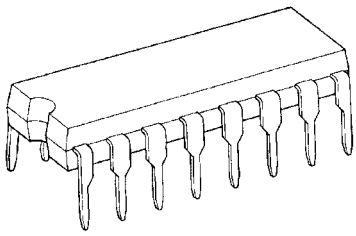
TOSHIBA BIPOLAR LINEAR INTEGRATED CIRCUIT SILICON MONOLITHIC

TA8407P,TA8407F

DUAL POWER OPERATIONAL AMPLIFIER

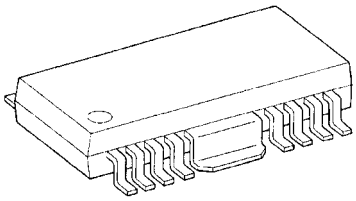
The TA8407P, TA8407F are dual power operational amplifier. It is intended for use especially DC MOTOR positioning system applications, such as Arm Driver (for Audiodisk Players), head or voice coil motor drivers (for Floppy and Winchester Disk Drivers) and any other power driver applications.

TA8406P



DIP16-P-300-2.54A

TA8406F



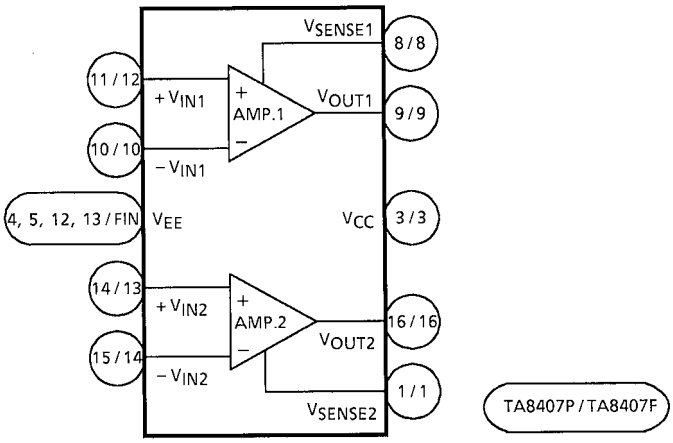
HSOP16-P-300-1.00

Weight:
DIP16−P−300−2.54A : 1.0 g (Typ.)
HSOP16−P−300−1.00 : 0.5 g (Typ.)

FEATURES

- Built−in over current protector
- Few external parts are required.
- Output current up to 1.2 A Max. (AVE)
- Excellent crosstalk characteristics

BLOCK DIAGRAM



PIN FUNCTION

TA8407P

PIN No.	SYMBOL	FUNCTION DESCRIPTION
1	V_{SENSE2}	Amp.2 output current detection terminal.
2	NC	No connection.
3	V_{CC}	Positive−side power supply terminal.
4	V_{EE}	Negative−side power supply terminal.
5	V_{EE}	Negative−side power supply terminal.
6	NC	No connection.
7	NC	No connection.
8	V_{SENSE1}	Amp.1 output current detection terminal.
9	V_{OUT1}	Amp.1 output terminal.
10	$-V_{IN1}$	Amp.1 input terminal (−).
11	$+V_{IN1}$	Amp.1 input terminal (+).
12	V_{EE}	Negative−side power supply terminal.
13	V_{EE}	Negative−side power supply terminal.
14	$+V_{IN2}$	Amp.2 input terminal (+).
15	$-V_{IN2}$	Amp.2 input terminal (−).
16	V_{OUT2}	Amp.2 output terminal

TA8407F

PIN No.	SYMBOL	FUNCTION DESCRIPTION
1	V_{SENSE2}	AMP.2 output current detection terminal.
2	NC	No connection.
3	V_{CC}	Possitive−side power supply terminal.
4	NC	No connection
5	NC	No connection
6	NC	No connection
7	NC	No connection
8	V_{SENSE1}	AMP.1 output current detection terminal.
9	V_{OUT1}	AMP.1 output terminal.
10	$-V_{IN1}$	AMP.1 input terminal (−).
11	NC	No connection.
12	$+V_{IN1}$	AMP.1 input terminal (+).
13	$+V_{IN2}$	AMP.2 input terminal (+).
14	$-V_{IN2}$	AMP.2 input terminal (−).
15	NC	No connection.
16	V_{OUT2}	AMP.2 output terminal.
FIN	V_{EE}	Negative−side power supply terminal.

