

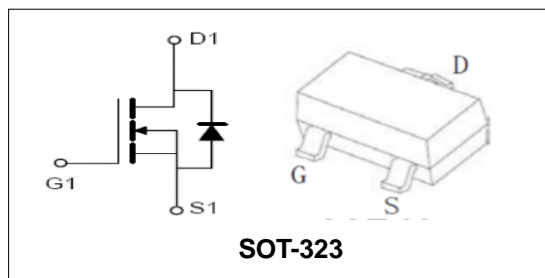
**20V/2.1A N-Channel Junction Power MOSFET****Features**

- TrenchFET Power MOSFET

| | | |
|----------------|-----|----|
| BVDSS | 20 | V |
| ID | 2.1 | A |
| RDSON@VGS=4.5V | 59 | mΩ |
| RDSON@VGS=2.5V | 70 | mΩ |

Applications

- Load Switch for Portable Devices
- DC/DC Converter

**Order Information**

| Product | Package | Marking | Reel Size | Reel | Carton |
|---------|---------|---------|-----------|---------|-----------|
| PT2202 | SOT-323 | 2202 | 7inch | 3000PCS | 180000PCS |

Absolute Maximum Ratings

| Symbol | Parameter | Rating | Unit |
|--|--|---------------------------------|------|
| Common Ratings (TC=25°C Unless Otherwise Noted) | | | |
| $V_{(BR)DSS}$ | Drain-Source Breakdown Voltage | 20 | V |
| V_{GS} | Gate-Source Voltage | ±8 | V |
| T_J | Maximum Junction Temperature | 150 | °C |
| T_{STG} | Storage Temperature Range | -55 to 150 | °C |
| I_S | Diode Continuous Forward Current | $T_A = 25^\circ\text{C}$ 0.6 | A |
| Mounted on Large Heat Sink | | | |
| I_{DM} | Pulse Drain Current Tested (Silicon Limit) (Note1) | $T_A = 25^\circ\text{C}$ 12 | A |
| I_D | Continuous Drain current | $T_A = 25^\circ\text{C}$ 2.1 | A |
| P_D | Maximum Power Dissipation | $T_A = 25^\circ\text{C}$ 0.2 | W |
| $R_{\theta Ja}$ | Thermal Resistance Junction-to-Ambient (Note2) | 625 | °C/W |



20V/2.1A N-Channel Junction Power MOSFET

| Symbol | Parameter | Condition | Min. | Typ. | Max. | Unit |
|--|--|---|------|------|------|------|
| Static Electrical Characteristics @ T_J = 25°C (unless otherwise stated) | | | | | | |
| V _{(BR)DSS} | Drain- Source Breakdown Voltage | VGS=0V ID=10μA | 20 | -- | -- | V |
| I _{DSS} | Zero Gate Voltage Drain current | VDS=20V,VGS=0V | -- | -- | 1 | μA |
| I _{GSS} | Gate-Body Leakage Current | VGS=±8V,VDS=0V | -- | -- | ±100 | nA |
| V _{GS(TH)} | Gate Threshold Voltage | VDS=VGS,ID=50μA | 0.65 | 0.95 | 1.2 | V |
| R _{DS(ON)} | Drain-Source On-State Resistance (Note3) | VGS=4.5V, ID=3.6A | -- | 59 | 68 | mΩ |
| | | VGS=2.5V, ID=3.1A | -- | 70 | 115 | |
| Dynamic Electrical Characteristics @ T_J = 25°C (unless otherwise stated) (Note4) | | | | | | |
| C _{iss} | Input Capacitance | VDS=10V, VGS=0V, F=1MHz | -- | 300 | -- | pF |
| C _{oss} | Output Capacitance | | -- | 120 | -- | pF |
| C _{rss} | Reverse Transfer Capacitance | | -- | 80 | -- | pF |
| Q _g | Total Gate Charge | VDS=10V, ID=3.6A, VGS=4.5V | -- | 4 | -- | nC |
| Q _{gs} | Gate-Source Charge | | -- | 0.65 | -- | nC |
| Q _{gd} | Gate-Drain Charge | | -- | 31.5 | -- | nC |
| Switching Characteristics (Note4) | | | | | | |
| t _{d(on)} | Turn-on Delay Time | VDD=10V, RL=5.5Ω, VGS=4.5V RG=6Ω | -- | 7 | -- | nS |
| t _r | Turn-on Rise Time | | -- | 55 | -- | nS |
| t _{d(off)} | Turn-off Delay Time | | -- | 16 | -- | nS |
| t _f | Turn-off Fall Time | | -- | 10 | -- | nS |
| Source- Drain Diode Characteristics @ T_J = 25°C (unless otherwise stated) | | | | | | |
| V _{SD} | Forward on voltage | IS=0.94A,VGS=0V | -- | 0.76 | 1.2 | V |

