

# M52461GP

## SERVO MOTER MOTROL FOR RADIO CONTROL

REJ03F0006-0100Z

Rev.1.00

Jul.25.2003

### Description

The M52461GP is a semiconductor integrated circuit for servo control applications.

### Features

- Excellent power supply stability and temperature stability
- Simple setting of dead of band range
- Small outline (16pin SSOP)

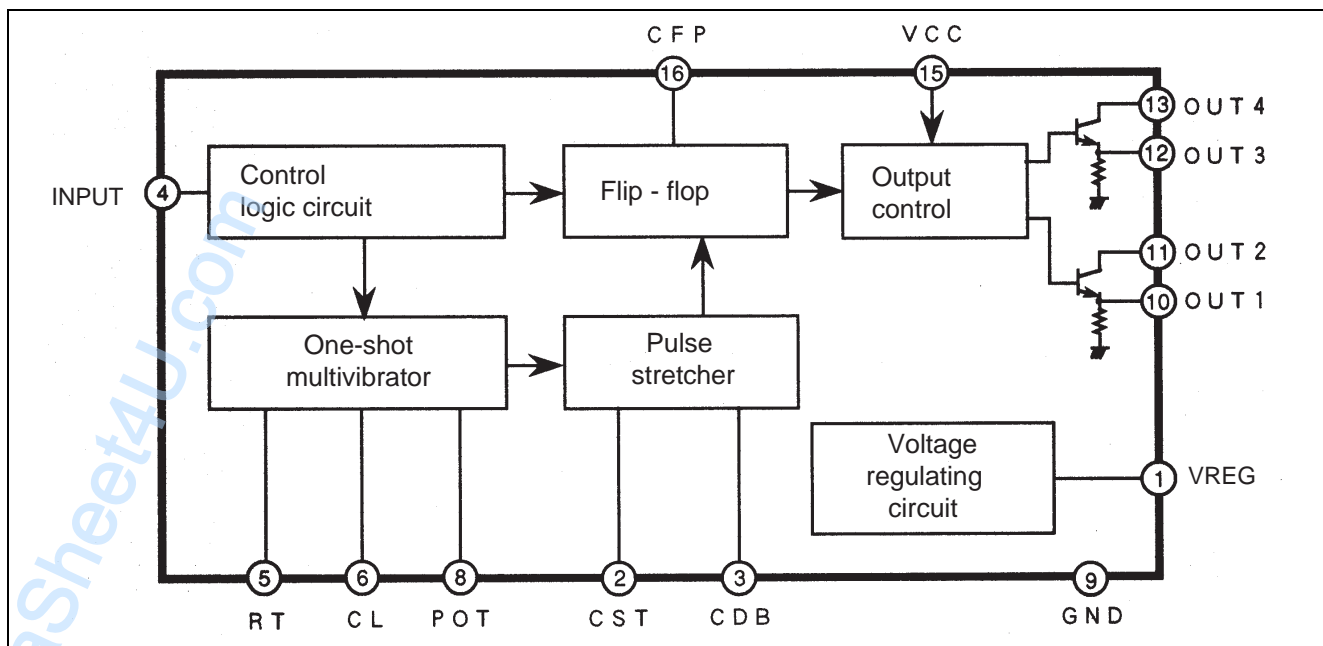
