

# LTspice Model

## 42 V Input Window Voltage Detector for Automotive Applications

### NiSSHINBO

### R3152N013A-TR-KE

#### Model Information

**Model** A macro model  
**Call Name** MDC\_R3152N013A-TR-KE\_LT  
**Pin Assign** 1:VDD 2:CD 3:UV 4:OV 5:GND 6:SENSE  
**File List** Model Library MDC\_R3152N013A-TR-KE\_LT.lib  
 Model Report MDC\_R3152N013A-TR-KE\_LT.pdf(this file)

**Verified Simulator Version** LTspice

#### Note

#### References

The information which was used for modeling is as follow:

[Data Sheet]

- Date/Version
- Product name R3152N013A-TR-KE
- Company name NiSSHINBO

[Characteristics listed]

- Characteristics Overvoltage/Undervoltage Detection  
Release Delay Time  
Output Current vs VDS

#### Simulation Condition

This table shows the range of evaluated simulation range that was not occurs any convergence problems in this area.

Item	Condition	Unit
Temperature	25	deg C

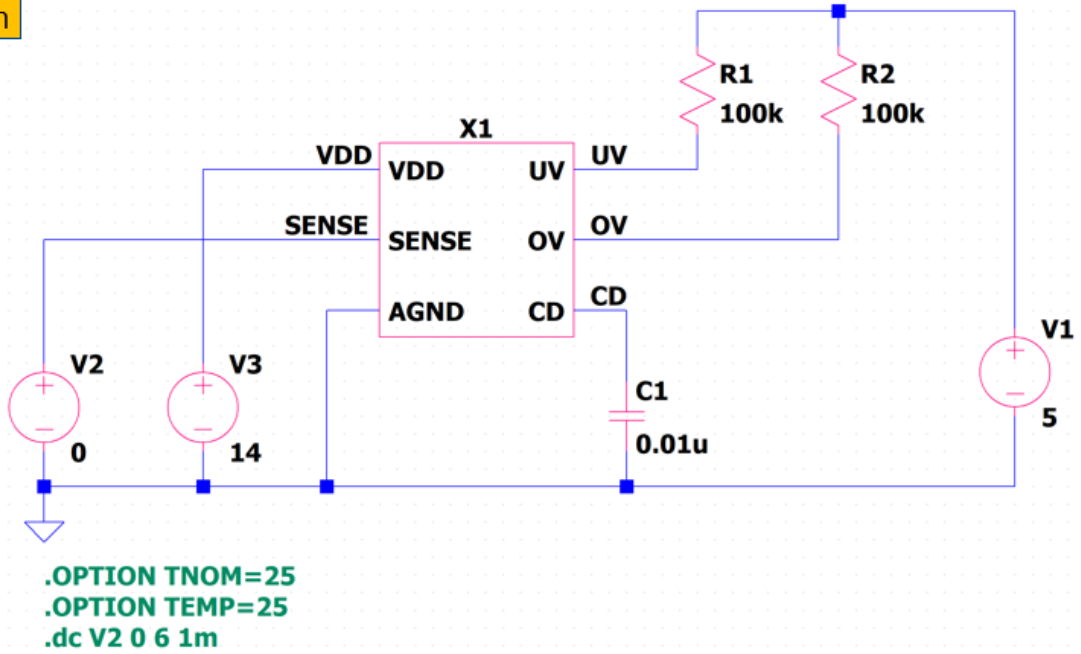
○ : Implemented  
 × : Not Implemented  
 — : Not applicable

**Model Functions Table**

	RANK=1	
Functions	RANK	Implemented
Overvoltage Detection: 1.33V	1	○
Undervoltage Detection: 1.17 V	1	○
Detection Release Hysteresis: A, Typ. 1.0% with hysteresis	1	○
Release Delay Time: Typ. 4 ms (CD = 0.01 μF)	1	○
Output Type: Nch. Open Drain	1	○

