

Component Parameter Test Instruments

I. TH2838 Series Precision LCR Meter

Features

- High accuracy: Adopt Auto-balance bridge technology, 4-terminal pair
- High stability and consistency: Up to 15 ranges
- High speed: Up to 5.6ms
- High resolution: 7-inch, 800×600
- High power:
 - Signal source: Voltage up to 20Vrms(only TH2838H)
 - Current up to 100mA(only TH2838H)
 - DC bias: Voltage up to $\pm 40V$ (only TH2838H)
 - Current up to 100mA
 - Up to 120A when controlling 6 sets of TH1778 series DC Bias Current Source by external DC Bias interface
 - Independent Voltage Source: $\pm 10V$ programmable output (only TH2838H)
- Multi-parameter Graphic Sweep Function
- Arithmetical operation
- 10 bins sorting, sorting result with sound and light alarm
- Huge storage space:
 - Internal: 40 groups of setting files, 10 groups of gif image files
 - External: 500 groups of setting files through USB storage
- High compatibility: Support SCPI commands, compatible with KEYSIGHT E4980A, E4980AL, HP4284A etc.



RS232	USB HOST	USB DEVICE	HANDLER	LAN	GPIB
standard	standard	standard	standard	standard	option

TH2838 Series

Dimension (mm): 400(W) x 132(H) x 425(D)
Net weight : 15kg

Application

1. Passive component
 - Impedance parameter estimation and performance analysis of capacitor, inductor, magnetic core, resistor, piezoelectric devices, transformers, chip components and network components
2. Semiconductor component
 - Parasitic parameter test and analysis of LED driver integrated circuit C-VDC features of varactors Parasitic parameter analysis of transistors or integrated circuit
3. Other components
 - Impedance assessment of printed circuit boards, relays, switches, cables, batteries
4. Dielectric material
 - Dielectric constant and loss angle evaluation of plastics, ceramics and other materials
5. Magnetic materials
 - Magnetic permeability and loss angle assessment of ferrite, amorphous body and other magnetic materials
6. Semiconductor materials
 - Dielectric constant, electric conductivity and C-V characteristics of semiconductor materials Liquid crystal cell of dielectric constant, elastic constant and C-V characteristics of liquid crystal cell

Specifications

Model		TH2838	TH2838H	TH2838A
Test Signal Source				
Output impedance		100 Ω , $\pm 1\%$ @1kHz		
Frequency	Range	20Hz-2MHz		20Hz-1MHz
	Resolution	20.0000Hz - 99.9999Hz	0.1mHz	
		100.000Hz - 999.999Hz	1mHz	
		1.00000kHz - 9.99999kHz	10mHz	
		10.0000kHz - 99.9999kHz	0.1Hz	
		100.000kHz - 999.999kHz	1Hz	
		1.00000MHz - 2.00000MHz	10Hz	

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AC test signal		Rated value(ALC OFF): Set the voltage as the Hcur voltage when the test terminal is open Set the current as the Hcur current when the test terminal is short Constant value(ALC ON): Keep the voltage in DUT is the same as the set value Keep the current in DUT is the same as the set value			
AC signal	Voltage range	5mVrms -- 2Vrms	F≤1MHz 5mVrms-- 20Vrms F >1MHz 5mVrms -- 15Vrms	5mVrms -- 2Vrms	
	Resolution	5mVrms -- 0.2Vrms	100μVrms		
		0.2Vrms -- 0.5Vrms	200μVrms		
		0.5Vrms -- 1Vrms	500μVrms		
		1Vrms -- 2Vrms	1mVrms		
		2Vrms -- 5Vrms	2mVrms		
		5Vrms -- 10Vrms	5mVrms		
		10Vrms -- 20Vrms	10mVrms		
	Current range	50μArms -- 20mArms	50μArms --100mArms	50μArms -- 20mArms	
	Resolution	50μArms -- 2mArms	1 μArms		
2mArms -- 5mArms		2 μArms			
5mArms -- 10mArms		5 μArms			
10mArms -- 20mArms		10μArms			
20mArms -- 50mArms		20μArms			
50mArms--100mArms		50μArms			
Rdc test	Voltage range	100mV — 2V			
	Resolution	100μV			
	Current range	0mA— 20mA			
	Resolution	1μA			
DC Bias	Voltage range	0V — ± 10V	0V — ± 40V	0V — ± 10V	
	Resolution	0V -- 5V	100μV		
		5V -- 10V	1mV		
		10V -- 20V	2mV		
		20V -- 40V	5mV		
	Current range	0mA— ± 100mA			
	Resolution	0 A -- 50mA	1μA		
50mA -- 100mA		10μA			
Voltage source	Voltage range	-----	-10V -- 10V	-----	
	Resolution	-----	1mV	-----	
	Current range	-----	-45mA -- +45mA	-----	
	Output impedance	-----	100Ω	-----	
Display					
Dimensions /typ		7-inch (diagonal)TFT LCD display			
Proportion		16:9			
Resolution		800×RGB×480			
Test function					

