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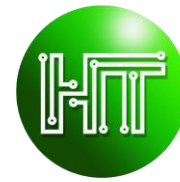
Low-voltage High-current HT6329S multiphase DC-DC 3V 40A Demo Board

Date: 10 Jun 2025



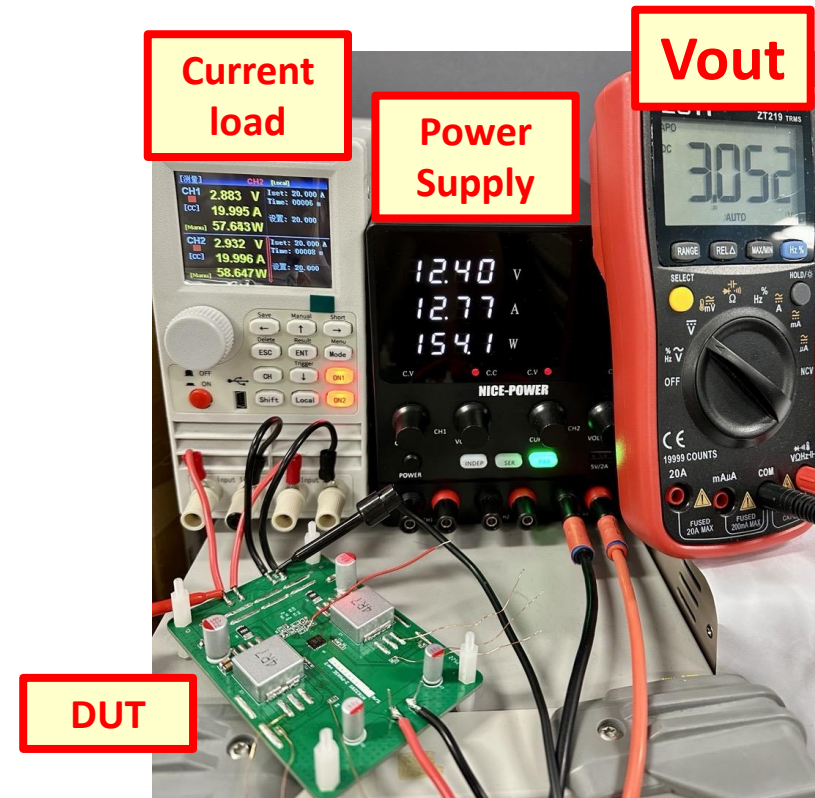
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Test setup



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Configuration	
Inductor	2 x 4.7uH
Frequency	500kHz
Vin	12V
Vout	3V



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Switching waveform



Current load = 2A

Ch1 

Ch2 

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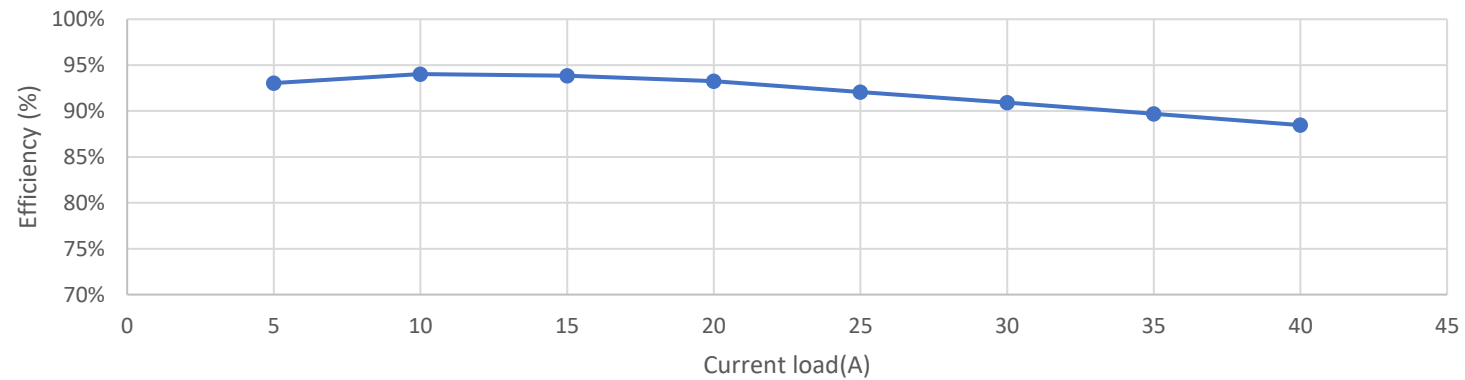
Current load (Full Load) = 40A



