



Superior ESD Testing Solutions

WaveAppraise

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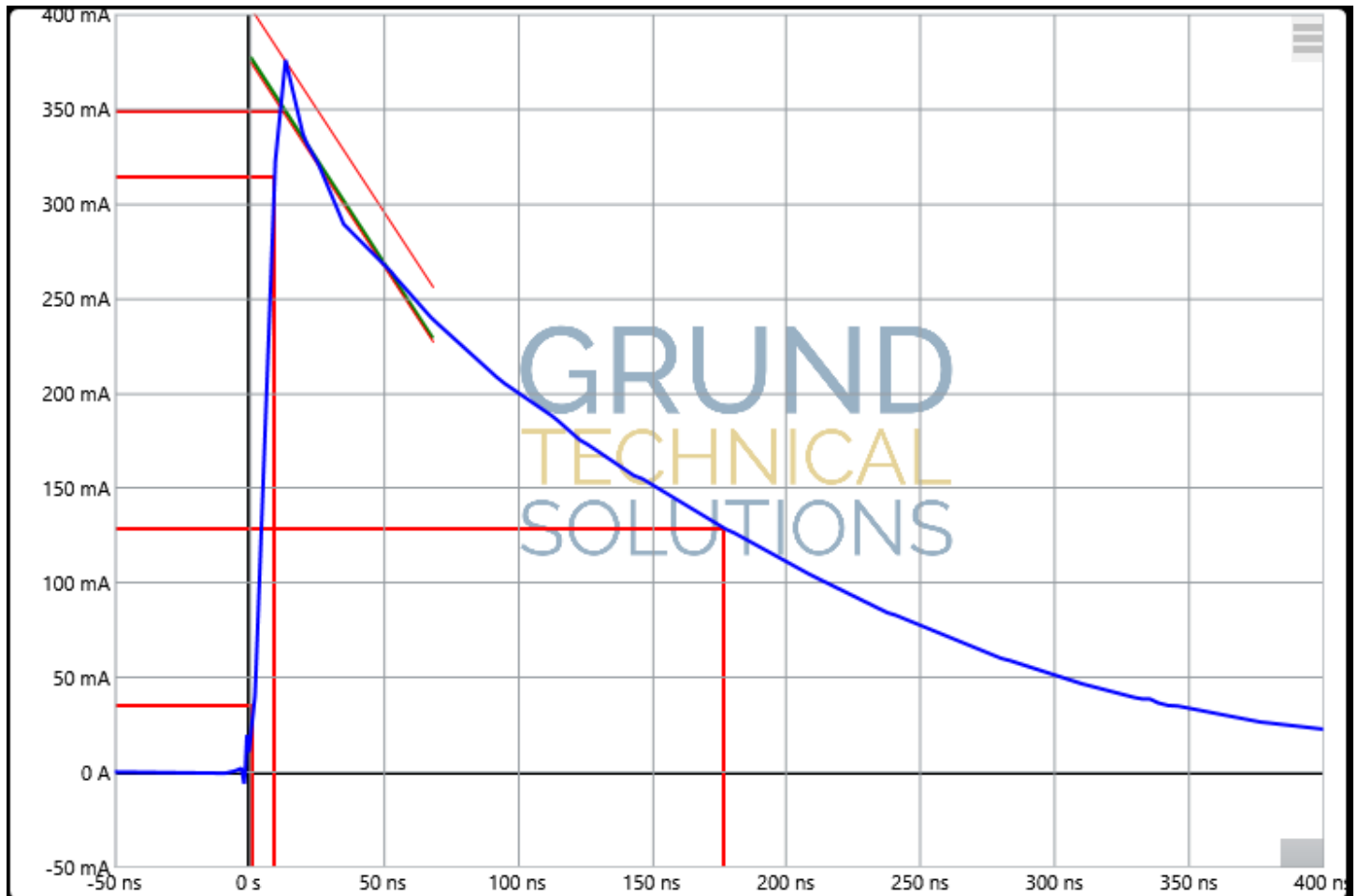
Milpitas, CA 95035

Email: support@grundtech.com

HBM Short (0 Ω)		
Voltage	Outcome	Remarks
500 V	Pass	
-500 V	Pass	
1 kV	Pass	
-1 kV	Fail	Decay Time (Td) = 172.41 ns (130 ns - 170 ns)
2 kV	Pass	
-2 kV	Fail	Decay Time (Td) = 172.62 ns (130 ns - 170 ns)
4 kV	Pass	
-4 kV	Fail	Decay Time (Td) = 172.88 ns (130 ns - 170 ns)
8 kV	Pass	
-8 kV	Pass	