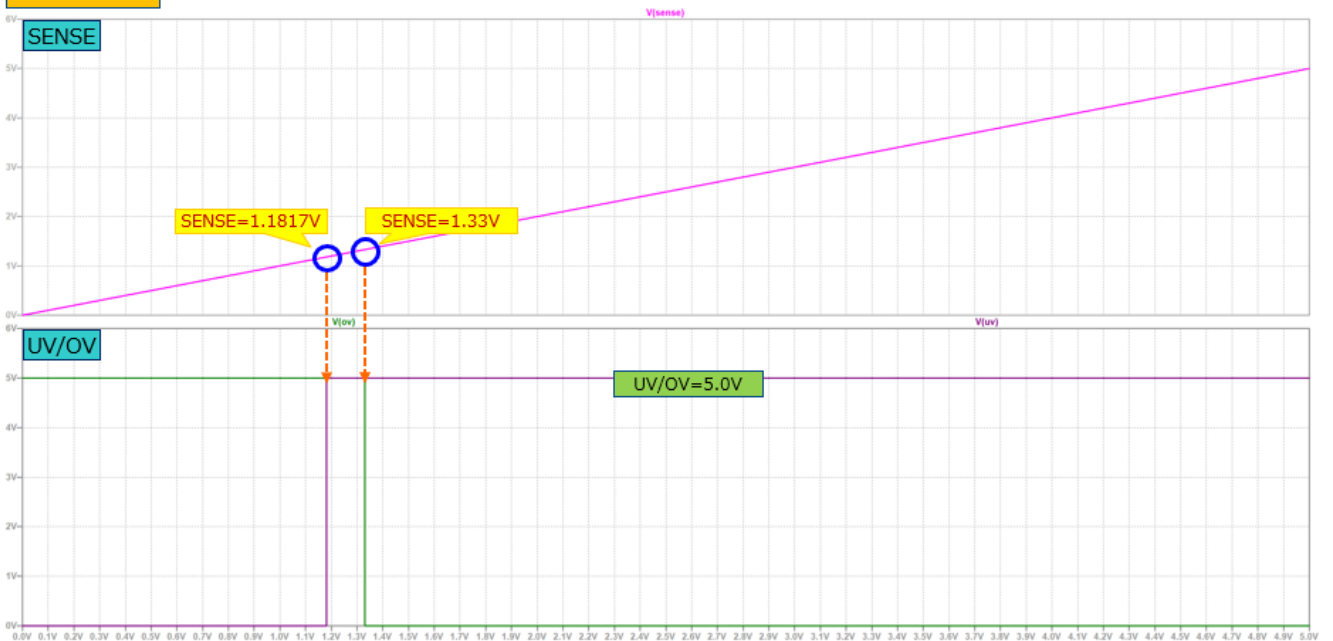
Overvoltage/Undervoltage Detection  
 Simulation results are following.  
 Explanatory notes — : simulated

Testbench



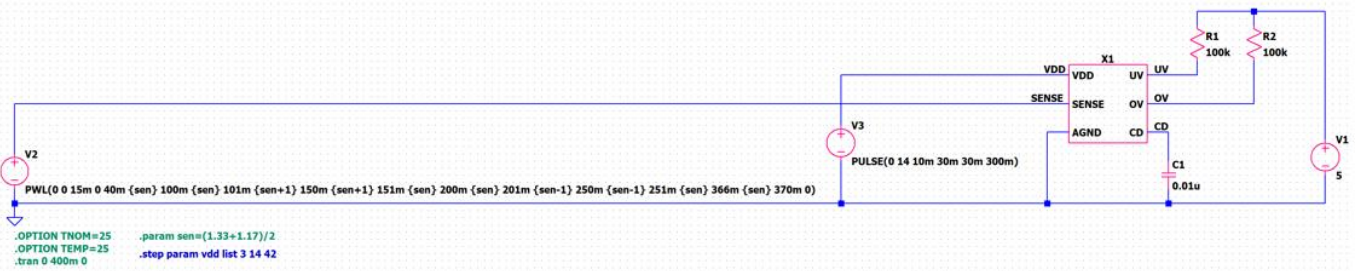
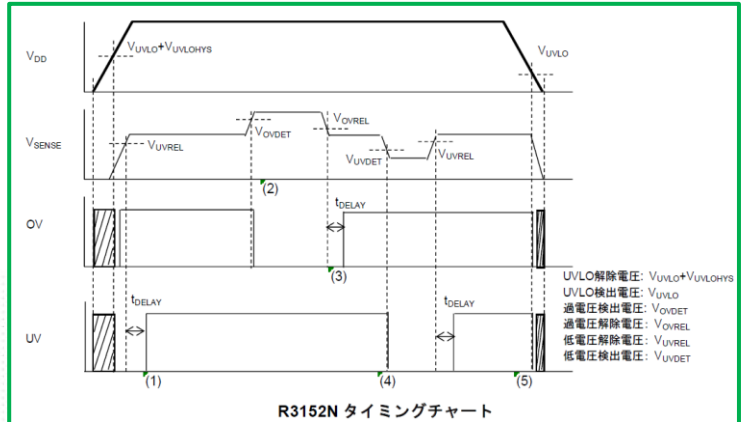
Overvoltage/Undervoltage Detection  
 Simulation results are following.  
 Explanatory notes — : simulated

