# Characteristics Data
# TOS9300 Series

**May 13, 2025**

**KIKUSUI ELECTRONICS CORP.**

**Ver.1.02**

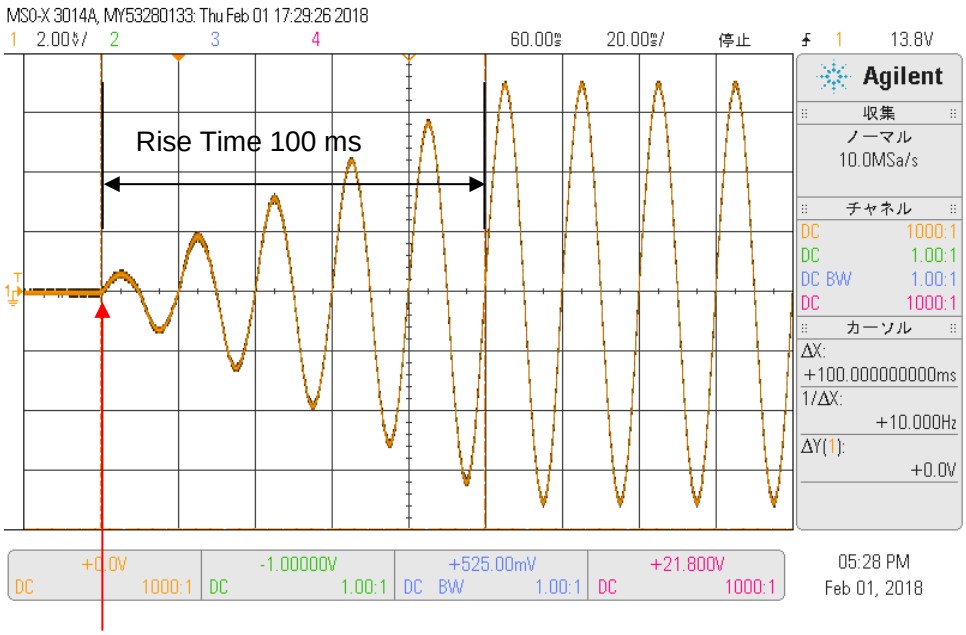
# CONTENTS



*All numerical data provided in this document are reference values only and do not constitute a product guarantee across all models.

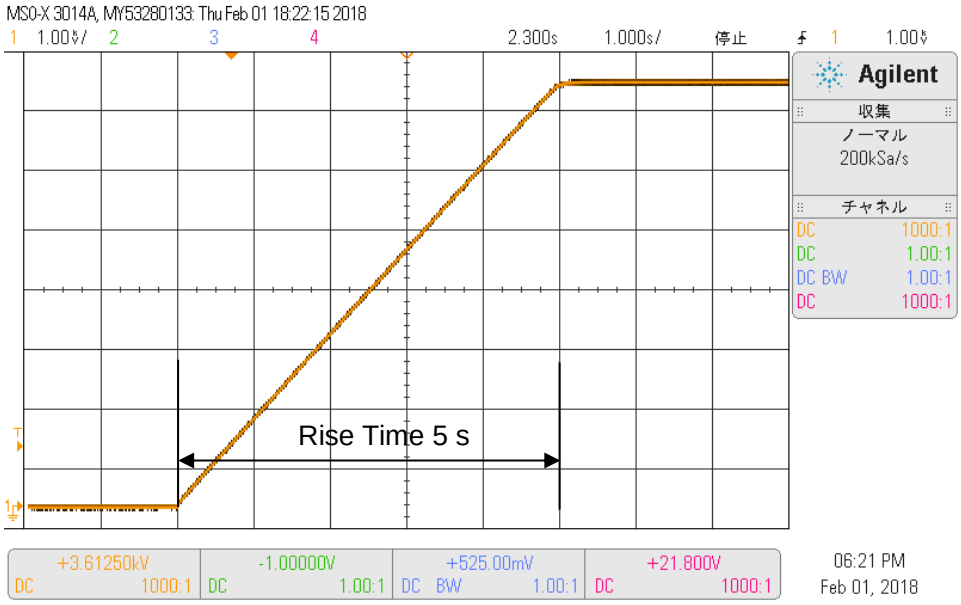
* This data applies to all models of TOS9300 series except TOS9311.

| Model | TOS9300 Series | Temperature | |
|---|---|---|---|
| Item | Voltage Rise Waveform<br>(ACW: AC withstanding voltage test) | Testing Circuit | |
| Condition | Test Voltage = 5000 V, Open (No load), Rise Time = 0.1 s | | |

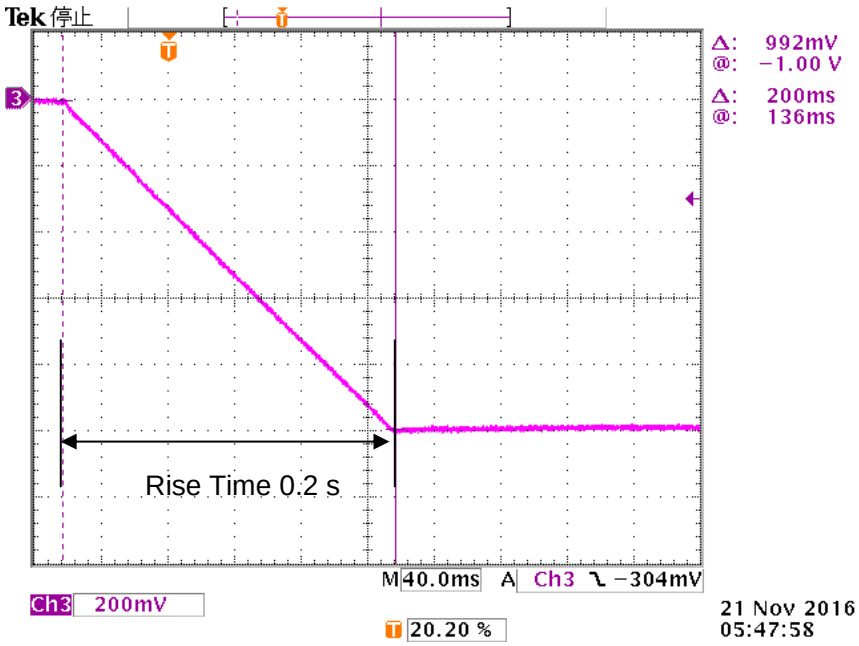



Zero-crossing (zero potential) start

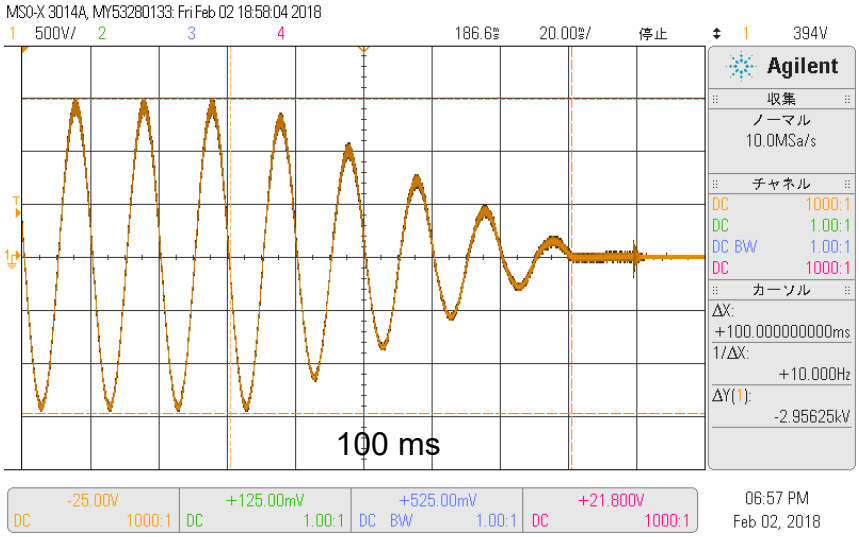
| Model | TOS9300 Series | Temperature | |
|---|---|---|---|
| Item | Voltage Rise Waveform<br>(DCW: DC withstanding voltage test) | Testing Circuit | |
| Condition | Test Voltage = 7200 V, Open (No load), Rise Time = 5 s | | |



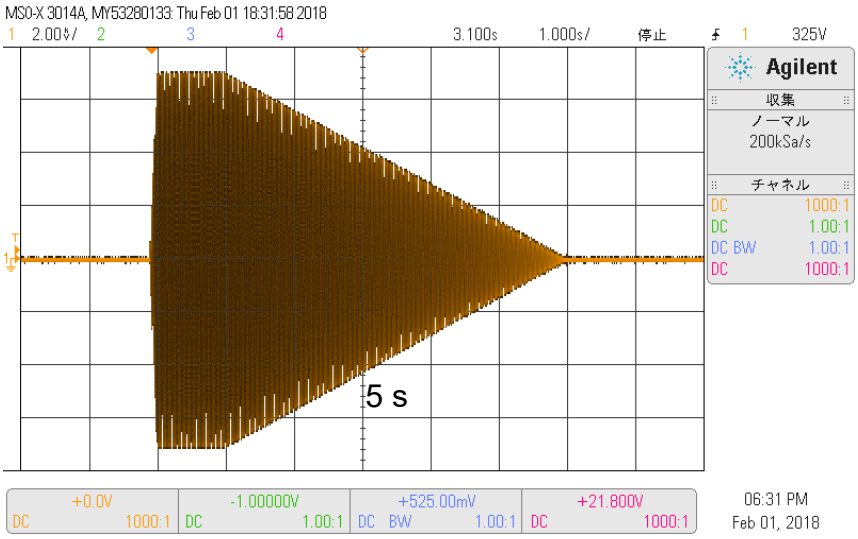
| Model | TOS9300 Series | Temperature | |
|---|---|---|---|
| Item | Voltage Rise Waveform<br>(IR: insulation resistance test) | Testing Circuit | |
| Condition | Test Voltage = -1000 V, Open (No load), Rise Time = 0.2 s | | |



| Model | TOS9300 Series | Temperature | |
|---|---|---|---|
| Item | Voltage Fall Waveform (ACW) | Testing Circuit | |
| Condition | Test Voltage = 5000 V, Open (No load), Fall Time = 0.1 s/5 s | | |

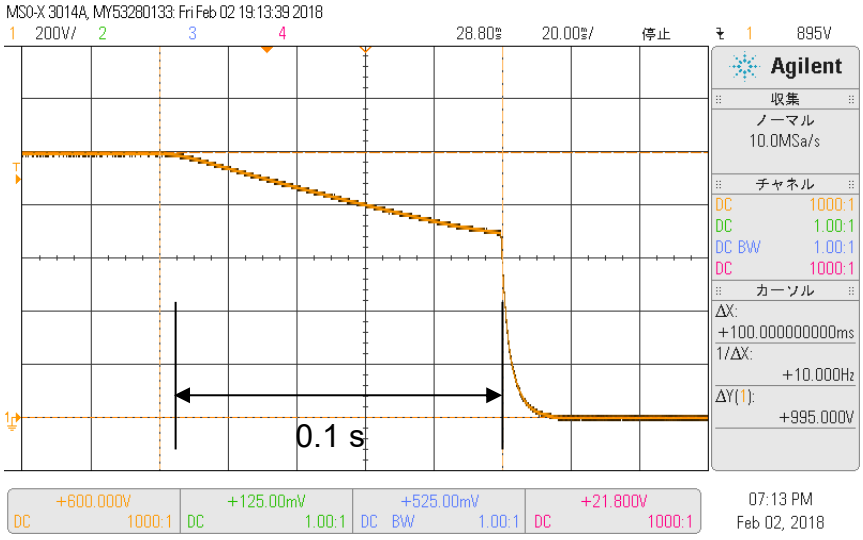



Fall Time = 0.1 s

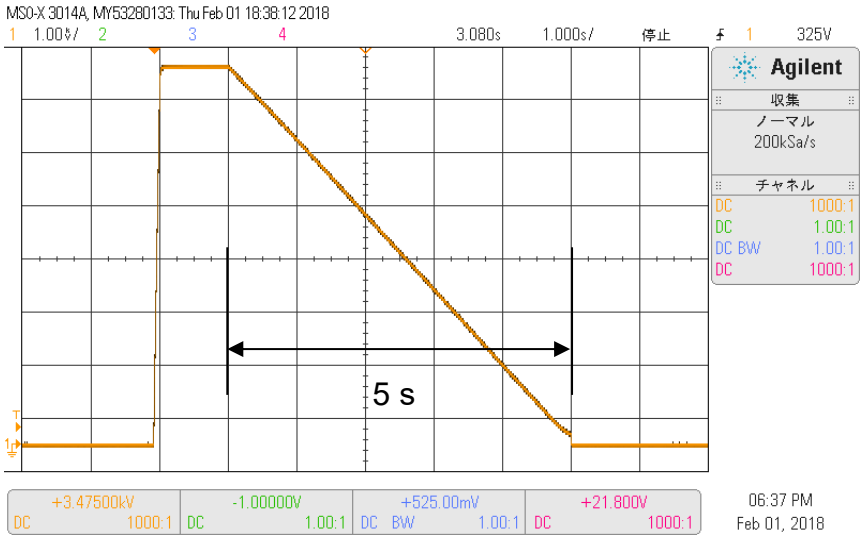



Fall Time = 5 s

| Model | TOS9300 Series | Temperature | |
|---|---|---|---|
| Item | Voltage Fall Waveform (DCW) | Testing Circuit | |
| Condition | Test Voltage = 7200 V, Open (No load) | | |

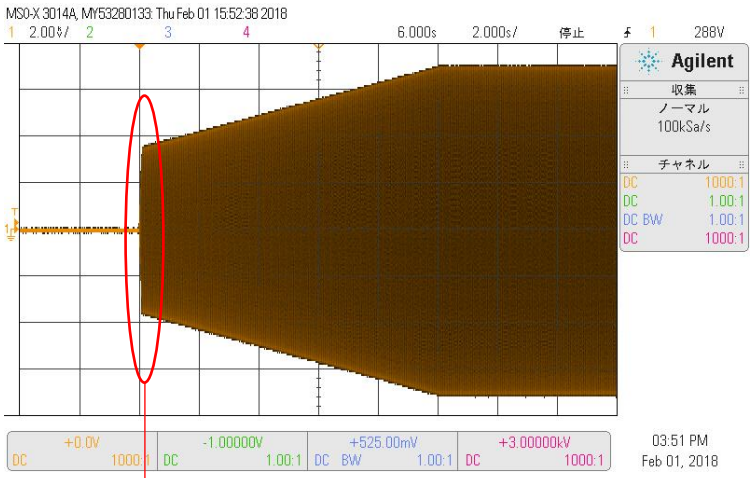



Fall Time = 0.1 s

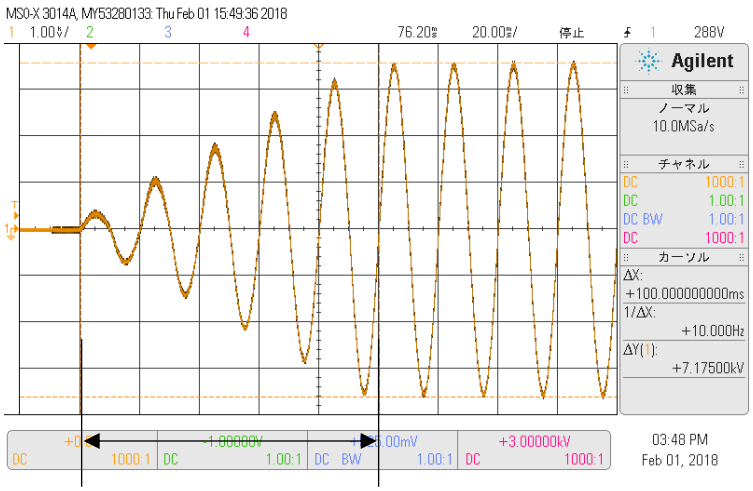



Fall Time = 5 s

| Model | TOS9300 Series | Temperature | |
|---|---|---|---|
| Item | Start Voltage (ACW) | Testing Circuit | |
| Condition | Test Voltage = 5000 V, 50 Hz<br>Start Voltage = 50%, Rise Time = 10 s | | |

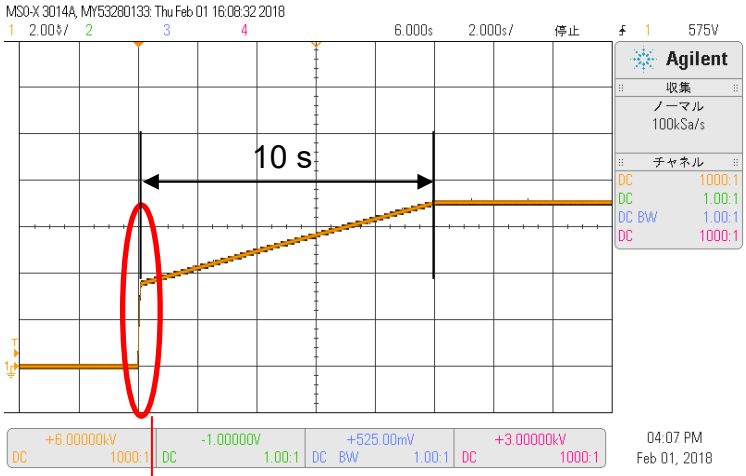



Enlarged View

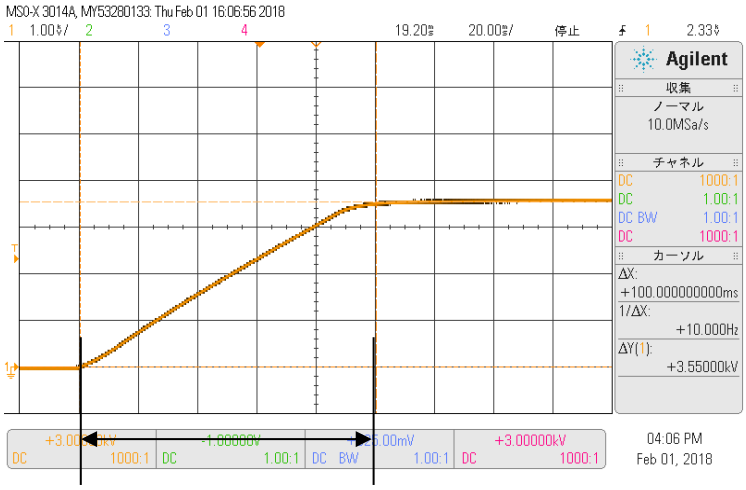



The time to reach the Start Voltage: 100 ms

| Model | TOS9300 Series | Temperature | |
|---|---|---|---|
| Item | Start Voltage (DCW) | Testing Circuit | |
| Condition | Test Voltage = 7200 V, Start Voltage = 50%<br>Rise Time = 10 s | | |

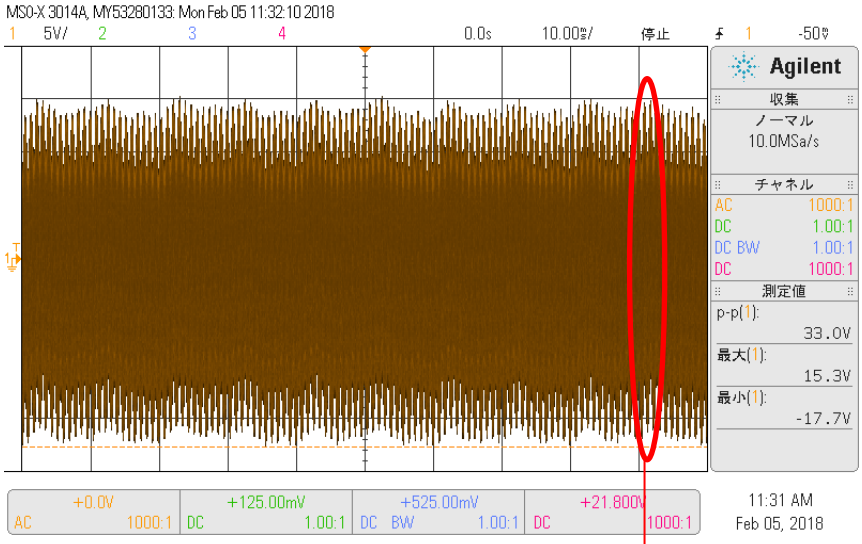



Enlarged View



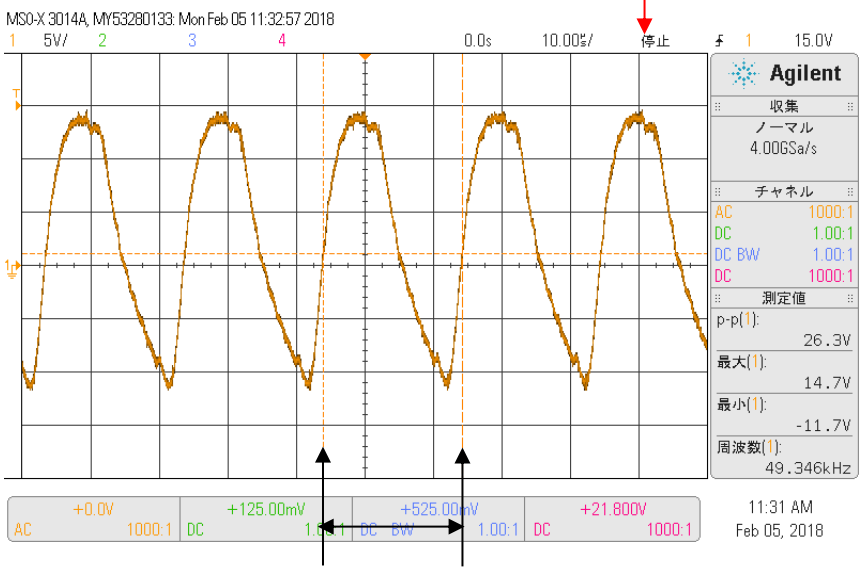

The time to reach the Start Voltage: 100 ms

| Model | TOS9300 Series | Temperature | |
|---|---|---|---|
| Item | Ripple Voltage (DCW) | Testing Circuit | |
| Condition | Test Voltage = 5000 V, Measurement Current = 20 mA | | |



