



EN/DECODER
<b>M5E</b>

3 STATES ENCODER  
3 態編碼 IC

**GENERAL DESCRIPTION 功能敘述**

The M5E is a CMOS ASIC encoder. It will en-code 12 parallel data inputs (A0~A11) and serially transmit them to the output when transmits enable ( $\overline{TE}$ ) depressed. The address inputs are 3 states i.e. LOW (0) or OPEN (X) and HIGH (1). It will transmit 1 cycle each time  $\overline{TE}$  depressed.

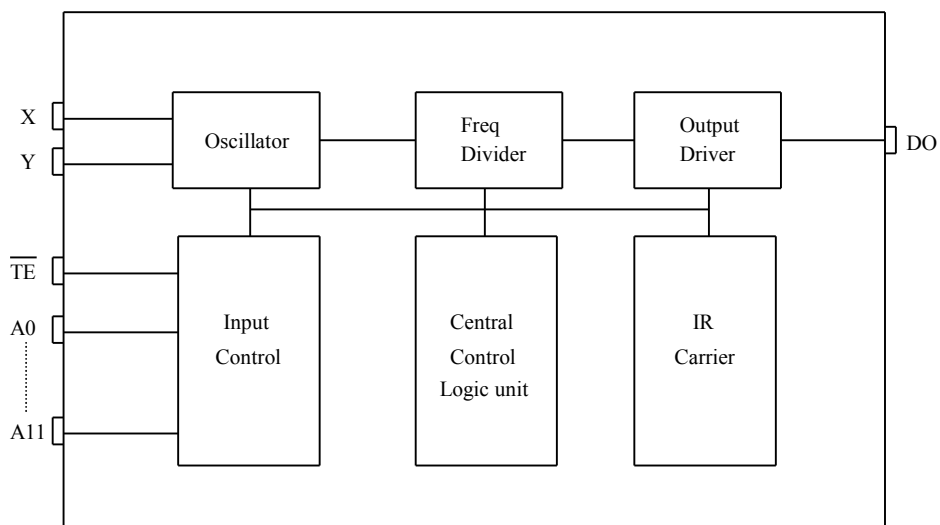
**FEATURES 產品特長**

- Same Rose matched to the DECODER M5D/F
- $3^{12} = 531, 441$  codes, "0", "X", "1" Tri-states
- 4 cycles transmission each time
- Direct data transmit type : (Elimination TE and diodes)  
—M5E-H : switch to VDD
- Built-in IR carrier : suffix -IR
- DIP 18 or SO available

**APPLICATIONS 產品應用**

- Car/home alarm system, garage control etc..

**BLOCK DIAGRAM 功能方塊圖**



\*All specs and applications shown above subject to change without prior notice.  
( 以上電路及規格僅供參考,本公司得逕行修正 )



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<b>M5E</b>

**ABSOLUTE MAXIMUM RATING**

(TA=25°C)

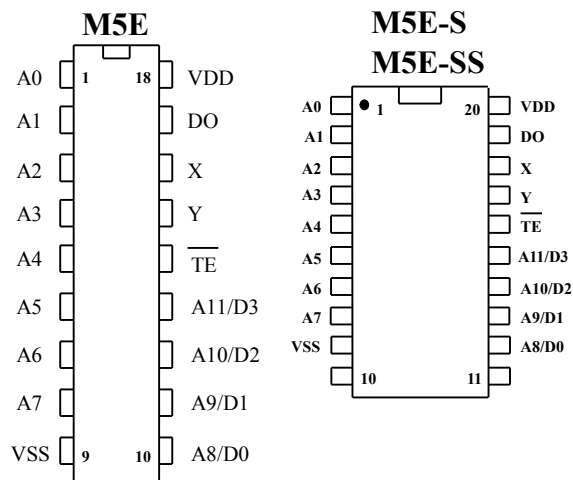
Parameter	Rating	Unit
Supply Voltage	-0.3 to 13	V
Input Voltage	-0.2~V <sub>DD</sub> +0.2	V
Operating Temperature	-20 to 70	°C
Storage Temperature	-50 to 125	°C