### Applications

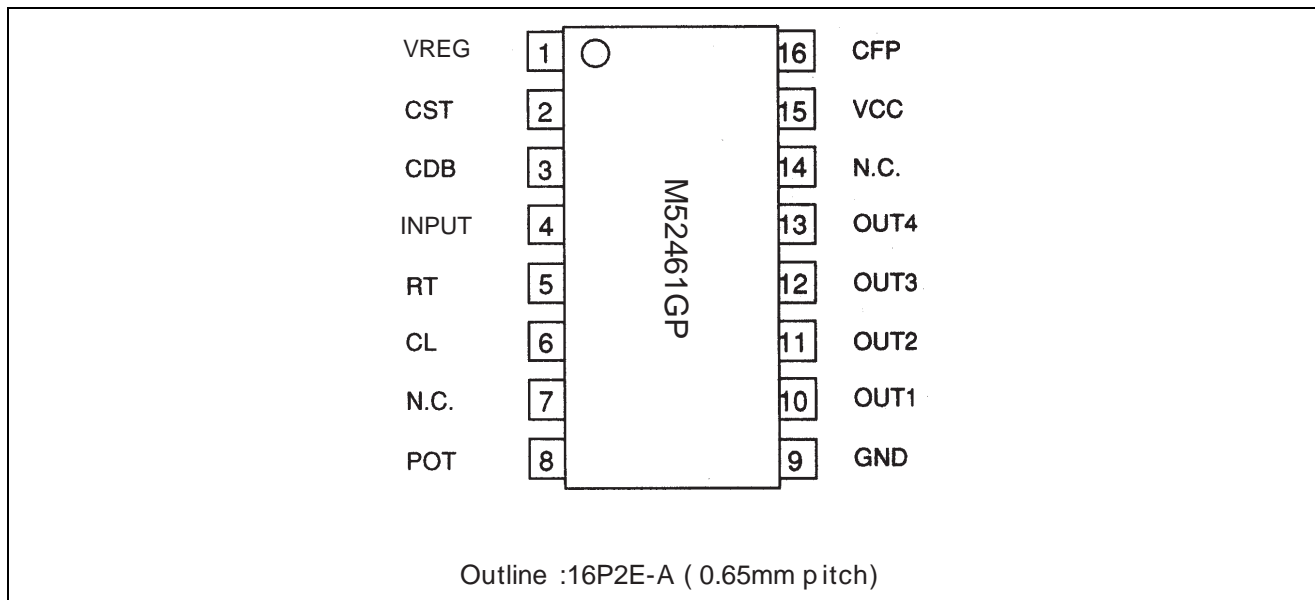
- Digital proportional systems for radio control, servo motor control ,etc

### Recommended Operating Conditions

- Supply Voltage range : 2.8 to 7.5 V
- Operating temperature : -20 to 75°C
- Input rise time : 500 nS max.
- Input fall time : 500 nS max.

### Block Diagram



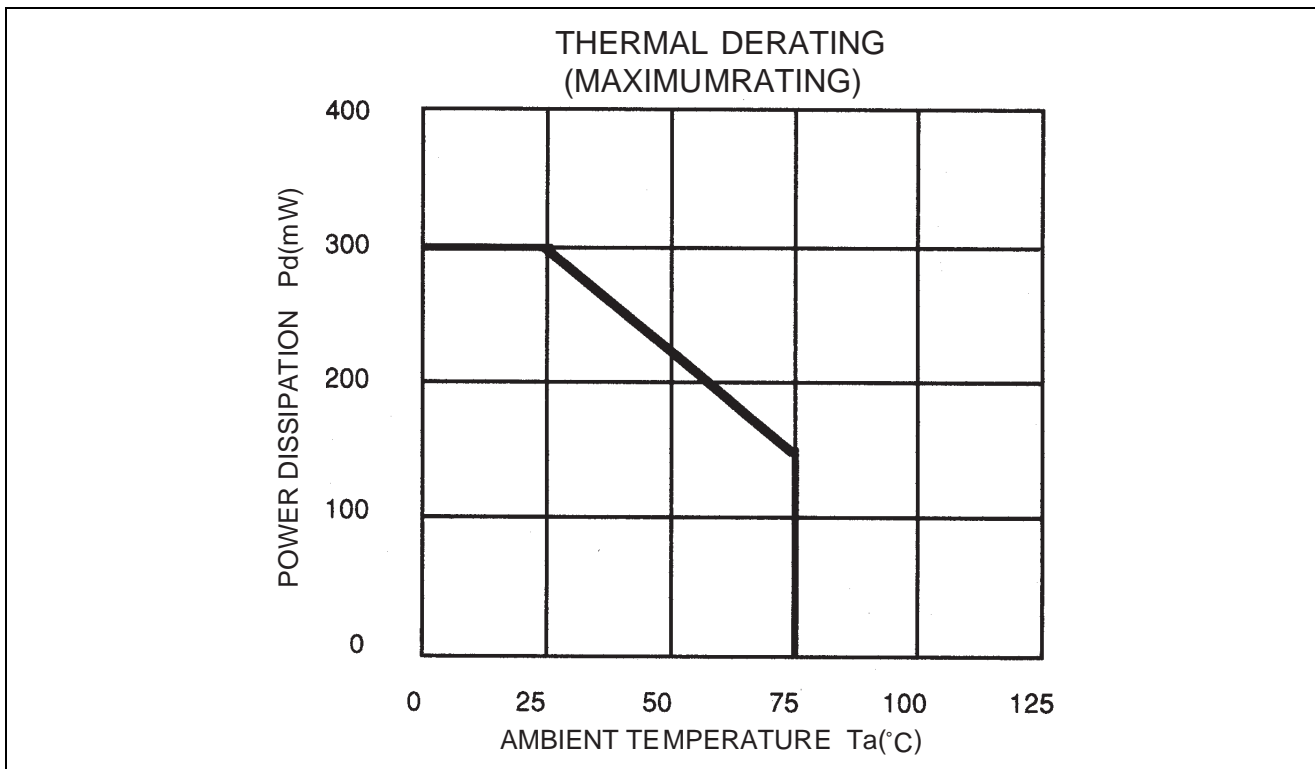
**M52461GP****Pin Arrangement****Pin Description**