Note:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t ≤ 10 sec.
3. Pulse Test: pulse width ≤ 300 us, duty cycle ≤ 2%.
4. Guranteed by design, not subject to production testing.



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Typical Characteristics

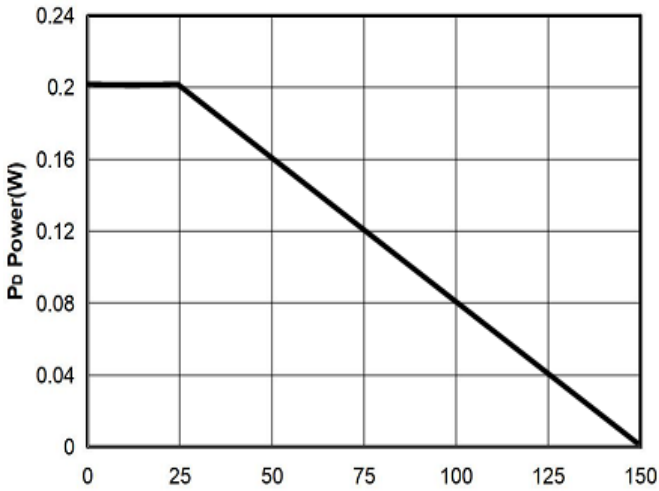


Figure1: T_J Junction Temperature (°C)

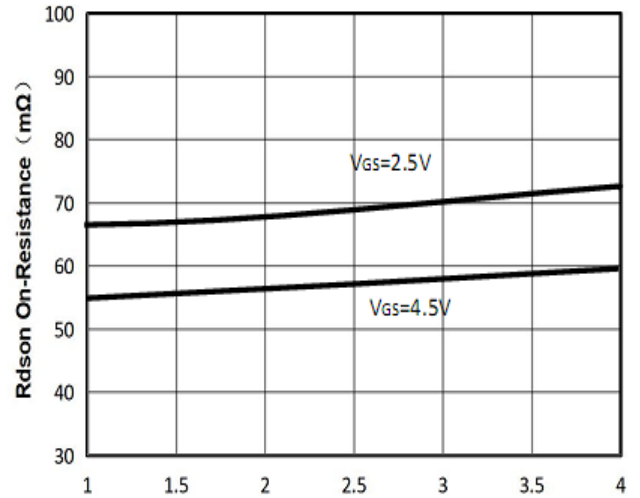


Figure2: I_D Drain Current (A)

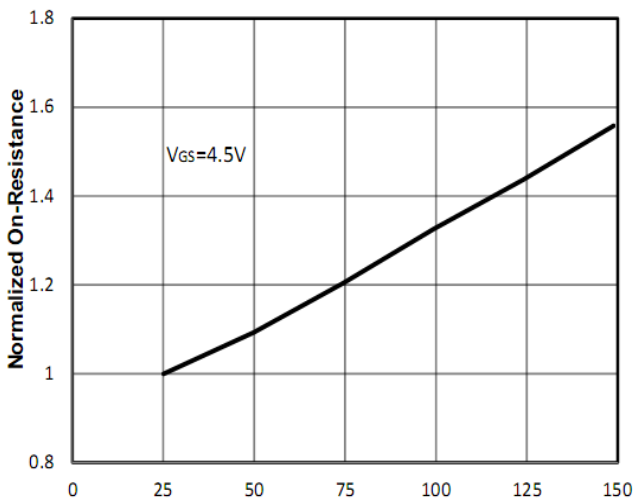


Figure3: T_J Junction Temperature (°C)