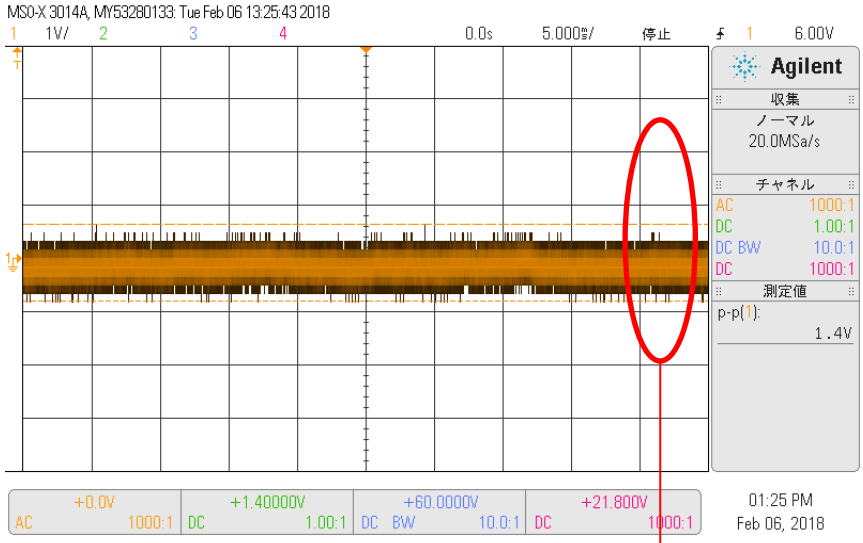

Vp-p = 33 V

Enlarged View



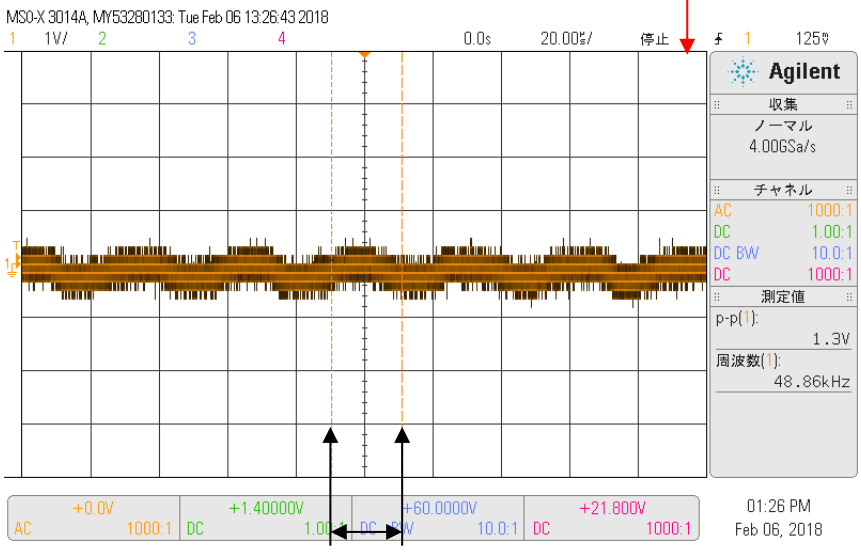

Approx. 50 kHz

| Model | TOS9300 Series | Temperature | |
|---|---|---|---|
| Item | Ripple Voltage (IR) | Testing Circuit | |
| Condition | Test Voltage = -1000 V, Open (No load) | | |



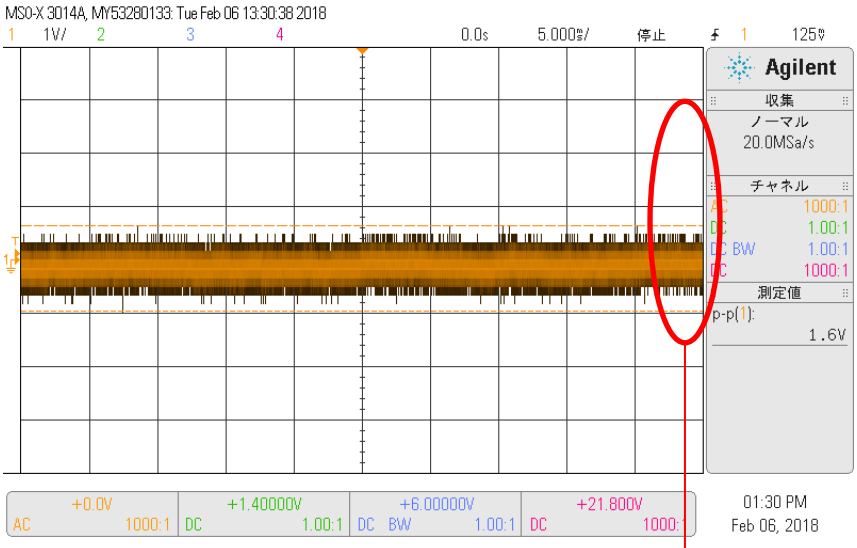

Vp-p = 1.4 V

Enlarged View



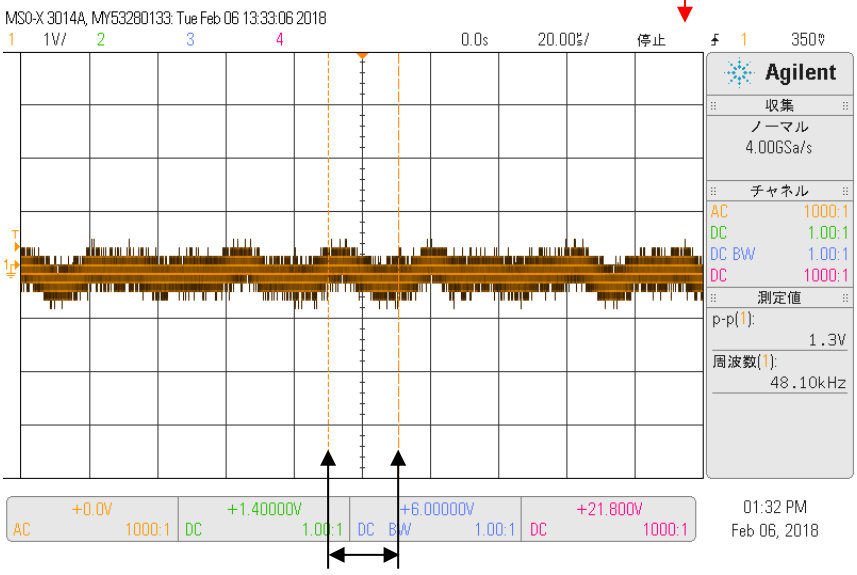

Approx. 50 kHz

| Model | TOS9300 Series | Temperature | |
|---|---|---|---|
| Item | Ripple Voltage (IR) | Testing Circuit | |
| Condition | Test Voltage = -1000 V, 1 MΩ | | |



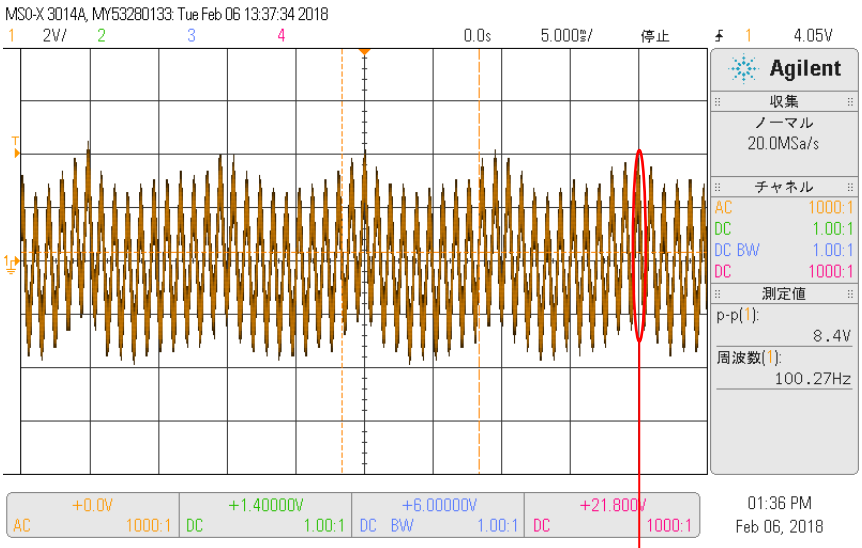

Vp-p = 1.4 V

Enlarged View



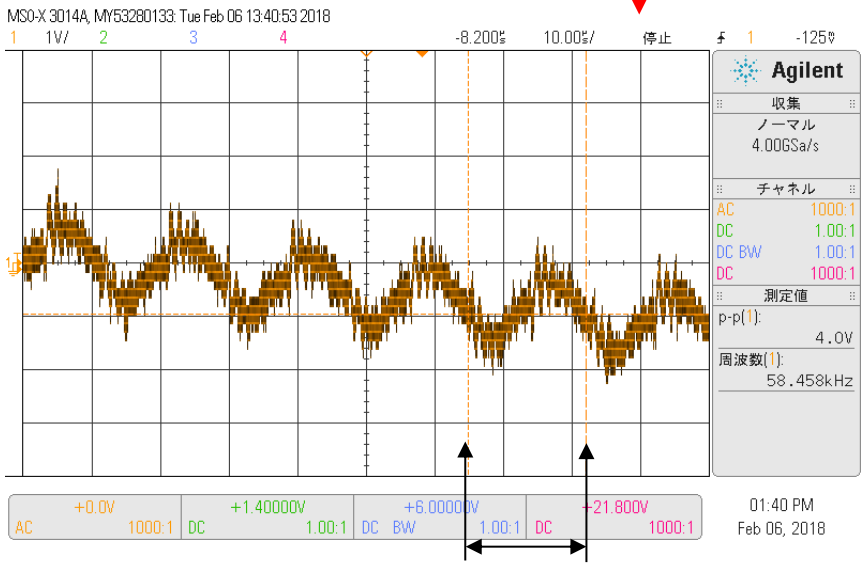

Approx. 50 kHz

| Model | TOS9300 Series | Temperature | |
|---|---|---|---|
| Item | Ripple Voltage (IR) | Testing Circuit | |
| Condition | Test Voltage = 7200 V, Open (No load)<br>* Equivalent to 'DCW Test Voltage = 7200 V'. | | |



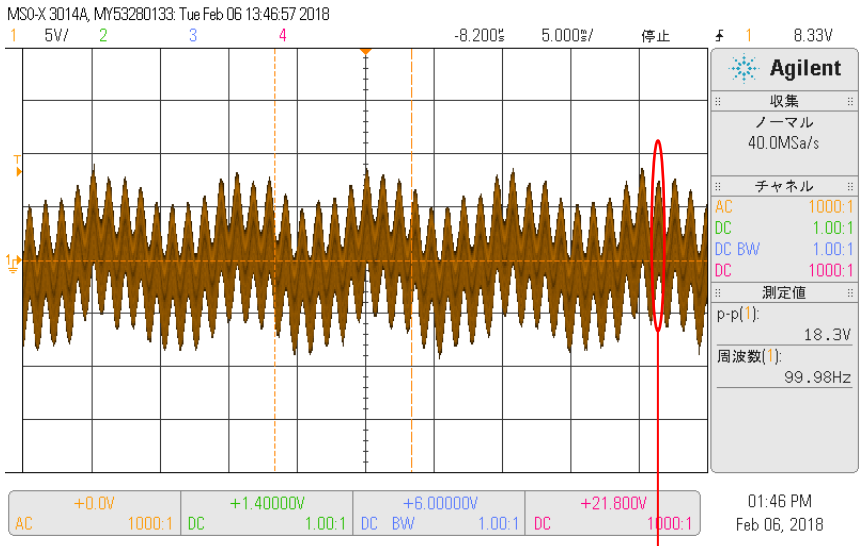

Vp-p = 8.4 V

Enlarged View



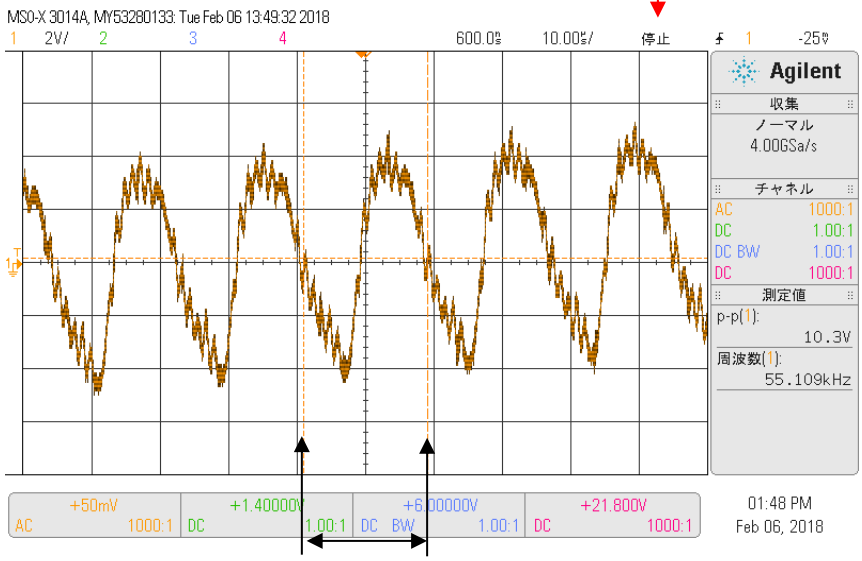

Approx. 58 kHz

| Model | TOS9300 Series | Temperature | |
|---|---|---|---|
| Item | Ripple Voltage (IR) | Testing Circuit | |
| Condition | Test Voltage = 7200 V, 1 MΩ | | |



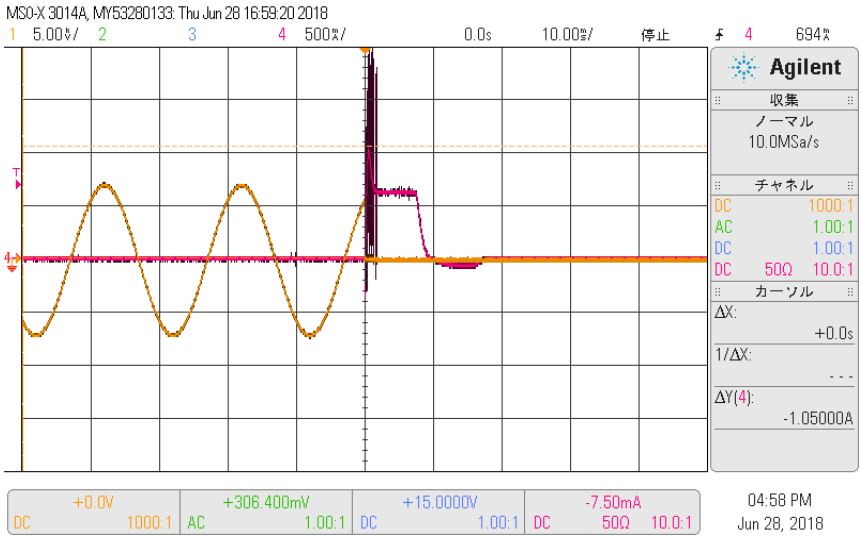

Vp-p = 18.3 V

Enlarged View

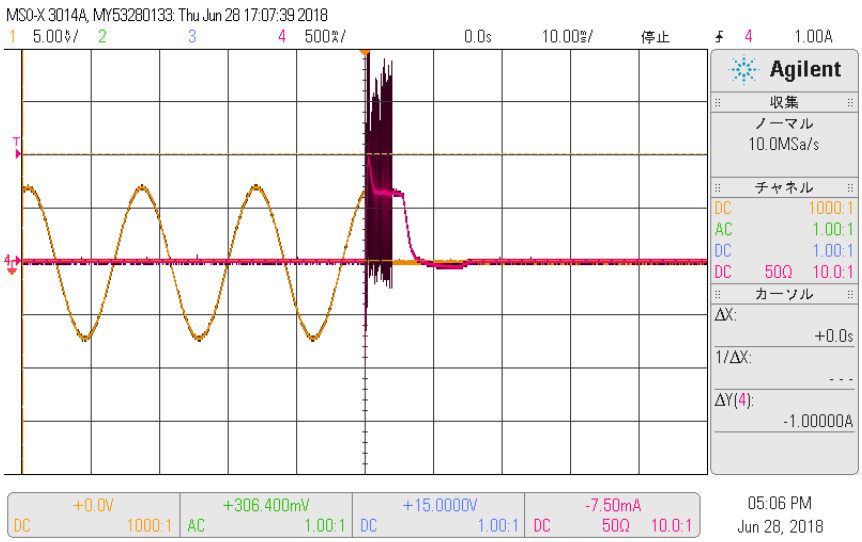



Approx. 55 kHz

| Model | TOS9300 Series | Temperature | |
|---|---|---|---|
| Item | Short-Circuit Current (ACW) | Testing Circuit | |
| Condition | Test Voltage = 5000 V | | |

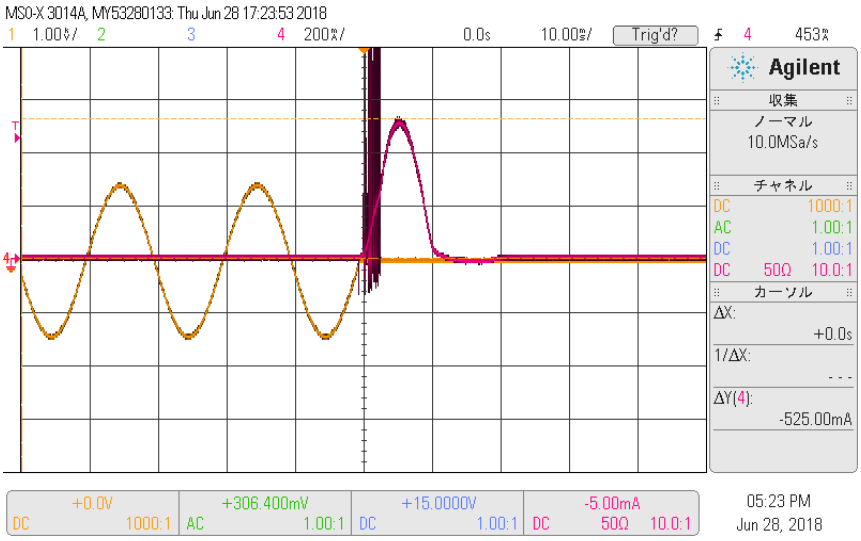



50 Hz: Approx. 1.05 A

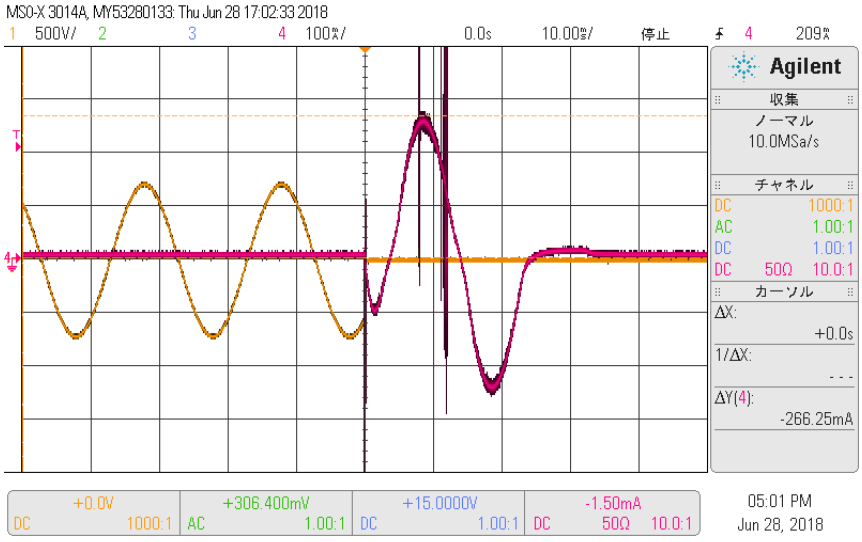



60 Hz: Approx. 1.00 A

| Model | TOS9300 Series | Temperature | |
|---|---|---|---|
| Item | Short-Circuit Current (ACW) | Testing Circuit | |
| Condition | Test Voltage = 1000 V/500 V | | |



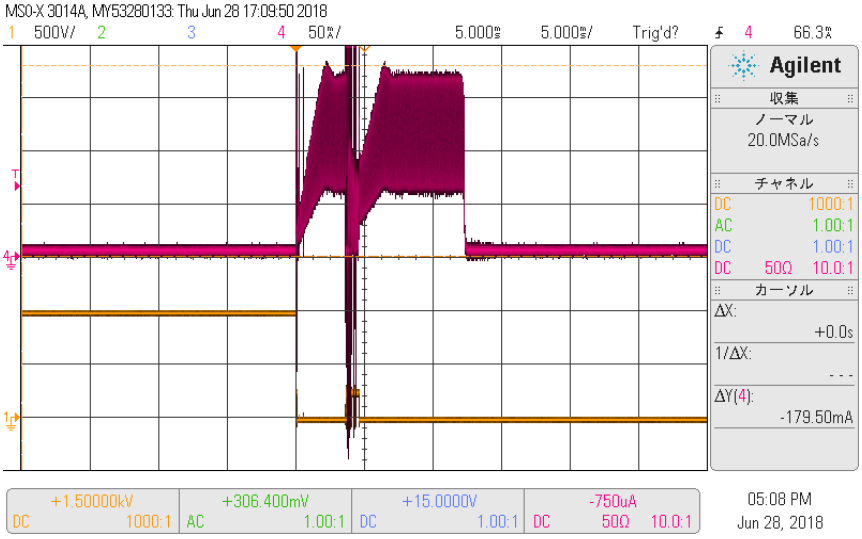

1000 V - 50 Hz: Approx. 525 mA




500 V - 50 Hz/60 Hz: Approx. 262 mA

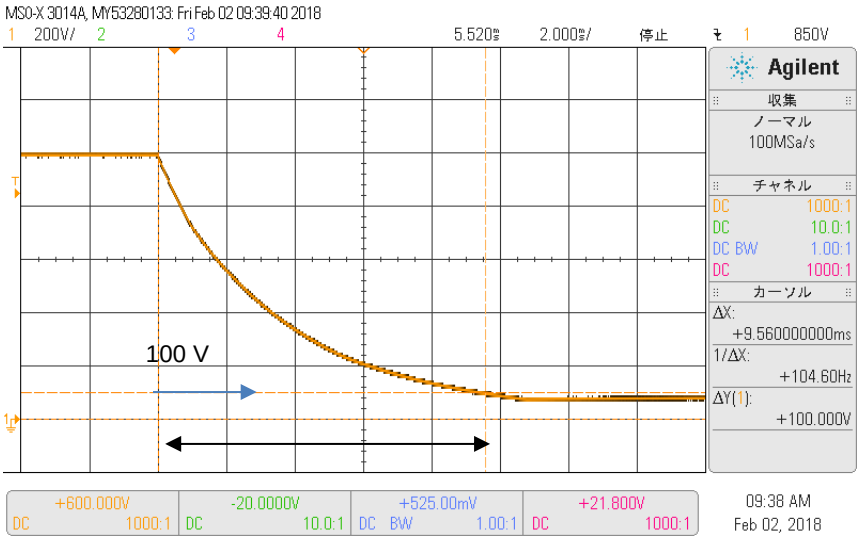
| Model | TOS9300 Series | Temperature | |
|---|---|---|---|
| Item | Short-Circuit Current (DCW) | Testing Circuit | |
| Condition | Test Voltage = 7200 V/1000 V | | |


7200 V: Approx. 282 mA

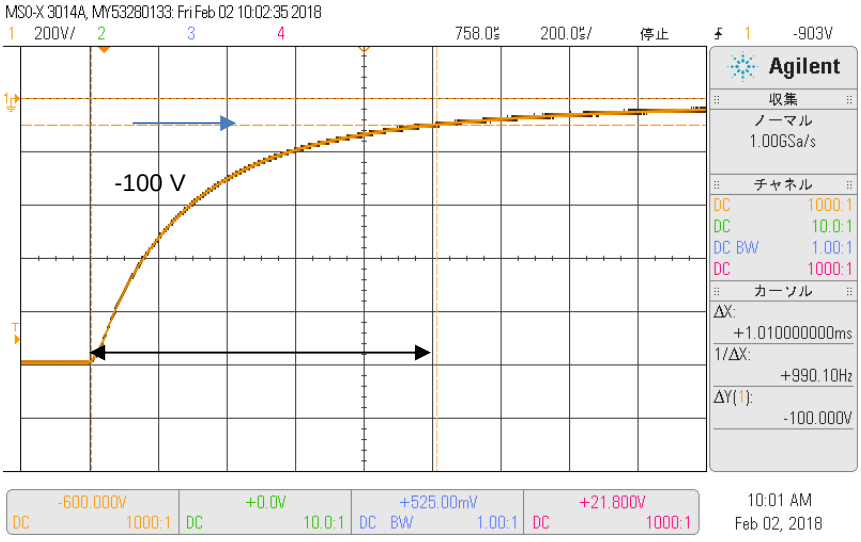



1000 V: Approx. 179 mA

| Model | TOS9300 Series | Temperature | |
|---|---|---|---|
| Item | Discharge Function (DCW/IR) | Testing Circuit | |
| Condition | Test Voltage = DCW: 7200 V, IR: -1000 V<br>The capacitor of 9400 pF was connected. | | |