HBM Short (0 Ω) +500V

PASS



Measurements for HBM 0-Ohm JS-001

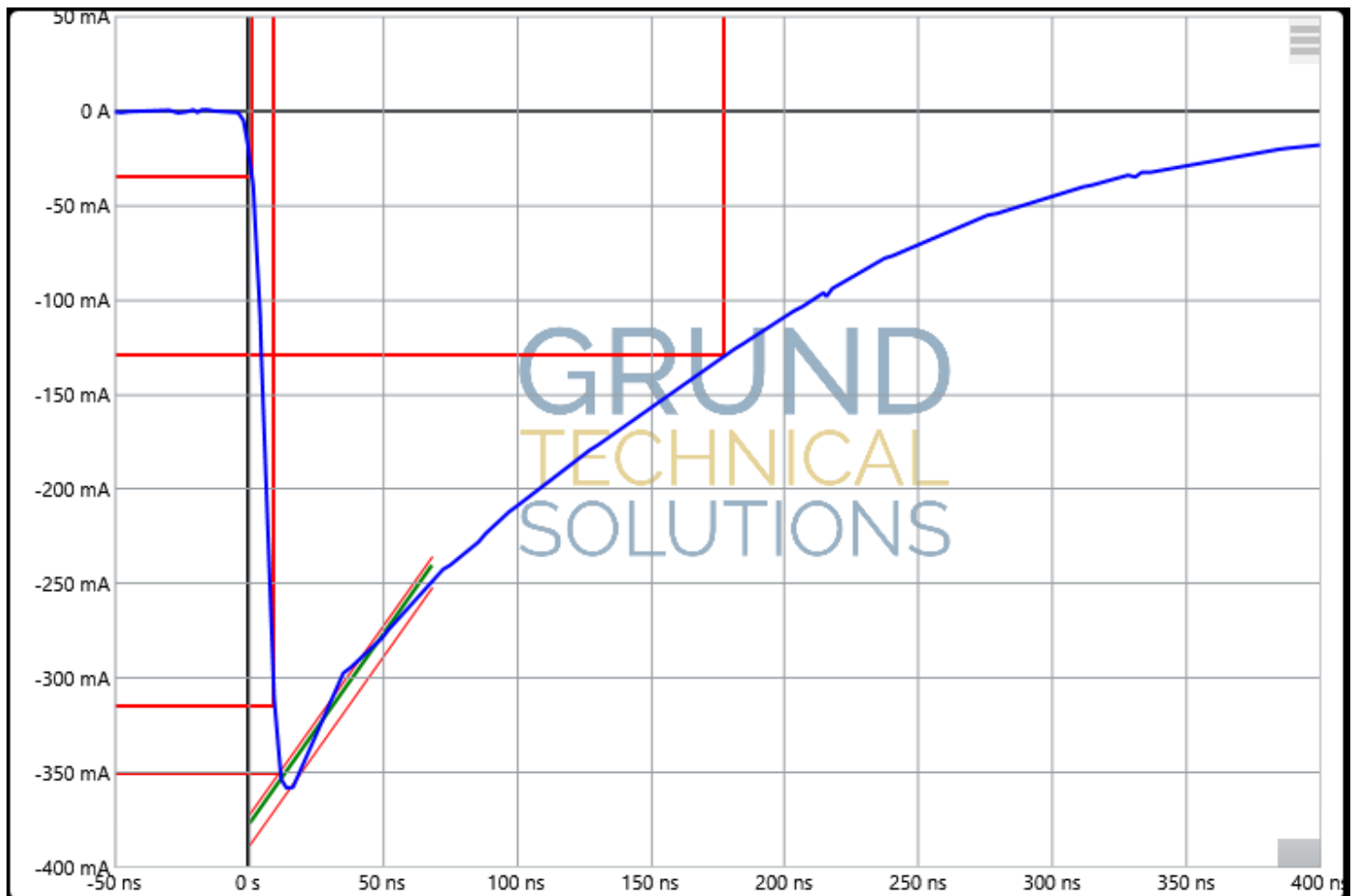
Measurement	Value	Outcome	Min Allowed	Max Allowed
Peak Current (Ips)	348.83 mA	Pass	300 mA	370 mA
Rise Time (Tr)	7.82 ns	Pass	2 ns	10 ns
Decay Time (Td)	163.35 ns	Pass	130 ns	170 ns
Ring % (Ir)	8.2 %	Pass	0 %	15 %

Properties

Attenuation	10
Date	1/1/2019 4:00:00 AM
Tester Model	GTS PurePulse
Tester Serial #	000000
Scope Channel	0
Data Points	1400
Sampling Rate	2.5 GS
Scope Model	Demo Scope Model
Scope Serial #	SN123456
Scope Cal Due Date	1/1/0001 12:00:00 AM
Operator	
Current Probe	CT2

HBM Short (0 Ω) -500V

PASS



Measurements for HBM 0-Ohm JS-001

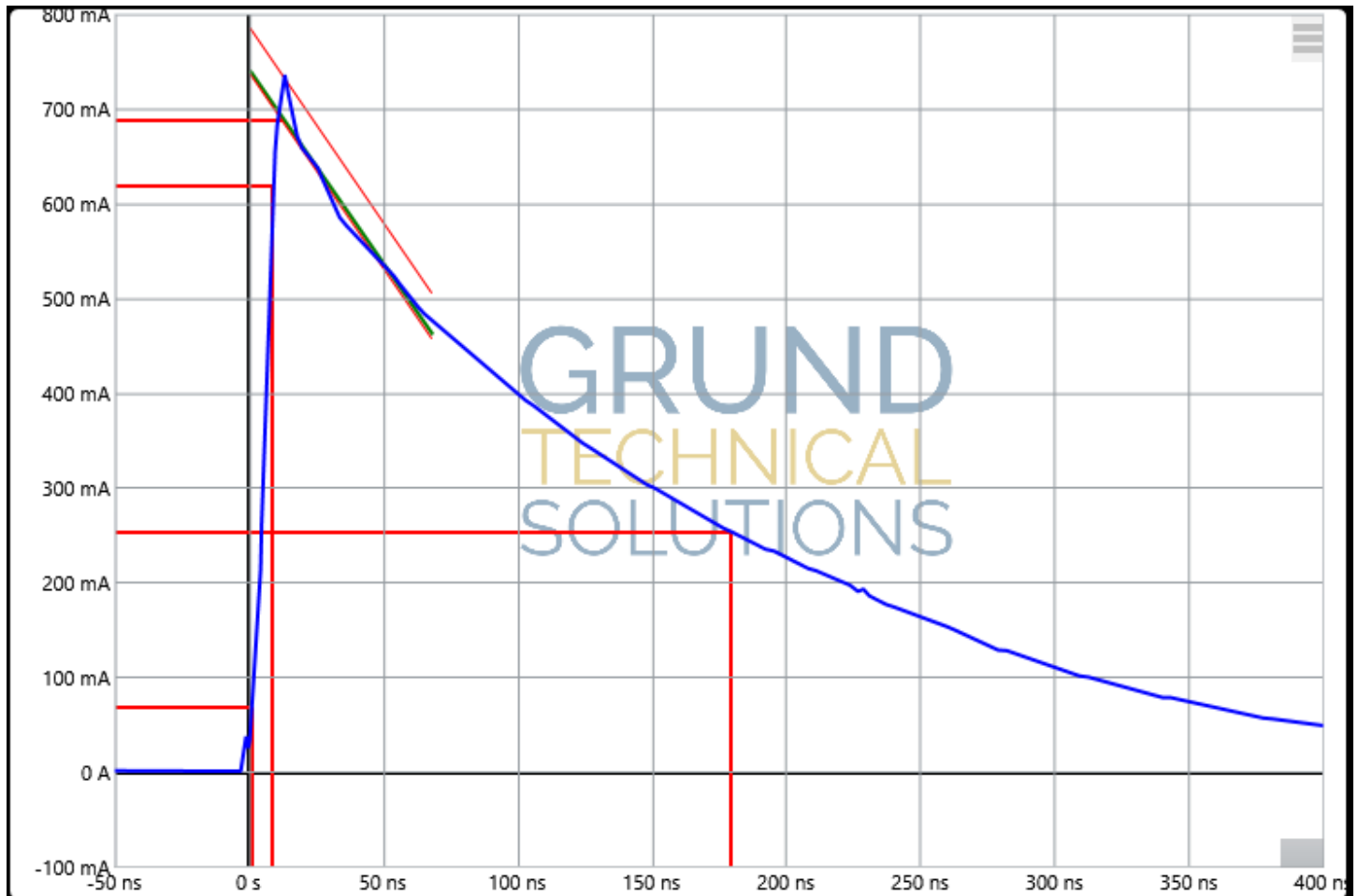
Measurement	Value	Outcome	Min Allowed	Max Allowed
Peak Current (Ips)	-350.21 mA	Pass	-300 mA	-370 mA
Rise Time (Tr)	8.41 ns	Pass	2 ns	10 ns
Decay Time (Td)	163.88 ns	Pass	130 ns	170 ns
Ring % (Ir)	4.53 %	Pass	0 %	15 %