Pin No.	Symbol	Function	Descriptions
1	VREG	Regulated voltage source	This is output of the internal regulated supply voltage. Make connections from this pin to pot-entiometer and pulse stretcher resistor.
2	CST	Stretcher pin	Connect the capacitor and resistor of the pulse stretcher section.
3	CDB	Dead band setting pin	Connect the capacitor and band can be changed according the value of this capacitor.
4	INPUT	Input pin	
5	RT	Constant setting pin	Connect a capacitor that will determine the constant current value of pin 6. Constant current will became 100 $\mu$ A at the time of the resistance of 18 k $\Omega$
6	CL	Local pulse setting pin	Connect a capacitor that will adjust a triangular wave made by charging of constant current.
7	N.C.	No connection	
8	POT	Servo position voltage input pin	Connect to the potentiometer for the position detection connected with the output axis.
9	GND	Grounding pin	Grounding
10	OUT1	Output 1	Connect to the base of the external NPN transistor
11	OUT2	Output 2	Connect to the base of the external PNP transistor
12	OUT3	Output 3	Connect to the base of the external NPN transistor
13	OUT4	Output 4	Connect to the base of the external PNP transistor
14	N.C.	No connection	
15	VCC	Supply voltage	Connect a capacitor of more than 10 $\mu$ F.
16	CFP	Fixed driving pulse setting pin	Connect a capacitor that will determine the fixed driving pulse width.

**M52461GP****Absolute Maximum Ratings**

(VCC = 5V, Ta = 25°C, unless otherwise noted)

Symbol	Parameter	Test conditions	Ratings	Unit
VCC	Supply voltage		9.0	V
IO	Output current	OUT1 to OUT4	40	mA
PD	Power dissipation		300	mW
K $\theta$	Thermal derating range	Ta $\geq$ 25°C	-3.0	mW/°C
Tstg	Storage temperature		-40 to 125	°C