Efficiency @ Vin = 12V

Input current (A)	Current load (A)	Efficiency
1.375	5	93.1%
2.72	10	94.0%
4.085	15	93.8%
5.476	20	93.3%
6.932	25	92.1%
8.414	30	90.9%
9.934	35	89.7%
11.5	40	88.5%

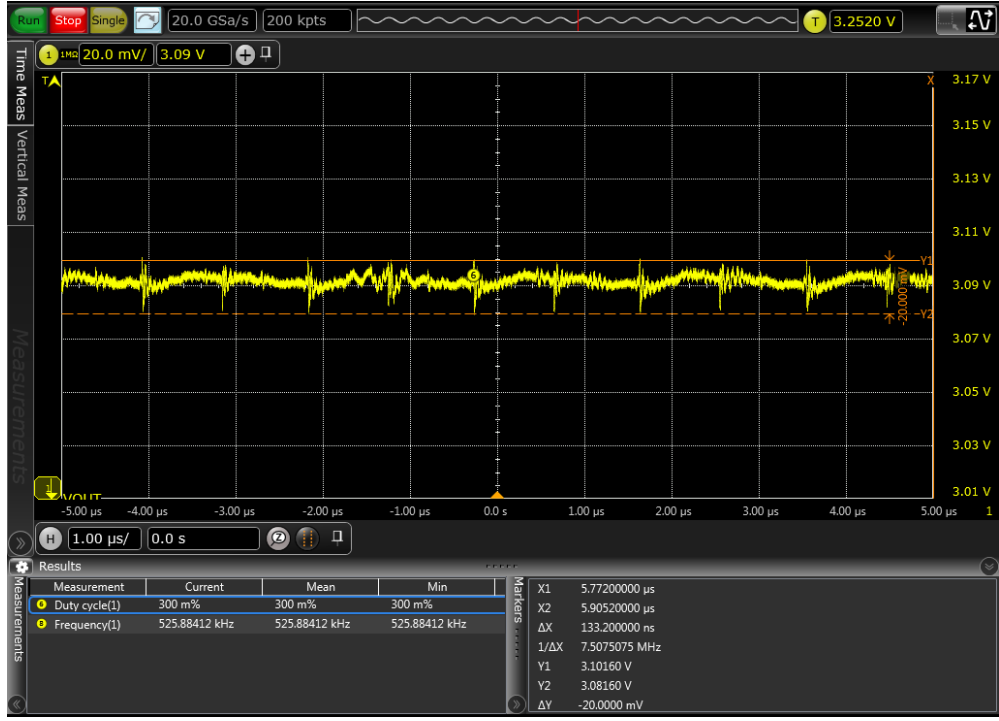
Efficiency vs Current Load



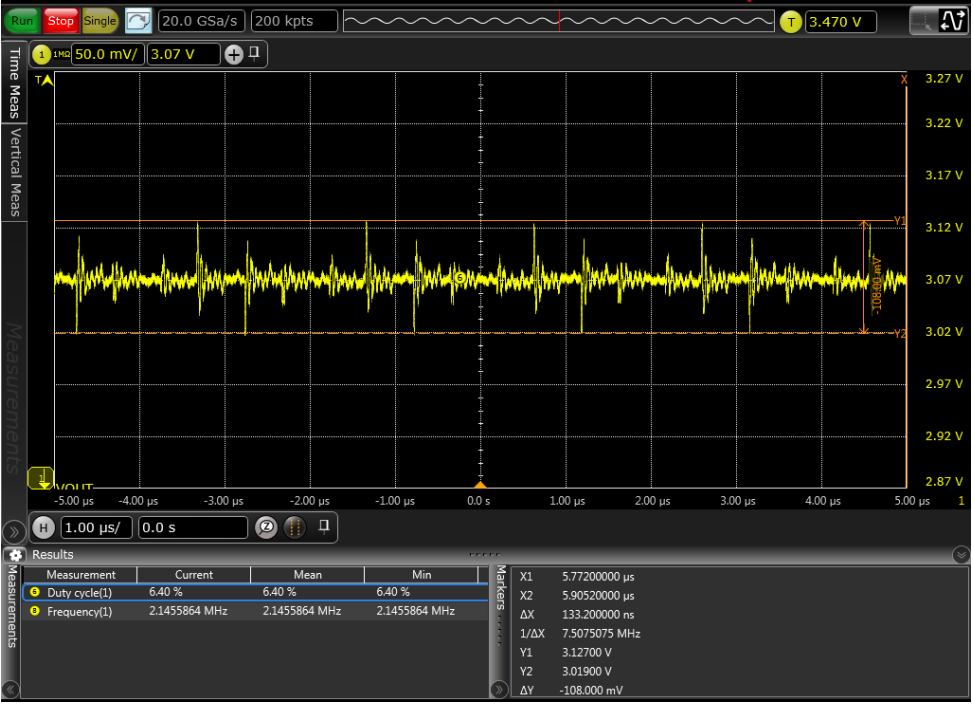
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Output Ripple



