# SMA7036M 2-Phase Excitation

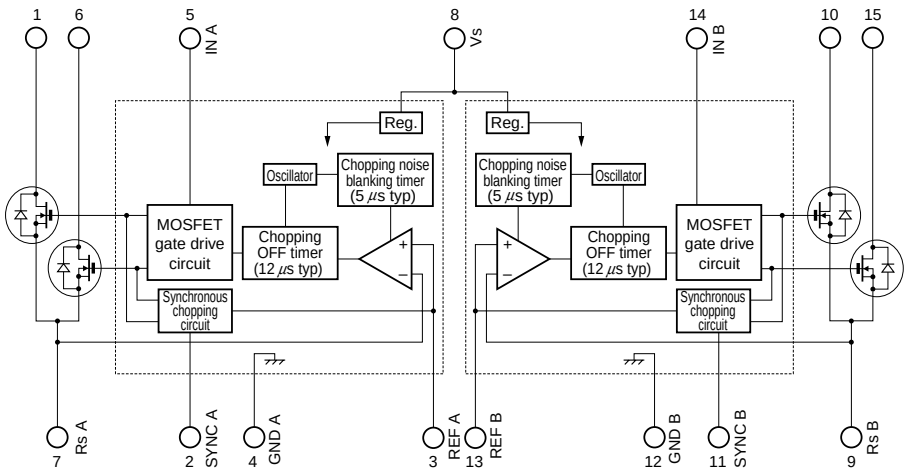
## ■Absolute Maximum Ratings

| Parameter | Symbol | Ratings | Unit |
|---|---|---|---|
| Motor Supply Voltage | $V_{CC}$ | 46 | V |
| Control Supply Voltage | $V_S$ | 46 | V |
| FET Drain-Source Voltage | $V_{DSS}$ | 100 | V |
| TTL Input Voltage | $V_{IN}$ | –0.3 to +7 | V |
| SYNC Terminal Voltage | $V_{SYNC}$ | –0.3 to +7 | V |
| Reference Voltage | $V_{REF}$ | –0.3 to +7 | V |
| Sense Voltage | $V_{RS}$ | –5 to +7 | V |
| Output Current | $I_O$ | 1.5 | A |
| Power Dissipation | $P_{D1}$ | 4.0 ($T_a$=25°C) | W |
| | $P_{D2}$ | 28 ($T_c$=25°C) | W |
| Channel Temperature | $T_{ch}$ | 150 | °C |
| Storage Temperature | $T_{stg}$ | –40 to +150 | °C |
| Operating Ambient Temperature | $T_a$ | –20 to +85 | °C |

## ■Electrical Characteristics

| | Parameter | | Symbol | Ratings min. | Ratings typ. | Ratings max. | Unit |
|---|---|---|---|---|---|---|---|
| DC Characteristics | Control Supply Current | | $I_S$ | | 10 | 15 | mA |
| | | | Condition | | $V_S$=44V | | |
| | Control Supply Voltage | | $V_S$ | 10 | 24 | 44 | V |
| | FET Drain-Source Voltage | | $V_{DSS}$ | 100 | | | V |
| | | | Condition | | $V_S$=44V, $I_{DSS}$=250μA | | |
| | FET ON Voltage | | $V_{DS}$ | | | 0.6 | V |
| | | | Condition | | $I_D$=1A, $V_S$=10V | | |
| | FET Diode Forward Voltage | | $V_{SD}$ | | | 1.1 | V |
| | | | Condition | | $I_{SD}$=1A | | |
| | FET Drain Leakage Current | | $I_{DSS}$ | | | 250 | μA |
| | | | Condition | | $V_{DSS}$=100V, $V_S$=44V | | |
| | IN Terminal | Active H | $V_{IH}$ | 2 | | | V |
| | | | Condition | | $I_D$=1A | | |
| | | | $V_{IL}$ | | | 0.8 | |
| | | | Condition | | $V_{DSS}$=100V | | |
| | | Active L | $V_{IH}$ | 2 | | | V |
| | | | Condition | | $V_{DSS}$=100V | | |
| | | | $V_{IL}$ | | | 0.8 | |
| | | | Condition | | $I_D$=1A | | |
| | | Input Current | $I_I$ | | | ±1 | μA |
| | | | Condition | | $V_S$=44V, $V_I$=0 or 5V | | |
| | SYNC Terminal | Input Loltage | $V_{SYNC}H$ | 4.0 | | | V |
| | | | Condition | | Synchronous chopping mode | | |
| | | | $V_{SYNC}L$ | | | 0.8 | |
| | | | Condition | | Asynchronous chopping mode | | |
| | | Input Current | $I_{SYNC}H$ | | | 0.1 | mA |
| | | | Condition | | $V_S$=44V, $V_{YS}$=5V | | |
| | | | $I_{SYNC}L$ | | | –0.1 | |
| | | | Condition | | $V_S$=44V, $V_{YS}$=0V | | |
| | REF Terminal | Input Voltage | $V_{REF}$ | 0 | | 2.0 | V |
| | | | Condition | | Reference voltage input | | |
| | | | $V_{REF}$ | 4.0 | | 5.5 | |
| | | | Condition | | Output FET OFF | | |
| | | Input Current | $I_{REF}$ | | | ±1 | μA |
| | | | Condition | | No synchronous trigger | | |
| | | Internal Resistance | $R_{REF}$ | | 40 | | Ω |
| | | | Condition | | Resistance between GND and REF terminal at synchronous trigger | | |
| AC Characteristics | Switching Time | | $T_{on}$ | | 1.5 | | μs |
| | | | Condition | | $V_S$=24V, $I_D$=1A | | |
| | | | $T_r$ | | 0.5 | | |
| | | | Condition | | $V_S$=24V, $I_D$=1A | | |
| | | | $T_{stg}$ | | 0.9 | | |
| | | | Condition | | $V_S$=24V, $I_D$=1A | | |
| | | | $T_f$ | | 0.1 | | |
| | | | Condition | | $V_S$=24V, $I_D$=1A | | |
| | Chopping OFF Time | | $T_{OFF}$ | | 12 | | μs |
| | | | Condition | | $V_S$=24V | | |