**ELECTRICAL CHARACTERISTICS**

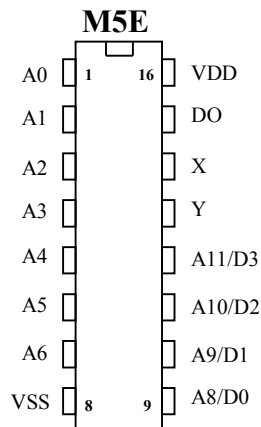
Characteristics	Sym.	Min.	Typ.	Max.	Unit	Conditions
Operating Voltage	V <sub>DD</sub>	2.4	—	13	V	
Operating Current	I <sub>OP</sub>	—	0.1	1	mA	No load
Quiescent Current	I <sub>SB</sub>	—	0.1	0.5	μA	
Output Drive Current	I <sub>O</sub>	—	2	—	mA	@V <sub>DS</sub> =1.2V
Input Voltage	V <sub>IH</sub>	V <sub>DD</sub> -0.2	V <sub>DD</sub>	V <sub>DD</sub>	V	
	V <sub>IL</sub>	V <sub>SS</sub>	V <sub>SS</sub>	V <sub>SS</sub> +0.2		
Oscillator Frequency	F <sub>osc</sub>	—	76	—	KHz	External±30%, R <sub>osc</sub> =360KΩ

**PIN DESCRIPTION**

No.	Name	Description
1~8	A0~A7	3 states address inputs
9	VSS	Negative power supply
10~13	A8~A11 / D0~D3	3 states address inputs / Data input
14	$\overline{TE}$	Transmit enable
15	Y	Oscillator output
16	X	Oscillator input
17	DO	Data output
18	VDD	Positive power supply



No.	Name	Description
1~7	A0~A6	3 states address inputs
8	VSS	Negative power supply
9~12	A8~A11 / D0~D3	3 states address inputs / Data input
13	Y	Oscillator output
14	X	Oscillator input
15	DO	Data output
16	VDD	Positive power supply



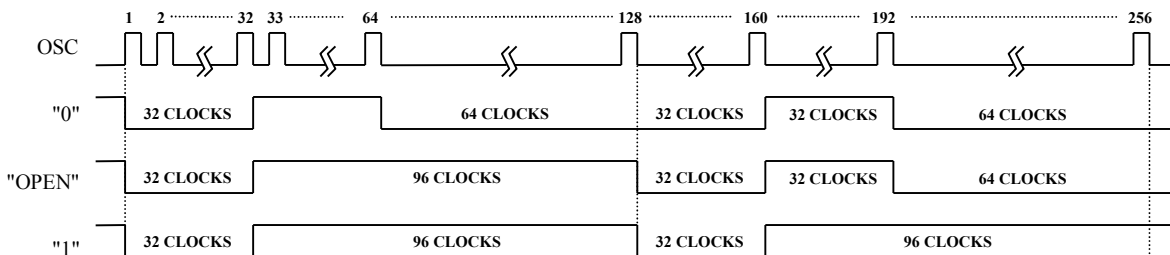


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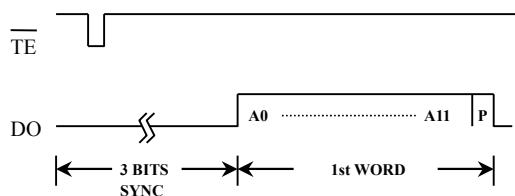
TIMING WAVEFORM