Properties

Attenuation	10
Date	1/1/2019 4:00:00 AM
Tester Model	GTS PurePulse
Tester Serial #	000000
Scope Channel	0
Data Points	1400
Sampling Rate	2.5 GS
Scope Model	Demo Scope Model
Scope Serial #	SN123456
Scope Cal Due Date	1/1/0001 12:00:00 AM
Operator	
Current Probe	CT2

HBM Short (0 Ω) +1000V

PASS

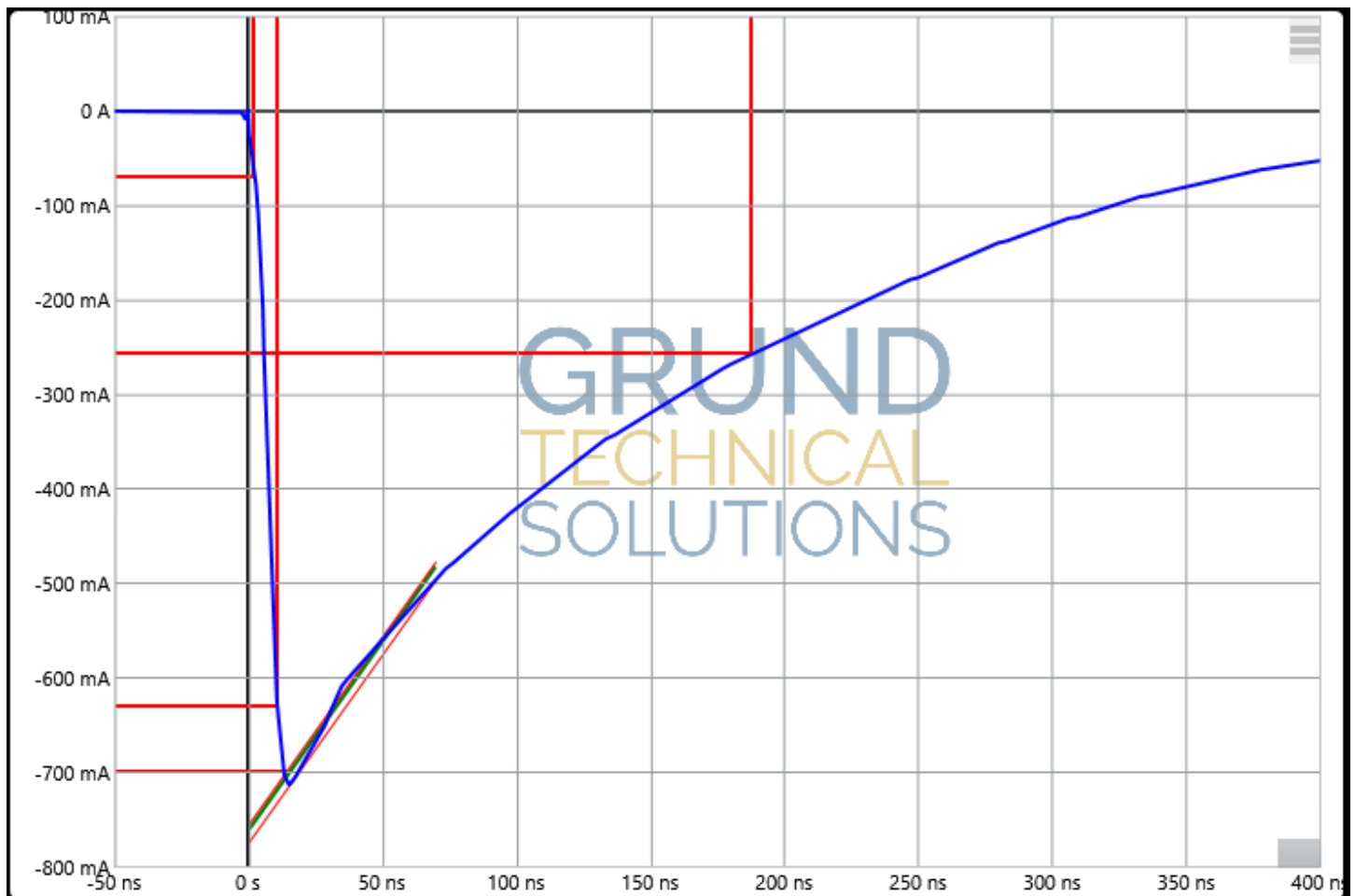


Measurements for HBM 0-Ohm JS-001

Measurement	Value	Outcome	Min Allowed	Max Allowed
Peak Current (Ips)	687.17 mA	Pass	600 mA	730 mA
Rise Time (Tr)	7.78 ns	Pass	2 ns	10 ns
Decay Time (Td)	166.38 ns	Pass	130 ns	170 ns
Ring % (I _r)	7.04 %	Pass	0 %	15 %