MAXIMUM RATINGS (Ta = 25°C)

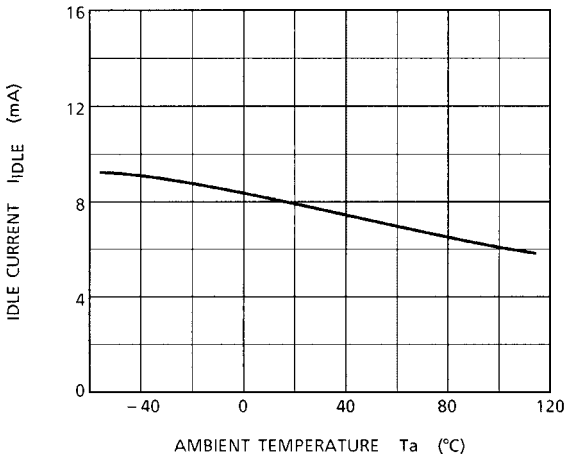
CHARACTERISTIC		SYMBOL	RATING	UNIT
Supply Voltage		V_{CC}, V_{EE}	±18	V
Output Current		$I_{O\ (AVE.)}$	1.2 (Note 1)	A
Power Dissipation	TA8407P	P_D	1.4 (Note 2)	W
			2.7 (Note 3)	
	TA8407P		1.4 (Note 4)	
Operating Temperature		T_{opr}	−30~75	°C
Storage Temperature		T_{stg}	−55~150	°C

Note 1: V_{CC} = 6 V, V_{EE} = −6 V
Note 2: No heat sink
Note 3: This value is obtained by 50 × 50 × 0.8 mm PCB mounting occupied in excess of 60% of copper area.
Note 4: This value is obtained by 60 × 30 × 1.6 mm PCB mounting occupied in excess of 50% of copper area.

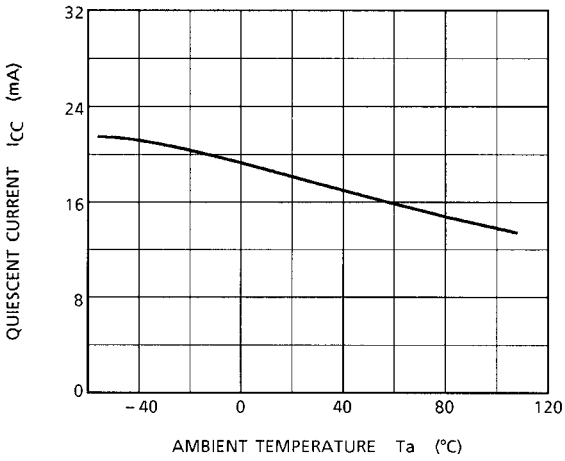
ELECTRICAL CHARACTERISTICS
(Unless otherwise specified, V_{CC} = 15 V, V_{EE} = −15 V, Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CIR-CUIT	TEST CONDITION	MIN	TYP.	MAX	UNIT
Quiescent Current		I_{CC}	—	—	—	20	35	mA
Input Off Set Current		I_{IO}	—	—	—	2	100	nA
Input Bias Current		I_I	—	—	—	50	300	nA
Input Off Set Voltage		V_{IO}	—	—	—	1.0	7.0	mV
Output Voltage Swing	Upper	V_{OH}	—	V_{CC} = ±15 V, I_O = 1 A	11.5	12.1	—	V
	Lower	V_{OL}	—		−11.5	−12.3	—	
	Upper	V_{OH}	—	V_{CC} = ±6 V, I_O = 1 A	2.2	3.3	—	V
	Lower	V_{OL}	—		−2.2	−3.7	—	
Open Loop Gain		G_{VO}	—	—	—	90	—	dB
Input Common Mode Voltage Range		CMR	—	—	—	±14	—	
Common Mode Rejection Ratio		CMRR	—	—	—	95	—	dB
Supply Voltage Rejection Ratio		SVRR	—	—	—	45	150	μV / V
Slew Rate		SR	—	—	—	0.4	—	V / μs
Short Circuit Current		I_{SC}	—	R_{SC} = 0.68 Ω	0.8	1.0	—	A
Cross Talk		CT	—	—	—	60	—	dB