(1) BIT FORMAT

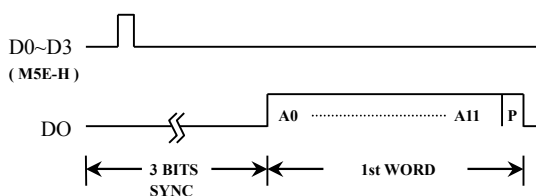


(2) TIMING DIAGRAM

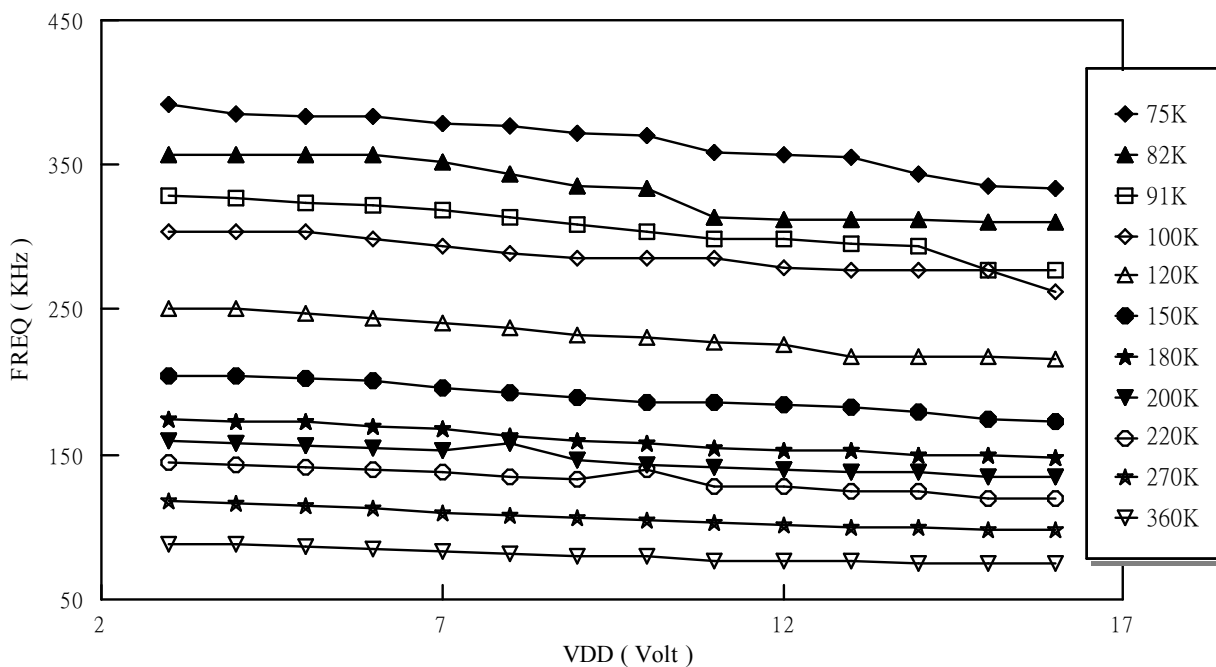
A.



B.