Properties

Attenuation	10
Date	1/1/2019 4:00:00 AM
Tester Model	GTS PurePulse
Tester Serial #	000000
Scope Channel	0
Data Points	1400
Sampling Rate	2.5 GS
Scope Model	Demo Scope Model
Scope Serial #	SN123456
Scope Cal Due Date	1/1/0001 12:00:00 AM
Operator	
Current Probe	CT2

HBM Short (0 Ω) -1000V**FAIL****Measurements for HBM 0-Ohm JS-001**

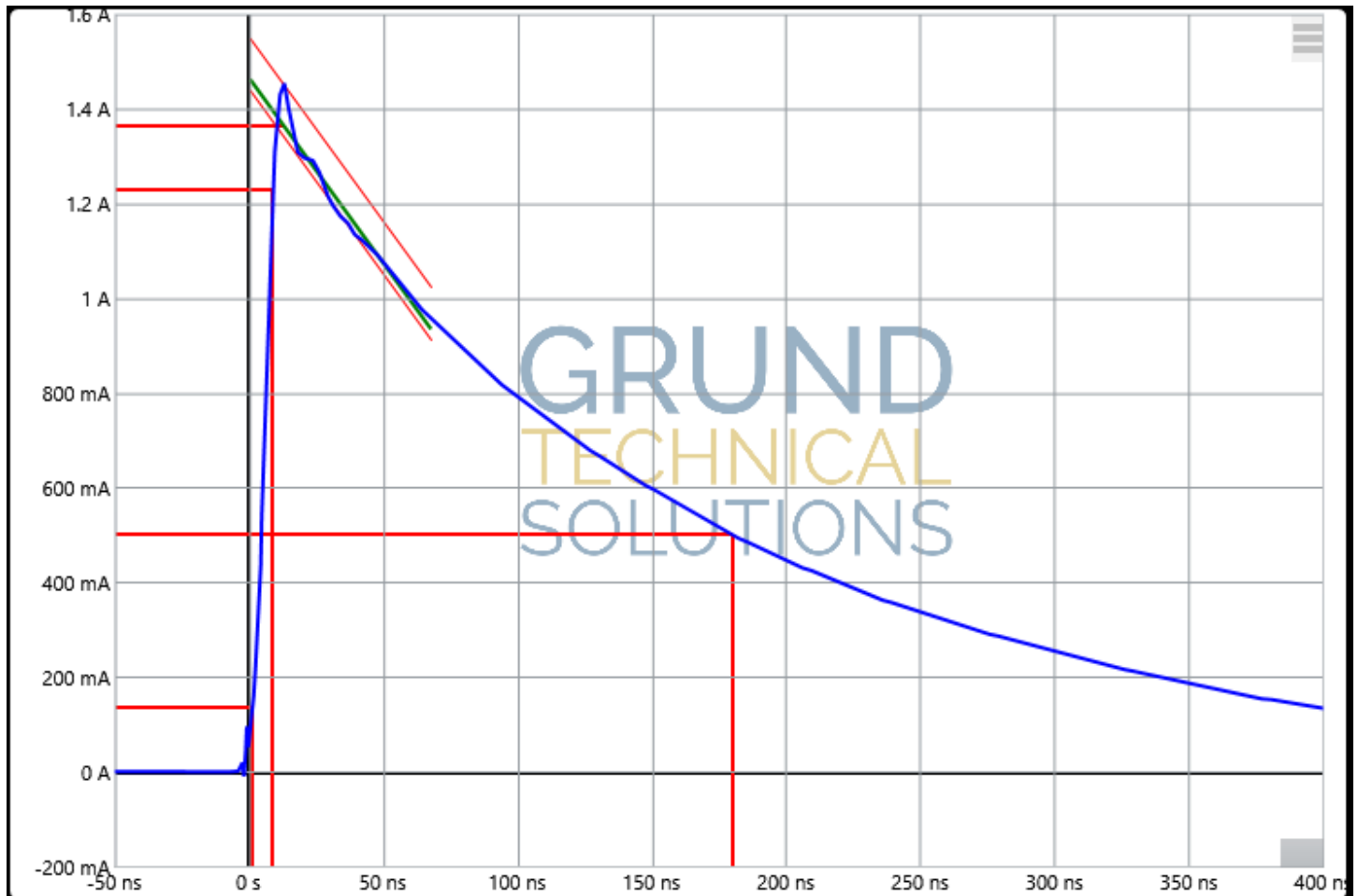
Measurement	Value	Outcome	Min Allowed	Max Allowed
Peak Current (Ips)	-699.54 mA	Pass	-600 mA	-730 mA
Rise Time (Tr)	8.29 ns	Pass	2 ns	10 ns
Decay Time (Td)	172.41 ns	Fail	130 ns	170 ns
Ring % (Ir)	2.57 %	Pass	0 %	15 %

Properties

Attenuation	10
Date	1/1/2019 4:00:00 AM
Tester Model	GTS PurePulse
Tester Serial #	000000
Scope Channel	0
Data Points	1400
Sampling Rate	2.5 GS
Scope Model	Demo Scope Model
Scope Serial #	SN123456
Scope Cal Due Date	1/1/0001 12:00:00 AM
Operator	
Current Probe	CT2