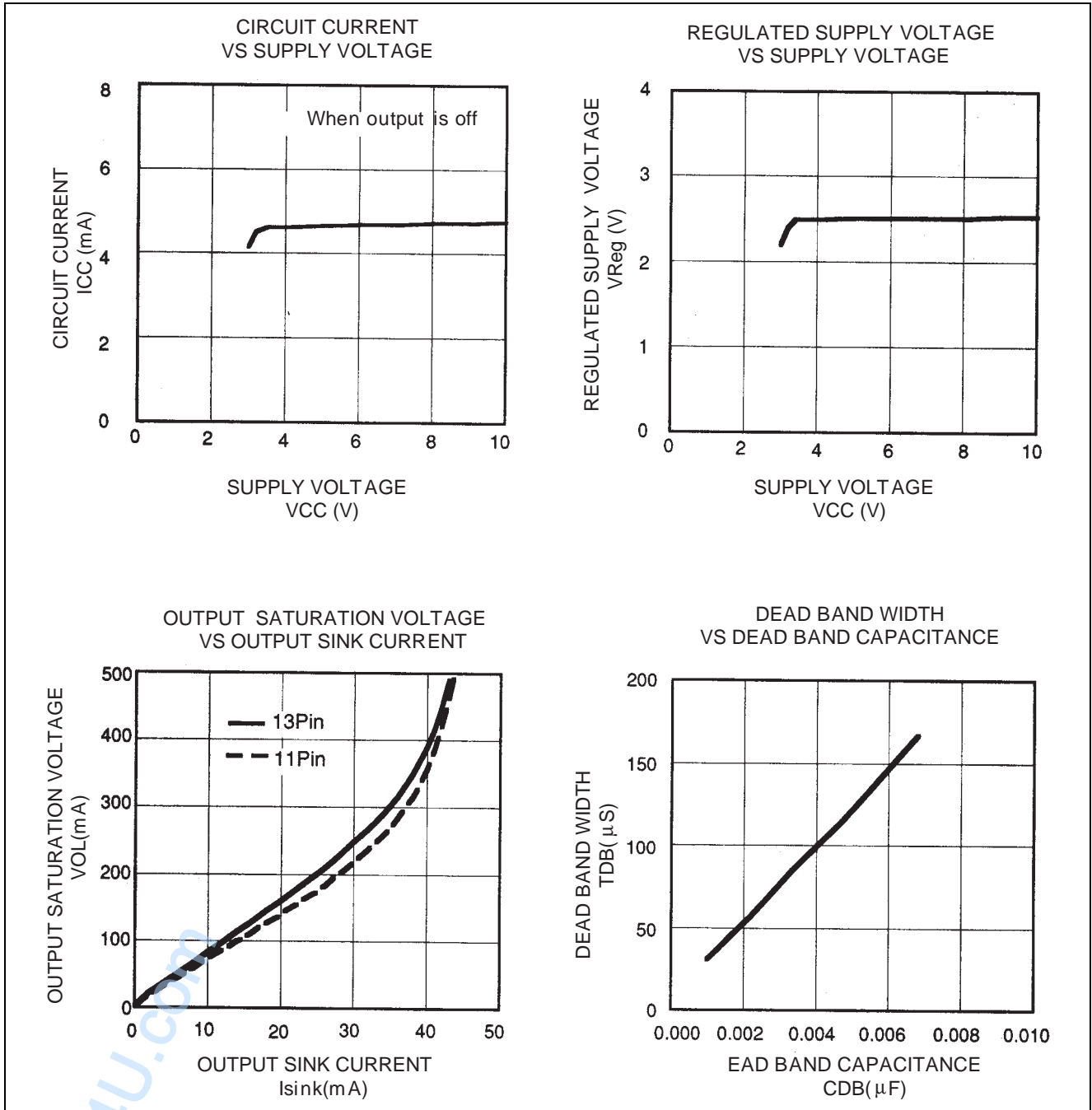
**M52461GP****Electrical Characteristics**

(VCC = 5.0 V, Ta = 25°C)

Symbol	Parameter	Test conditions	Limits			Unit
			Min	Typ	Max	
VCC	Supply voltage		2.8	5.0	7.5	V
ICC1	Circuit Current 1	Output off	—	5.0	10.0	mA
ICC2	Circuit Current 2	Output on	—	6.0	11.0	mA
Vreg	Regulated voltage	No load	2.35	2.5	2.65	V
dVreg	Regulated voltage precision	VCC = 3.5 to 6.5 V	—	0.2	—	%/V
Iref	Reference current	RT = 18 kΩ, Pin 5 current value	90	100	110	μA
Vih	High input voltage	Pin4	2.0	—	Vcc	V
WL	Standard local pulse width	RT = 18 kΩ, CL = 0.1 μF	1.4	1.5	1.6	ms
dWL	Supply voltage dependence of the local pulse width	VCC = 3.5 to 6.5 V	—	—	2.0	μs/V
		VCC = 2.5 to 7.5 V	—	—	15.0	
Wdb1	Minimum dead bandwidth	CFP = 0.01μF Not connect CDB	—	—	1.0	μs
Wdb2	Standard driving band width	Not connect CFP and CDB	—	2.5	6.0	μs
AST	Stretcher gain	RT = 18 kΩ RST = 120 kΩ CST = 0.1 μF	—	100	—	times
WKP	Fixed driving pulse width	CFP = 0.01μF Not connect CDB	0.7	1.0	1.3	ms
WCP	Standard driving pulse width	Not connect CFP and CDB	0.3	0.5	0.8	ms
Wout	Output pulse width	CST = 0.1 μF RST = 120 kΩ Pulse width 100μs (3pin)	8.0	10.0	12.0	ms
Vosat	Output pin saturation voltage	ISINK = 20 mA	—	0.2	0.4	V