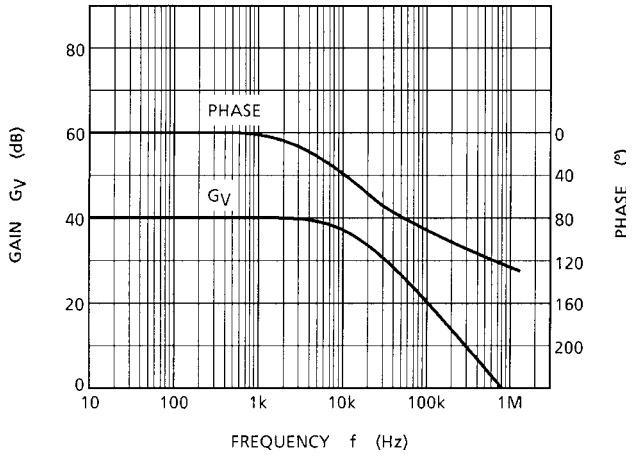
I_{IDLE} – Ta



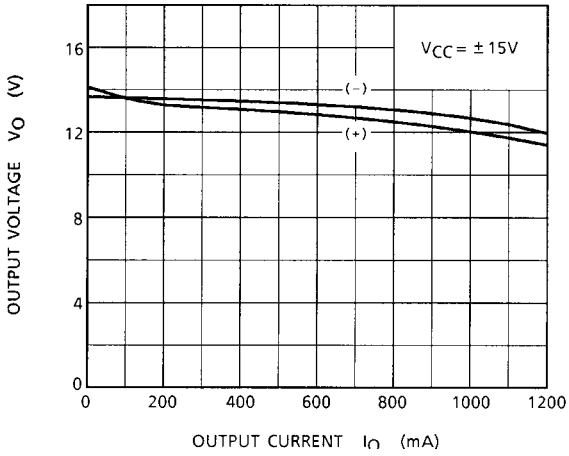
I_{CC} – Ta



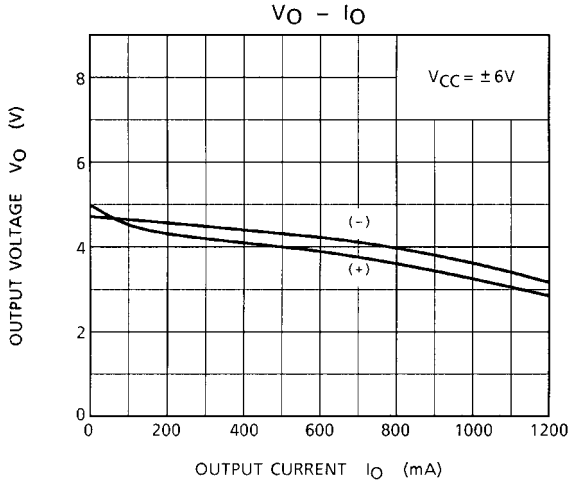
G_V, PHASE – f



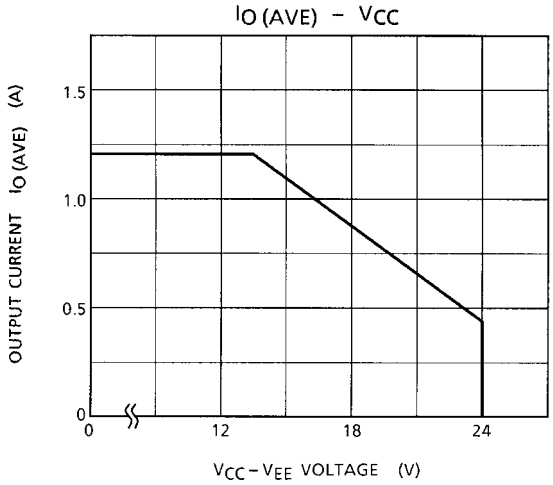