HBM Short (0 Ω) +2000V

PASS



Measurements for HBM 0-Ohm JS-001

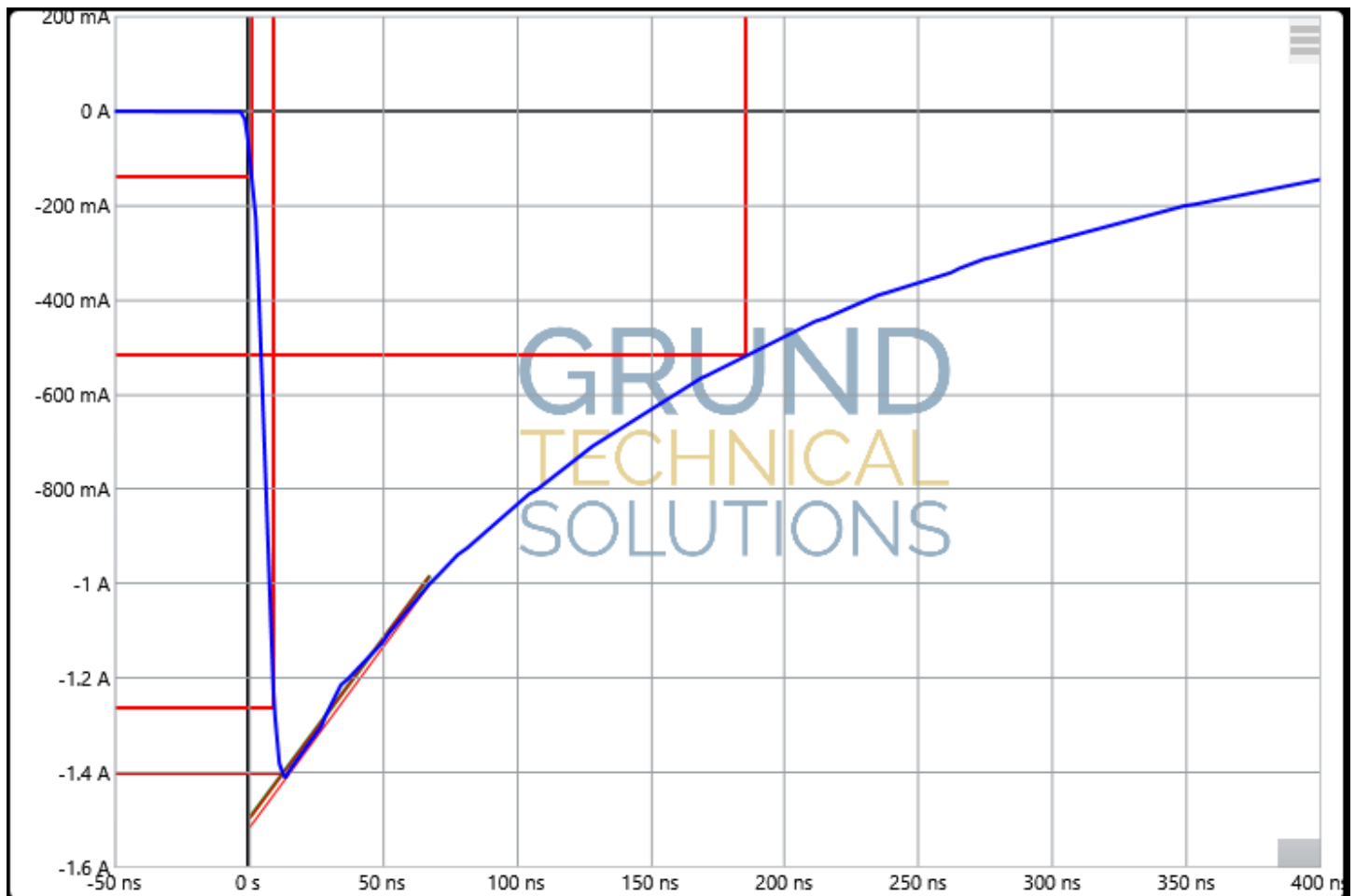
Measurement	Value	Outcome	Min Allowed	Max Allowed
Peak Current (Ips)	1.36 A	Pass	1.2 A	1.47 A
Rise Time (Tr)	7.56 ns	Pass	2 ns	10 ns
Decay Time (Td)	167.17 ns	Pass	130 ns	170 ns
Ring % (Ir)	8.01 %	Pass	0 %	15 %

Properties

Attenuation	10
Date	1/1/2019 4:00:00 AM
Tester Model	GTS PurePulse
Tester Serial #	000000
Scope Channel	0
Data Points	1400
Sampling Rate	2.5 GS
Scope Model	Demo Scope Model
Scope Serial #	SN123456
Scope Cal Due Date	1/1/0001 12:00:00 AM
Operator	
Current Probe	CT2