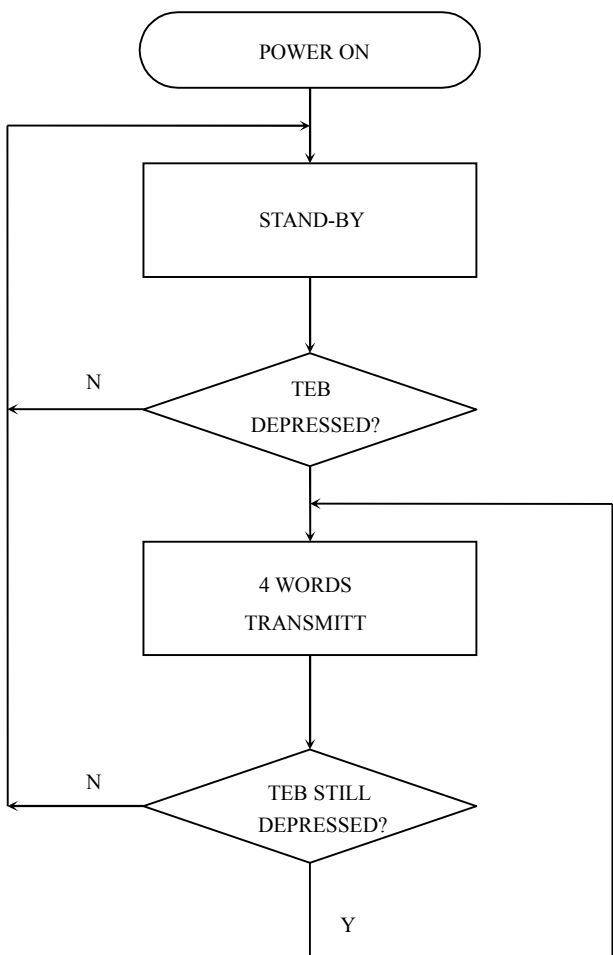
M5E F-V curve





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**OPERATING FLOWCHART**





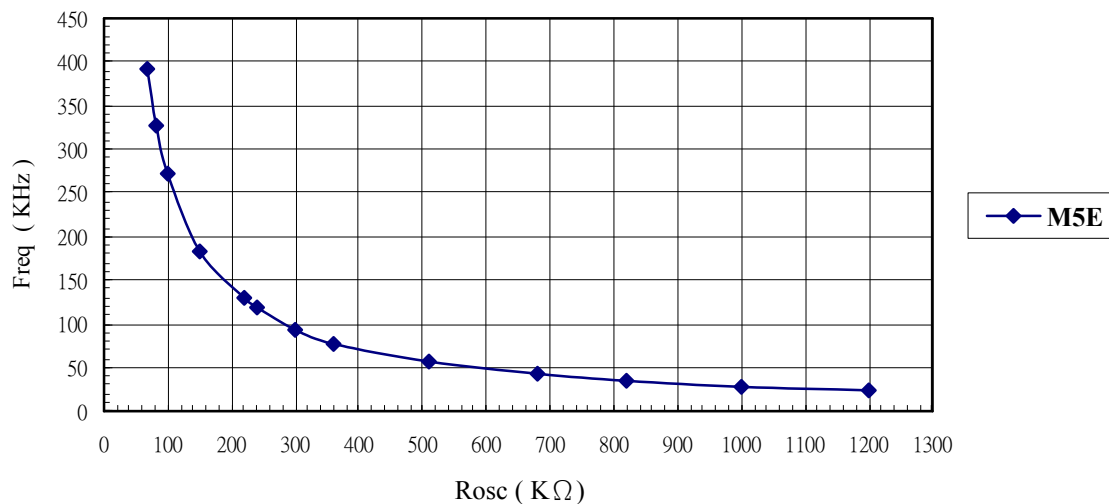
**RECONNENDED OSCILLATOR PARAMETERS**

Rosc (KΩ)	M5E (KHz)
68	392
82	327
100	272
150	183
220	130
240	119
300	93
360	77
510	57
680	43
820	35
1000	28
1200	24

**DATA OUTPUT**

M5E	M5D/F
0 (VSS)	0 (VSS)
X (OPEN)	0 (VSS)
1 (VDD)	1 (VDD)
POWER ON	0 (VSS)