V_O – I_O



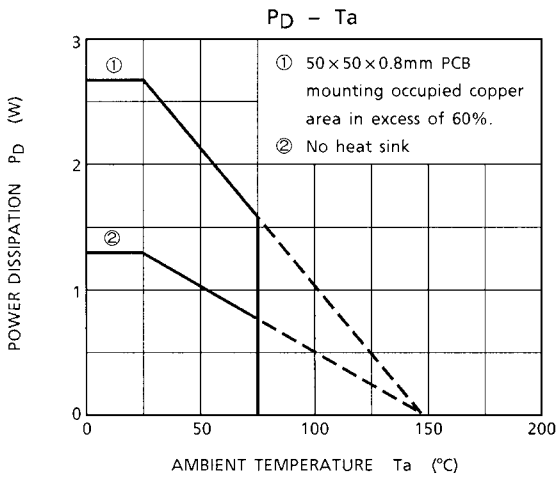
V_O – I_O



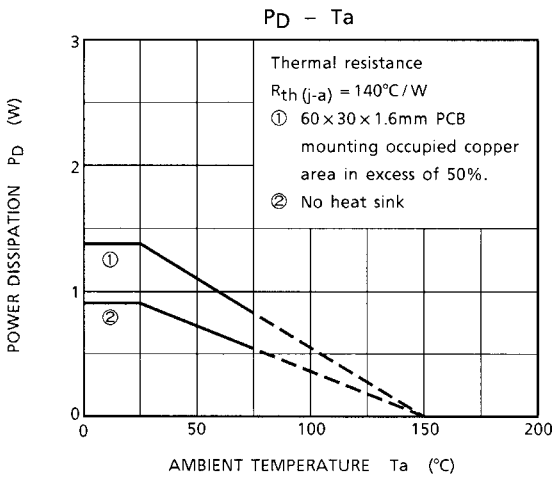
$I_{O\,(AVE)}$ – V_{CC}



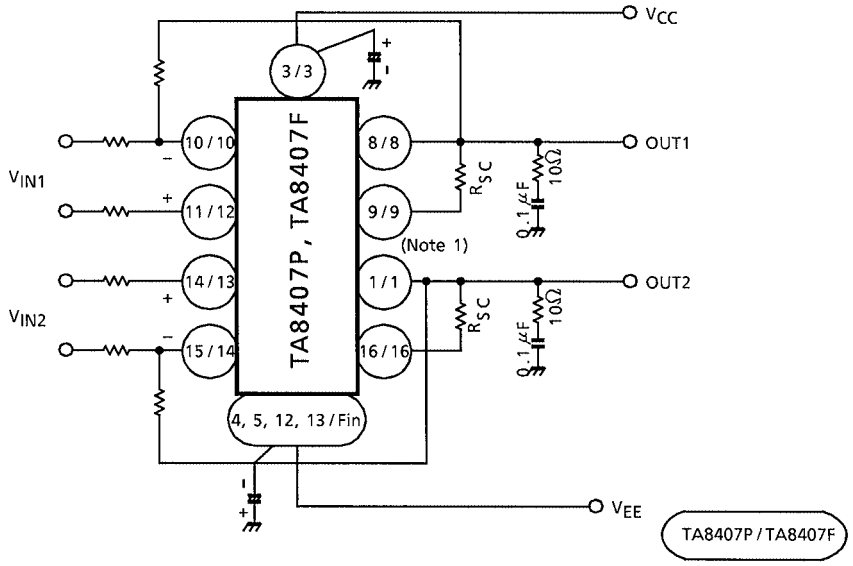
TA8407P



TA8407F



APPLICATION CIRCUIT 1.