Discharge Time: Approx. 10 ms



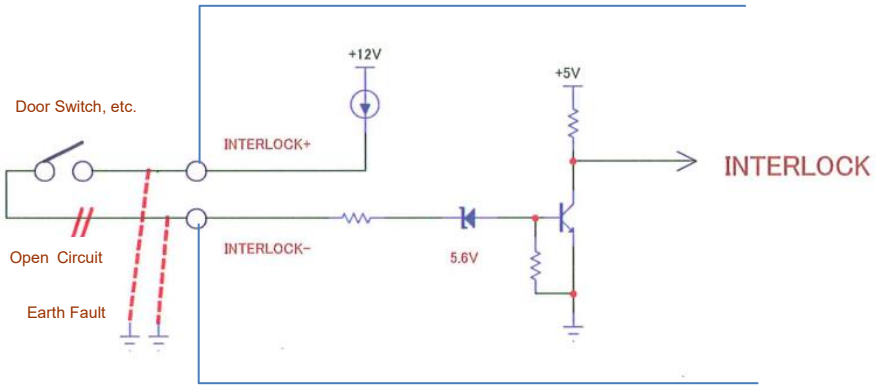

Discharge Time: Approx. 1 ms

| Model | TOS9300 Series | Temperature | |
|---|---|---|---|
| Item | Pin Assignment of SIGNAL I/O Connector | Testing Circuit | |
| Condition | *See the pin assignment information for the timing charts shown below. | | |

| Pin no. | IN/OUT | Signal name | Description |
|---|---|---|---|
| 1 | IN | INTERLOCK+ | Activate/release interlock. |
| 2 | – | COM | Circuit common (chassis potential) shared by input and output. |
| 3 | IN | PM0 | Select setup memories and auto test program memories. |
| 4 | IN | PM1 | |
| 5 | IN | PM2 | |
| 6 | IN | PM3 | |
| 7 | IN | PM4 | |
| 8 | IN | PM5 | |
| 9 | IN | PM6 | |
| 10 | IN | PM7 | |
| 11 | IN | STB | Recall setup memories and programs selected with the PM0 to PM7 signals. |
| 12 | – | Reserved | Not used. |
| 13 | – | Reserved | |
| 14 | – | Reserved | |
| 15 | IN | START | Start a test. |
| 16 | IN | STOP | Stop a test. |
| 17 | IN | ENABLE | Enable the START signal. |
| 18 | – | COM | I/O circuit common (chassis potential). |
| 19 | IN | INTERLOCK- | Activate/release interlock. |
| 20 | – | COM | I/O circuit common (chassis potential). |
| 21 | – | +24V | +24 V internal power supply output terminal. Maximum output current 100 mA. |
| 22 | OUT | H.V ON/LINE ON | Set to on in any of the following conditions. Testing. Auto testing. Voltage remaining across the output terminals. Power being supplied to the EUT from the TOS9303LC through AC LINE OUT. |
| 23 | OUT | RISE | Set to on when the voltage is rising |
| 24 | OUT | TEST | Set to on during test time |
| 25 | OUT | PASS | Set to on for the duration of time specified by Pass Hold when a PASS judgment is made. |
| 26 | OUT | U FAIL | Set to on continuously when a Upper-FAIL judgment is made. Or set to on continuously along with the L FAIL signal when Contact-FAIL judgment is made. |
| 27 | OUT | L FAIL | Set to on continuously when an Lower-FAIL judgment is made. Or set to on continuously along with the U FAIL signal when Contact-FAIL judgment is made. |
| 28 | OUT | PD | Set to on when the test mode is set to partial discharge test. |
| 29 | OUT | READY | Set to on when the product is ready to start a test. |
| 30 | OUT | PROTECTION | Set to on when a protection function is activated. |
| 31 | OUT | STEP END | Set to on when each step ends during an auto test. |
| 32 | OUT | CYCLE END | Set to on when the last step ends during an auto test. |
| 33 | OUT | ACW | Set to on when the test mode is set to AC withstanding voltage test. |
| 34 | OUT | DCW | Set to on when the test mode is set to DC withstanding voltage test. |
| 35 | OUT | IR | Set to on when the test mode is set to insulation resistance test. |
| 36 | OUT | EC | Set to on when the test mode is set to earth continuity test. |
| 37 | OUT | LC | Set to on when the test mode is set to leakage current test. |

| Input signal | Output signal |
|---|---|
| Opening the input terminals is equivalent to high-level input.<br>• Low-active control<br>• High-level input voltage: 11 V to 15 V<br>• Low-level input voltage: 0 V to 4 V<br>• Low-level input current: -5 mA max.<br>• Input time width: 5 ms min. | • Open collector output<br>• Output withstanding voltage: 30 Vdc<br>• Output saturation voltage: Approx. 1.1 V (25°C)<br>• Maximum output current 400 mA (TOTAL) |

| Model | TOS9300 Series | Temperature | |
|---|---|---|---|
| Item | INTERLOCK Terminal Operating Condition on SIGNAL I/O | Testing Circuit | |
| Condition | | | |




**TOS9300 Internal Circuit**

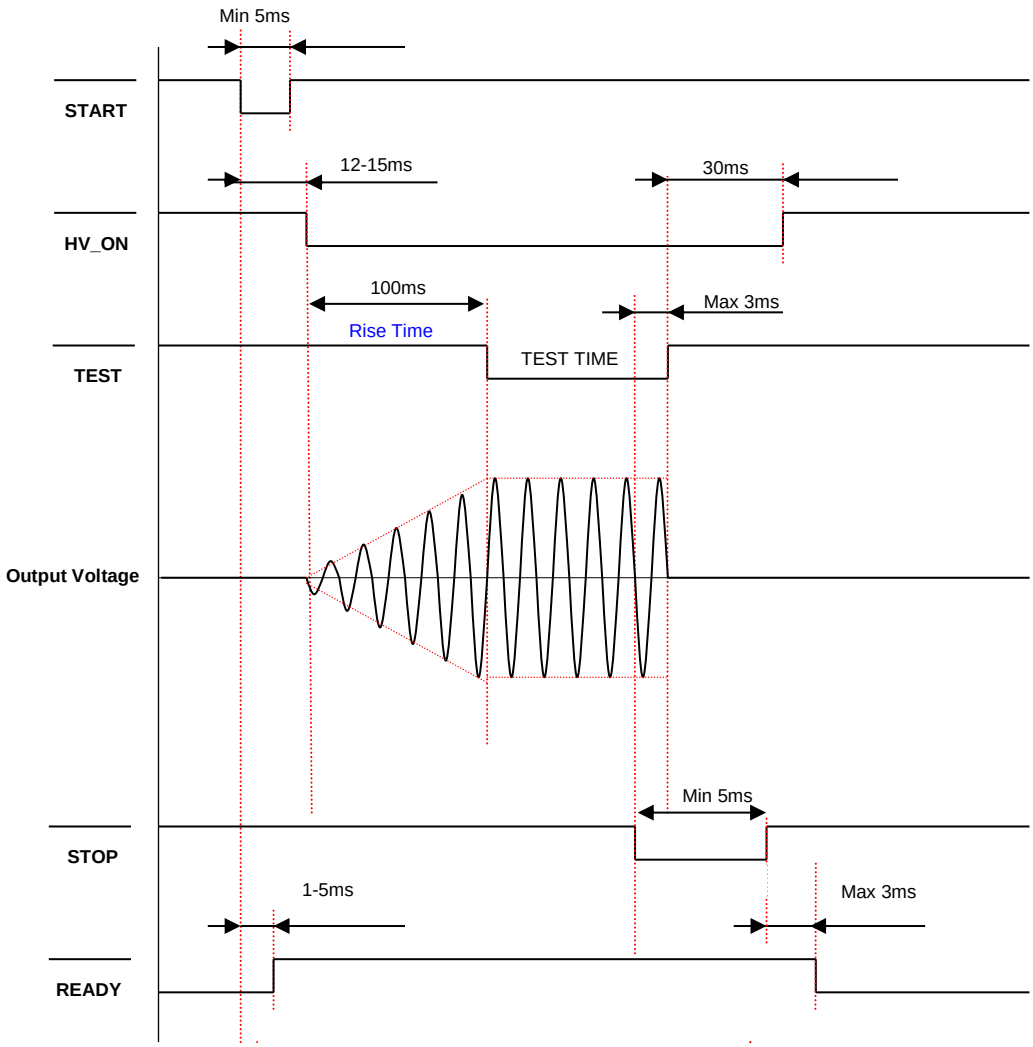
| Interlock Terminal Condition | Interlock Operation |
|---|---|
| INTERLOCK+ and INTERLOCK- are short-circuited. | Interlock is released. |
| The circuit is open. | Interlock is activated. |
| INTERLOCK+ is in contact with the ground (earth). | Interlock is activated. |
| INTERLOCK- is in contact with the ground (earth). | Interlock is activated. |

| Model | TOS9300 Series | Temperature | |
|---|---|---|---|
| Item | Timing Setting and Typical Value | Testing Circuit | |
| Condition | | | |

| Timing Item | Setting Value/Setting Range |
|---|---|
| <COMMON> | |
| 1. START – READY | 1 - 5 ms* |
| 2. START – HV_ON | 12 - 15 ms* |
| 3. TEST – HV_ON | 30 ms* |
| | |
| <STOP> | |
| 4. STOP – TEST | Max 3 ms* |
| 5. STOP – READY | Max 3 ms* |
| | |
| <PASS> | |
| 6. TEST – PASS | Max 3 ms* |
| 7. PASS – READY | Max 3 ms* |
| | |
| <FAIL> | |
| 8. TEST – FAIL | Max 3 ms* |
| 9. FAIL – READY | Max 3 ms* |
| | |
| <PROTECTION> | |
| 10. INTERLOCK – PROTECTION | 20 ms or less* |
| 11. STOP – PROTECTION | Max 10 ms* |
| 12. PROTECTION – READY | Max 3 ms* |

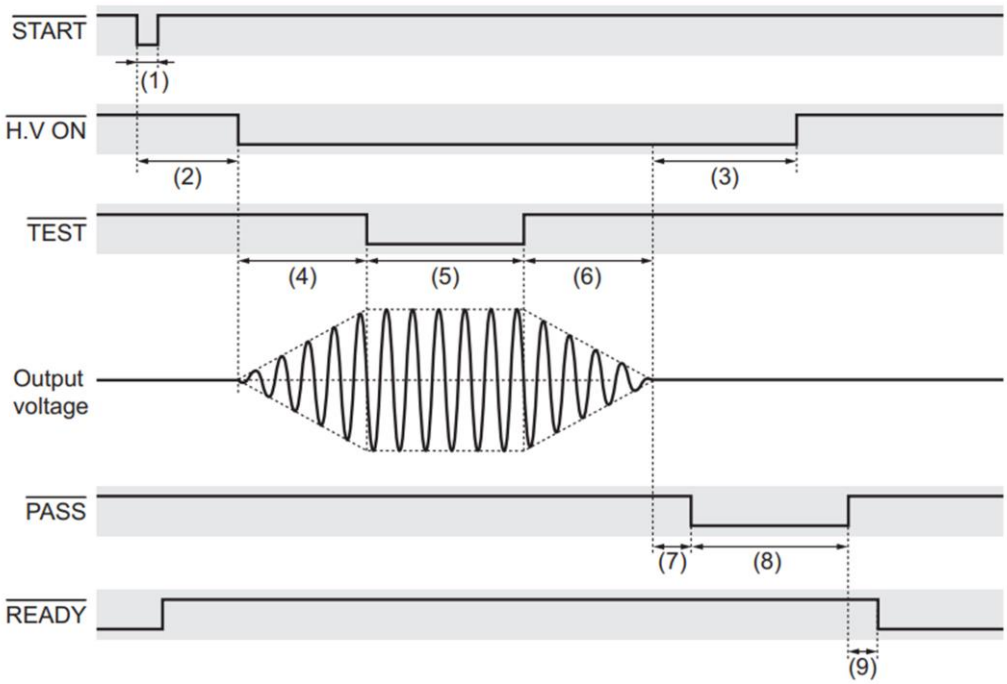
*TYP: It is a typical value at an ambient temperature of 23 °C and does not guarantee the performance of TOS9300 Series.

| Model | TOS9300 Series | Temperature | |
|---|---|---|---|
| Item | Timing Chart of SIGNAL I/O Signals<br>STOP Signal of ACW | Testing Circuit | |
| Condition | Test Voltage = 1.2 kV, Rise Time = 0.1 s, Pass Hold: 50 ms, Frequency: 50 Hz<br>No load (waveform monitoring with a high voltage probe) | | |




The values shown above are typical values at an ambient temperature of 23 °C and do not guarantee the performance of TOS9300 Series.

| Model | TOS9300 Series | Temperature | |
|---|---|---|---|
| Item | Timing Chart of SIGNAL I/O Signals<br>PASS Signal of ACW | Testing Circuit | |
| Condition | Rise Time: ON, Test Time: ON<br>Fall Time: ON, Pass Hold: 50 ms<br>No load (waveform monitoring with a high voltage probe) | | |



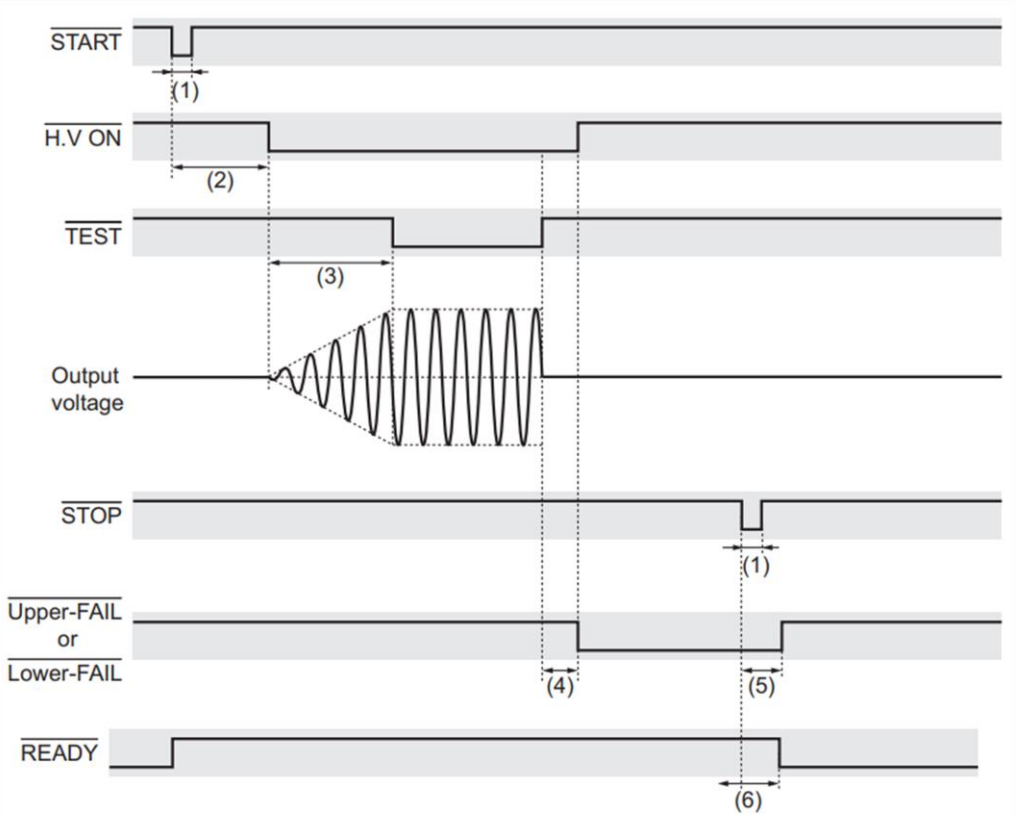

| No. | Description |
|---|---|
| (1) | 5 ms min. |
| (2) | Approx. 20 ms[1] |
| (3) | Approx. 30 ms[*1] |
| (4) | Rise Time |
| (5) | Test Time |

| No. | Description |
|---|---|
| (6) | Fall Time |
| (7) | Approx. 5 ms[*1] |
| (8) | Pass Hold |
| (9) | Approx. 2 ms[*1] |

1 TYP (typical value)

TYP is a typical value at an ambient temperature of 23 °C and does not guarantee the performance of TOS9300 Series.

| Model | TOS9300 Series | Temperature | |
|---|---|---|---|
| Item | Timing Chart of SIGNAL I/O Signals<br>FAIL Signal of ACW | Testing Circuit | |
| Condition | Rise Time: ON<br>Test Time: OFF<br>Pass Hold: 50 ms | | |



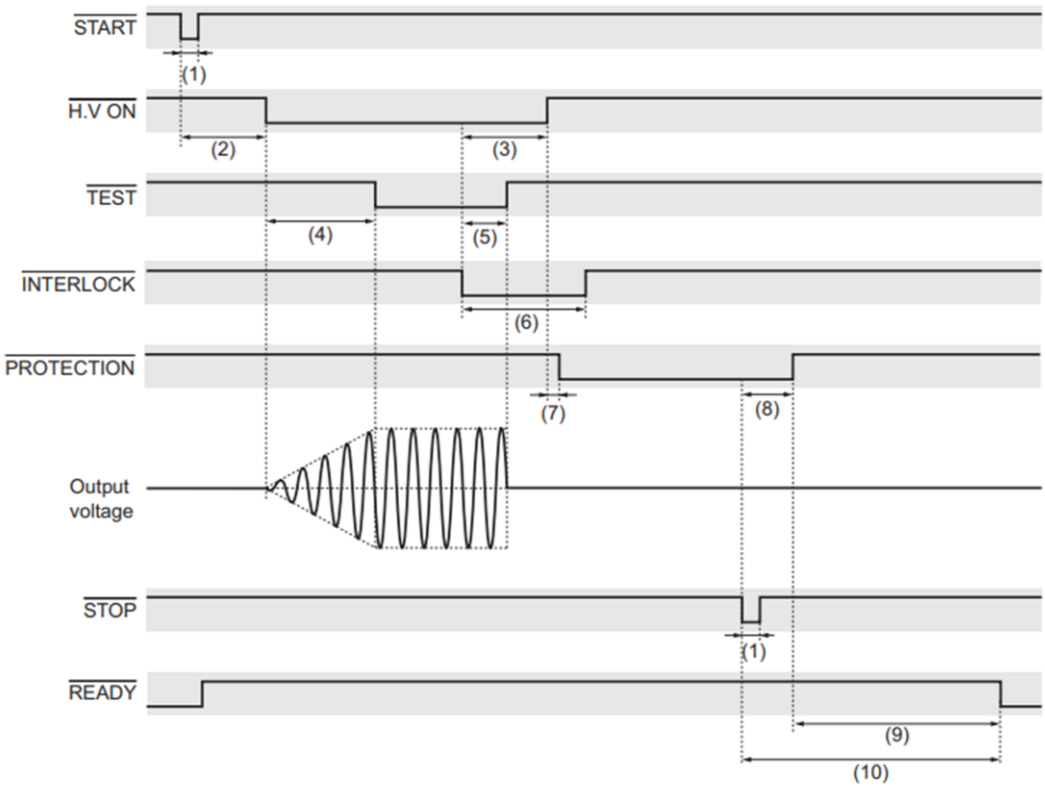

| No. | Description |
|---|---|
| (1) | 5 ms min. |
| (2) | Approx. 20 ms[1] |
| (3) | Rise Time |

| No. | Description |
|---|---|
| (4) | Approx. 5 ms*1 |
| (5) | Approx. 5 ms*1 |
| (6) | Approx. 6 ms*1 |

1 TYP (typical value)

TYP is a typical value at an ambient temperature of 23 °C and does not guarantee the performance of TOS9300 Series.

| Model | TOS9300 Series | Temperature | |
|---|---|---|---|
| Item | Timing Chart of SIGNAL I/O Signals<br>PROTECTION Signal of ACW | Testing Circuit | |
| Condition | Rise Time: ON, Test Time: OFF<br>No load (waveform monitoring with a high voltage probe), Started the test with SINGNAL I/O. Aborted the test with an interlock operation. | | |



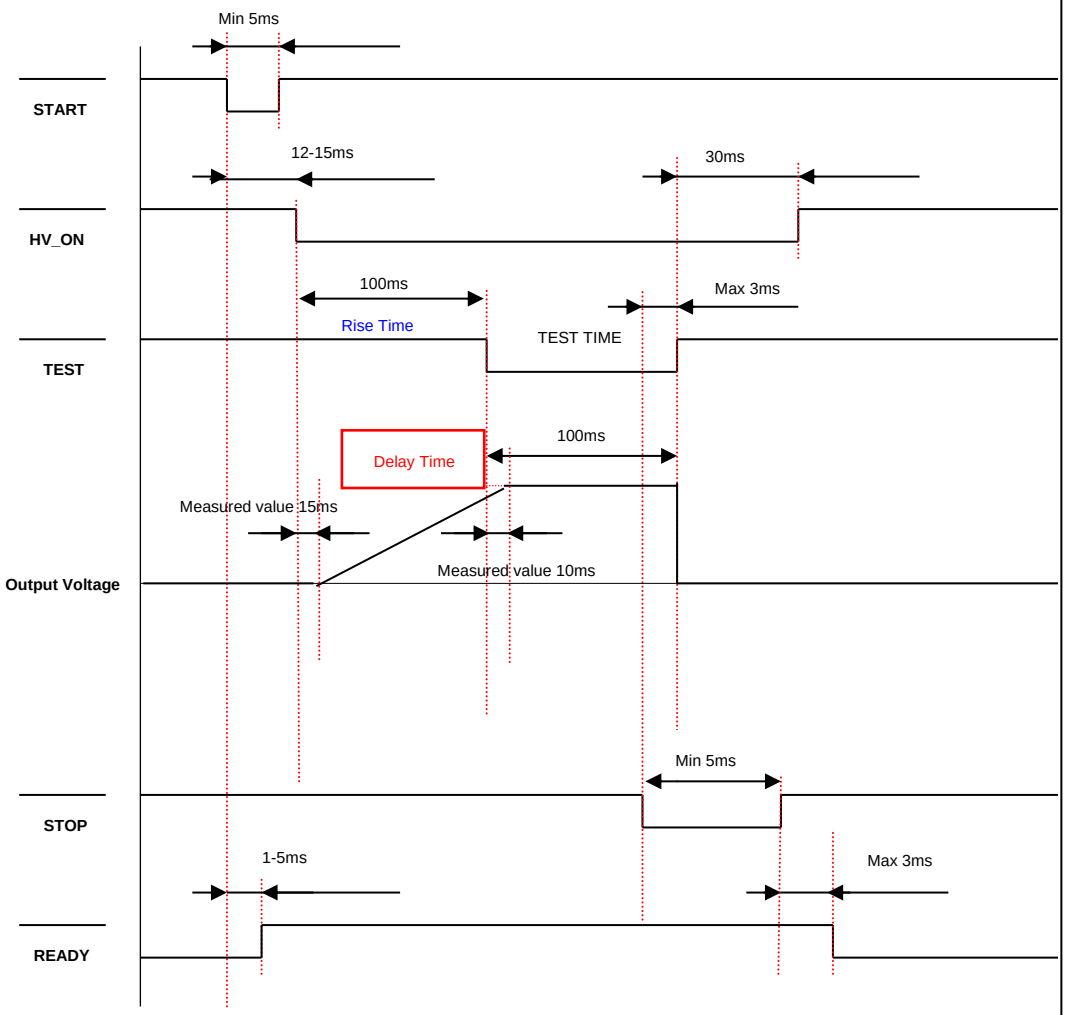

| No. | Description |
|---|---|
| (1) | 5 ms min. |
| (2) | Approx. 20 ms[1] |
| (3) | Approx. 20 ms[*1] |
| (4) | Rise Time |
| (5) | Approx. 10 ms[*1] |

| No. | Description |
|---|---|
| (6) | 5 ms min. |
| (7) | Approx. 0.5 ms[*1] |
| (8) | Approx. 10 ms[*1] |
| (9) | Approx. 90 ms[*1] |
| (10) | Approx. 100 ms[*1] |