HBM Short (0 Ω) -2000V

FAIL



Measurements for HBM 0-Ohm JS-001

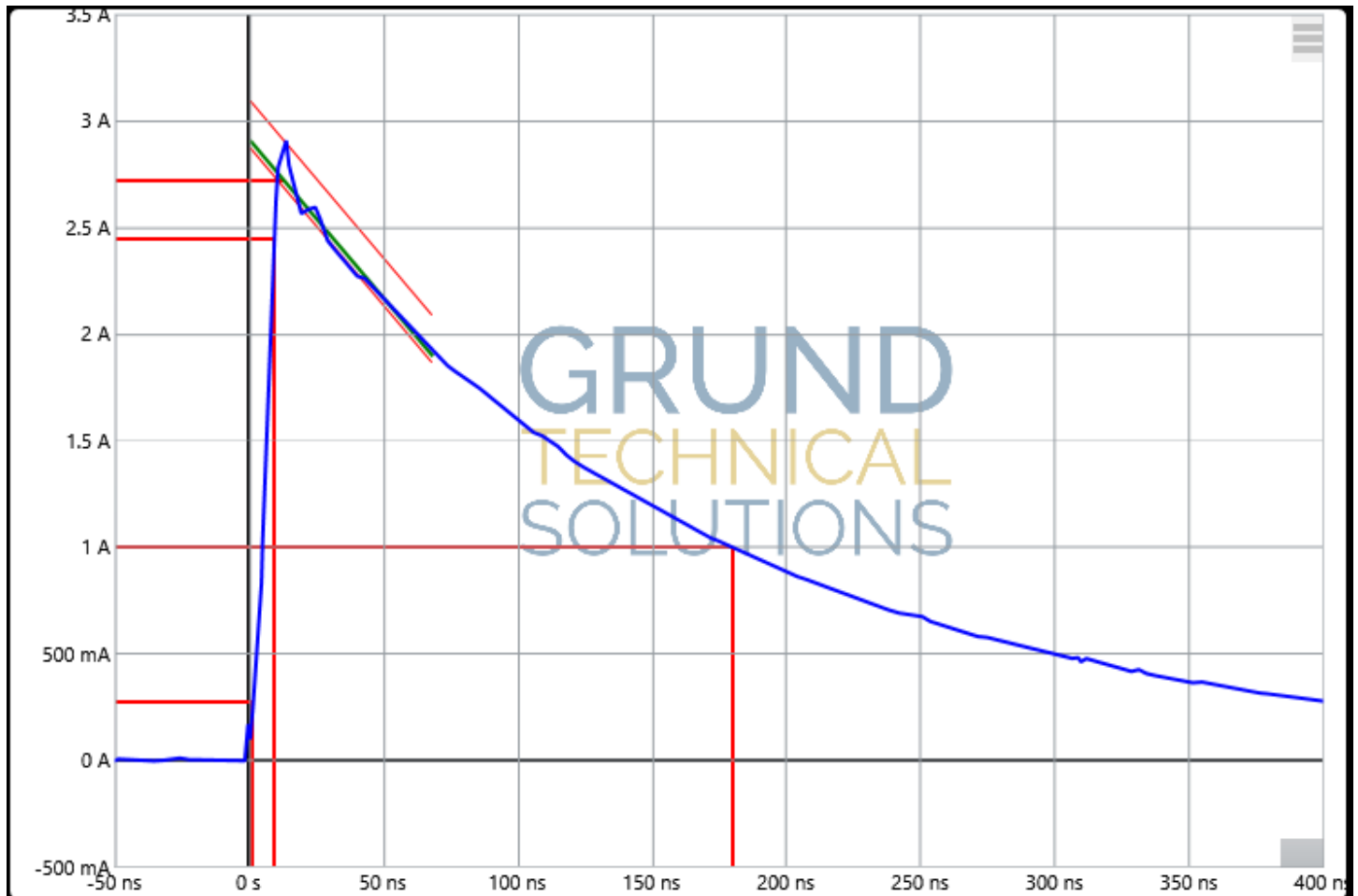
Measurement	Value	Outcome	Min Allowed	Max Allowed
Peak Current (Ips)	-1.4 A	Pass	-1.2 A	-1.47 A
Rise Time (Tr)	7.92 ns	Pass	2 ns	10 ns
Decay Time (Td)	172.62 ns	Fail	130 ns	170 ns
Ring % (I _r)	1.46 %	Pass	0 %	15 %

Properties

Attenuation	10
Date	1/1/2019 4:00:00 AM
Tester Model	GTS PurePulse
Tester Serial #	000000
Scope Channel	0
Data Points	1400
Sampling Rate	2.5 GS
Scope Model	Demo Scope Model
Scope Serial #	SN123456
Scope Cal Due Date	1/1/0001 12:00:00 AM
Operator	
Current Probe	CT2

HBM Short (0 Ω) +4000V

PASS



Measurements for HBM 0-Ohm JS-001

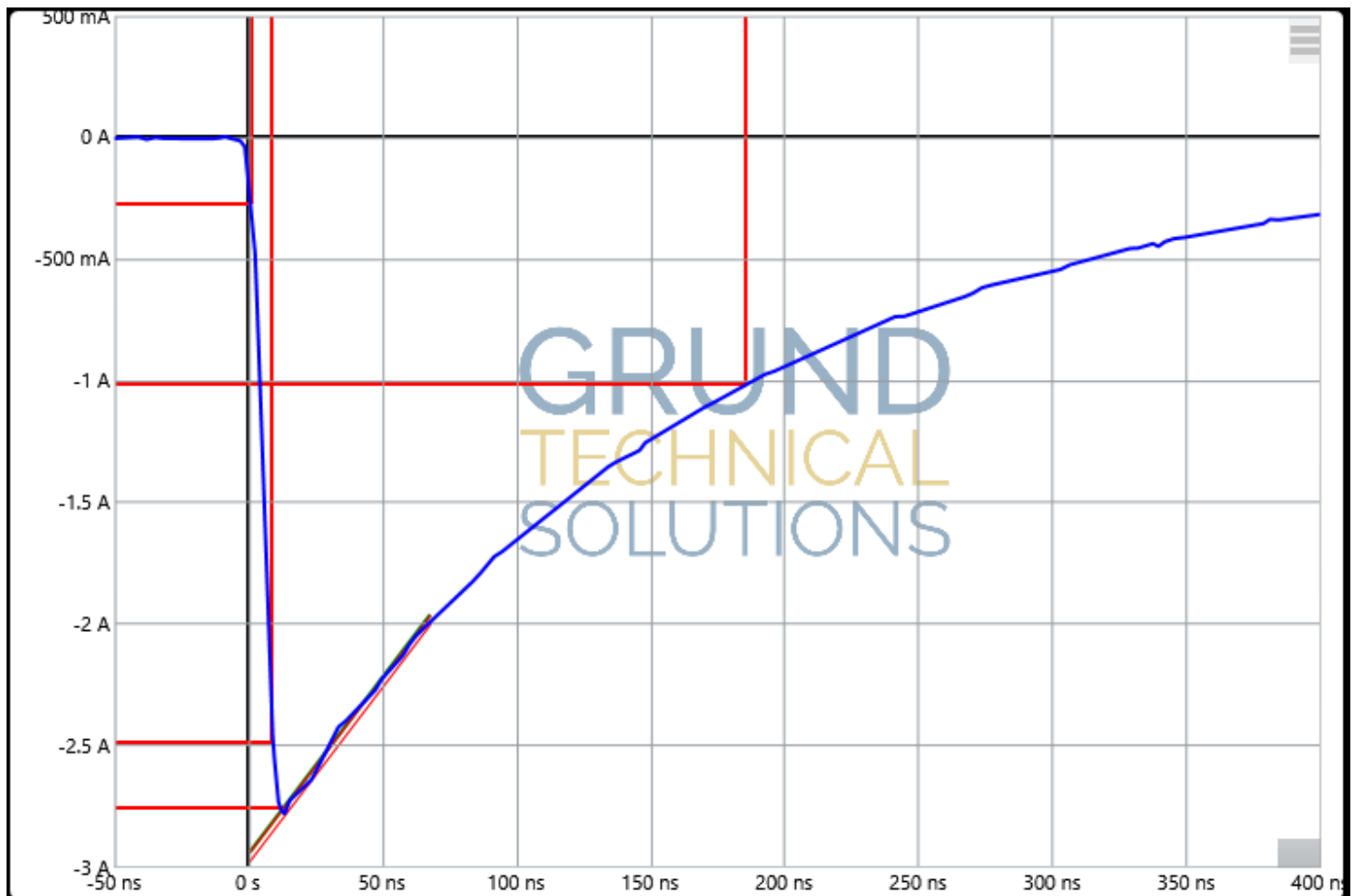
Measurement	Value	Outcome	Min Allowed	Max Allowed
Peak Current (Ips)	2.72 A	Pass	2.4 A	2.93 A
Rise Time (Tr)	7.58 ns	Pass	2 ns	10 ns
Decay Time (Td)	166.63 ns	Pass	130 ns	170 ns
Ring % (Ir)	8.13 %	Pass	0 %	15 %