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Test parameter		Cp-D,Cp-Q,Cp-G,Cp-Rp Cs-D,Cs-Q,Cs-Rs Lp-D, Lp-Q, Lp-G, Lp-Rp, Lp-Rdc Ls-D, Ls-Q, Ls-Rs, Ls-Rdc, Rdc R-X, Z-θd, Z-θr G-B, Y-θd, Y-θr Vdc-Idc						
Mathematics function		A(X+B)+C, X is test parameter, A, B,C is input parameter						
Equivalent circuit		Series, parallel						
Deviation measurement		Absolute deviation Δ compared with the nominal value Percentage deviation Δ% compared with the nominal value						
Calibration function		OPEN, SHORT, LOAD						
Range selection		AUTO, HOLD						
Range	LCR	100mΩ, 1Ω, 10Ω, 20Ω, 50Ω, 100Ω, 200Ω, 500Ω, 1kΩ, 2kΩ, 5kΩ, 10kΩ, 20kΩ, 50kΩ, 100kΩ, total 15 ranges						
	Rdc	1Ω, 10Ω, 20Ω, 50Ω, 100Ω, 200Ω, 500Ω, 1kΩ, 2kΩ, 5kΩ, 10kΩ, 20kΩ, 50kΩ, 100kΩ, total 15 ranges						
Trigger mode		INT, MAN, EXT, BUS						
Trigger delay		0 s -- 999 s, resolution 100us						
Test terminal configuration		Four-pair						
Test cable length		0m, 1m						
Test average		1-255 times						
Test time (ms)	Speed mode	20Hz	100Hz	1kHz	10kHz	100kHz	1MHz	2MHz
	FAST	330	100	20	7.7	5.7	5.6	5.6
	MED	380	180	110	92	89	88	88
	LONG	480	300	240	230	220	220	220
Test display range a 1×10 ⁻¹⁸ ; E 1×10 ¹⁸								
Cs, Cp		±1.000000 aF -- 999.9999 EF						
Ls,Lp		±1.000000 aH -- 999.9999 EH						
D		±0.000001 -- 9.999999						
Q		±0.01 -- 99999.99						
R, Rs, Rp, X, Z, Rdc		±1.000000 aΩ -- 999.9999 EΩ						
G,B,Y		±1.000000 aS -- 999.9999 ES						
Vdc		±1.000000 aV -- 999.9999 EV						
Idc		±1.000000 aA -- 999.9999 EA						
θ r		±1.000000 a rad -- 3.141593 rad						
θ d		±0.0001 deg -- 180.0000 deg						
Δ%		±0.0001% -- 999.9999%						
t		-99.99°C -- 1000.00°C						
Turn Ratio (extension pending)		±0.000000 -- 1000.000						
Basic test accuracy		0.05% (the details refer to the instruction)						
List sweep								
Sweep points		Up to 201 points						
Sweep Parameters		Test frequency, AC voltage, AC current, DC BIAS voltage, DC BIAS current						
Trigger mode	SEQ	Once triggered, test at the sweep points. /EOM/INDEX will be output one time.						
	STEP	Once triggered, test at one sweep point. /EOM/INDEX will be output at each point, but the list sweep comparator results only be output at the last /EOM.						

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List sweep comparator		Set one pair of lower limit and upper limit for each sweep point. Optional: judge through the first sweep parameter / judge through the second sweep parameter / not used in each limit.
List sweep time tag		In SEQ mode, set the trigger point to 0, by defining the time, the test start time can be recorded at each measurement point.
Graph sweep analysis		
Sweep points	51, 101, 201, 401 or 801	-----
Sweep trace	Primary or secondary parameters	-----
Display range	AUTO, HOLD	-----
Coordinate scale	Logarithm, linearity	-----
Sweep parameters	Test frequency, ACV, ACI, DCV BIAS/DCI BIAS, DC voltage source	-----
Sweep result display	Maximum value/ minimum value of primary/secondary parameter, primary/secondary value of the setting point	-----
Sweep graph storage	Sweep graphs can be saved to the interior FLASH, external USB storage or uploaded to the upper computer.	-----
Comparator		
Bin sorting	Primary parameter	9 BIN, OUT_OF_BINS, AUX_BIN, LOW_C_REJECT
	Secondary parameter	HIGH, IN, LOW
Bin limit setup		Absolute value, deviation value, percentage deviation value
Bin count		0 -- 999999
PASS/FAIL indication		When the primary parameter is one of the 9 BINs and the secondary parameter is IN, the PASS light on the front panel is ON, or FAIL light is ON.
Test auxiliary function		
Data buffer storage function		201 test results can be read in batches
Storage/Calling function		100 groups of test setting files in the internal nonvolatile memory 0--99 100 groups of test setting files in the USB storage 0—99
Keyboard lockout function		Front panel keys can be locked
USB HOST port		Universal Serial Bus socket, A class; FAT16/FAT32 format. USB flash disk storage or barcode scanning
USB DEVICE port		Universal Serial Bus socket, small size B class (4 contact position); Correspond to USBTMC-USB488 and USB 2.0 The female joint is used for connecting the external control unit.
LAN		10/100BaseT Ethernet, 8pins, two selectable speed mode
HANDLER interface		Be used for bin sorting signal output
External DC BIAS control		Control TH1778A/TH1778AS Bias current source, at most 1 set of TH1778+5 sets of TH1778S (120A MAX)
RS232		
GPIB (option)		24 pin D-Sub port (D-24 class), the female joint is compatible with IEEE488.1, 2 and SCPI.

Standard Accessories

Three core power cord
TH26010 Gold-plated short circuit board

TH26011BS 4 terminal pair Kelvin test clip leads
TH26005C Four-terminal test fixture

Options

TH26108C Four-terminal-pair patch test fixture
TH26007A Magnetic ring test fixture
TH26047 Four-terminal test fixture
TH26063 Four-terminal test fixture
TH2838-GPIB GPIB Interface board

TH26008A SMD component test fixture
TH26009B SMD Kelvin test tweezers
TH26048 Four-terminal test fixture
TH26062A Four-terminal test fixture
TH26033 GPIB Control cable