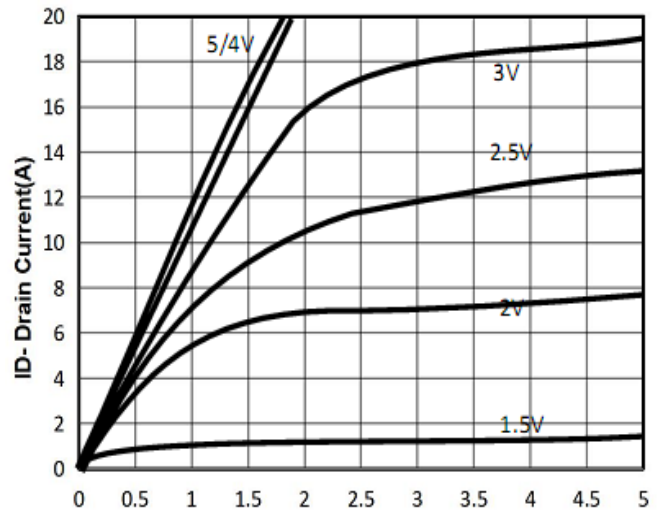


Figure4: V_{DS} Drain-Source Voltage (V)

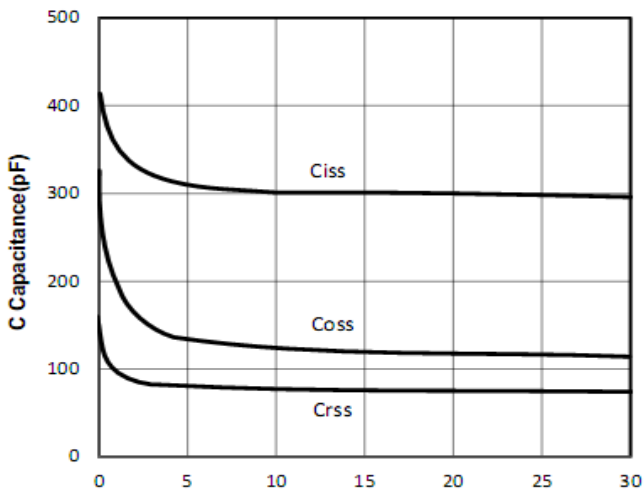


Figure5: V_{DS} Drain-Source Voltage (V)

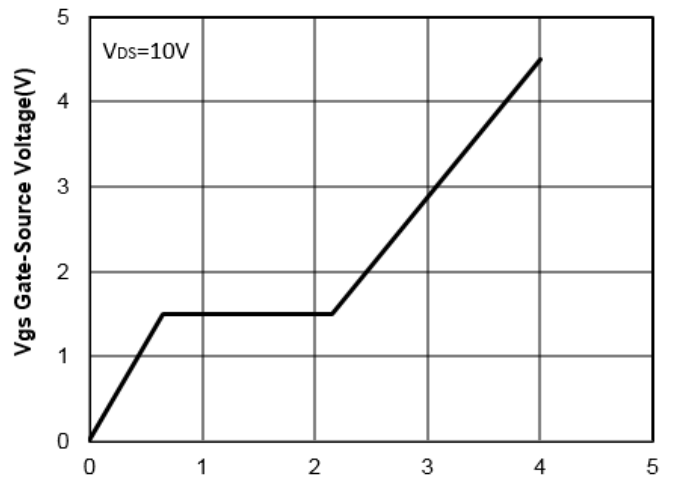


Figure6: Q_g Gate Charge (nC)



20V/2.1A N-Channel Junction Power MOSFET

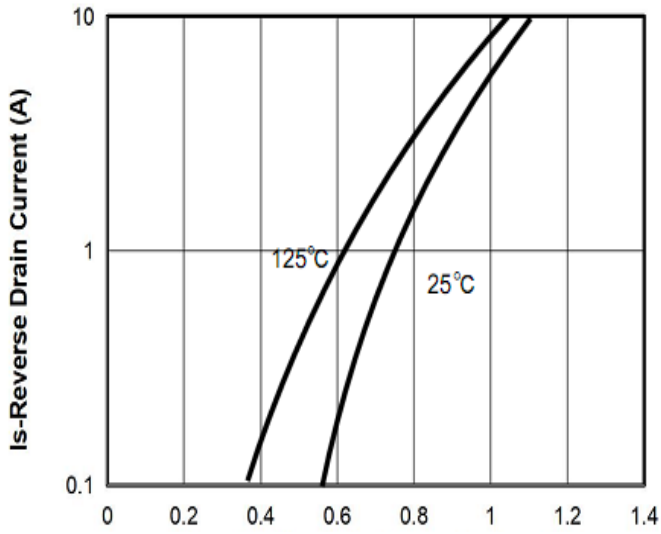


Figure7: Vsd Source-Drain Voltage (V)