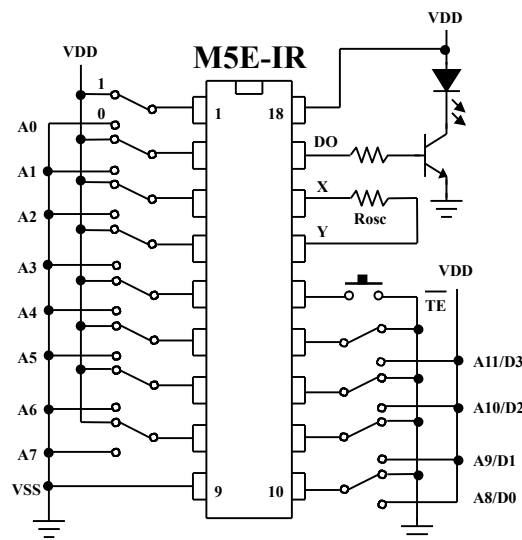
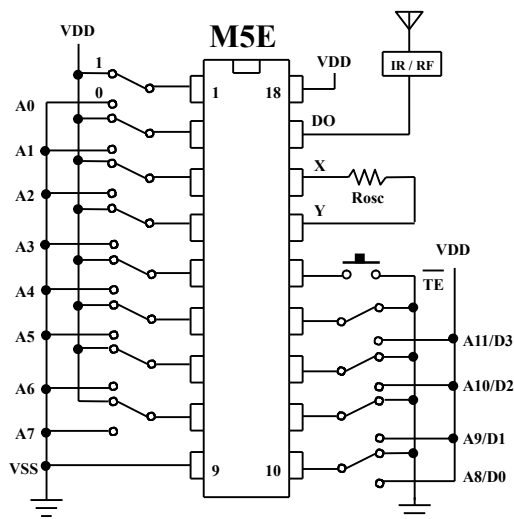
**Freq-Rosc Chart**  
( VDD@12V )



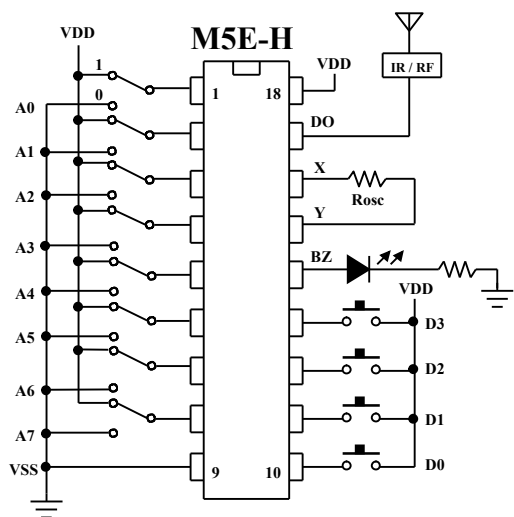


APPLICATION DIAGRAM 參考電路圖

IR 內建發射



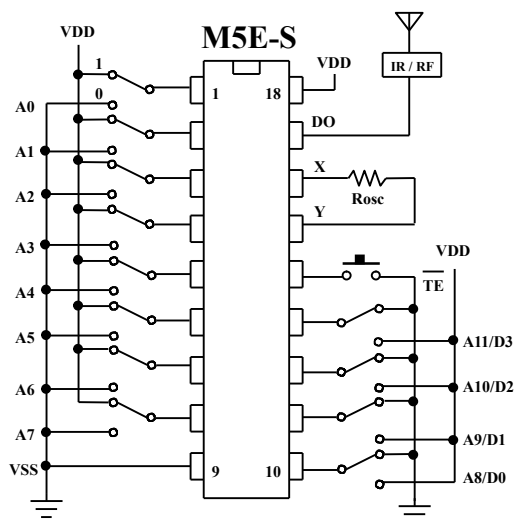
直接發射 (VDD)



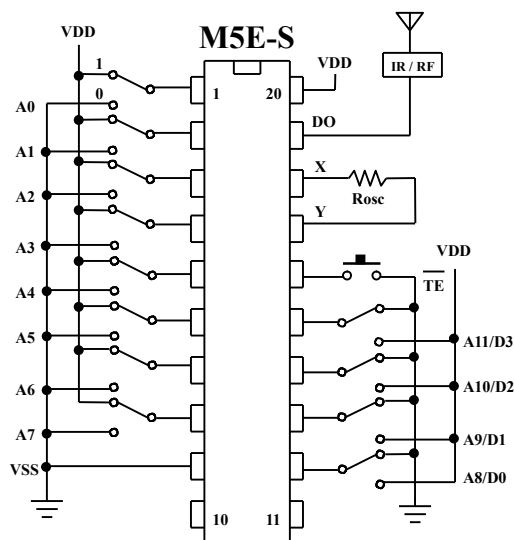


APPLICATION DIAGRAM 參考電路圖 (SOP PACKAGE)