Sim result



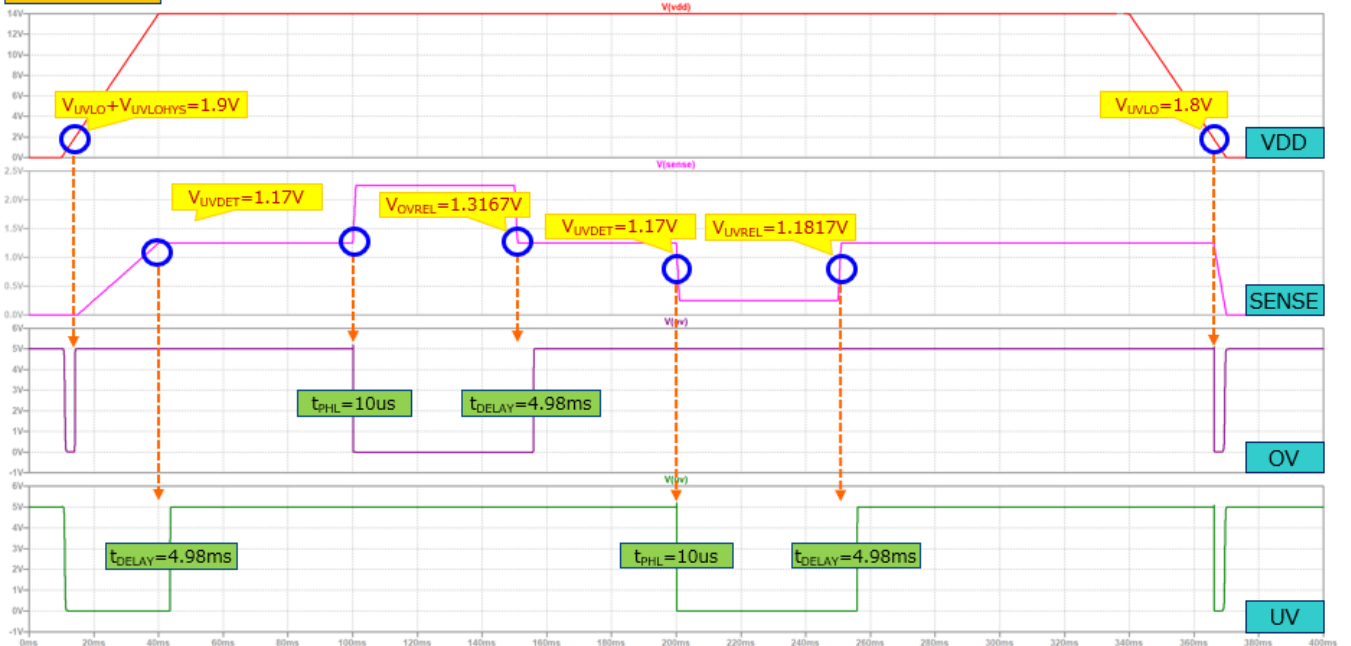
Overvoltage/Undervoltage Detection  
 Simulation results are following.  
 Explanatory notes — : simulated

Testbench



Overvoltage/Undervoltage Detection  
 Simulation results are following.  
 Explanatory notes — : simulated