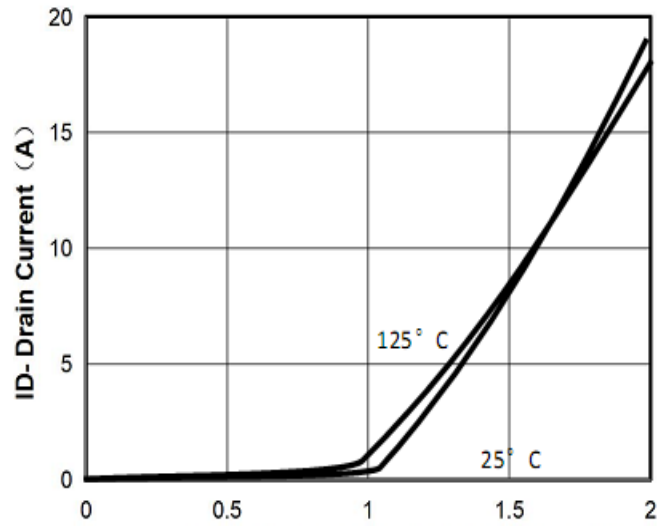


Figure8: Vgs Gate-Source Voltage (V)

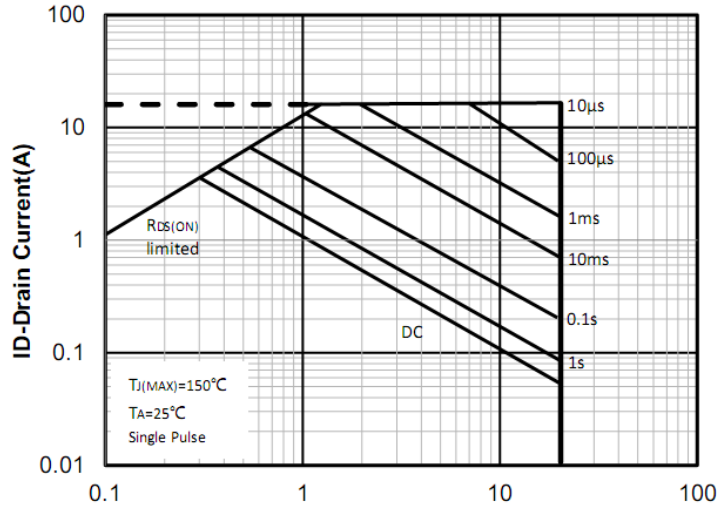


Figure9: VDS Drain-Source Voltage (V)

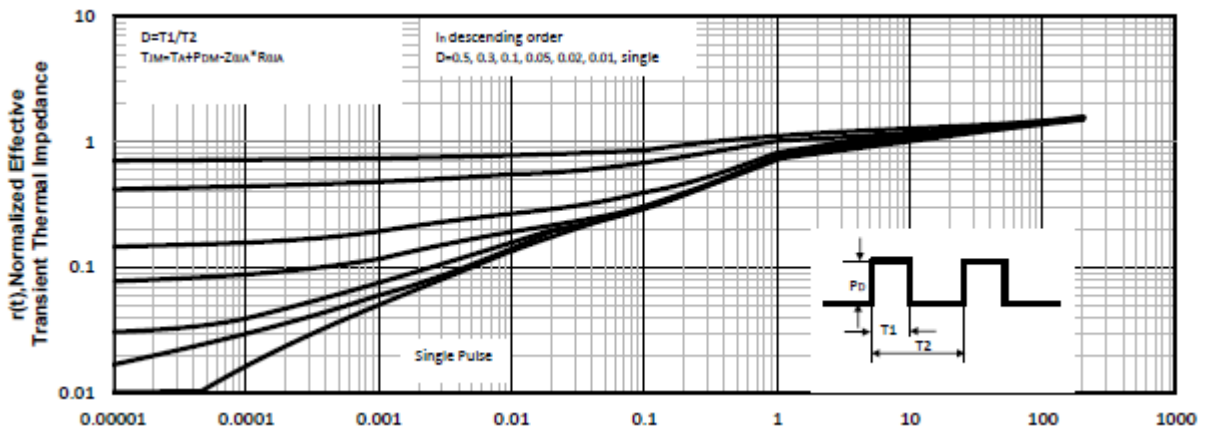


Figure10: Square Wave Pulse Duration (sec)