$I_{out} = 2A$
 $V_{ripple-pp} = 20mV$



$I_{out} = 40A$
 $V_{ripple-pp} = 108mV$

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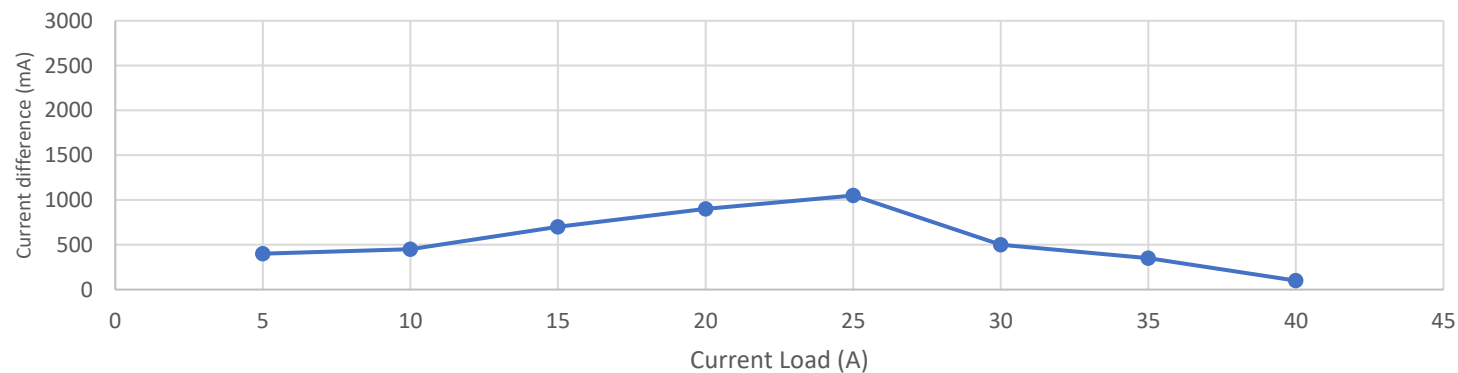
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Output Current Balancing

Current load (A)	Ch1 Rsense voltage (mV)	Ch2 Rsense voltage (mV)	Current difference of 2 channel (mA)
5	4.6	5.4	400
10	9.6	10.5	450
15	14.4	15.8	700
20	19.3	21.1	900
25	24.3	26.4	1050
30	29.9	30.9	500
35	35	35.7	350
40	40.3	40.5	100

Current difference across 2 channel (mA)