Sim result

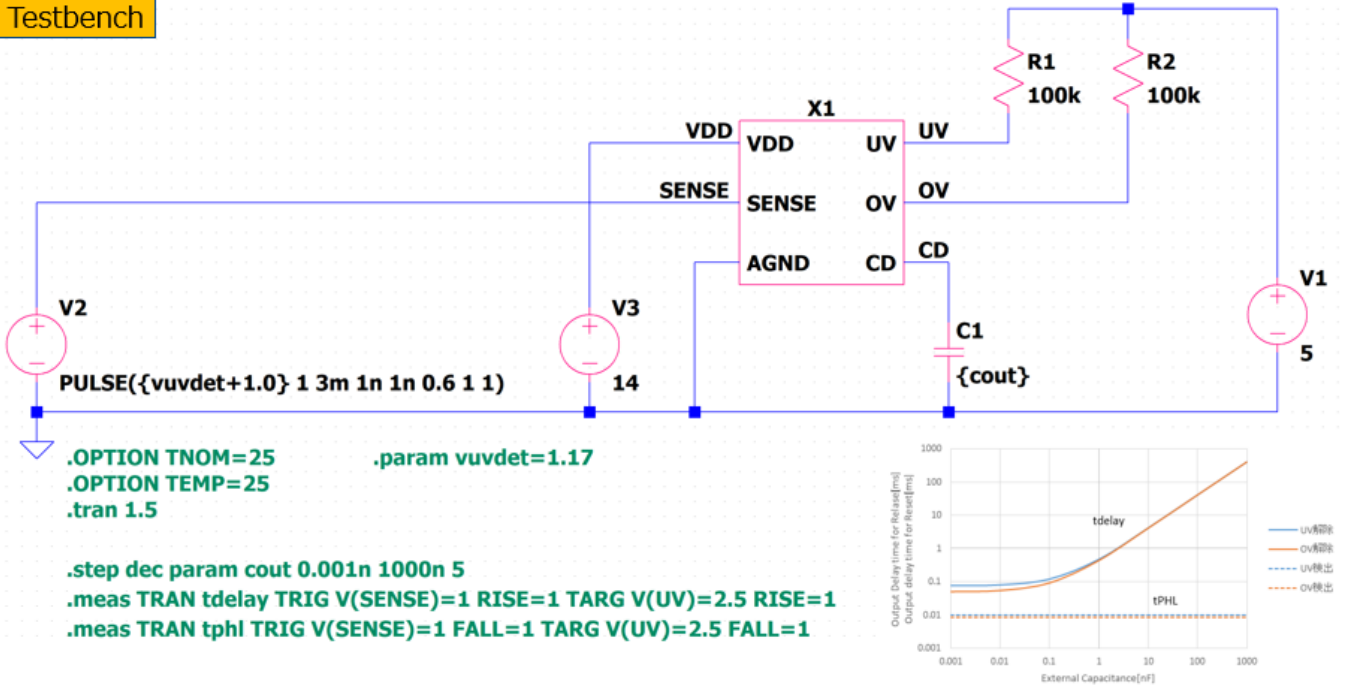


Release Delay Time

Simulation results are following.