20V/2.1A N-Channel Junction Power MOSFET
Test Circuit and Waveform:

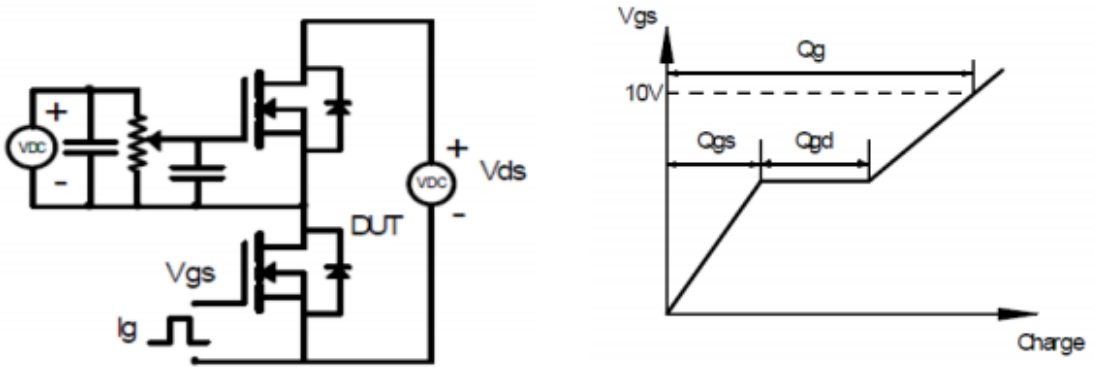


Figure A Gate Charge Test Circuit & Waveforms

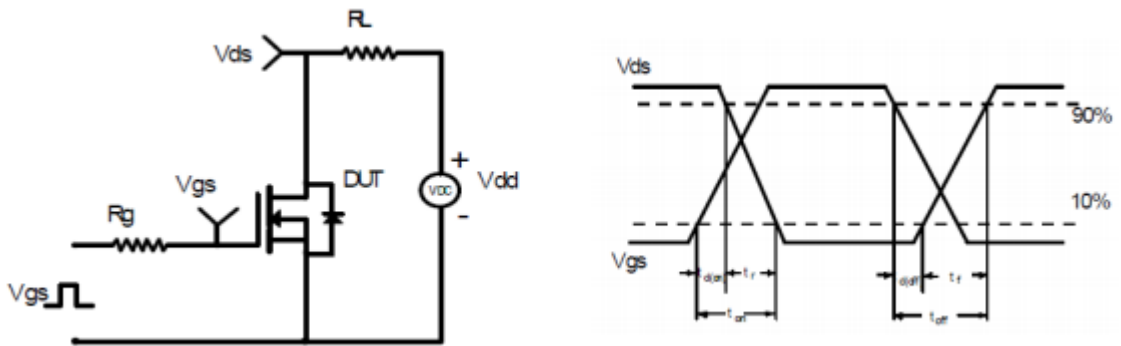


Figure B Switching Test Circuit & Waveforms

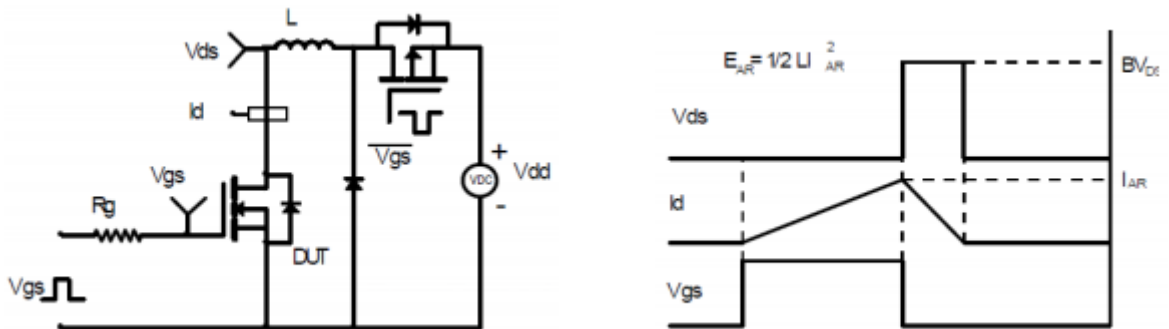
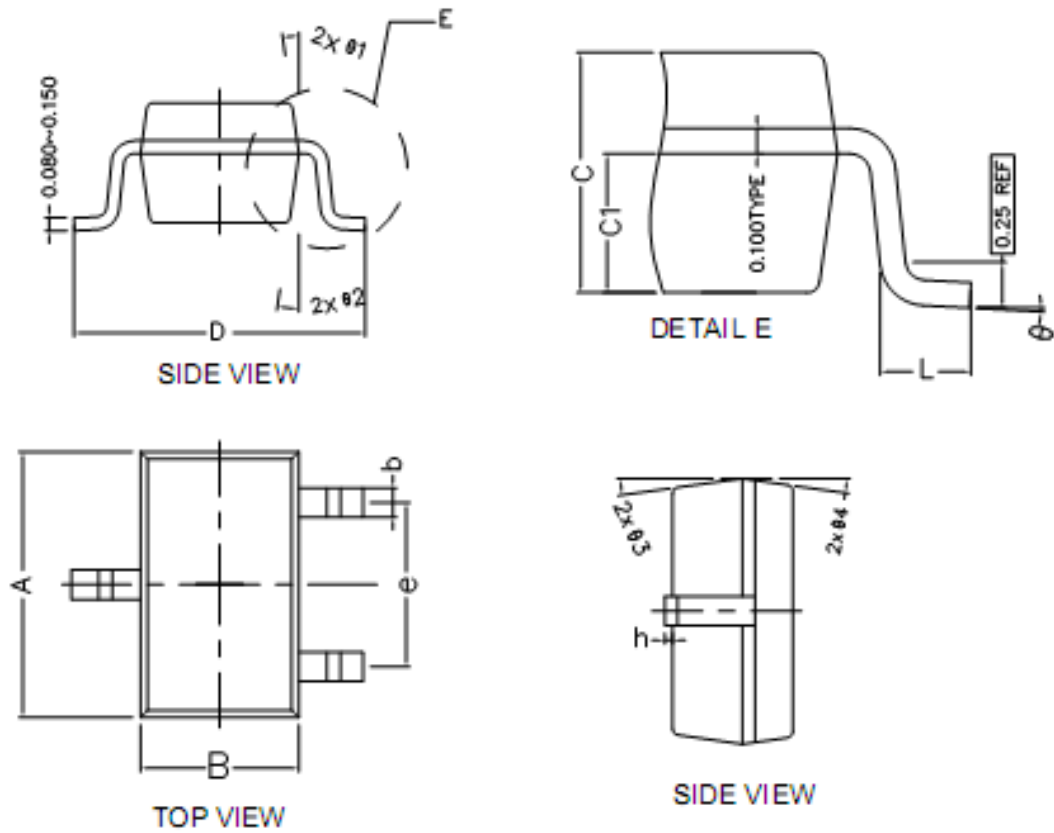


Figure C Unclamped Inductive Switching Circuit & Waveforms

20V/2.1A N-Channel Junction Power MOSFET
SOT-323 Package Outline Dimensions (Units: mm)


| COMMON DIMENSIONS (UNITS OF MEASURE IS mm) | | | |
|---|------------|--------|-------|
| | MIN | NORMAL | MAX |
| A | 2.000 | 2.100 | 2.200 |
| B | 1.150 | 1.250 | 1.350 |
| C | 0.900 | 0.950 | 1.000 |
| C1 | 0.500 | 0.550 | 0.600 |
| D | 2.100 | 2.300 | 2.500 |
| L | 0.220 | 0.360 | 0.500 |
| b | 0.200 | 0.250 | 0.400 |
| h | 0.020 | 0.050 | 0.100 |
| e | 1.300 TYPE | | |
| θ_1 | 8° TYPE | | |
| θ_2 | 8° TYPE | | |
| θ_3 | 8° TYPE | | |
| θ_4 | 8° TYPE | | |
| θ | 0~8° TYPE | | |