1 TYP (typical value)

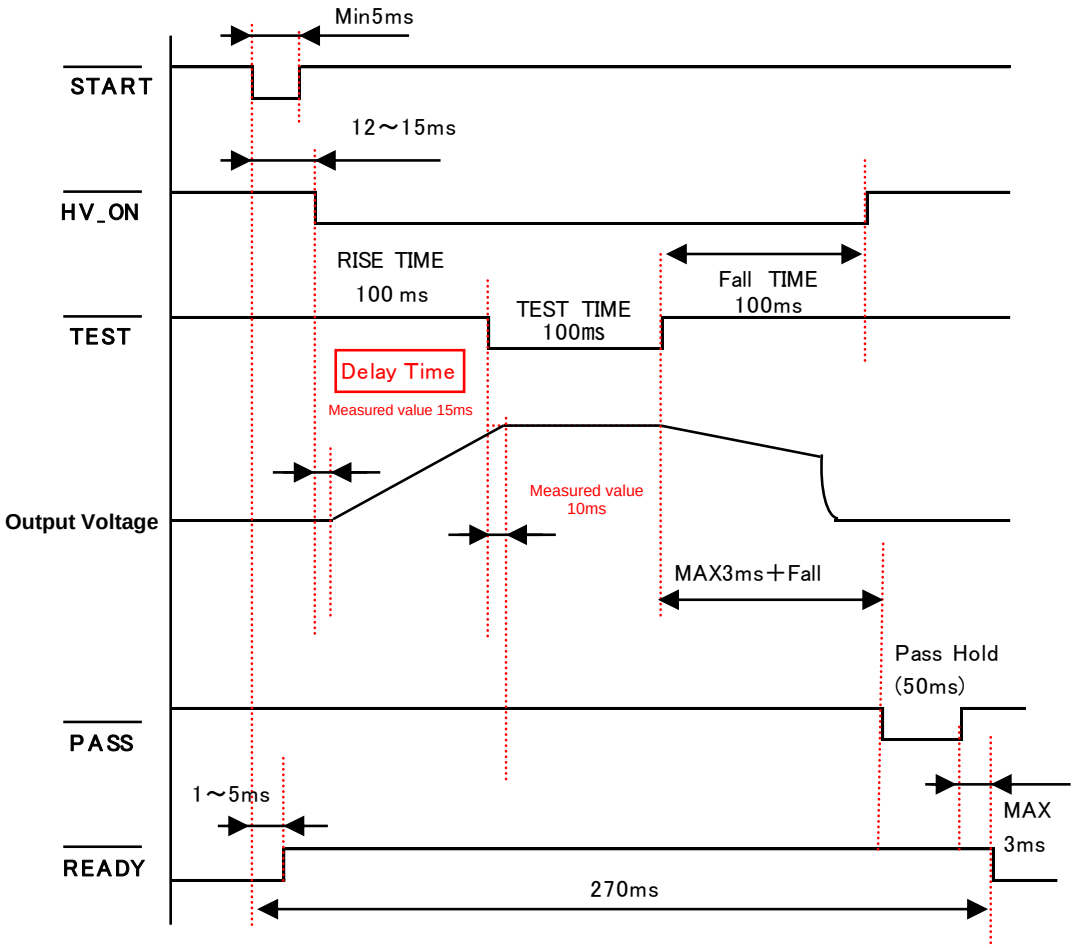
TYP is a typical value at an ambient temperature of 23 °C and does not guarantee the performance of TOS9300 Series.

| Model | TOS9300 Series | Temperature | |
|---|---|---|---|
| Item | Timing Chart of SIGNAL I/O Signals<br>STOP Signal of DCW | Testing Circuit | |
| Condition | Test Voltage = 1.7 kV, Rise Time = 0.1 s, Test Time: OFF,<br>Frequency: 50 Hz, No load (waveform monitoring with a high voltage probe) | | |



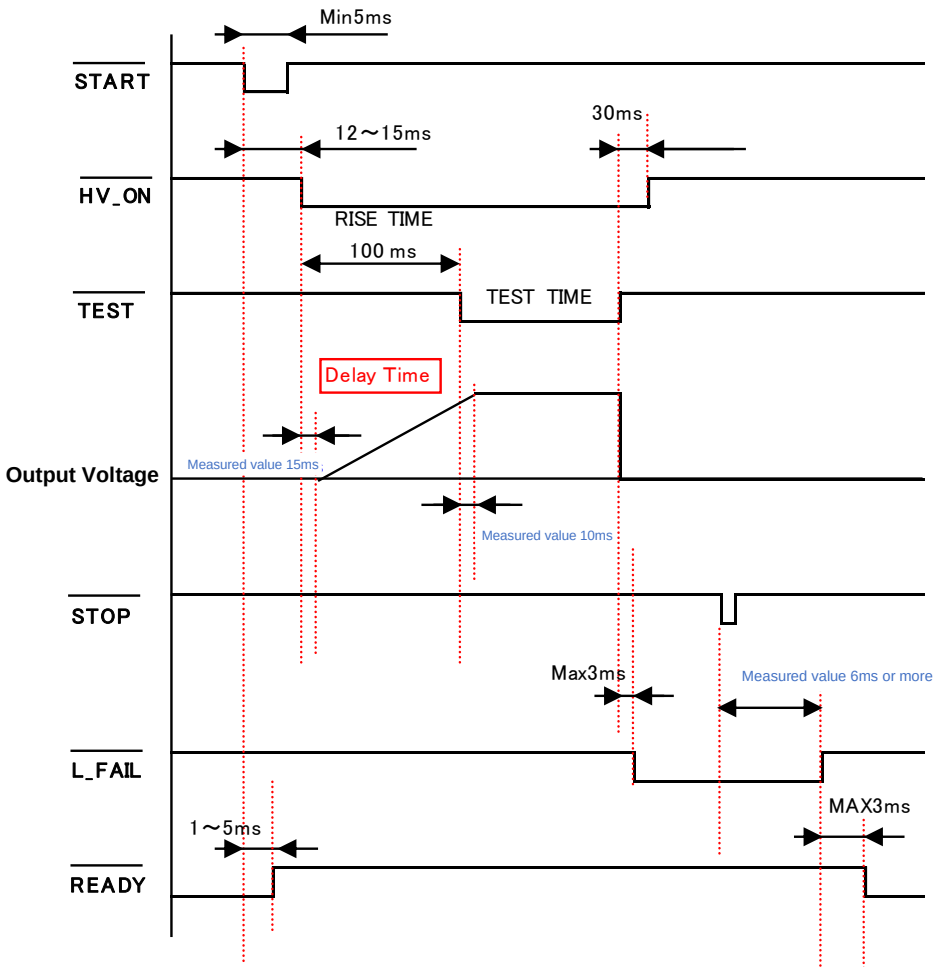

The values shown above are typical values at an ambient temperature of 23 °C and do not guarantee the performance of TOS9300 Series.

| Model | TOS9300 Series | Temperature | |
|---|---|---|---|
| Item | Timing Chart of SIGNAL I/O Signals<br>PASS Signal of DCW | Testing Circuit | |
| Condition | Test Voltage = 1.7 kV, Rise Time = 0.1 s, Test Time = 0.1 s, Fall Time = 0.1 s,<br>Pass Hold: 50 ms, No load (waveform monitoring with a high voltage probe) | | |



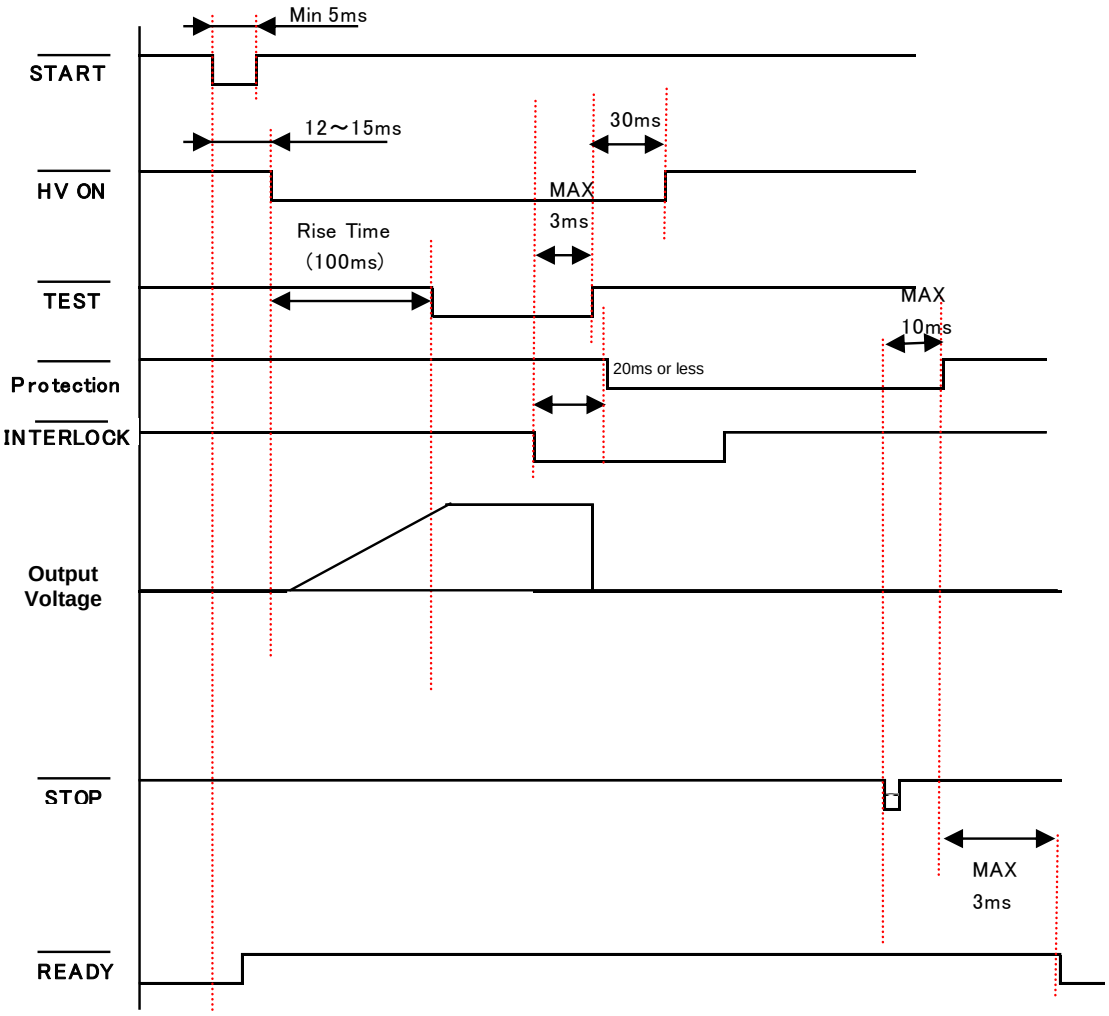

The values shown above are typical values at an ambient temperature of 23 °C and do not guarantee the performance of TOS9300 Series.

| Model | TOS9300 Series | Temperature | |
|---|---|---|---|
| Item | Timing Chart of SIGNAL I/O Signals<br>FAIL Signal of DCW | Testing Circuit | |
| Condition | Test Voltage = 1.7 kV, Rise Time = 0.1 s, Test Time = OFF, Fall Time = OFF,<br>Lower Limit = 0.1 mA, No load (waveform monitoring with a high voltage probe) | | |



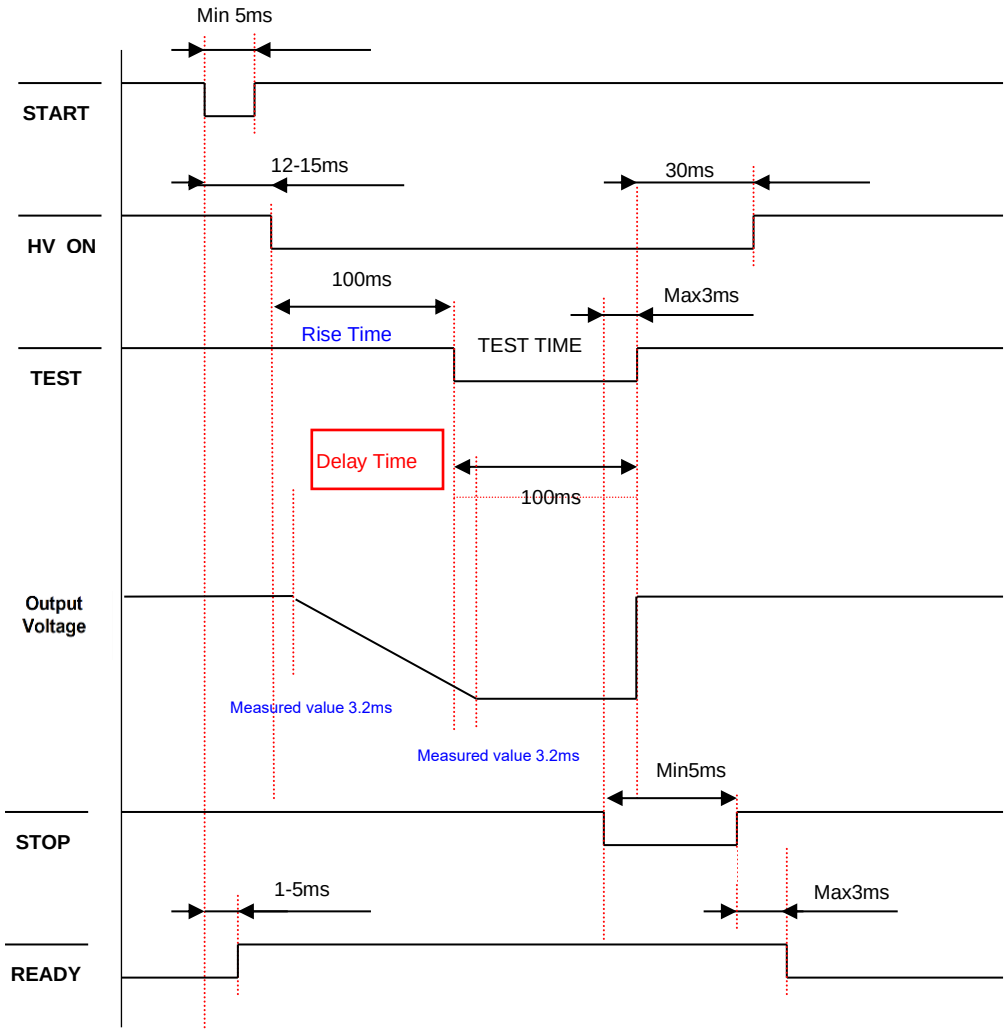

The values shown above are typical values at an ambient temperature of 23 °C and do not guarantee the performance of TOS9300 Series.

| Model | TOS9300 Series | Temperature | |
|---|---|---|---|
| Item | Timing Chart of SIGNAL I/O Signals<br>PROTECTION Signal of DCW | Testing Circuit | |
| Condition | Test Voltage = 1.7 kV, Rise Time = 0.1 s, Test Time = OFF,<br>Judge Delay = 0.1 s, No load (waveform monitoring with a high voltage probe) | | |



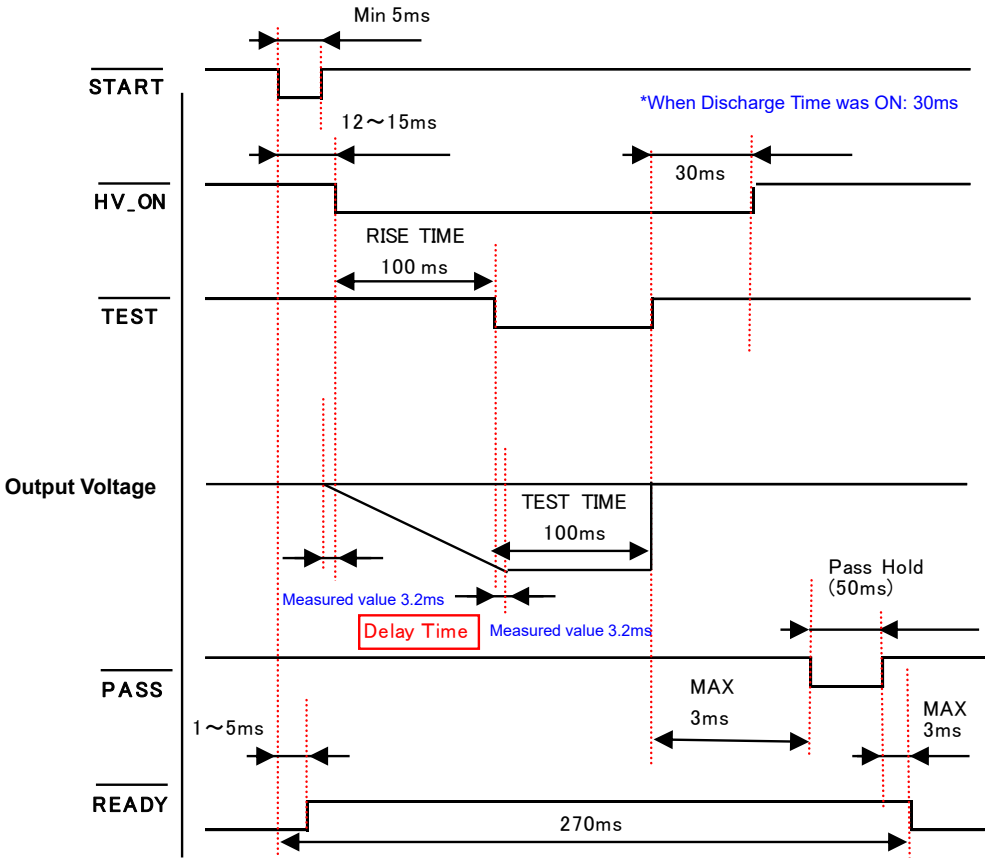

The values shown above are typical values at an ambient temperature of 23 °C and do not guarantee the performance of TOS9300 Series.

| Model | TOS9300 Series | Temperature | |
|---|---|---|---|
| Item | Timing Chart of SIGNAL I/O Signals<br>STOP Signal of IR | Testing Circuit | |
| Condition | Test Voltage = 1.0 kV, Rise Time = 0.1 s, Test Time = OFF,<br>Fall Time = OFF, Pass Hold: 50 ms, No load (waveform monitoring with a high voltage probe) | | |



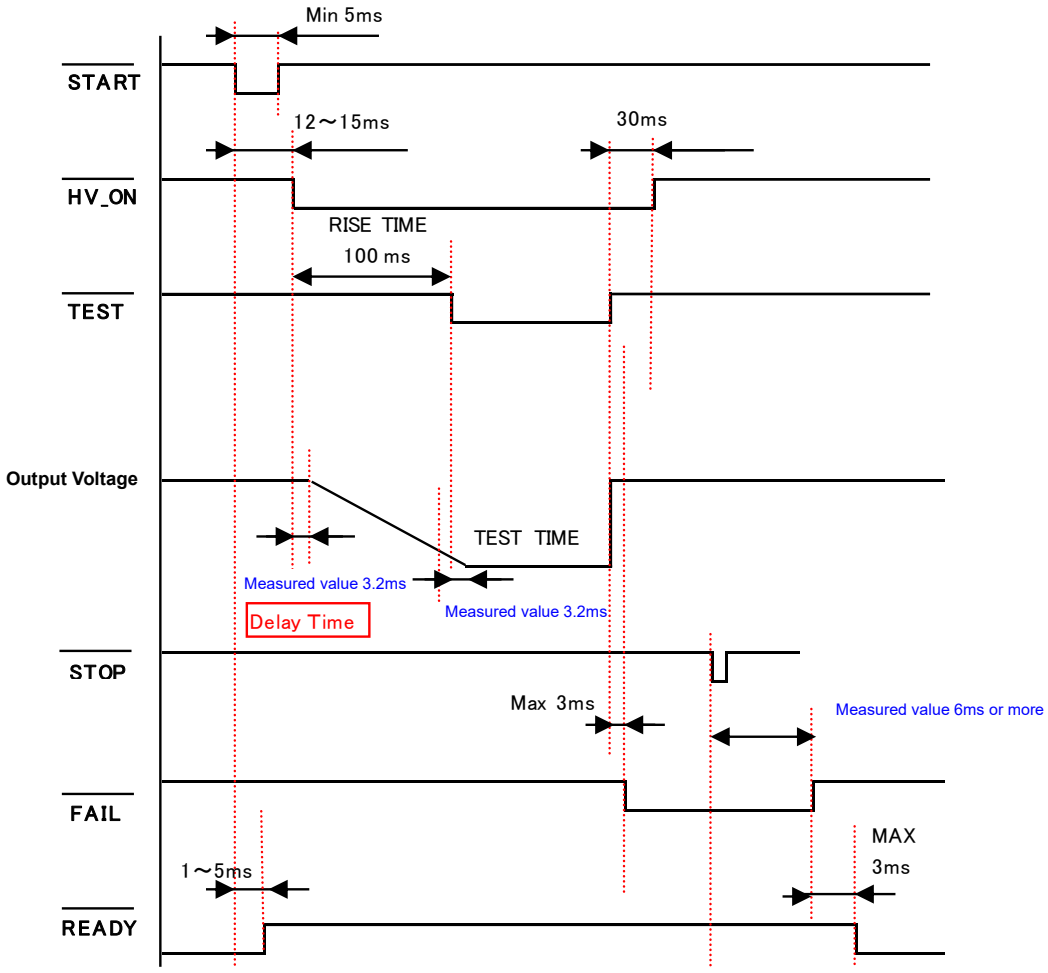

The values shown above are typical values at an ambient temperature of 23 °C and do not guarantee the performance of TOS9300 Series.

| Model | TOS9300 Series | Temperature | |
|---|---|---|---|
| Item | Timing Chart of SIGNAL I/O Signals<br>PASS Signal of IR | Testing Circuit | |
| Condition | Test Voltage = 1.0 kV, Rise Time = 0.1 s, Test Time = 0.1 s,<br>Pass Hold: 50 ms, No load (waveform monitoring with a high voltage probe) | | |



