the following screen will appear:



This indicates that no measurement is taken in this case. Move to the next position.

- DIP3 represents the voltage of #R3 on ceramic DIP-14 part:



If ceramic DIP-8 part is inserted, the following screen will appear:

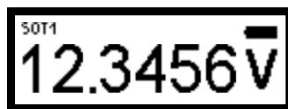


This indicates that no measurement is taken in this case. Move to the next position.

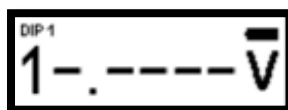
- DIP4 represents the voltage of #R4 on ceramic DIP-14 and #R2 on DIP-8 part:




- SOT1 represents the voltage of the RADFET on VT01 part:





If the RADFET voltage is above 25V (voltage limit), the instrument will display the following message:



The measurement procedure can be repeated with the same device or different devices, by pressing MENU button .

Powering off the instrument:

To power off the instrument, hold the menu button  for approximately 3 seconds when at the following manu location:



Insert RADFET
and press MENU


After a led indication (3x blink), the following screen appears:



Powering Off

The instrument is switched off. To power on the instrument and start new measurement, go to step [1].

Battery status:

There is a battery status indicator in the top right corner of the screen. Once the indicator shows an empty battery () , it is highly recommended to replace the batteries.

Dose readout:

Radfet Reader PRO firmware can be customized depending on customer requirement, such as dose readout. Please contact us for more details.

Important remarks:

- During measurement please do not touch the exposed radfet pins (with hands or any conductive material), as this can disturb and invalidate the measurement.
- Do not use the instrument in high humidity environments, rapid temperature changing environments and particularly in ionising radiation environments. This might cause false readings.
- Do not use the instrument in ionising radiation field, this might cause false readings and permanent damages.
- When replacing the batteries, please use appropriate battery type (see Table 1), any other type/size batteries might cause wrong readings or permanent damage to the instrument.