Properties

Attenuation	10
Date	1/1/2019 4:00:00 AM
Tester Model	GTS PurePulse
Tester Serial #	000000
Scope Channel	0
Data Points	1400
Sampling Rate	2.5 GS
Scope Model	Demo Scope Model
Scope Serial #	SN123456
Scope Cal Due Date	1/1/0001 12:00:00 AM
Operator	
Current Probe	CT2

HBM Short (0 Ω) -4000V

FAIL



Measurements for HBM 0-Ohm JS-001

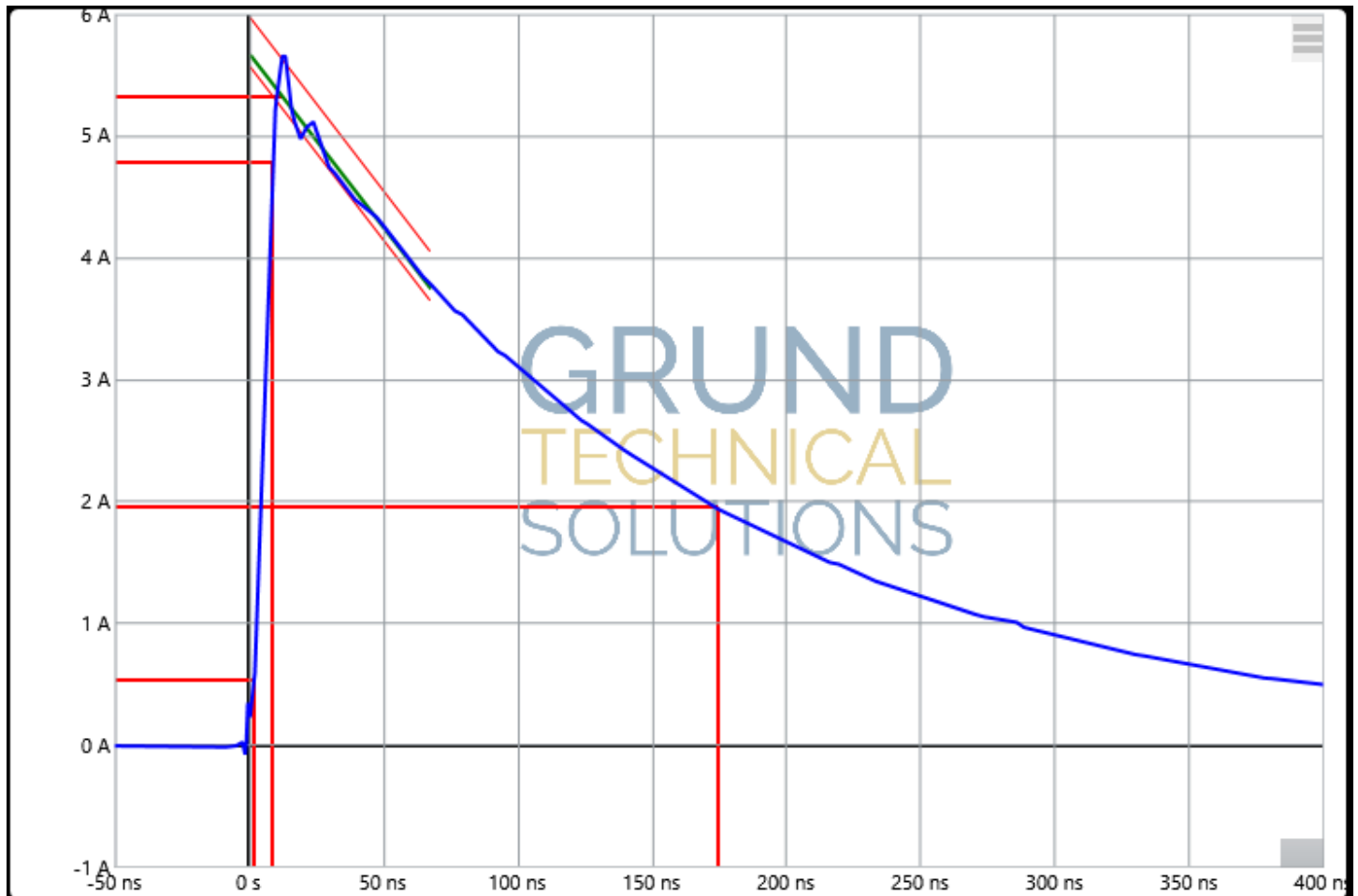
Measurement	Value	Outcome	Min Allowed	Max Allowed
Peak Current (Ips)	-2.76 A	Pass	-2.4 A	-2.93 A
Rise Time (Tr)	7.82 ns	Pass	2 ns	10 ns
Decay Time (Td)	172.88 ns	Fail	130 ns	170 ns
Ring % (I _r)	1.54 %	Pass	0 %	15 %