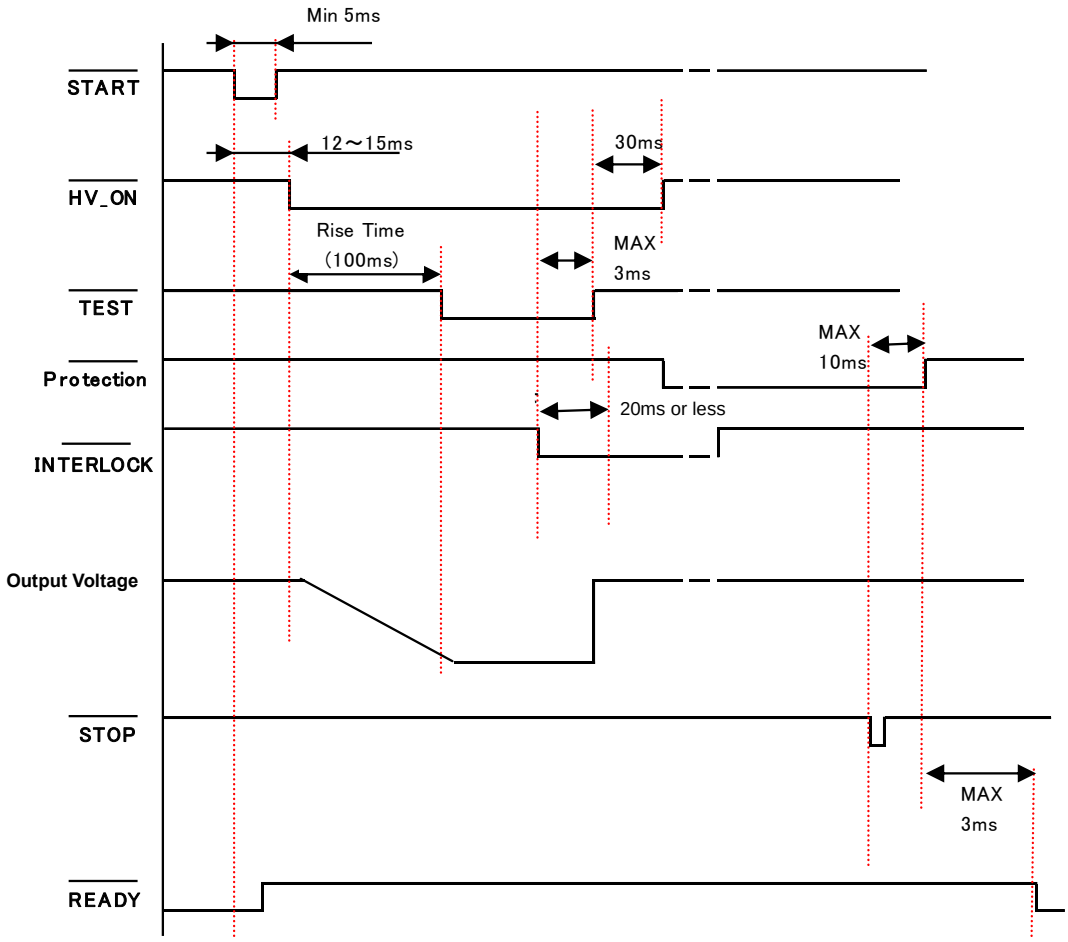

The values shown above are typical values at an ambient temperature of 23 °C and do not guarantee the performance of TOS9300 Series.

| Model | TOS9300 Series | Temperature | |
|---|---|---|---|
| Item | Timing Chart of SIGNAL I/O Signals<br>FAIL Signal of IR | Testing Circuit | |
| Condition | Test Voltage = 1.0 kV, Rise Time = 0.1 s, Test Time = OFF, Pass Hold = 50 ms, Lower Limit = 0.2 mA, Judge Delay = 0.1 s, No load (waveform monitoring with a high voltage probe) | | |



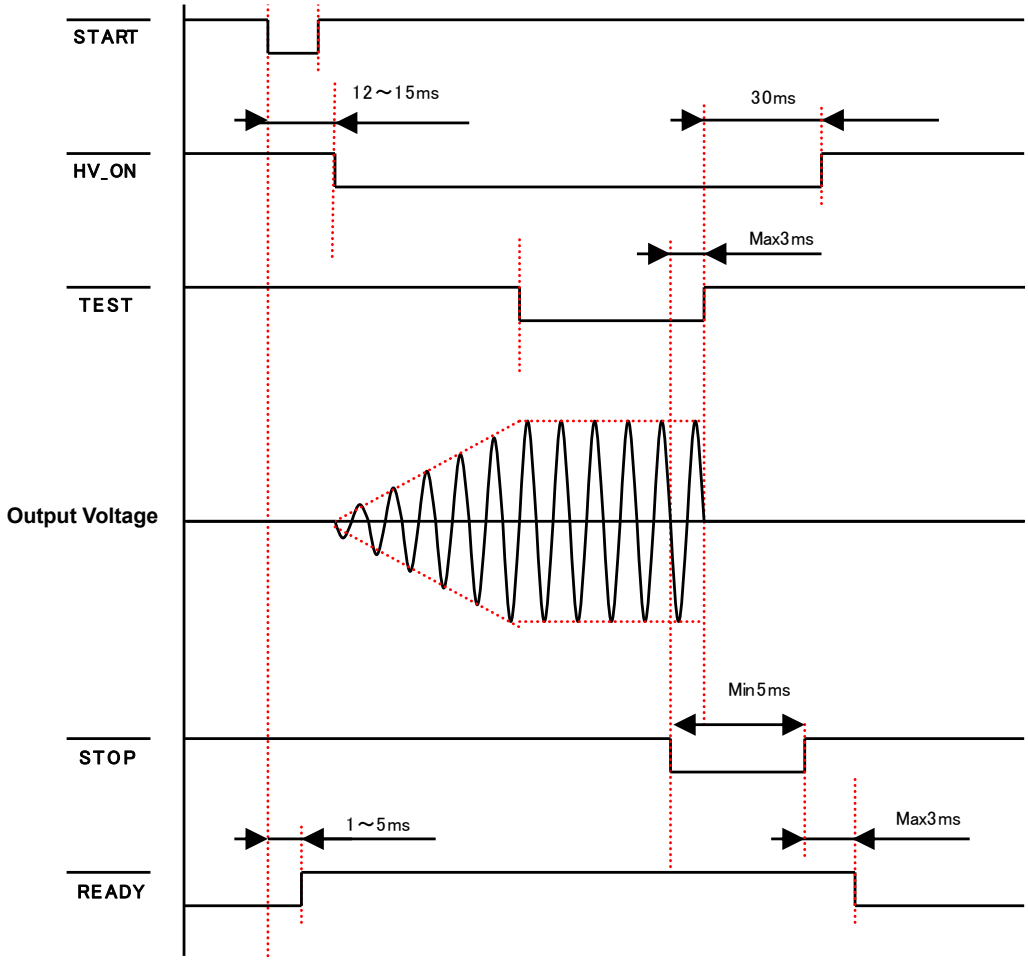

The values shown above are typical values at an ambient temperature of 23 °C and do not guarantee the performance of TOS9300 Series.

| Model | TOS9300 Series | Temperature | |
|---|---|---|---|
| Item | Timing Chart of SIGNAL I/O Signals<br>PROTECTION Signal of IR | Testing Circuit | |
| Condition | Test Voltage = 1.0 kV, Rise Time = 0.1 s, Test Time = OFF,<br>Judge Delay = 0.1 s, No load (waveform monitoring with a high voltage probe) | | |



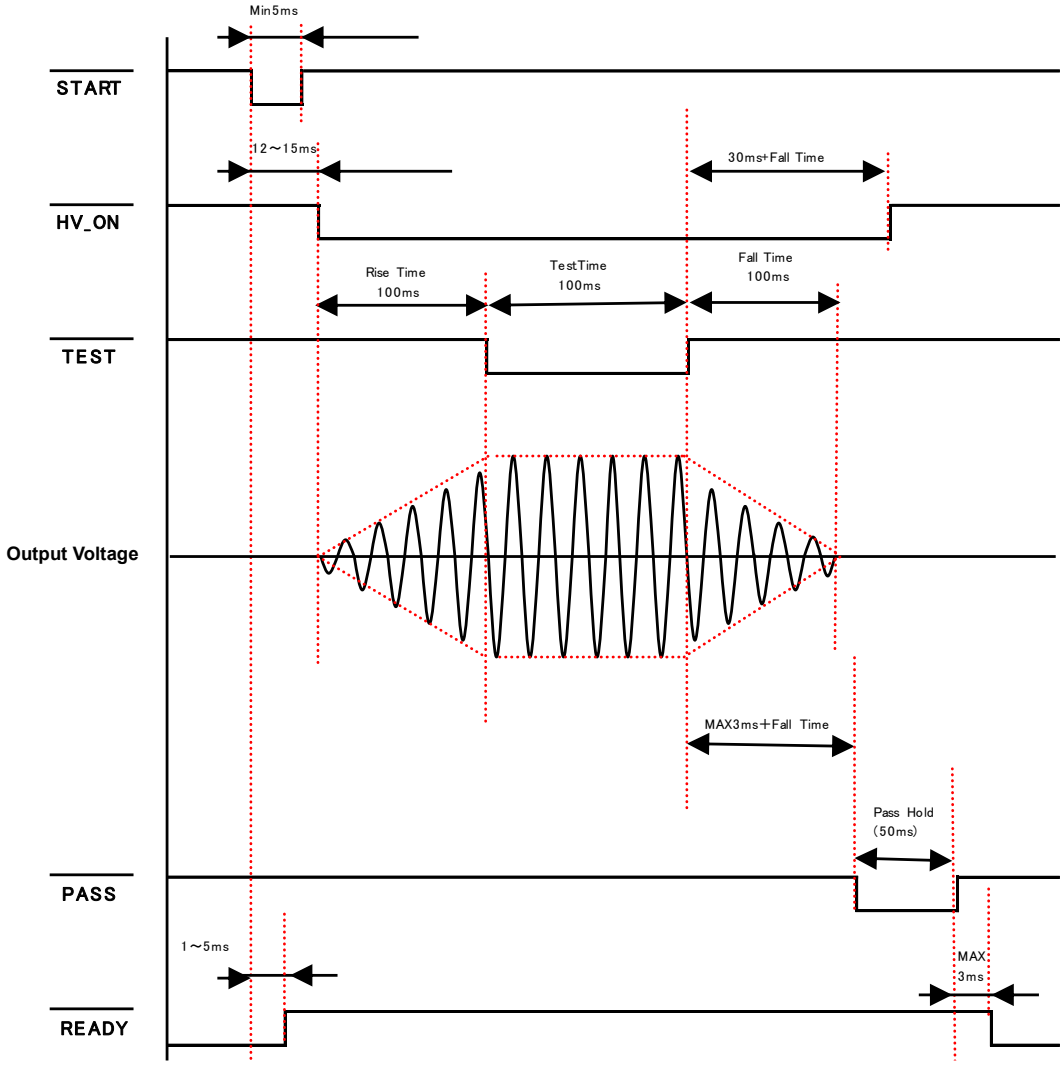

The values shown above are typical values at an ambient temperature of 23 °C and do not guarantee the performance of TOS9300 Series.

| Model | TOS9300 Series | Temperature | |
|---|---|---|---|
| Item | Timing Chart of SIGNAL I/O Signals<br>STOP Signal of ECAC (AC earth continuity test) | Testing Circuit | |
| Condition | Test Current = 5 A, Rise Time = 0.1 s, Test Time = OFF, Fall Time = OFF,<br>Pass Hold = 50 ms, Frequency = 50 Hz, The output was short-circuited. | | |



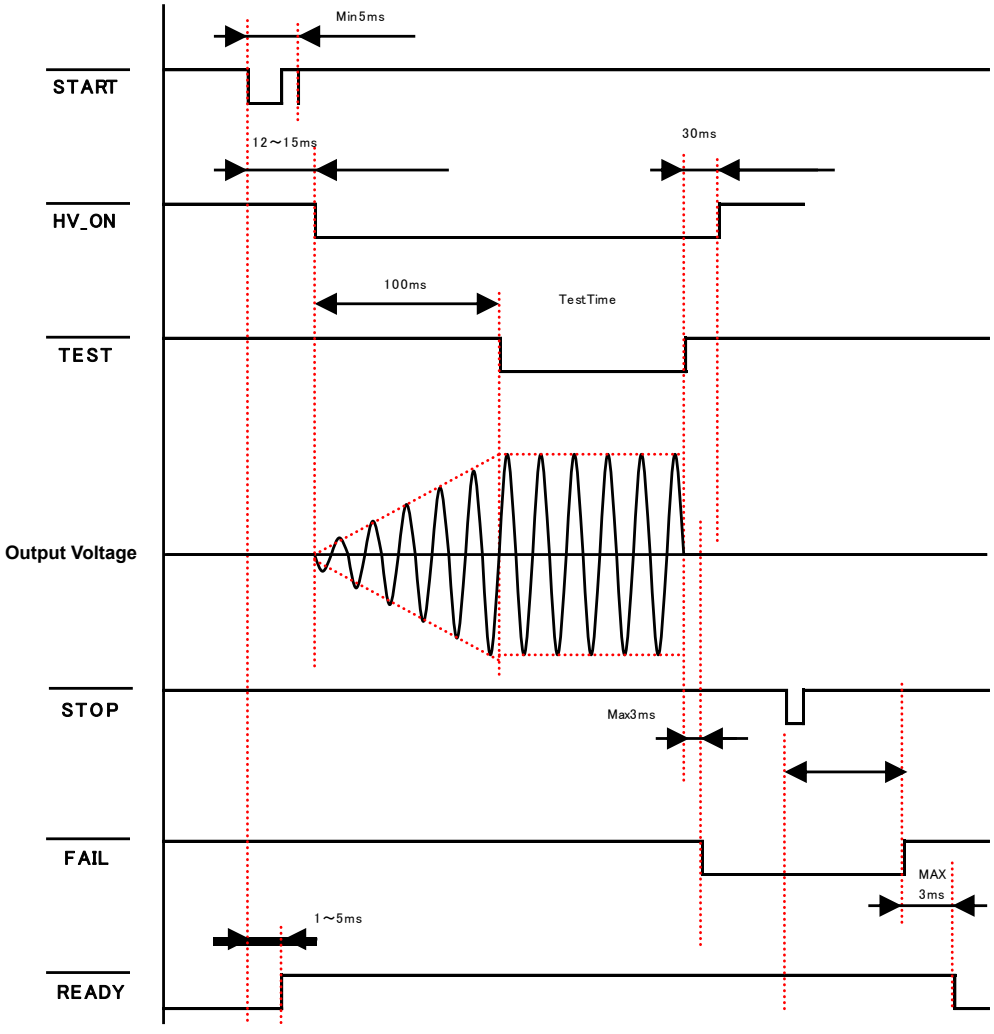

The values shown above are typical values at an ambient temperature of 23 °C and do not guarantee the performance of TOS9300 Series.

| Model | TOS9300 Series | Temperature | |
|---|---|---|---|
| Item | Timing Chart of SIGNAL I/O Signals<br>PASS Signal of ECAC | Testing Circuit | |
| Condition | Test Current = 5 A, Rise Time = 0.1 s, Test Time = 0.1 s, Fall Time = 0.1 s,<br>Pass Hold = 50 ms, Frequency = 50 Hz, The output was short-circuited. | | |



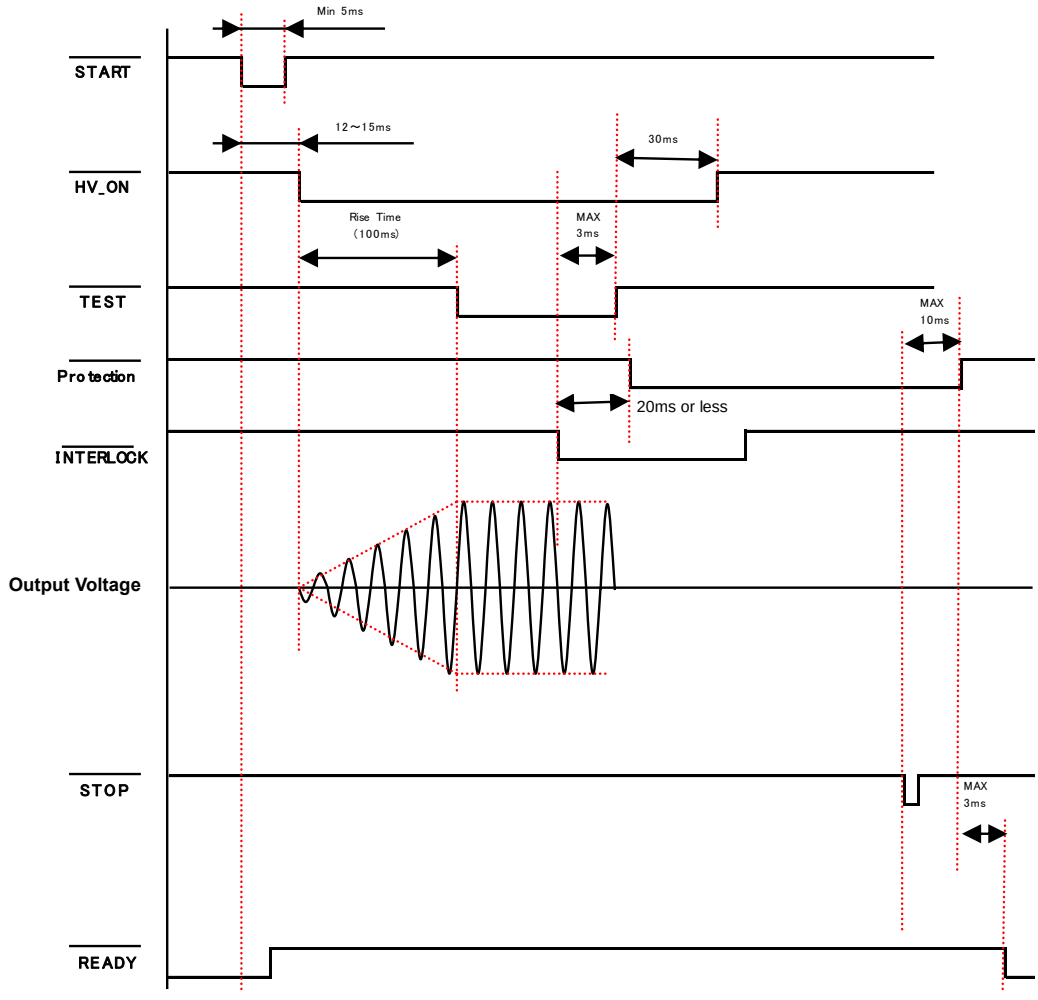

The values shown above are typical values at an ambient temperature of 23 °C and do not guarantee the performance of TOS9300 Series.

| Model | TOS9300 Series | Temperature | |
|---|---|---|---|
| Item | Timing Chart of SIGNAL I/O Signals<br>FAIL Signal of ECAC | Testing Circuit | |
| Condition | Test Current = 5 A, Rise Time = 0.1 s, Test Time = OFF, Fall Time = OFF,<br>Upper Limit: 0.000 1Ω, Pass Hold = 50 ms, Frequency = 50 Hz, No load (waveform monitoring with a high voltage probe) | | |



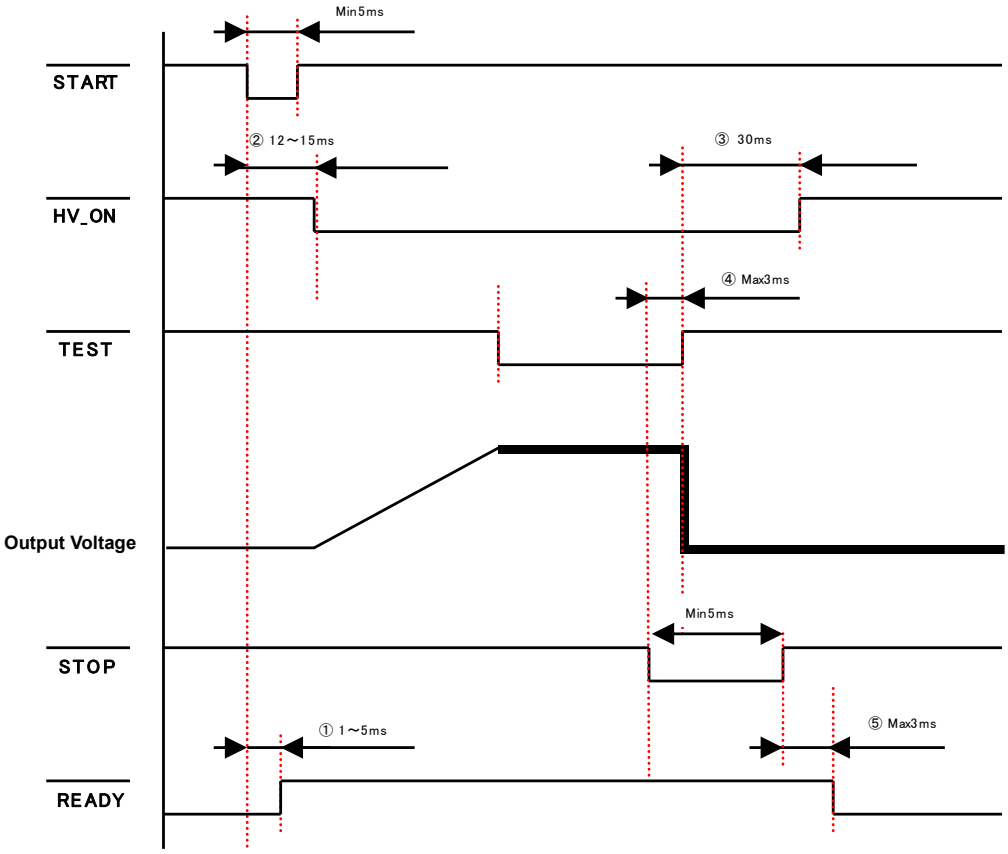

The values shown above are typical values at an ambient temperature of 23 °C and do not guarantee the performance of TOS9300 Series.

| Model | TOS9300 Series | Temperature | |
|---|---|---|---|
| Item | Timing Chart of SIGNAL I/O Signals<br>PROTECTION Signal of ECAC | Testing Circuit | |
| Condition | Test Current = 5 A, Rise Time = 0.1 s, Test Time = OFF, Fall Time = OFF,<br>Frequency = 50 Hz, The output was short-circuited. | | |