Explanatory notes — : simulated

Testbench

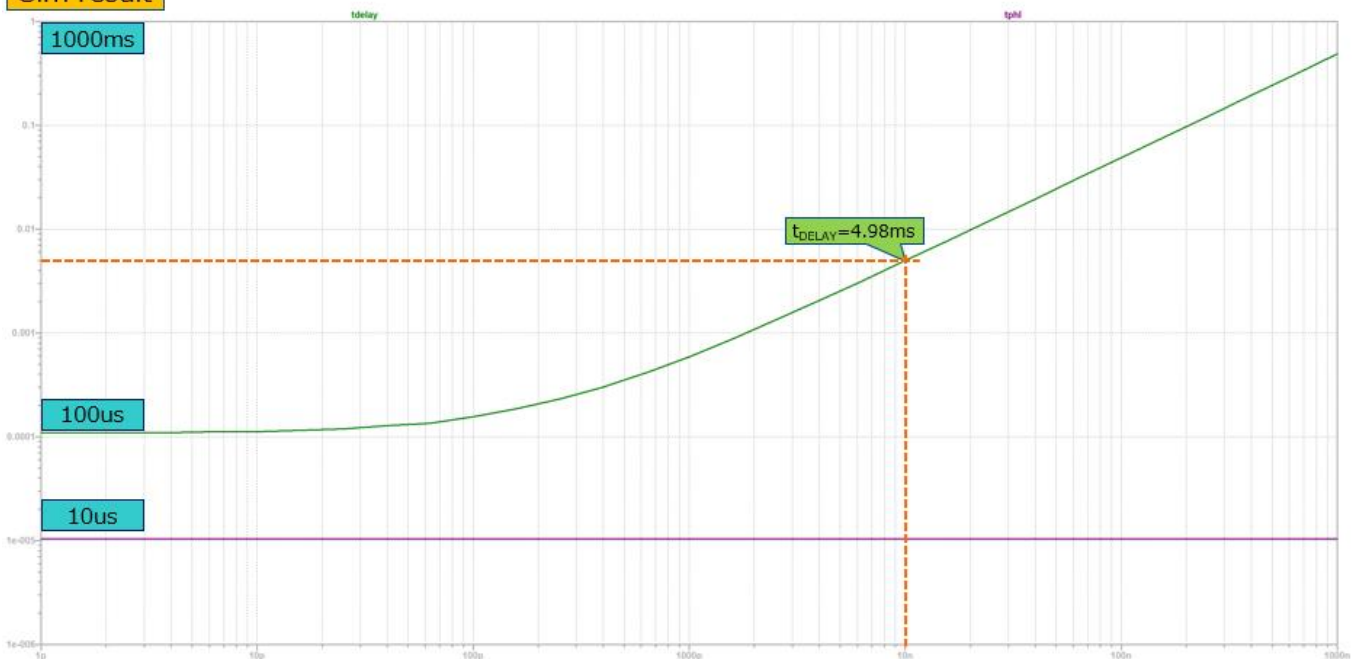


Release Delay Time

Simulation results are following.

Explanatory notes — : simulated

Sim result

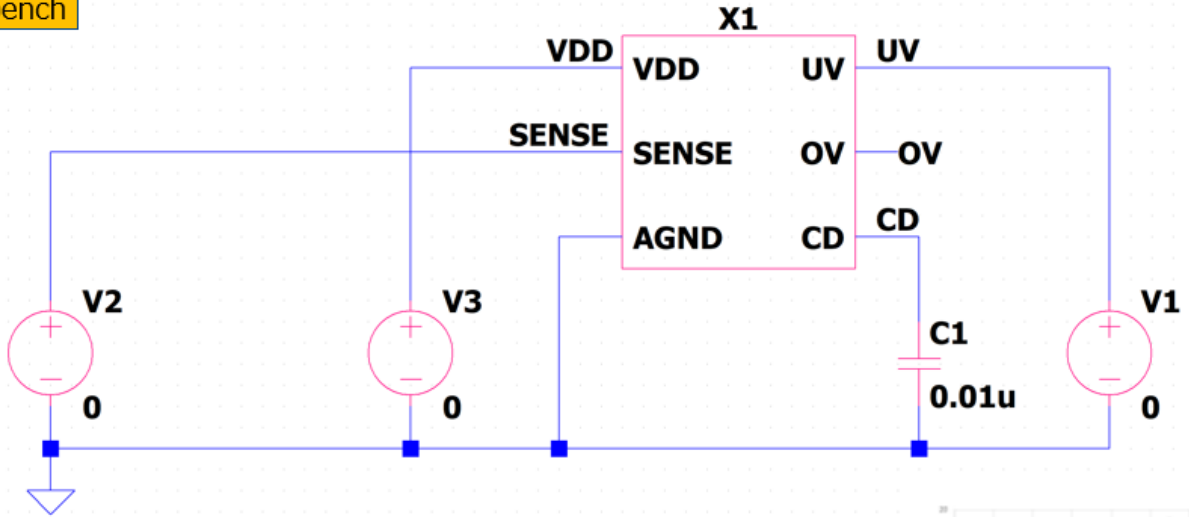


Output Current vs VDS

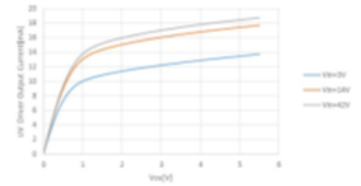
Simulation results are following.