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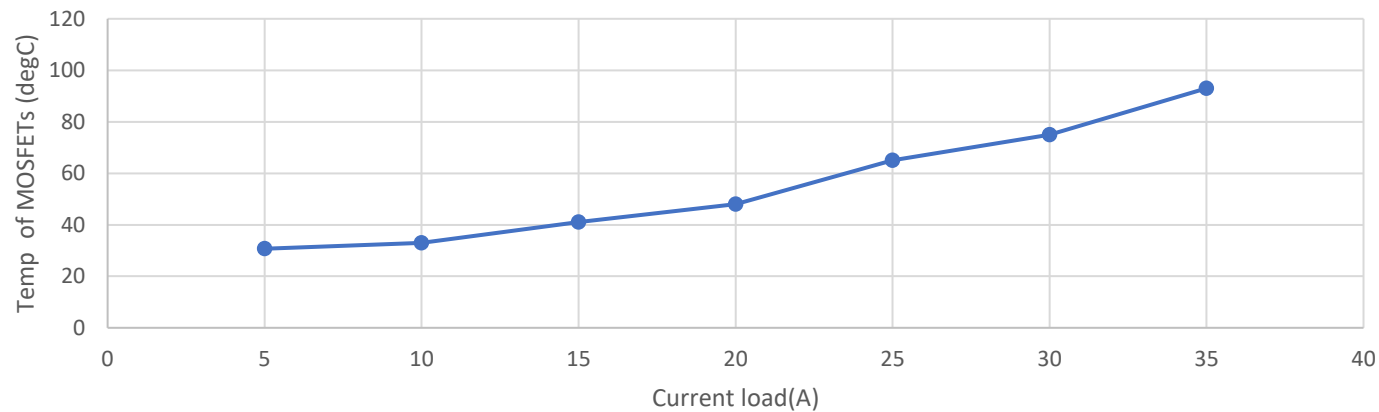
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Thermal Characteristics

Room temperature: 25degC

Current load (A)	Highest temperature spot (degC) (at MOSFETs, operated after 2 min)
5	30.7
10	33
15	41
20	48
25	65
30	75
35	93