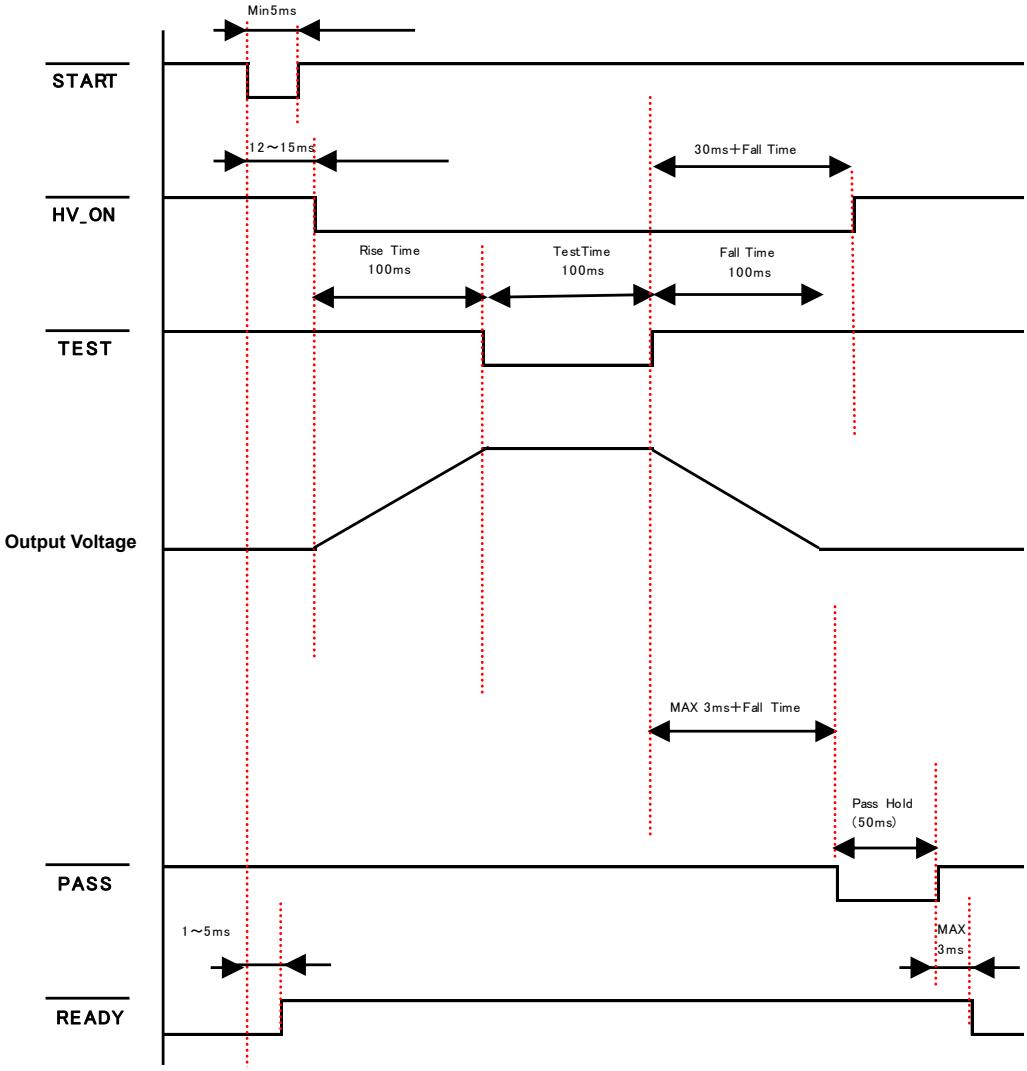

The values shown above are typical values at an ambient temperature of 23 °C and do not guarantee the performance of TOS9300 Series.

| Model | TOS9300 Series | Temperature | |
|---|---|---|---|
| Item | Timing Chart of SIGNAL I/O Signals<br>STOP Signal of ECDC (DC earth continuity test) | Testing Circuit | |
| Condition | Test Current = 5 A, Rise Time = 0.1 s, Test Time = OFF, Fall Time = OFF,<br>Pass Hold = 50 ms, The output was short-circuited. | | |



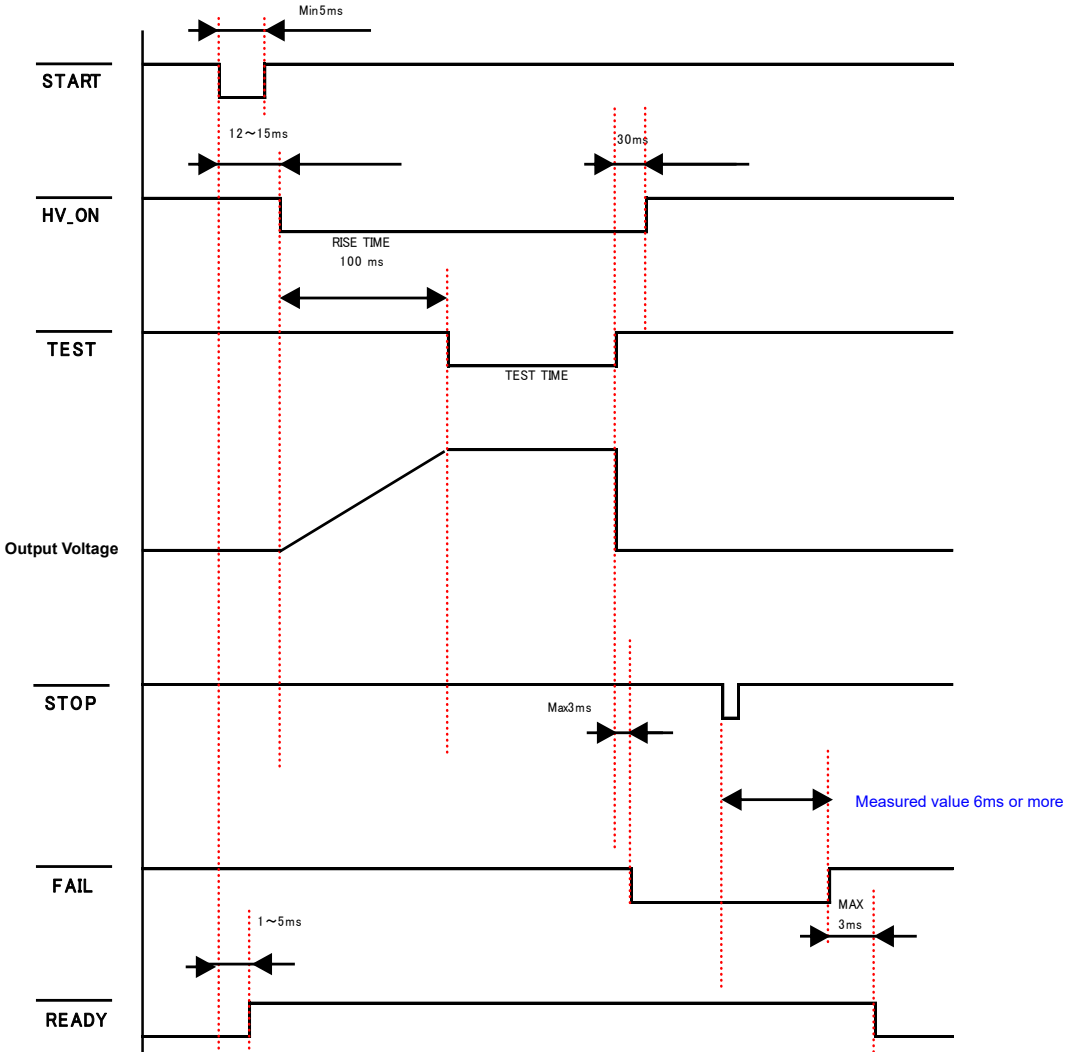

The values shown above are typical values at an ambient temperature of 23 °C and do not guarantee the performance of TOS9300 Series.

| Model | TOS9300 Series | Temperature | |
|---|---|---|---|
| Item | Timing Chart of SIGNAL I/O Signals<br>PASS Signal of ECDC | Testing Circuit | |
| Condition | Test Current = 5 A, Rise Time = 0.1 s, Test Time = 0.1 s,<br>Fall Time = 0.1 s, Pass Hold = 50 ms, The output was short-circuited. | | |



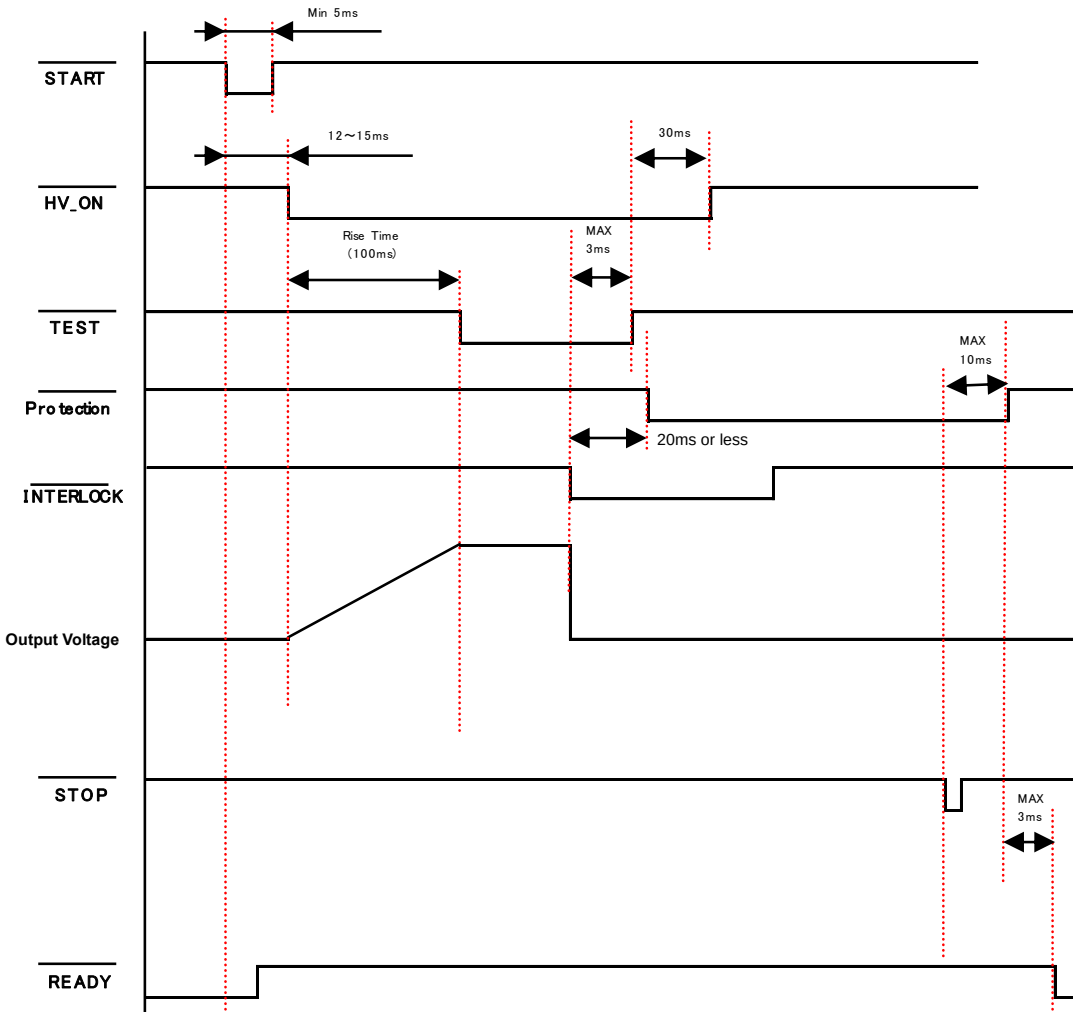

The values shown above are typical values at an ambient temperature of 23 °C and do not guarantee the performance of TOS9300 Series.

| Model | TOS9300 Series | Temperature | |
|---|---|---|---|
| Item | Timing Chart of SIGNAL I/O Signals<br>FAIL Signal of ECDC | Testing Circuit | |
| Condition | Test Current = 5 A, Rise Time = 0.1 s, Test Time = OFF,<br>Fall Time = OFF, Upper Limit = 0.0001 Ω, Pass Hold = 50 ms,<br>No load (waveform monitoring with a high voltage probe) | | |



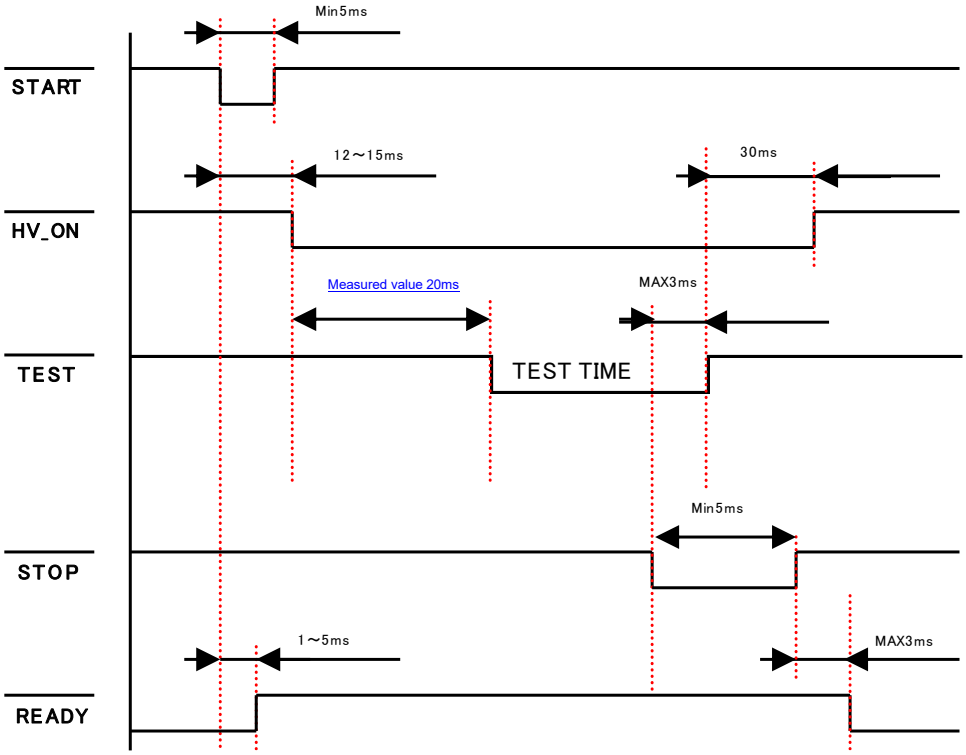

The values shown above are typical values at an ambient temperature of 23 °C and do not guarantee the performance of TOS9300 Series.

| Model | TOS9300 Series | Temperature | |
|---|---|---|---|
| Item | Timing Chart of SIGNAL I/O Signals<br>PROTECTION Signal of ECDC | Testing Circuit | |
| Condition | Test Current = 5 A, Rise Time = 0.1 s, Test Time = OFF,<br>Fall Time = OFF, The output was short-circuited. | | |



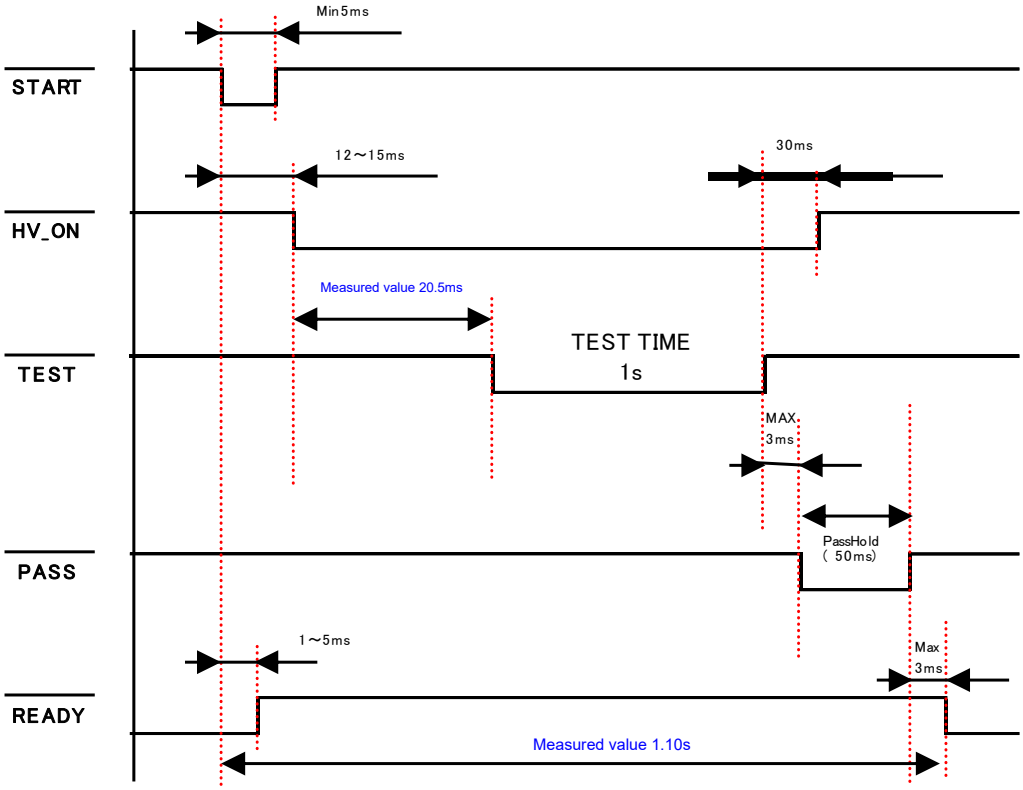

The values shown above are typical values at an ambient temperature of 23 °C and do not guarantee the performance of TOS9300 Series.

| Model | TOS9300 Series | Temperature | |
|---|---|---|---|
| Item | Timing Chart of SIGNAL I/O Signals<br>STOP Signal of LC (TC, PCC, Patient test) | Testing Circuit | |
| Condition | Polarity: Normal, Condition: Normal, Pass Hold: 50 ms, Test Time: 1 s<br>Network: C (TC: touch current), I (patient leakage current), Probe: Enc-Enc (TC),<br>Probe: Patient 110％ (Patient), 110% OUT: OFF (TC), ON-Normal (Patient) | | |



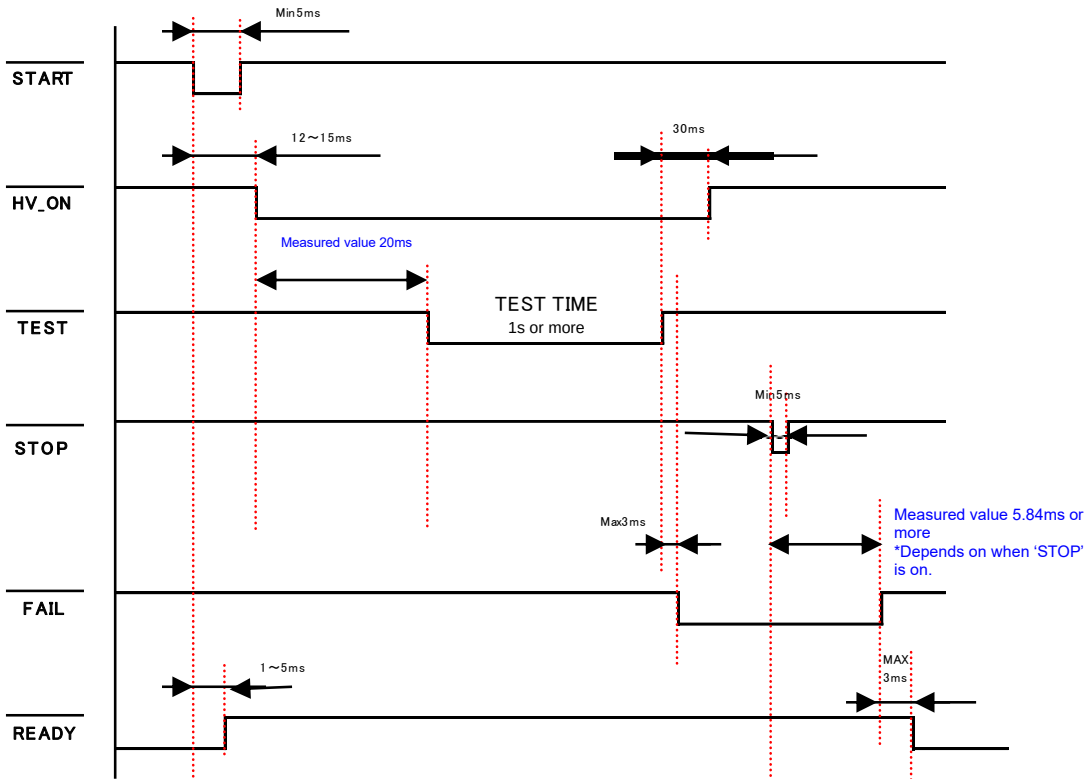

The values shown above are typical values at an ambient temperature of 23 °C and do not guarantee the performance of TOS9300 Series.

| Model | TOS9300 Series | Temperature | |
|---|---|---|---|
| Item | Timing Chart of SIGNAL I/O Signals<br>PASS Signal of LC (TC, PCC, Patient test) | Testing Circuit | |
| Condition | Polarity: Normal, Condition: Normal, Pass Hold: 50 ms, Test Time: OFF<br>Network: C (TC: touch current), I (patient leakage current), Probe: Enc-Enc (TC),<br>Probe: Patient 110％ (Patient), 110% OUT: OFF (TC), ON-Normal (Patient) | | |



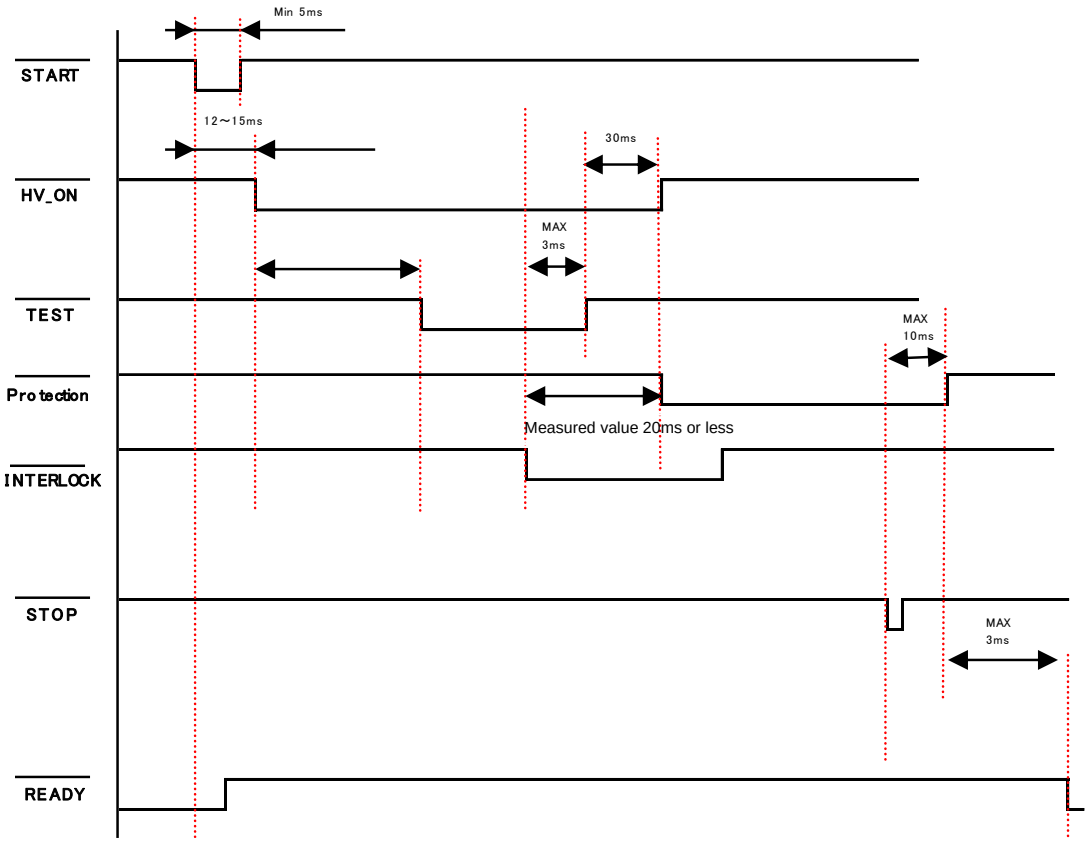

The values shown above are typical values at an ambient temperature of 23 °C and do not guarantee the performance of TOS9300 Series.

| Model | TOS9300 Series | Temperature | |
|---|---|---|---|
| Item | Timing Chart of SIGNAL I/O Signals<br>FAIL Signal of LC (TC, PCC, Patient test) | Testing Circuit | |
| Condition | Polarity: Normal, Condition: Normal, Pass Hold: 50 ms, Test Time: OFF, Upper Limit: 1.0001 mA, Lower Limit: 1 mA, Network: C (TC: touch current), I (patient leakage current), Probe: Enc-Enc (TC), Probe: Patient 110％ (Patient), 110% OUT: OFF (TC), ON-Normal (Patient) | | |