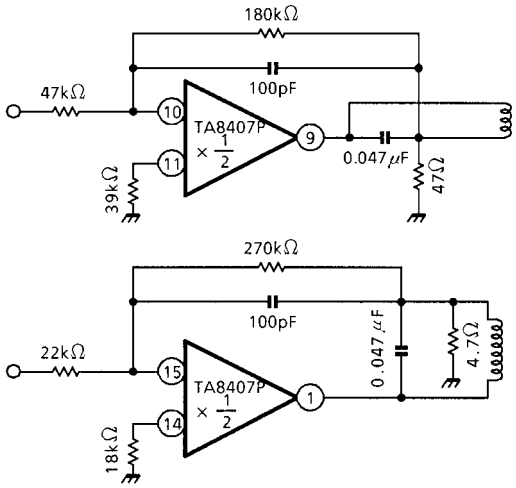


Note 1: $I_{SC} \approx \frac{0.7(V)}{R_{SC}(\Omega)}(A)$

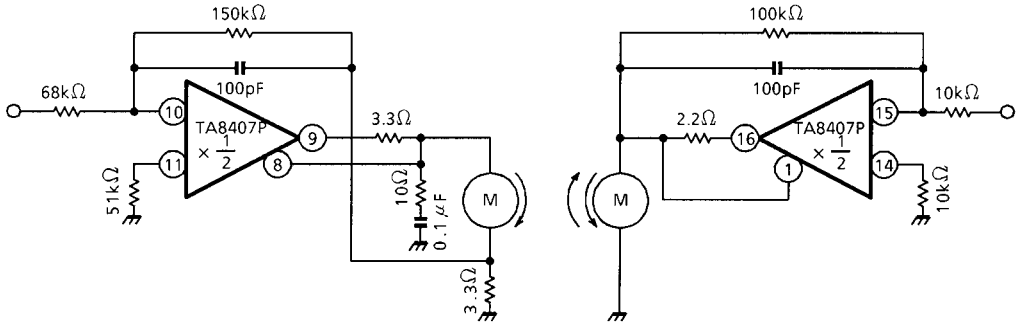
Note 2: If crosstalk is recognizable remarkably in applications above 80 kHz, change a capacitor to one having a value of about 0.33 μF as a compensating circuit.
Further, no resistor is needed in this case.

Note 3: Utmost care is necessary in the design of the output line, V_{CC} and GND line since IC may be destroyed due to short−circuit between outputs, air contamination fault, or fault by improper grounding.

APPLICATION CIRCUIT 2. (Actuator)