Properties

Attenuation	10
Date	1/1/2019 4:00:00 AM
Tester Model	GTS PurePulse
Tester Serial #	000000
Scope Channel	0
Data Points	1400
Sampling Rate	2.5 GS
Scope Model	Demo Scope Model
Scope Serial #	SN123456
Scope Cal Due Date	1/1/0001 12:00:00 AM
Operator	
Current Probe	CT2

HBM Short (0 Ω) +8000V

PASS



Measurements for HBM 0-Ohm JS-001

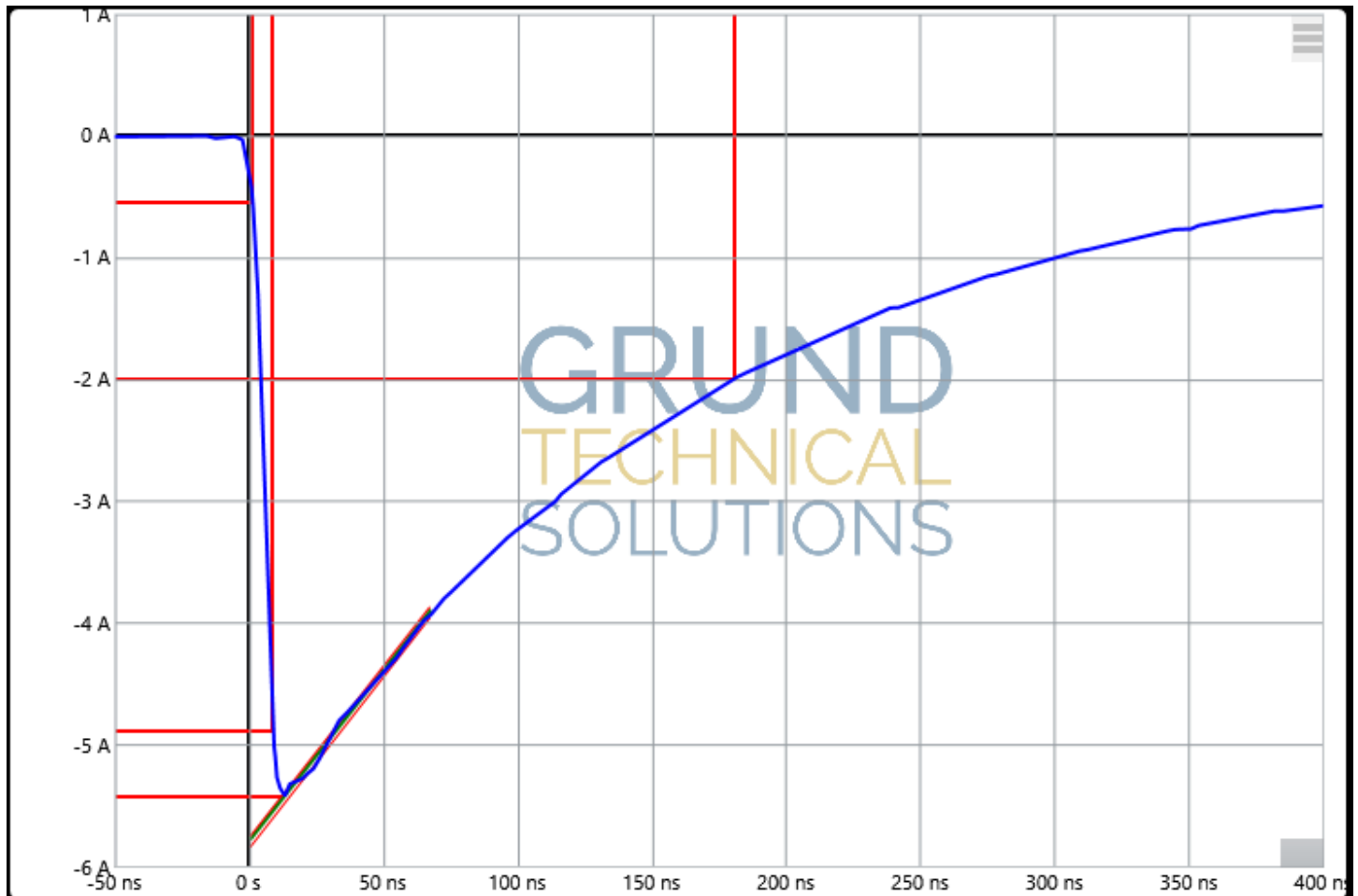
Measurement	Value	Outcome	Min Allowed	Max Allowed
Peak Current (Ips)	5.31 A	Pass	4.8 A	5.87 A
Rise Time (Tr)	7.07 ns	Pass	2 ns	10 ns
Decay Time (Td)	162.05 ns	Pass	130 ns	170 ns
Ring % (Ir)	7.59 %	Pass	0 %	15 %

Properties

Attenuation	10
Date	1/1/2019 4:00:00 AM
Tester Model	GTS PurePulse
Tester Serial #	000000
Scope Channel	0
Data Points	1400
Sampling Rate	2.5 GS
Scope Model	Demo Scope Model
Scope Serial #	SN123456
Scope Cal Due Date	1/1/0001 12:00:00 AM
Operator	
Current Probe	CT2

HBM Short (0 Ω) -8000V

PASS



Measurements for HBM 0-Ohm JS-001

Measurement	Value	Outcome	Min Allowed	Max Allowed
Peak Current (Ips)	-5.42 A	Pass	-4.8 A	-5.87 A
Rise Time (Tr)	7.84 ns	Pass	2 ns	10 ns
Decay Time (Td)	167.93 ns	Pass	130 ns	170 ns
Ring % (Ir)	1.62 %	Pass	0 %	15 %

Properties

Attenuation	10
Date	1/1/2019 4:00:00 AM
Tester Model	GTS PurePulse
Tester Serial #	000000
Scope Channel	0
Data Points	1400
Sampling Rate	2.5 GS
Scope Model	Demo Scope Model
Scope Serial #	SN123456
Scope Cal Due Date	1/1/0001 12:00:00 AM
Operator	
Current Probe	CT2