

# Unipolar Driver ICs

# SMA7022MU SMA7029M

## WITH MOSFETs

### ■ Ratings

Type No.	Absolute maximum ratings	Motor supply Voltage (V)	FET output breakdown voltage (V)	Control voltage (V)	TTL input voltage (V)	Reference voltage (V)	Output current (A)	Power dissipation (W)	Channel temperature (°C)	Storage temperature (°C)
		V <sub>CC</sub>	V <sub>DS</sub>	V <sub>S</sub>	V <sub>IN</sub>	V <sub>REF</sub>	I <sub>O</sub>	P <sub>D</sub>	T <sub>ch</sub>	T <sub>stg</sub>
SMA7022MU	46	100	46	7	2	1	4.5 (No Fin)	150	-40 to +150	
SMA7029M						1.5				

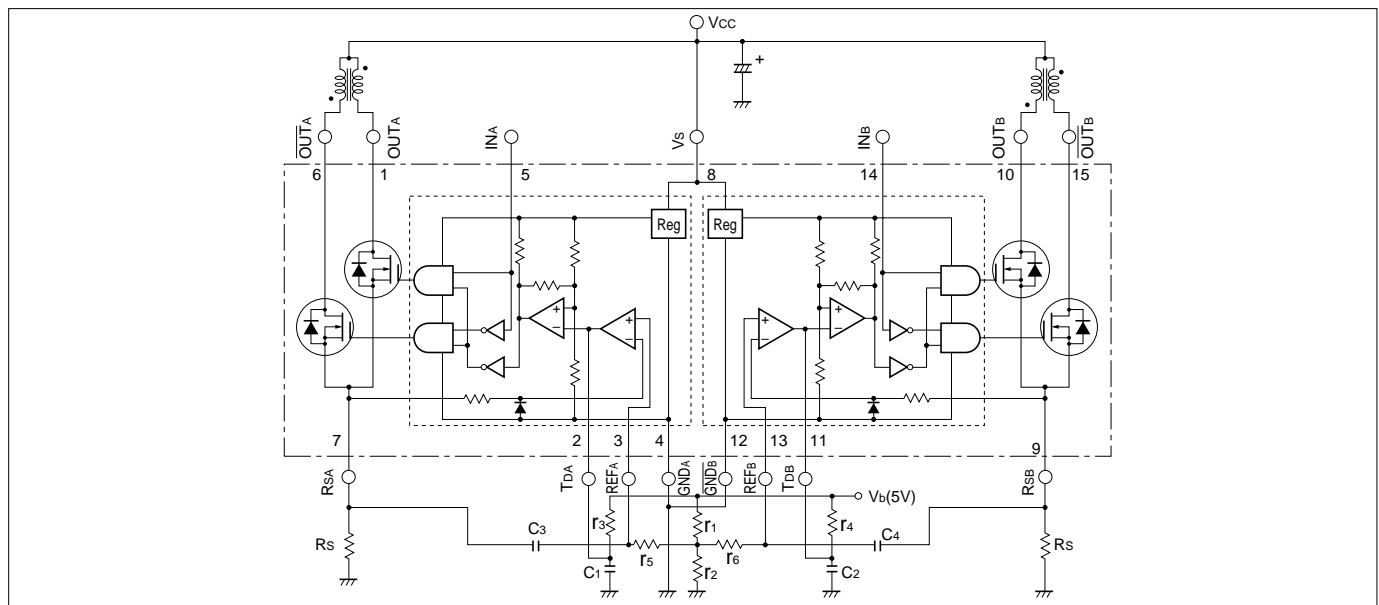
### ■ Characteristics (1) DC Characteristics

Type No.	Control current (mA)			Control voltage (V)			FET turn-on voltage (V)			FET drain leak current (mA)			TTL input current (μA)			TTL input current (mA)			TTL input voltage (OUT) (V)			TTL input voltage (V)			TTL input voltage (OUT) (V)			TTL input voltage (V)					
	I <sub>S</sub>			V <sub>S</sub>			V <sub>DS</sub>			I <sub>LOSS</sub>			I <sub>IH</sub>			I <sub>IL</sub>			V <sub>IH</sub>			V <sub>IL</sub>			V <sub>IH</sub>			V <sub>IL</sub>					
	min	typ	max	min	typ	max	min	typ	max	min	typ	max	min	typ	max	min	typ	max	min	typ	max	min	typ	max	min	typ	max	min	typ	max	min	typ	max
SMA7022MU	10	15	10	24	44			0.85			4			40			-0.8	2.0					0.8	2.0								0.8	
SMA7029M									0.6																								

### (2) AC Characteristics

Type No.	FET diode forward voltage (V)			Switching time (μs)								
	I <sub>SD</sub> = 1A			V <sub>S</sub> = 24V (7022MU) I <sub>D</sub> = 0.8A (7029M) I <sub>D</sub> = 1A								
	V <sub>SD</sub>			T <sub>r</sub>			T <sub>stg</sub>			T <sub>f</sub>		
	min	typ	max	min	typ	max	min	typ	max	min	typ	max
SMA7022MU			1.2			0.5			0.7			0.1
SMA7029M			1.1									

### ■ Internal circuit diagram (enclosed with chain line)



# SMA7022MU and SMA7029M

## Diagram of standard external circuit (Recommended circuit constants)

The diagram shows the internal and external components of the SMA7022MU and SMA7029M. Key components include a 46V max Vcc supply, a 5V VREF reference voltage, and various resistors (r1-r6, R1-Rs) and capacitors (C1-C4). The chip has pins for Vs, OUTA, OUTA, OUTB, OUTB, INA, INB, TdA, TdB, RSA, REFA, REFb, RSB, GA, GB, and Db. Two transformer-like symbols are shown connected to the OUTA and OUTB pins.

**Excitation signal time chart**  
2-phase excitation

clock	0	1	2	3	0	1
INA	H	H	L	L	H	H
INB	L	H	H	L	L	H

**1-2 phase excitation**

clock	0	1	2	3	4	5	6	7	0	1	2	3
INA	H	H	H	H	L	L	L	L	H	H	H	H
tdA	L	L	L	H	L	L	L	H	L	L	L	H
INB	L	L	H	H	H	H	L	L	L	L	H	H
tdB	L	H	L	L	L	H	L	L	L	H	L	L

• tdA and tdb are signals before the inverter stage.

- r1 510Ω
- r2 100Ω (VR)
- r3 47kΩ
- r4 47kΩ
- r5 2.4kΩ
- r6 2.4kΩ
- C1 330~500pF
- C2 330~500pF
- C3 2200pF
- C4 2200pF
- Rs 1.8Ω(typ)1~2W(7022MU)  
1Ω(typ)1~2W(7029M)

## External dimensions

(Unit: mm)

**Epoxy resin package**

Diagram 1054 shows a package with a width of 31±0.2 mm and a height of 1.02±0.2 mm. The lead pitch is P2.03±0.1×14=28.42 mm. The lead length is 1.16±0.2 mm. The package height is 8.5max±0.2 mm. The lead width is 0.65±0.1 mm. The package width is 31.5max mm. The lead pitch is 1.23 . . . . . 15.

Diagram 1055 shows a package with a width of 4±0.2 mm and a height of 2.5±0.2 mm. The lead pitch is 1.45±0.15 mm. The lead length is 6.7±0.5 mm (9.7 mm total). The lead width is 0.55±0.2 mm. The package height is 4±0.7 mm. The lead pitch is 1.23 . . . . . 15.

Forming number No. 1054

Forming number No. 1055