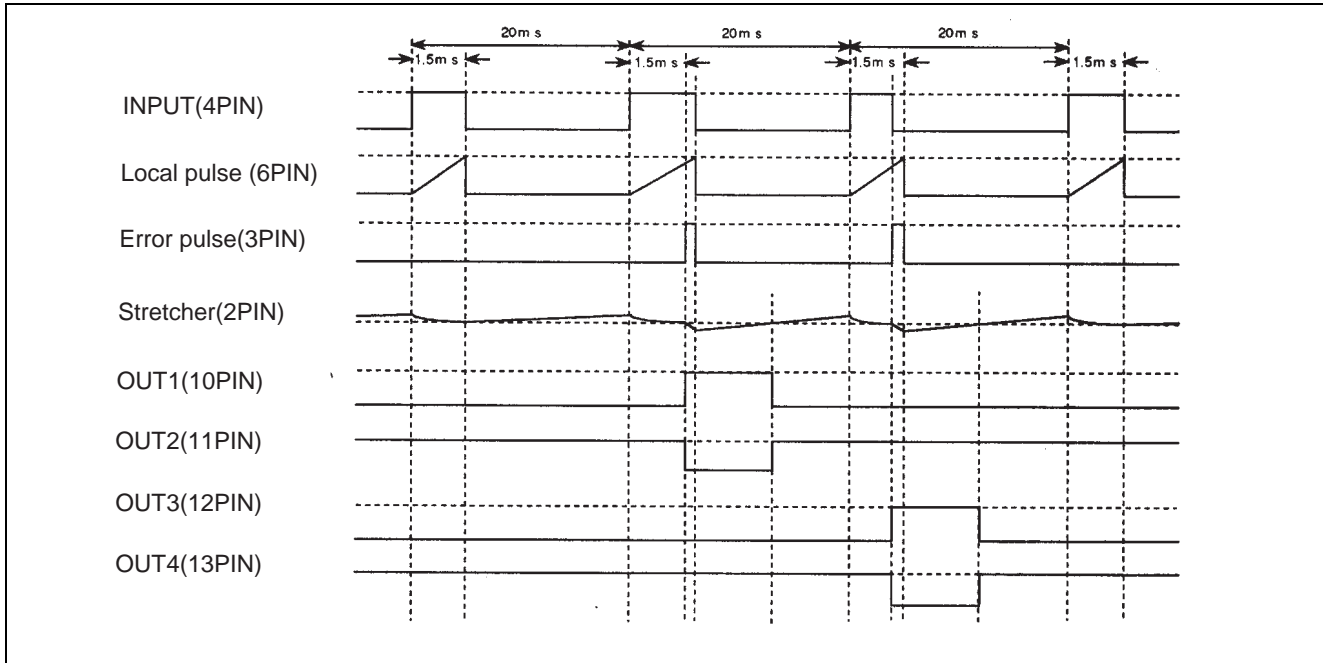
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**Typical Characteristics**

