

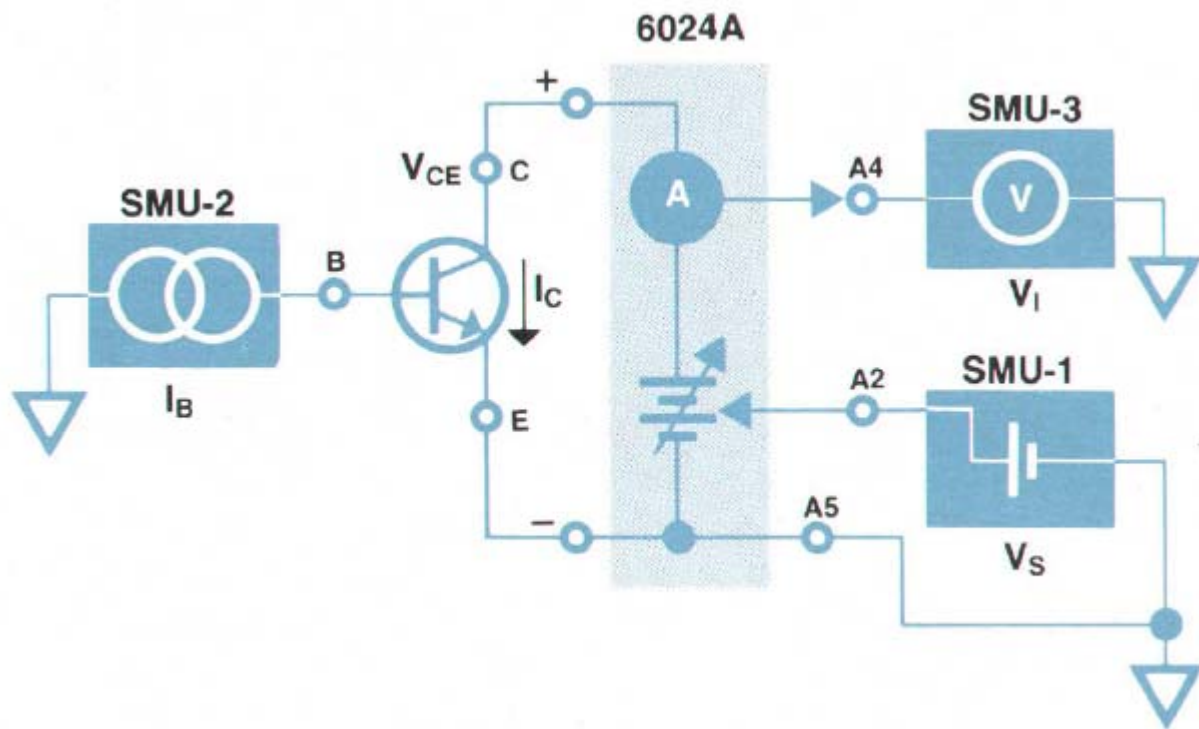
HP 4145A - Power Transistor Measurement Setup

I've been playing around with my repaired HP 4145A, and the setup to measure power transistors, as described in the issue of October 1982 of the Hewlett-Packard Journal (page 10), caught my attention.

The article doesn't provide a lot of detail on how to set up the analyzer. Since I struggled with it for a while, I will describe below how I configured everything to measure a 2N3055 transistor. Someone may find the information helpful.

1) Hardware Setup

I pretty much followed the diagram in the article:



2) Configuration of the 4145A

The following screen captures show how I set up the SMUs and the calculations to convert the sweep voltage into VCE and the output current voltage of the 6024A into IC:

***** CHANNEL DEFINITION *****

CHAN	NAME		SOURCE	
	V	I	MODE	FCTN
SMU1	VS	IS	V	VAR1
SMU2	VB	IB	I	VAR2
SMU3	V	I	I	CONST
SMU4				
Vs 1		-----	V	
Vs 2		-----	V	
Vm 1		-----	-----	-----
Vm 2		-----	-----	-----

USER FCTN	NAME (UNIT)= EXPRESSION
1	IC (A)= 2*V
2	VCE (V)= 12*VS

Define application, CHAN NAME and USER FCTN

******* SOURCE SET UP *******

	VAR1	VAR2
NAME	VS	IB
SWEEP MODE	LINEAR	LINEAR
START	.0000V	5.000mA
STOP	.3000V	-----
STEP	.0050V	5.000mA
NO. OF STEP	61	7
COMPLIANCE	40.00mA	10.000V

CONSTANT	SOURCE	COMPLIANCE
I	I	.000 A
		100.00V

Select sweep mode with softkey

3) Display Mode Setup

hp

** MEAS & DISP MODE SET UP **

MEASUREMENT MODE: SWEEP

GRAPHICS

LIST

DISPLAY MODE: GRAPHICS

MATRIX

SCHMOD

	X axis	Y1axis	Y2axis
NAME	VCE	IC	
SCL	LINEAR	LINEAR	
MIN	.00E+00	.00E+00	
MAX	4.00E+00	3.00E+00	

Select mode with softkey

This is the result (single measurement, long integration time):