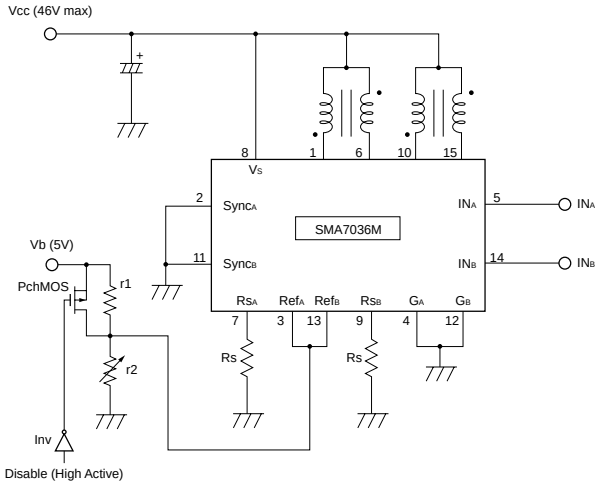
## ■Internal Block Diagram




1, 6, 10, 15pin
Description of pins

| | Excitation input signal | |
|---|---|---|
| | Active H | Active L |
| 1pin | OUT A | OUT $\bar{A}$ |
| 6pin | OUT $\bar{A}$ | OUT A |
| 10pin | OUT B | OUT $\bar{B}$ |
| 15pin | OUT $\bar{B}$ | OUT B |

## ■Typical Connection Diagram (Recommended component values)



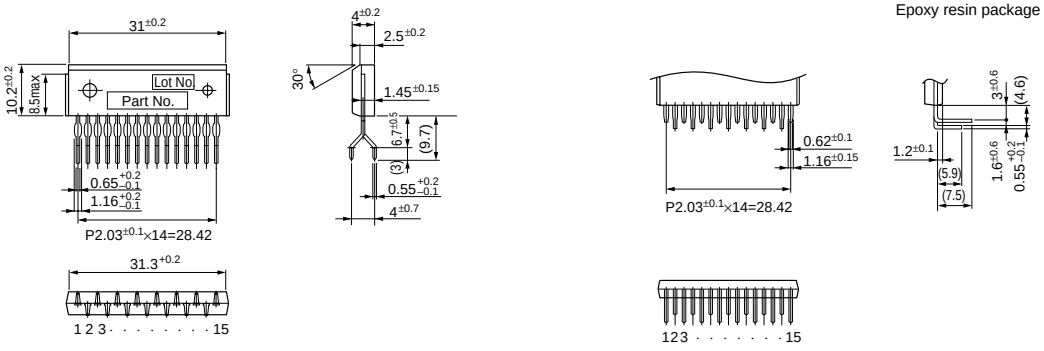

Excitation signal time chart
2-phase excitation

| clock | 0 | 1 | 2 | 3 | 0 | 1 |
|---|---|---|---|---|---|---|
| $IN_A$ | H | H | L | L | H | H |
| $IN_B$ | L | H | H | L | L | H |

$r_1$ : 8kΩ
$r_2$ : 2kΩ (VR)
$R_S$ (1 to 2W) : 1Ω typ
PchMOS : HN1J02FU (Toshiba)
Inv : 7404

## ■External Dimensions (ZIP15 [SMA15Pin])

(Unit : mm)




Forming No. No.1054

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Product Mass : Approx.4g