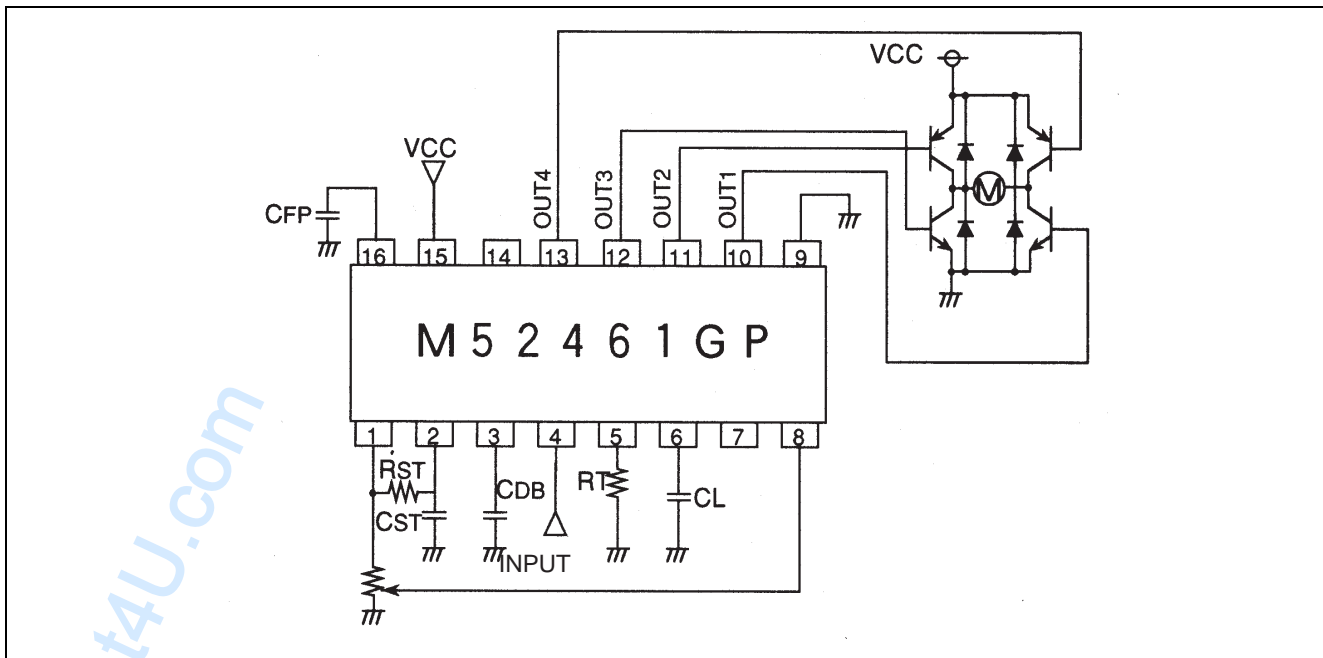


**M52461GP**

**Timing Diagram**



**Application Example**



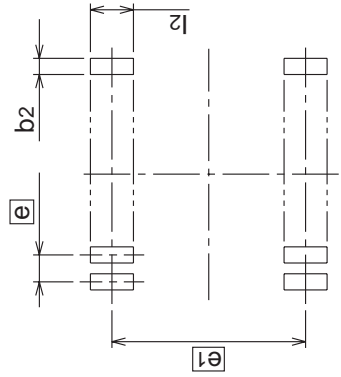
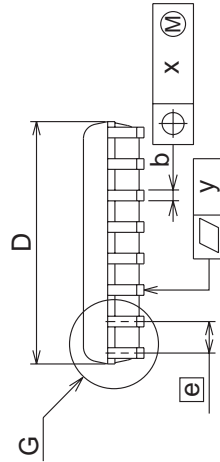
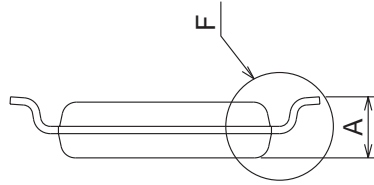
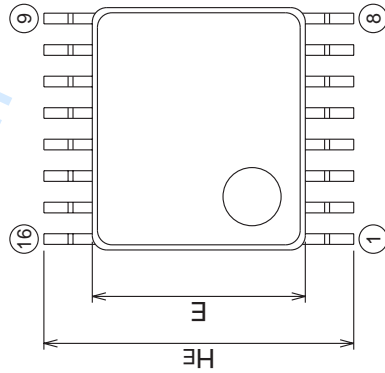
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Package Dimensions

Plastic 16pin 225mil SSOP

16P2E-A

EIAJ Package Code SSOP16-P-225-0.65	JEDEC Code	Weight(g) 0.06	Lead Material Alloy 42
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Recommended Mount Pad

Symbol	Dimension in Millimeters		
	Min	Norm	Max
A	—	—	1.45
A1	0	0.1	0.2
A2	—	1.15	—
b	0.17	0.22	0.32
c	0.13	0.15	0.2
D	4.9	5.0	5.1
E	4.3	4.4	4.5
e	—	0.65	—
HE	6.2	6.4	6.6
L	0.3	0.5	0.7
L1	—	1.0	—
Z	—	0.225	—
Z1	—	—	0.375
x	—	—	0.13
y	—	—	0.1
θ	0°	—	10°
b2	—	0.35	—
e1	—	5.8	—
l2	1.0	—	—

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