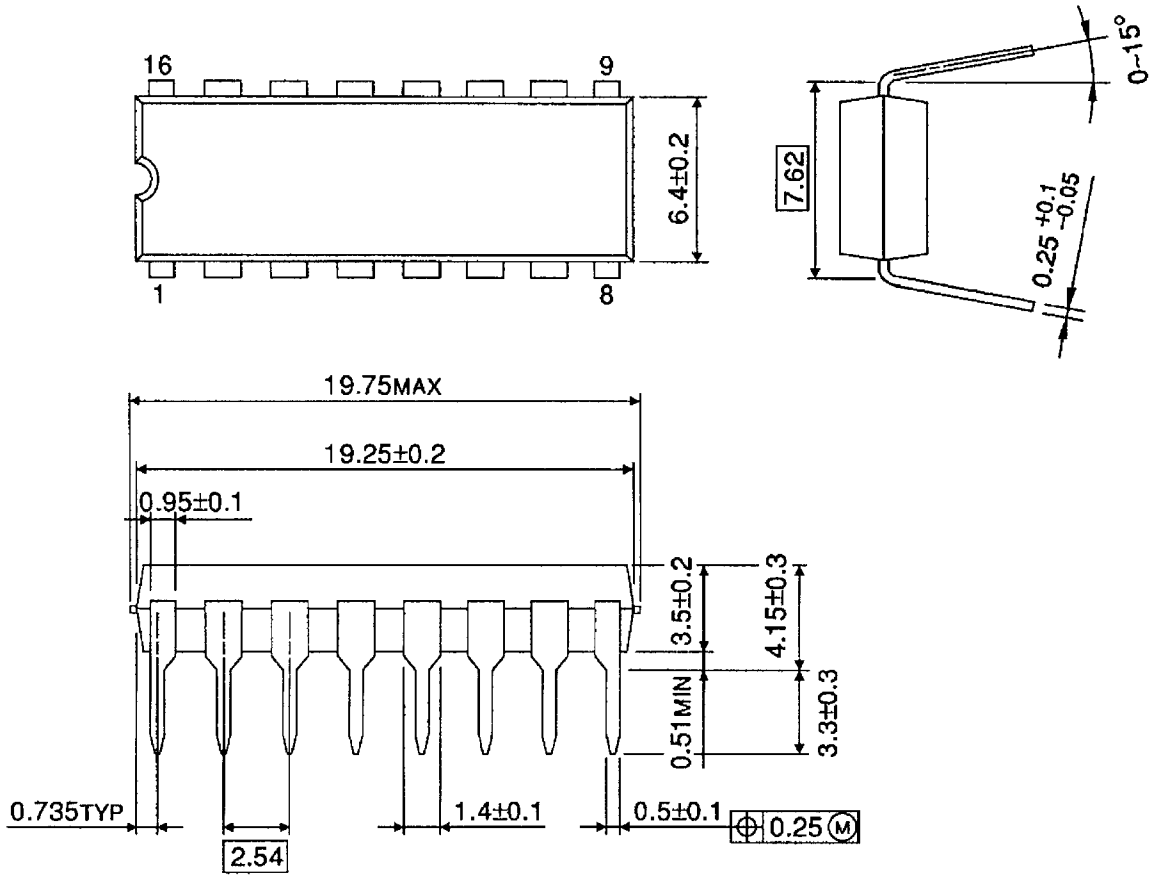


APPLICATION CIRCUIT 3. (Speed and carriage control)



PACKAGE DIMENSIONS

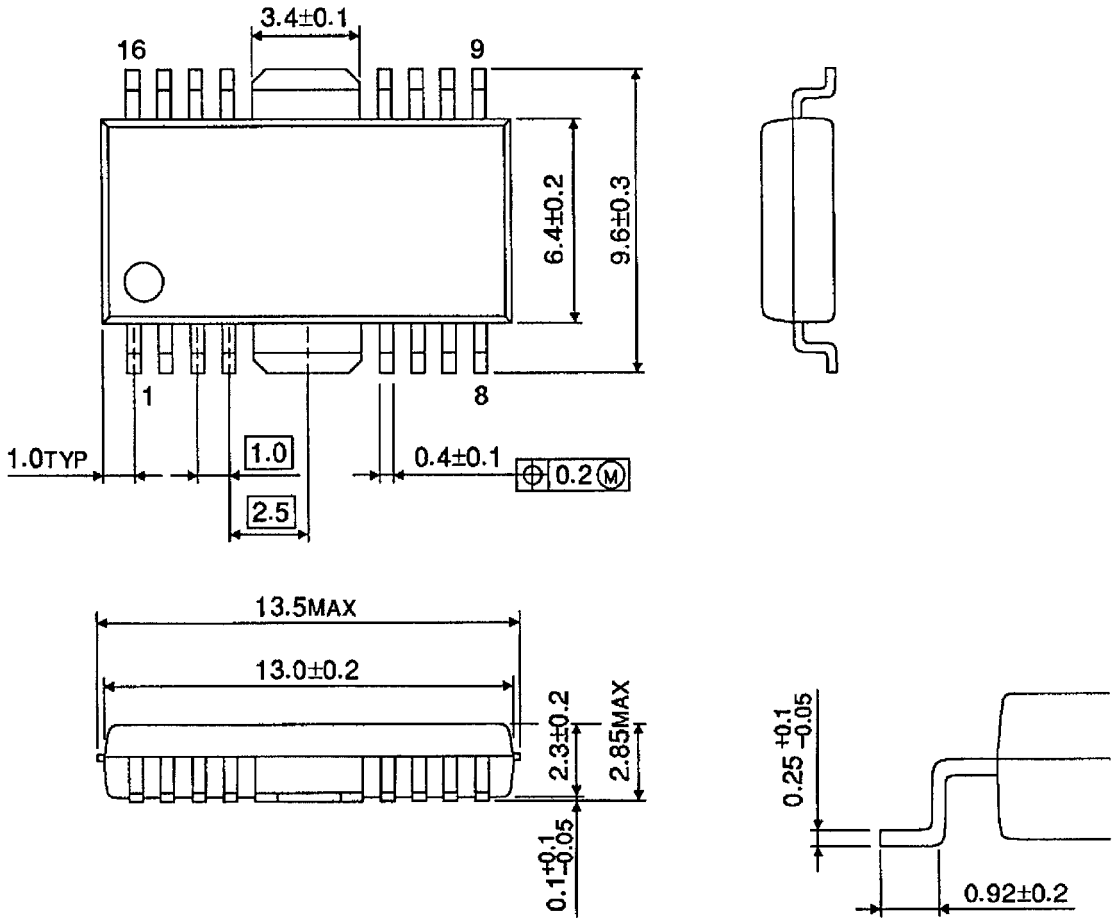
DIP16−P−300−2.54A Unit: mm



Weight: 1.0 g (Typ.)

PACKAGE DIMENSIONS

HSOP16−P−300−1.00 Unit: mm



Weight: 0.50 g (Typ.)

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