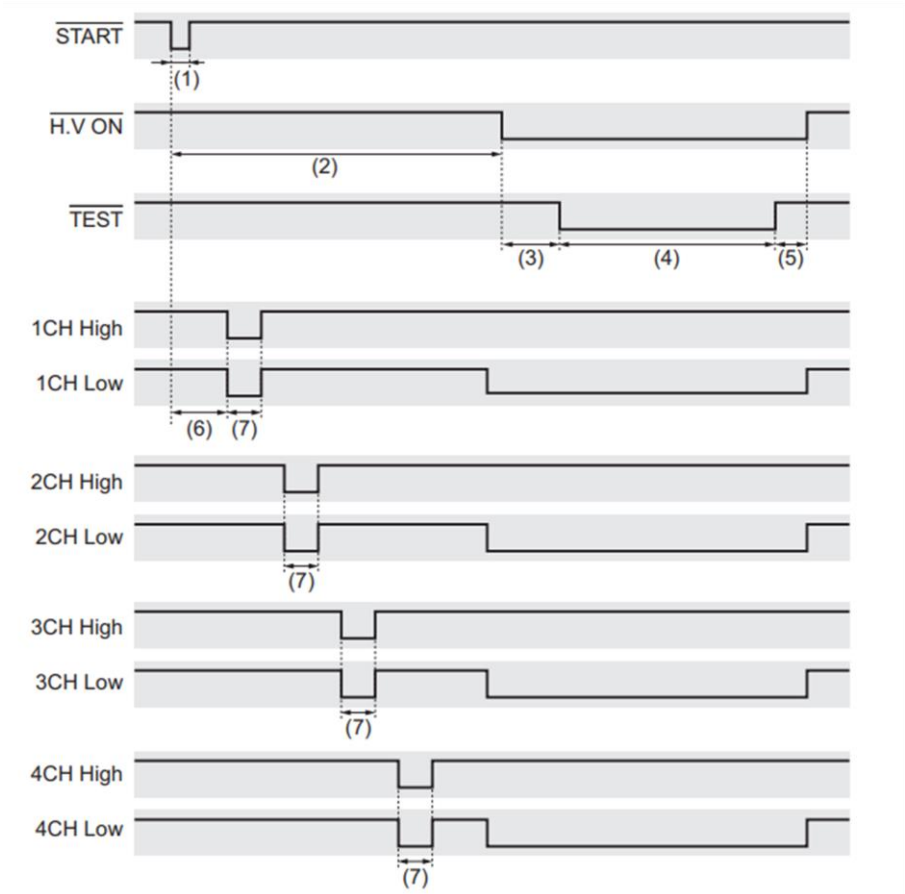

The values shown above are typical values at an ambient temperature of 23 °C and do not guarantee the performance of TOS9300 Series.

| Model | TOS9300 Series | Temperature | |
|---|---|---|---|
| Item | Timing Chart of SIGNAL I/O Signals<br>PROTECTION Signal of LC (TC, PCC, Patient test) | Testing Circuit | |
| Condition | Polarity: Normal, Condition: Normal, Pass Hold: 50 ms, Test Time: 1 s<br>Network: C (TC: touch current), I (patient leakage current), Probe: Enc-Enc (TC),<br>Probe: Patient 110％ (Patient), 110% OUT: OFF (TC), ON-Normal (Patient) | | |




The values shown above are typical values at an ambient temperature of 23 °C and do not guarantee the performance of TOS9300 Series.

| Model | TOS9300 Series | Temperature | |
|---|---|---|---|
| Item | Contact Check Operation with TOS9320 | Testing Circuit | |
| Condition | Combined with TOS9301 and TOS9320. Contact Check: ON<br>CH1 to CH4 of the scanner: Low<br>Rise Time: ON | | |




| No. | Description |
|---|---|
| (1) | 5 ms min. |
| (2) | Approx. 180 ms[1] |
| (3) | Rise Time |
| (4) | Test Time |
| 1 | TYP (typical value) |

| No. | Description |
|---|---|
| (5) | Varies depending on the EUT |
| (6) | Approx. 50 ms*1 |
| (7) | Approx. 30 ms*1 |

TYP is a typical value at an ambient temperature of 23 °C and does not guarantee the performance of TOS9300 Series.

| Model | TOS9300 Series | Temperature | |
|---|---|---|---|
| Item | Stray Capacitance on ACW | Testing Circuit | |
| Condition | Measured by connecting the lead wire, test lead and high voltage scanner (TOS9320) under the open circuit condition. | | |

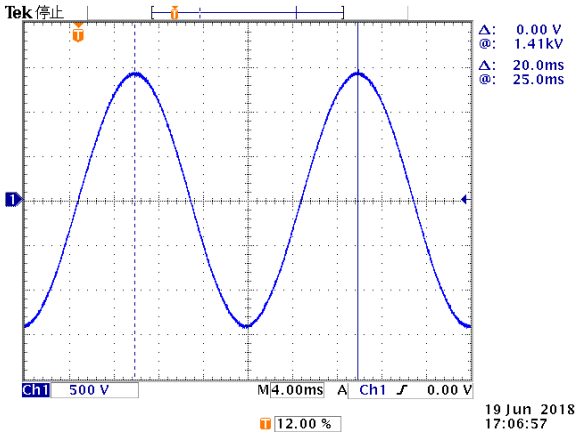
| Measurement environment | Output voltage | | | | |
|---|---|---|---|---|---|
| | 1 kV | 2 kV | 3 kV | 4 kV | 5 kV |
| When a lead wire 350 mm long is hung in air (typical value) | 2 µA | 4 µA | 6 µA | 8 µA | 10 µA |
| When the supplied lead wire TL31-TOS is used (typical value) | 16 µA | 32 µA | 48 µA | 64 µA | 80 µA |
| Per high voltage scanner (typical value, excluding the test lead) | 22 µA | 44 µA | 66 µA | 88 µA | 110 µA |

| Model | TOS9300 Series | Temperature | |
|---|---|---|---|
| Item | Output Voltage Waveform of ACW with Capacitor Connected | Testing Circuit | |
| Condition | | | |

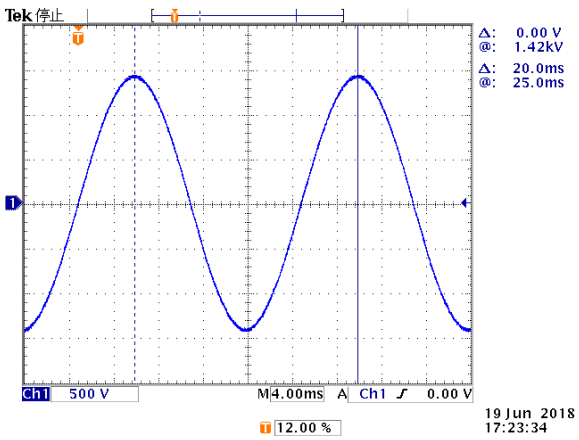
Output Frequency: 50 Hz

CF: Crest factor

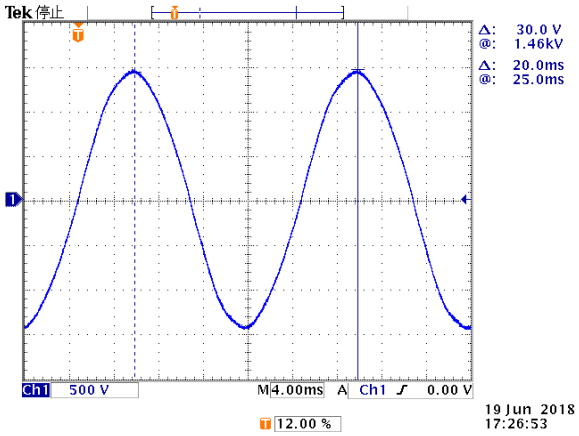
| | |
|---|---|
| 1KV No load | CF=1.437 |




| | | |
|---|---|---|
| 1KV0.01uF | | CF=1.431 |



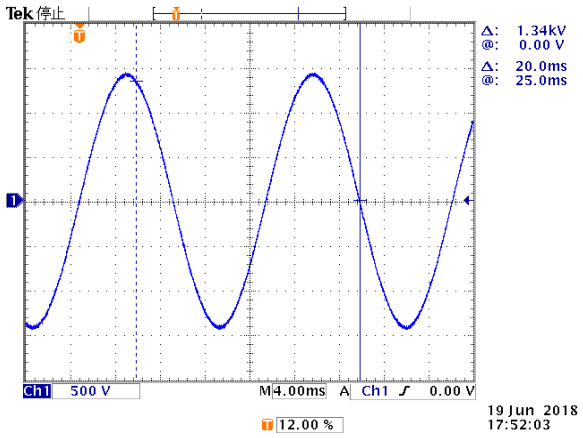

| | | |
|---|---|---|
| 1KV 0.01uF ×10 | | CF=1.414 |



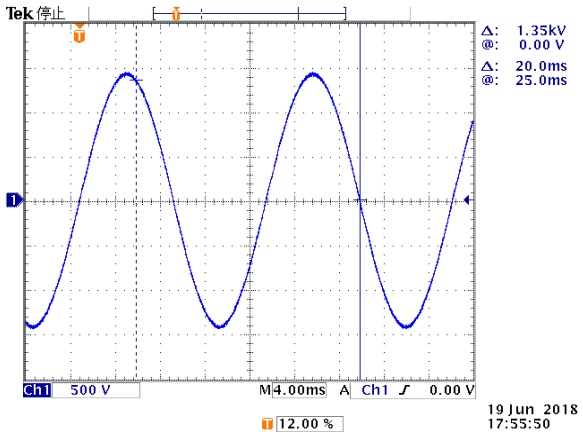
| Model | TOS9300 Series | Temperature41.07 | |
|---|---|---|---|
| Item | Output Voltage Waveform of ACW with Capacitor Connected | Testing Circuit | |
| Condition | | | |

Output Frequency: 60 Hz

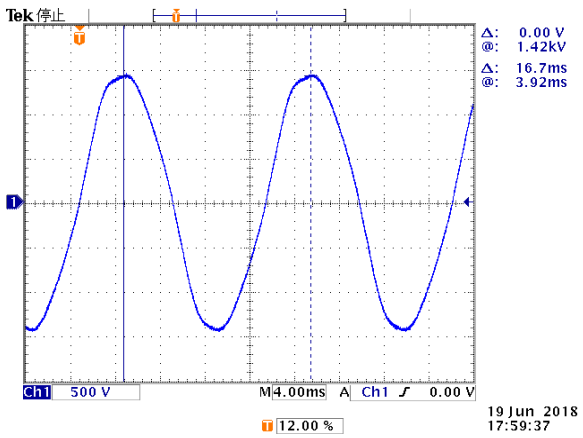
| | |
|---|---|
| 1KV No load | CF=1.436 |




| | | |
|---|---|---|
| 1KV 0.01uF | | CF=1.429 |




| | |
|---|---|
| 1KV 0.01uF×10 | CF=1.392 |



| Model | TOS9300 Series | Temperature | |
|---|---|---|---|
| Item | Power Consumption | Testing Circuit | |
| Condition | WT1802-02-M-HE/EX2: Precision Power Analyzer<br>PCR6000LE: AC Power Supply<br>DR25600: Decade Resistor Box | | |

## AC Input Frequency = 50 Hz

ACW: 5 kV, No load, Output Frequency: 50 Hz

| AC Voltage (V) | AC Current (A) | Apparent Power (VA) | Power Consumption (W) | Output Power (W) | Power Factor (%) | Efficiency (%) |
|---|---|---|---|---|---|---|
| 90 | 1.053 | 94.45 | 72.97 | – | 77.3 | – |
| 100 | 0.985 | 98.45 | 73.41 | – | 74.6 | – |
| 220 | 0.548 | 120.85 | 70.92 | – | 58.7 | – |
| 240 | 0.526 | 126.18 | 70.95 | – | 56.2 | – |

ACW: 5 kV, No load, Output Frequency: 60 Hz

| | | | | | | |
|---|---|---|---|---|---|---|
| 90 | 1.029 | 92.51 | 70.65 | – | 76.4 | – |
| 100 | 0.967 | 96.78 | 71.48 | – | 73.9 | – |
| 220 | 0.539 | 118.67 | 68.94 | – | 58.1 | – |
| 240 | 0.516 | 123.95 | 69.01 | – | 55.7 | – |

ACW: 5 kV, 100 mA, Output Frequency: 50 Hz

| | | | | | | |
|---|---|---|---|---|---|---|
| 90 | 7.827 | 690.5 | 677.2 | 501.8 | 98.1 | 74.1 |
| 100 | 7.302 | 717.7 | 671.1 | 501.8 | 93.5 | 74.8 |
| 220 | 3.162 | 695.8 | 636.7 | 501.8 | 91.5 | 78.8 |
| 240 | 2.972 | 711.4 | 636.0 | 501.8 | 89.4 | 78.9 |

ACW: 5 kV, 100 mA, Output Frequency: 60 Hz

| | | | | | | |
|---|---|---|---|---|---|---|
| 90 | 7.993 | 704.2 | 676.6 | 500.0 | 96.1 | 73.9 |
| 100 | 7.105 | 698.6 | 666.1 | 500.0 | 95.3 | 75.1 |
| 220 | 3.193 | 699.8 | 632.8 | 500.0 | 90.4 | 79.0 |
| 240 | 2.956 | 708.1 | 635.1 | 500.0 | 89.7 | 78.7 |

DCW: 7.2 kV, 14.4 mA

| | | | | | | |
|---|---|---|---|---|---|---|
| 90 | 2.307 | 208.2 | 185.0 | 103.7 | 88.9 | 56.0 |
| 100 | 2.075 | 206.6 | 184.2 | 103.7 | 89.2 | 56.3 |
| 220 | 1.011 | 219.9 | 179.5 | 103.7 | 81.6 | 57.8 |
| 240 | 0.95.3 | 228.1 | 180.7 | 103.7 | 79.2 | 57.4 |

IR: 1 kV, 1 mA

| | | | | | | |
|---|---|---|---|---|---|---|
| 90 | 0.634 | 57.1 | 33.5 | 1.0 | 58.7 | 3.0 |
| 100 | 0.592 | 59.1 | 33.4 | 1.0 | 56.6 | 3.0 |
| 220 | 0.375 | 82.9 | 33.1 | 1.0 | 40.0 | 3.0 |
| 240 | 0.365 | 88.3 | 33.1 | 1.0 | 37.5 | 3.0 |

| Model | TOS9300 Series | Temperature | |
|---|---|---|---|
| Item | Power Consumption | Testing Circuit | |
| Condition | WT1802-02-M-HE/EX2: Precision Power Analyzer<br>PCR6000LE: AC Power Supply<br>DR25600: Decade Resistor Box | | |

## AC Input Frequency = 60 Hz

ACW: 5 kV, No load, Output Frequency: 50 Hz

| AC Voltage (V) | AC Current (A) | Apparent Power (VA) | Power Consumption (W) | Output Power (W) | Power Factor (%) | Efficiency (%) |
|---|---|---|---|---|---|---|
| 90 | 0.884 | 79.31 | 61.48 | – | 77.5 | – |
| 100 | 0.791 | 78.93 | 61.06 | – | 77.4 | – |
| 220 | 0.473 | 104.10 | 60.28 | – | 57.9 | – |
| 240 | 0.471 | 113.27 | 60.30 | – | 53.2 | – |

ACW: 5 kV, No load, Output Frequency: 60 Hz

| | | | | | | |
|---|---|---|---|---|---|---|
| 90 | 0.901 | 81.00 | 63.00 | – | 77.8 | – |
| 100 | 0.825 | 82.27 | 62.98 | – | 76.6 | – |
| 220 | 0.490 | 107.90 | 61.58 | – | 57.1 | – |
| 240 | 0.477 | 115.24 | 62.00 | – | 53.8 | – |

ACW: 5 kV, 100 mA, Output Frequency: 50 Hz

| | | | | | | |
|---|---|---|---|---|---|---|
| 90 | 8.107 | 716.8 | 678.5 | 498.8 | 94.7 | 73.5 |
| 100 | 7.082 | 698.6 | 665.9 | 498.8 | 95.3 | 74.9 |
| 220 | 3.129 | 686.4 | 638.4 | 498.8 | 93.0 | 78.1 |
| 240 | 2.880 | 692.0 | 634.6 | 498.8 | 91.7 | 78.6 |

ACW: 5 kV, 100 mA, Output Frequency: 60 Hz

| | | | | | | |
|---|---|---|---|---|---|---|
| 90 | 7.907 | 704.3 | 677.2 | 502.0 | 96.2 | 74.1 |
| 100 | 7.100 | 699.1 | 668.7 | 502.0 | 95.7 | 75.1 |
| 220 | 3.192 | 700.6 | 637.0 | 502.0 | 90.9 | 78.8 |
| 240 | 2.954 | 707.4 | 637.0 | 502.0 | 90.0 | 78.8 |

DCW: 7.2 kV, 14.4 mA

| | | | | | | |
|---|---|---|---|---|---|---|
| 90 | 2.290 | 205.0 | 184.9 | 103.7 | 90.2 | 56.1 |
| 100 | 2.058 | 205.1 | 184.1 | 103.7 | 89.8 | 56.3 |
| 220 | 1.004 | 220.7 | 179.2 | 103.7 | 81.2 | 57.8 |
| 240 | 0.953 | 228.6 | 178.9 | 103.7 | 78.3 | 58.0 |

IR: 1 kV, 1 mA

| | | | | | | |
|---|---|---|---|---|---|---|
| 90 | 0.653 | 59.2 | 34.0 | 1.0 | 57.4 | 2.9 |
| 100 | 0.599 | 60.0 | 33.3 | 1.0 | 55.5 | 3.0 |
| 220 | 0.390 | 86.0 | 33.2 | 1.0 | 38.5 | 3.0 |
| 240 | 0.385 | 93.0 | 33.5 | 1.0 | 36.0 | 3.0 |

| Model | TOS9300 Series | Temperature | |
|---|---|---|---|
| Item | Power Consumption | Testing Circuit | |
| Condition | WT1802-02-M-HE/EX2: Precision Power Analyzer<br>PCR6000LE: AC Power Supply<br>DR25600: Decade Resistor Box | | |

## AC Input Frequency = 50 Hz

EC AC: 40 A, 100 mA, READY status, Output Frequency: 50 Hz

| AC Voltage (V) | AC Current (A) | Apparent Power (VA) | Power Consumption (W) | Output Power (W) | Power Factor (%) | Efficiency (%) |
|---|---|---|---|---|---|---|
| 90 | 0.825 | 74.23 | 50.00 | | 67.4 | – |
| 100 | 0.766 | 76.50 | 49.70 | | 65.0 | – |
| 220 | 0.466 | 102.57 | 49.08 | | 47.9 | – |
| 240 | 0.450 | 108.00 | 49.04 | | 45.4 | – |

EC AC: 40 A, 100 mA, READY status, Output Frequency: 60 Hz

| | | | | | | |
|---|---|---|---|---|---|---|
| 90 | 0.826 | 74.21 | 50.00 | – | 67.4 | – |
| 100 | 0.766 | 76.51 | 49.68 | – | 64.9 | – |
| 220 | 0.467 | 102.67 | 49.08 | – | 47.8 | – |
| 240 | 0.449 | 107.80 | 49.08 | – | 45.5 | – |

EC AC: 40 A, 0.1 Ω, Output Frequency: 50 Hz

| | | | | | | |
|---|---|---|---|---|---|---|
| 90 | 3.654 | 326.90 | 295.60 | 160 | 90.4 | 54.1 |
| 100 | 3.285 | 326.70 | 293.70 | 160 | 89.9 | 54.5 |
| 220 | 1.536 | 337.56 | 286.26 | 160 | 84.8 | 55.9 |
| 240 | 1.401 | 335.98 | 285.78 | 160 | 85.1 | 56.0 |

EC AC: 40 A, 0.1 Ω, Output Frequency: 60 Hz

| | | | | | | |
|---|---|---|---|---|---|---|
| 90 | 3.577 | 319.10 | 294.70 | 160 | 92.4 | 54.3 |
| 100 | 3.207 | 318.90 | 291.90 | 160 | 91.5 | 54.8 |
| 220 | 1.505 | 331.06 | 285.03 | 160 | 86.1 | 56.1 |
| 240 | 1.403 | 336.44 | 284.95 | 160 | 84.7 | 56.2 |

EC DC: 40 A, 0.1 Ω

| | | | | | | |
|---|---|---|---|---|---|---|
| 90 | 3.580 | 319.9 | 295.3 | 160.0 | 92.3 | 54.2 |
| 100 | 3.220 | 320.0 | 293.2 | 160.0 | 91.6 | 54.6 |
| 220 | 1.515 | 332.6 | 286.4 | 160.0 | 86.1 | 55.9 |
| 240 | 1.409 | 337.6 | 285.7 | 160.0 | 84.6 | 56.0 |

| Model | TOS9300 Series | Temperature | |
|---|---|---|---|
| Item | Power Consumption | Testing Circuit | |
| Condition | WT1802-02-M-HE/EX2: Precision Power Analyzer<br>PCR6000LE: AC Power Supply<br>DR25600: Decade Resistor Box | | |

## AC Input Frequency = 60 Hz

EC AC: 40 A, 100 mA, READY status, Output Frequency: 50 Hz

| AC Voltage (V) | AC Current (A) | Apparent Power (VA) | Power Consumption (W) | Output Power (W) | Power Factor (%) | Efficiency (%) |
|---|---|---|---|---|---|---|
| 90 | 0.833 | 74.93 | 50.07 | – | 66.8 | – |
| 100 | 0.769 | 77.01 | 49.87 | – | 64.8 | – |
| 220 | 0.478 | 105.15 | 49.14 | – | 46.7 | – |
| 240 | 0.466 | 111.85 | 49.12 | – | 43.9 | – |

EC AC: 40 A, 100 mA, READY status, Output Frequency: 60 Hz

| | | | | | | |
|---|---|---|---|---|---|---|
| 90 | 0.834 | 74.98 | 50.04 | – | 66.7 | – |
| 100 | 0.773 | 77.26 | 49.80 | – | 64.5 | – |
| 220 | 0.478 | 105.15 | 49.13 | – | 46.7 | – |
| 240 | 0.466 | 111.82 | 49.12 | – | 43.9 | – |

EC AC: 40 A, 0.1 Ω, Output Frequency: 50 Hz

| | | | | | | |
|---|---|---|---|---|---|---|
| 90 | 3.490 | 310.00 | 292.00 | 160 | 94.2 | 54.8 |
| 100 | 3.206 | 319.20 | 294.40 | 160 | 92.2 | 54.3 |
| 220 | 1.519 | 333.51 | 286.58 | 160 | 85.9 | 55.8 |
| 240 | 1.418 | 340.00 | 286.00 | 160 | 84.1 | 55.9 |

EC AC: 40 A, 0.1 Ω, Output Frequency: 60 Hz

| | | | | | | |
|---|---|---|---|---|---|---|
| 90 | 3.493 | 312.40 | 294.20 | 160 | 94.2 | 54.4 |
| 100 | 3.224 | 320.60 | 292.80 | 160 | 91.3 | 54.6 |
| 220 | 1.494 | 328.46 | 285.54 | 160 | 86.9 | 56.0 |
| 240 | 1.429 | 342.50 | 285.11 | 160 | 83.2 | 56.1 |