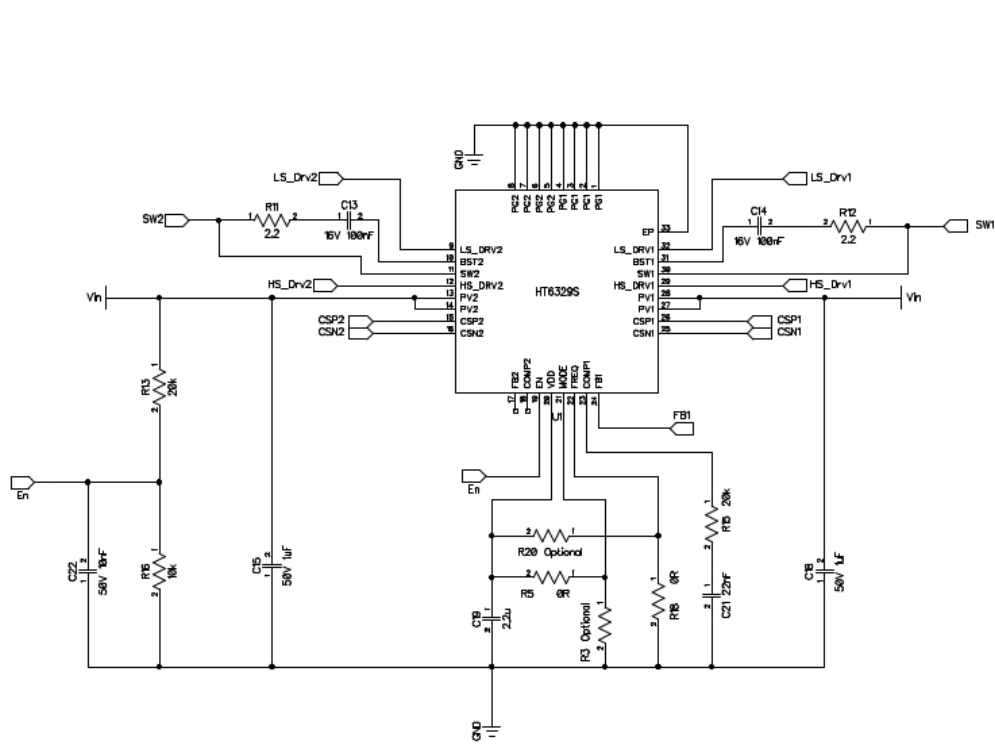
MOSFET Temperature vs Current load



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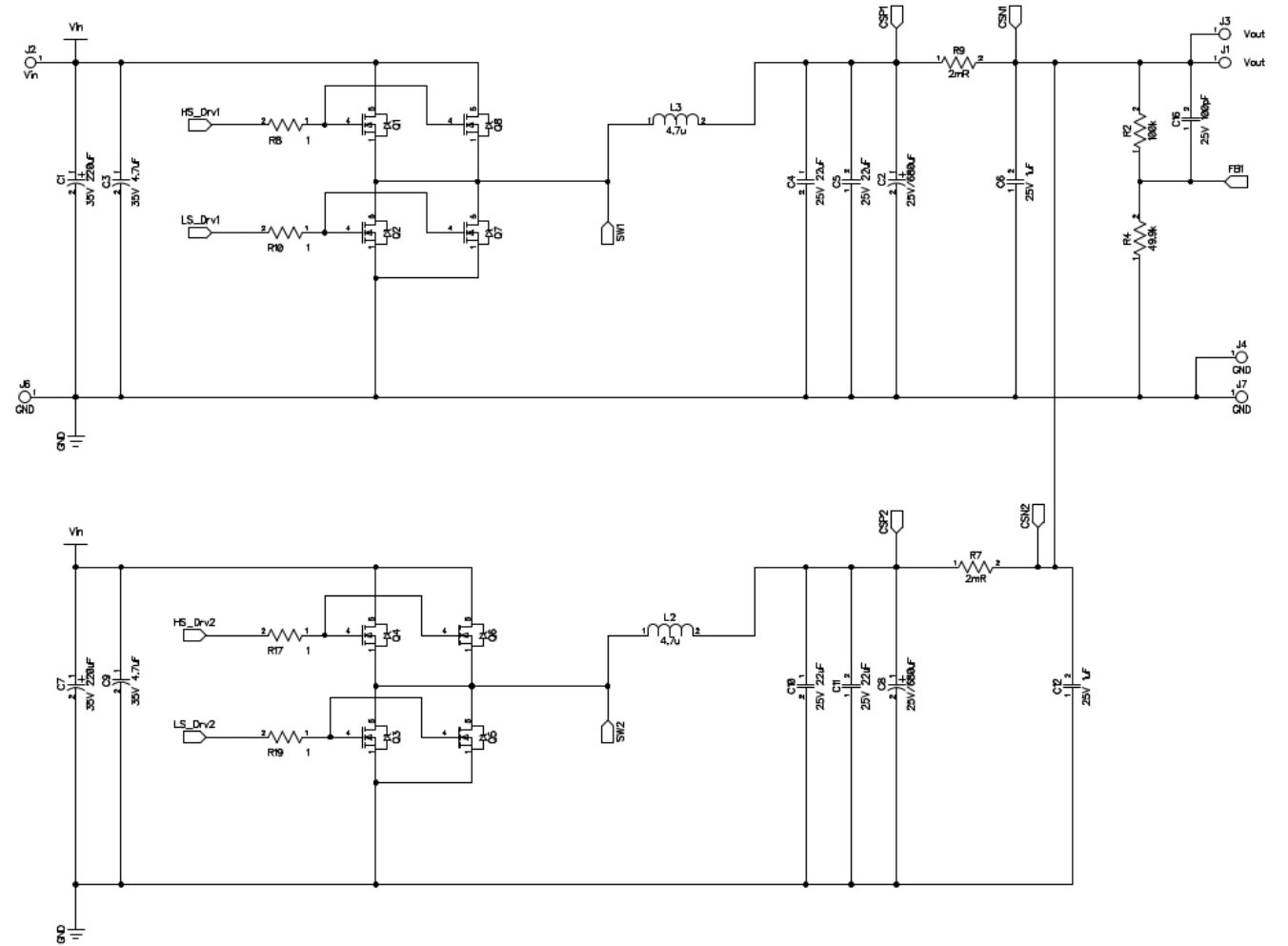
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Schematic diagram



R5 connected to VDD, 2-phase mode, single output
 R3 connected to GND, normal mode, dual output
 Only one R5 or R3 connected to the pin at the time

R18 for programming switching frequency,
 tie to VDD set switching frequency to 700kHz
 tie to GND set switching frequency to 500kHz
 left open set switching frequency to 300kHz



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聯絡我們 Contact Us (Hong Kong Office)

Tel: (852) 36195375

Address: Unit 713, 7/F, 12W, 12 Science Park West Avenue,

Email: httadmin@hightt.com

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