Explanatory notes — : simulated

**Testbench**



```
.OPTION TNOM=25
.OPTION TEMP=25
.dc V1 0 5.5 1m V3 list 3 14 42
```

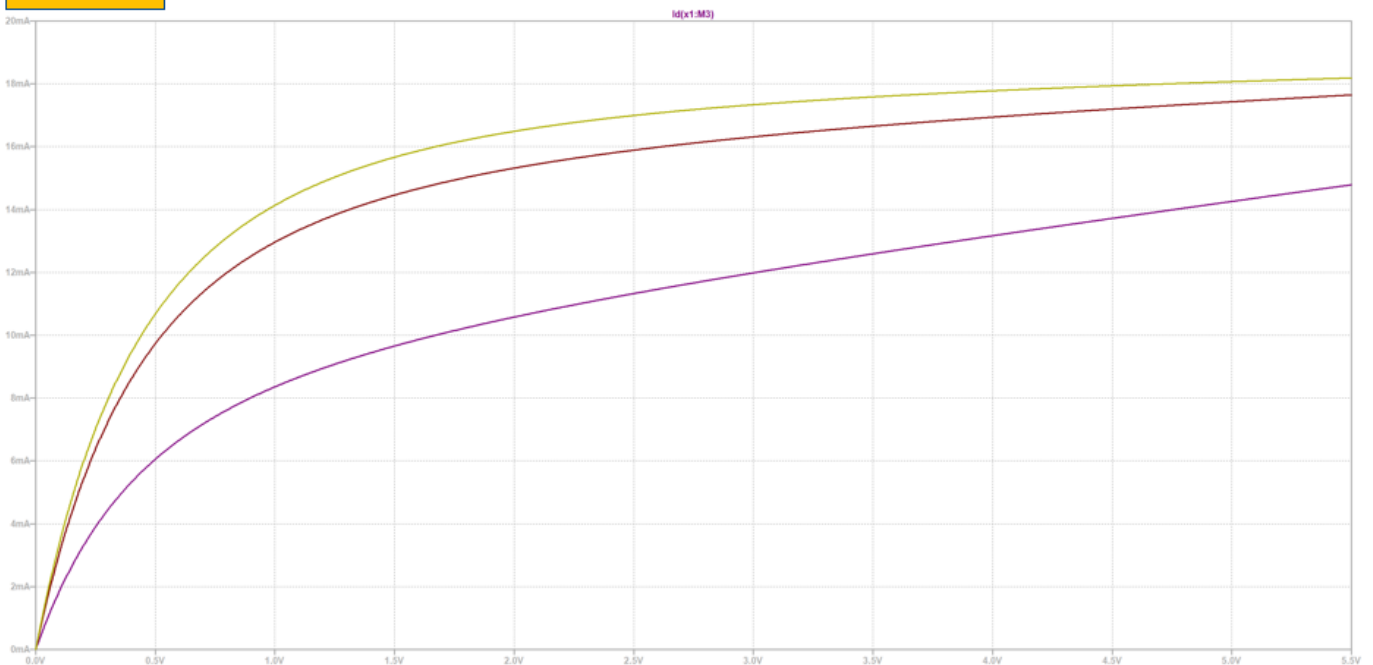


Output Current vs VDS

Simulation results are following.

Explanatory notes — : simulated

**Sim result**



## DISCLAIMER

1. This SPICE (Simulation Program with Integrated Circuit Emphasis) model and its content (the "Contents") are copyright of MoDeCH Inc. All rights reserved. Any redistribution or reproduction of any or all part of the Contents in any form is prohibited without express written permission made by MoDeCH Inc.
2. MoDeCH Inc. as licensor (the "Licensor") hereby grants to you, as licensee (the "Licensee"), a non-exclusive, non-transferable license to use the Contents as long as you abide by the terms and conditions of this DISCLAIMER.
3. The Licensee is not authorized to sell, loan, rent and redistribute or license the Contents in whole or in part, or in modified form, to anyone.
4. The Licensor shall in no way be liable to the Licensee or any third party for any loss or damage (including ,but not limited to, lost profits, or other incidental, consequential, or punitive damages), however caused (including through negligence) which may be directly or indirectly suffered from, arising out of, or in connection with, any use of the Contents .
5. Notwithstanding anything contained in this DISCLAIMER, in no event shall Licensor be liable for any claims, damages or loss which may arise from the modification, combination, operation or use of the Contents with the Licensee's computer programs.
6. The Licensor does not warrant that the Contents will function in any environment.
7. The Contents may be changed or updated without notice. MoDeCH Inc. may also make improvements and/or changes in the products, pricing and/or the programs related to the Contents at any time without notice.



MoDeCH Inc.

Head Office

Location: 5-15 Yokoyama-cho, Hachioji-Shi, Tokyo 192-0081, Japan

Tel:+81-42-656-3360

E-Mail:[model-on-support@modech.co.jp](mailto:model-on-support@modech.co.jp)

URL:<http://www.modech.com/en/>