EC DC: 40 A, 0.1 Ω

| | | | | | | |
|---|---|---|---|---|---|---|
| 90 | 3.555 | 317.0 | 295.6 | 160.0 | 93.2 | 54.1 |
| 100 | 3.195 | 317.8 | 293.8 | 160.0 | 92.4 | 54.5 |
| 220 | 1.517 | 333.7 | 286.6 | 160.0 | 85.9 | 55.8 |
| 240 | 1.418 | 340.9 | 286.2 | 160.0 | 84.0 | 55.9 |

| Model | TOS9300 Series | Temperature | |
|---|---|---|---|
| Item | Power Consumption | Testing Circuit | |
| Condition | WT1802-02-M-HE/EX2: Precision Power Analyzer<br>PCR6000LE: AC Power Supply<br>DR25600: Decade Resistor Box | | |

AC Input Frequency: 50 Hz, LC: READY status

| AC Voltage (V) | AC Current (A) | Apparent Power (VA) | Power Consumption (W) | Output Power (W) | Power Factor (%) | Efficiency (%) |
|---|---|---|---|---|---|---|
| 90 | 0.737 | 66.26 | 38.57 | – | 58.2 | – |
| 100 | 0.681 | 68.05 | 38.31 | – | 56.3 | – |
| 220 | 0.421 | 92.56 | 37.92 | – | 41.0 | – |
| 240 | 0.410 | 98.22 | 38.18 | – | 38.9 | – |

AC Input Frequency: 50 Hz, LC: TC MODE ON status

| | | | | | | |
|---|---|---|---|---|---|---|
| 90 | 0.867 | 78.0 | 46.3 | – | 59.3 | – |
| 100 | 0.801 | 80.1 | 46.0 | – | 57.4 | – |
| 220 | 0.478 | 105.3 | 45.1 | – | 42.8 | – |
| 240 | 0.461 | 110.8 | 45.2 | – | 40.7 | – |

AC Input Frequency: 60 Hz, LC: READY status

| | | | | | | |
|---|---|---|---|---|---|---|
| 90 | 0.752 | 67.54 | 38.59 | – | 57.1 | – |
| 100 | 0.697 | 69.64 | 38.28 | – | 55.0 | – |
| 220 | 0.447 | 97.92 | 37.90 | – | 38.7 | – |
| 240 | 0.429 | 102.78 | 38.13 | – | 37.1 | – |

AC Input Frequency: 60 Hz, LC: TC MODE ON status

| | | | | | | |
|---|---|---|---|---|---|---|
| 90 | 0.883 | 79.4 | 46.3 | – | 58.3 | – |
| 100 | 0.816 | 81.6 | 45.8 | – | 56.1 | – |
| 220 | 0.499 | 109.8 | 45.1 | – | 41.1 | – |
| 240 | 0.480 | 115.3 | 45.2 | – | 39.2 | – |

| Model | TOS9300 Series | Temperature | |
|---|---|---|---|
| Item | Power Consumption | Testing Circuit | |
| Condition | Combined with TOS9301 and TOS9320.<br>WT1802-02-M-HE/EX2: Precision Power Analyzer<br>PCR6000LE: AC Power Supply | | |

TOS9301 + TOS9320, AC Input Frequency: 50 Hz

| Output Condition | AC Voltage (V) | AC Current (A) | Apparent Power (VA) | Power Consumption (W) | Output Power (W) | Power Factor (%) | Efficiency (%) |
|---|---|---|---|---|---|---|---|
| | | | | | | | |
| EXTERNAL I/O switch is ON.<br>EXTERNAL LED is ON. | 90 | 0.072 | 6.42 | 2.79 | - | 43.5 | - |
| | 100 | 0.069 | 7.01 | 2.81 | - | 40.1 | - |
| | 220 | 0.065 | 14.22 | 3.06 | - | 21.5 | - |
| | 240 | 0.076 | 16.16 | 3.13 | - | 19.4 | - |
| | | | | | | | |
| EXTERNAL I/O switch is OFF.<br>EXTERNAL LED is OFF. | 90 | 0.057 | 5.05 | 2.04 | - | 40.4 | - |
| | 100 | 0.055 | 5.53 | 2.05 | - | 37.1 | - |
| | 220 | 0.059 | 13.01 | 2.25 | - | 17.3 | - |
| | 240 | 0.063 | 14.99 | 2.27 | - | 15.1 | - |
| | | | | | | | |
| CH1/CH2/CH3/CH4 LEDs are ON.<br>DANGER LED is ON.<br>EXTERNAL LED is OFF. | 90 | 0.360 | 32.0 | 17.8 | - | 55.7 | - |
| | 100 | 0.331 | 33.8 | 17.6 | - | 52.0 | - |
| | 220 | 0.194 | 42.6 | 17.8 | - | 41.7 | - |
| | 240 | 0.185 | 44.4 | 17.7 | - | 39.8 | - |
| | | | | | | | |

TOS9301 + TOS9320, AC Input Frequency: 60 Hz

| Output Condition | AC Voltage (V) | AC Current (A) | Apparent Power (VA) | Power Consumption (W) | Output Power (W) | Power Factor (%) | Efficiency (%) |
|---|---|---|---|---|---|---|---|
| | | | | | | | |
| EXTERNAL I/O switch is ON.<br>EXTERNAL LED is ON. | 90 | 0.075 | 6.80 | 2.84 | - | 41.8 | - |
| | 100 | 0.071 | 7.11 | 2.83 | - | 39.8 | - |
| | 220 | 0.073 | 16.10 | 3.10 | - | 19.3 | - |
| | 240 | 0.077 | 18.40 | 3.12 | - | 17.0 | - |
| | | | | | | | |
| EXTERNAL I/O switch is OFF.<br>EXTERNAL LED is OFF. | 90 | 0.060 | 5.40 | 2.04 | - | 37.8 | - |
| | 100 | 0.057 | 5.74 | 2.08 | - | 36.2 | - |
| | 220 | 0.068 | 14.97 | 2.23 | - | 14.9 | - |
| | 240 | 0.072 | 17.39 | 2.28 | - | 13.1 | - |
| | | | | | | | |
| CH1/CH2/CH3/CH4 LEDs are ON.<br>DANGER LED is ON.<br>EXTERNAL LED is OFF. | 90 | 0.357 | 32.0 | 17.6 | - | 54.9 | - |
| | 100 | 0.325 | 32.2 | 17.5 | - | 54.2 | - |
| | 220 | 0.194 | 42.8 | 17.3 | - | 40.3 | - |
| | 240 | 0.187 | 45.0 | 17.5 | - | 38.8 | - |
| | | | | | | | |

| Model | TOS9300 Series | Temperature | 26℃ |
|---|---|---|---|
| Item | Leakage Current (Protective Conductor Current) | Testing Circuit | |
| Condition | TOS3200: Leakage Current Tester<br>PCR2000W: AC Power Supply | | |

TOS9301

| AC Input | Condition | Polarity | Measured Value | Converted Value* |
|---|---|---|---|---|
| 100V | Normal condition | Normal | 0.61 m A | 1.83 m A |
| | | Reverse | 0.614 m A | 1.842 m A |
| 100V | Single fault mode<br>Disconnected pow er supply line (neutral) condition | Normal | 1.1 m A | 3.3 m A |
| | | Reverse | 1.14 m A | 3.42 m A |

TOS9303

| AC Input | Condition | Polarity | Measured Value | Converted Value* |
|---|---|---|---|---|
| 100V | Normal condition | Normal | 0.62 m A | 1.86 m A |
| | | Reverse | 0.606 m A | 1.818 m A |
| 100V | Single fault mode<br>Disconnected pow er supply line (neutral) condition | Normal | 1.09 m A | 3.27 m A |
| | | Reverse | 1.14 m A | 3.42 m A |

TOS9303LC

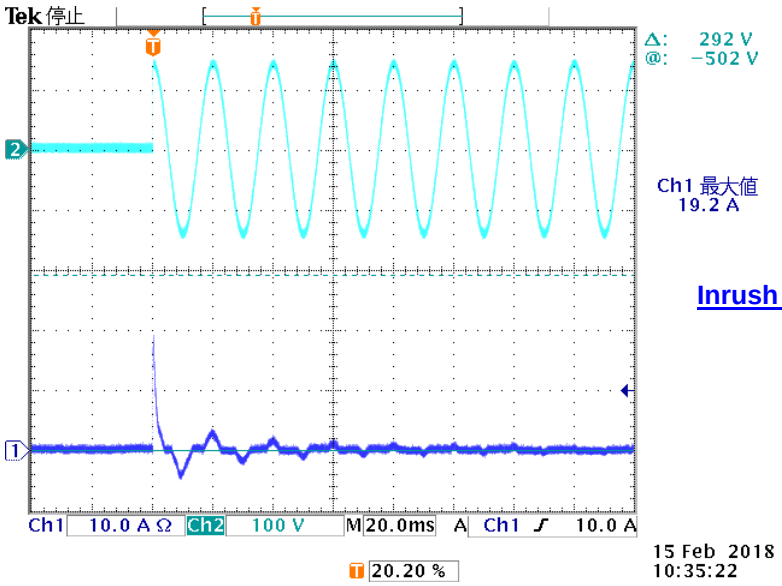
| AC Input | Condition | Polarity | Measured Value | Converted Value* |
|---|---|---|---|---|
| 100V | Normal condition | Normal | 0.607 m A | 1.821 m A |
| | | Reverse | 0.621 m A | 1.863 m A |
| 100V | Single fault mode<br>Disconnected pow er supply line (neutral) condition | Normal | 1.09 m A | 3.27 m A |
| | | Reverse | 2.25 m A | 6.75 m A |

Conversion Max. Input Voltage 250 V Max. Input Frequency 60 Hz

*Converted value = Measured value x (Max. Input Voltage/Pow er Supply Voltage) x (Max. Input Frequency/Pow er Supply Frequency)

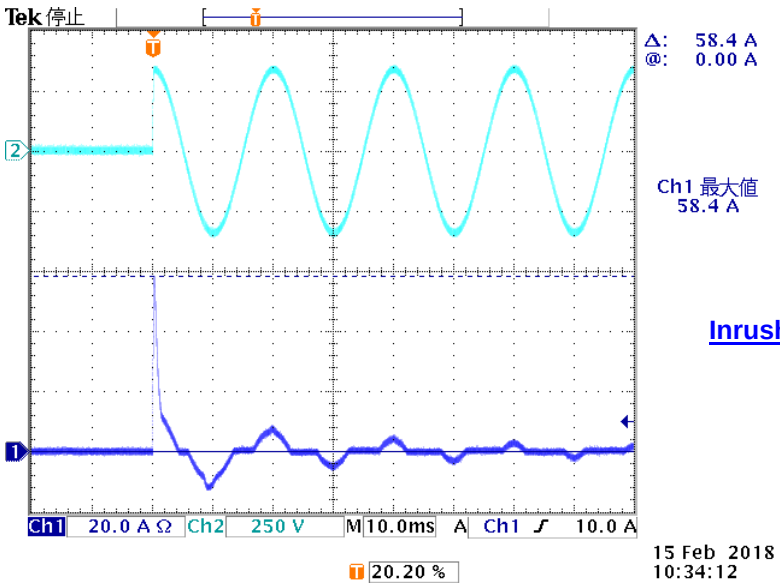
| Model | TOS9300 Series | Temperature | 25℃ |
|---|---|---|---|
| Item | Inrush Current Waveform of AC Input<br>TOS9301 | Testing Circuit | |
| Condition | TDS3014B: Digital Oscilloscope 100 MHz<br>TCPA400: Current Probe Amplifier<br>TCP404XL: AC/DC Current Probe | | |

Input: 100 Vac  Condition: Phase 90° at POWER ON




**Inrush Current = 19.2 A**

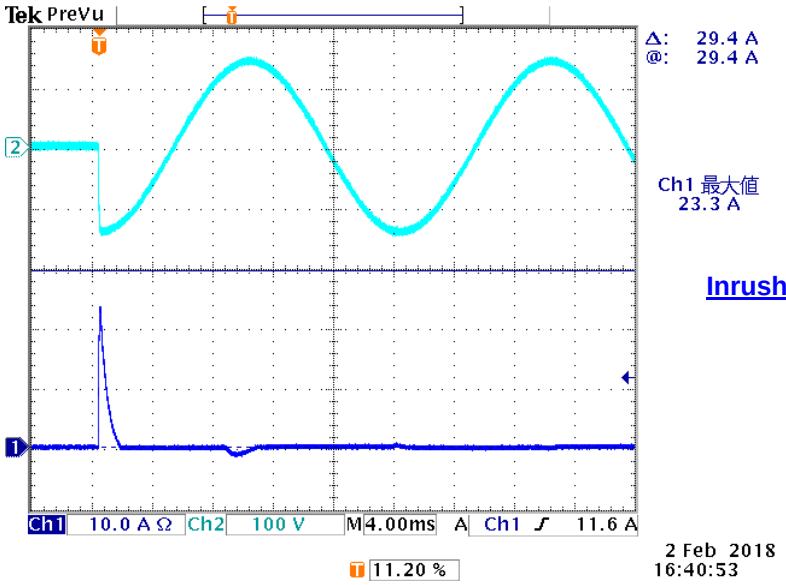
Input: 240 Vac  Condition: Phase 90° at POWER ON




**Inrush Current = 58.4 A**

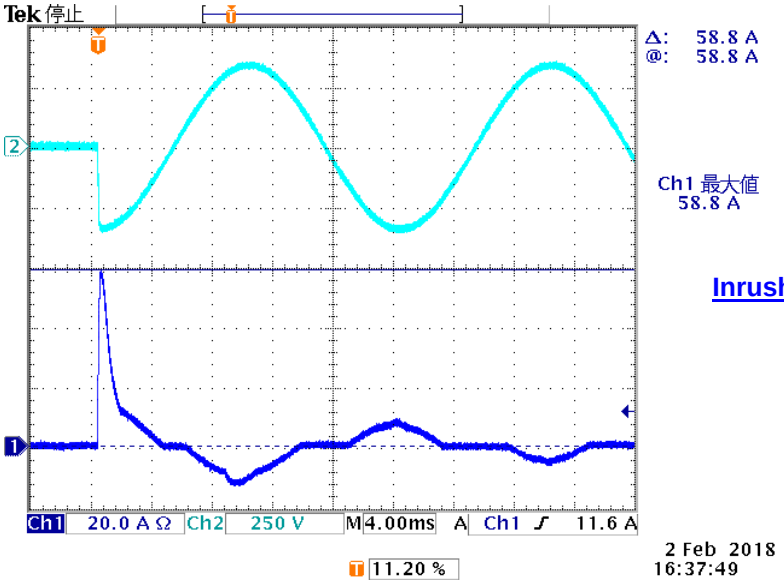
| Model | TOS9300 Series | Temperature | 25℃ |
|---|---|---|---|
| Item | Inrush Current Waveform of AC Input<br>TOS9303LC | Testing Circuit | |
| Condition | TDS3014B: Digital Oscilloscope 100 MHz<br>TCPA400: Current Probe Amplifier<br>TCP404XL: AC/DC Current Probe | | |

Input: 100 Vac  Condition: Phase 90° at POWER ON




Inrush Current = 23.3 A

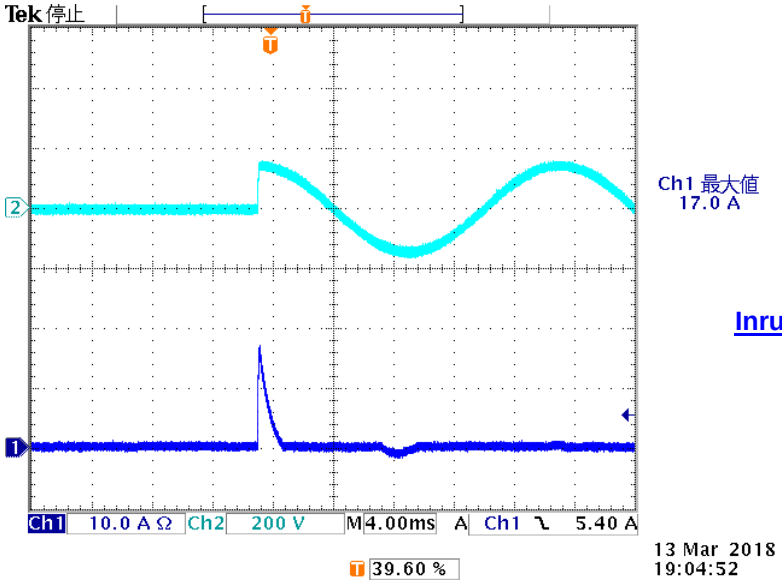
Input: 240 Vac  Condition: Phase 90° at POWER ON




Inrush Current = 58.8 A

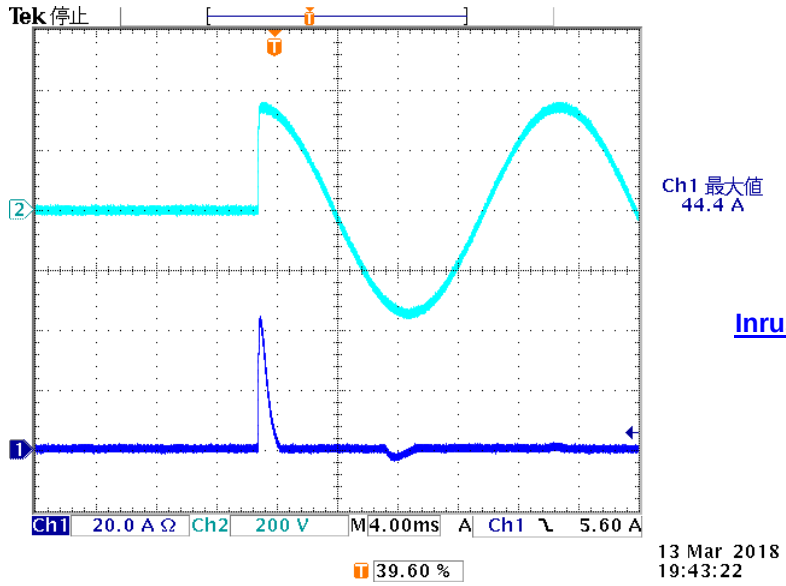
| Model | TOS9300 Series | Temperature | 25℃ |
|---|---|---|---|
| Item | Inrush Current Waveform of AC Input<br>TOS9320 | Testing Circuit | |
| Condition | TDS3014B: Digital Oscilloscope 100 MHz<br>TCPA400: Current Probe Amplifier<br>TCP404XL: AC/DC Current Probe | | |

Input: 100 Vac  Condition: Phase 90° at POWER ON




**Inrush Current = 17.0 A**

Input: 240 Vac  Condition: Phase 90° at POWER ON




**Inrush Current = 44.4 A**

| Model | TOS9300 Series | Temperature | 25℃ |
|---|---|---|---|
| Item | Noise | Testing Circuit | |
| Condition | Power Supply Voltage: 100 Vac/50 Hz<br>a) READY Status<br>b) ACW 5 kW, No load, The fan controller was working. | | |

TOS9301

| Position | Measured Noise Level | Calculated Noise Level after Background Noise Correction |
|---|---|---|
| Front side | a) 42.9 dB(A)<br>b) 43.3 dB(A) | a) 41.9 dB(A)<br>b) 43.3 dB(A) |
| Left side | a) 43.7 dB(A)<br>b) 44.1 dB(A) | a) 43.7 dB(A)<br>b) 44.1 dB(A) |
| Rear side | a) 47.2 dB(A)<br>b) 44.5 dB(A) | a) 47.2 dB(A)<br>b) 44.5 dB(A) |
| Right side | a) 44.8 dB(A)<br>b) 47.0 dB(A) | a) 44.8 dB(A)<br>b) 47.0 dB(A) |
| Top side | a) 46.7 dB(A)<br>b) 46.9 dB(A) | a) 46.7 dB(A)<br>b) 46.9 dB(A) |
| Background Noise | 35.4 dB(A) | |

No. of samples: 2 units, Measurement results (a/b) was obtained by the separate units.

TOS9303LC

| Position | Measured Noise Level | Calculated Noise Level after Background Noise Correction |
|---|---|---|
| Front side | a) 42.0 dB(A)<br>b) 42.5 dB(A) | a) 41.0 dB(A)<br>b) 41.5 dB(A) |
| Left side | a) 45.6 dB(A)<br>b) 46.0 dB(A) | a) 45.6 dB(A)<br>b) 46.0 dB(A) |
| Rear side | a) 47.4 dB(A)<br>b) 45.7 dB(A) | a) 47.4 dB(A)<br>b) 45.7 dB(A) |
| Right side | a) 44.5 dB(A)<br>b) 45.0 dB(A) | a) 44.5 dB(A)<br>b) 45.0 dB(A) |
| Top side | a) 47.5 dB(A)<br>b) 47.1 dB(A) | a) 47.5 dB(A)<br>b) 47.1 dB(A) |
| Background Noise | 35.4 dB(A) | |

No. of samples: 2 units, Measurement results (a/b) was obtained by the separate units.

Measurement Environment

(If the difference between the measured noise level and background noise is 4 dB or more)

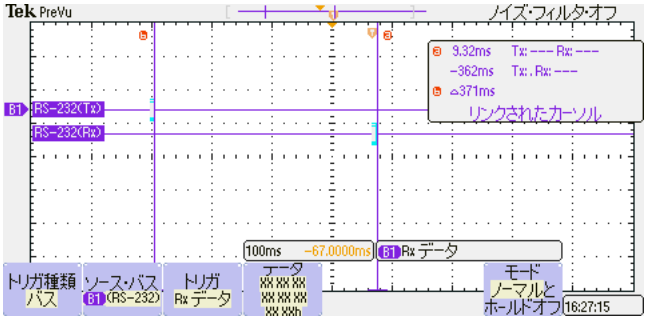
| Difference between measured noise level and background noise [dB] | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|
| Correction value [dB] | -2 | -2 | -1 | -1 | -1 | -1 | 0 |

| Model | TOS9300 Series | Temperature | 25℃ |
|---|---|---|---|
| Item | Command Control Time (via RS232C interface) | Testing Circuit | |
| Condition | See the command control time below for the typical commands. | | |

MEAS?

Response Time:

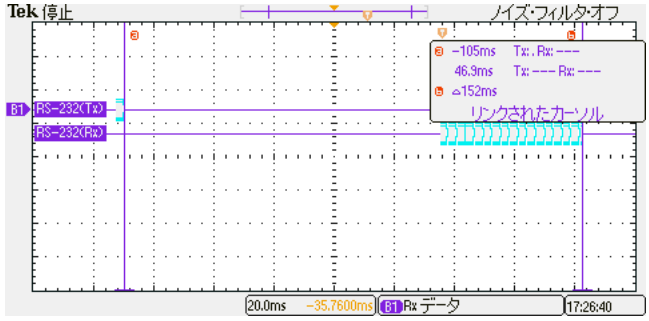
Approx. 371 ms




RES?

Response Time:

Approx. 152 ms

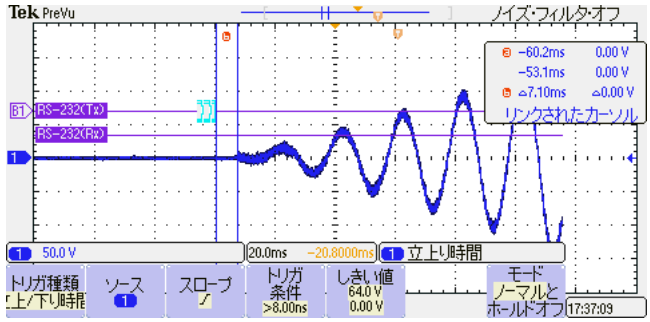



INIT:TEST

Output Response

Time:

Approx. 7.1 ms




START

Output Response Time:

Approx. 6.7 ms