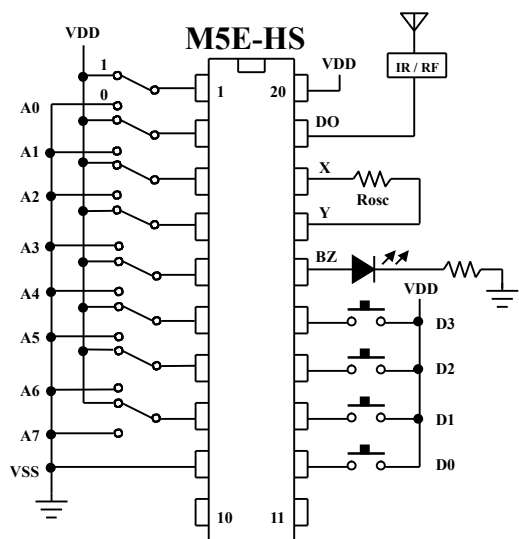
18 PIN



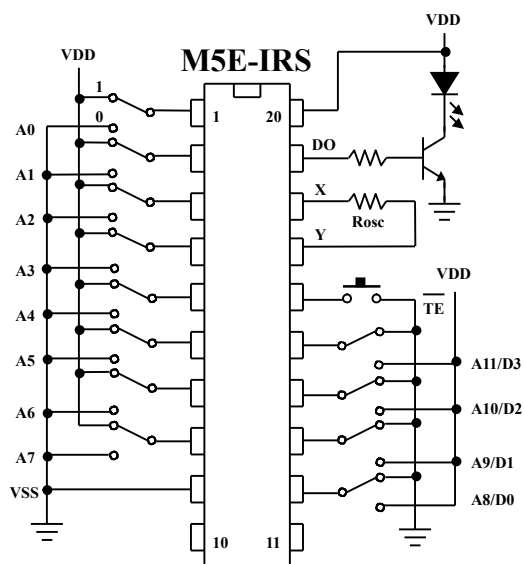
20 PIN



直接發射 (VDD)



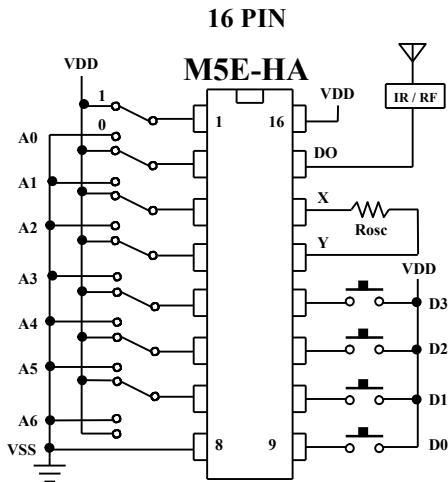
IR 內建發射





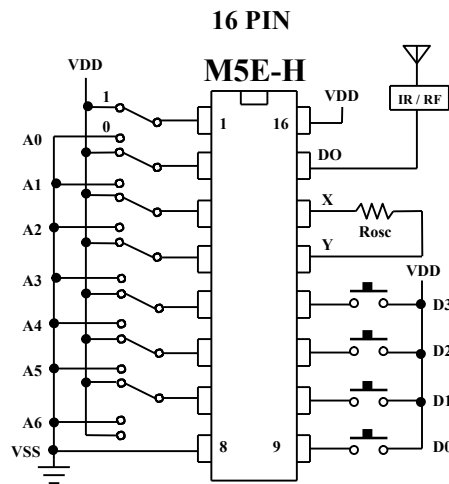
APPLICATION DIAGRAM 參考電路圖 (SOP PACKAGE)

直接發射 (VDD)



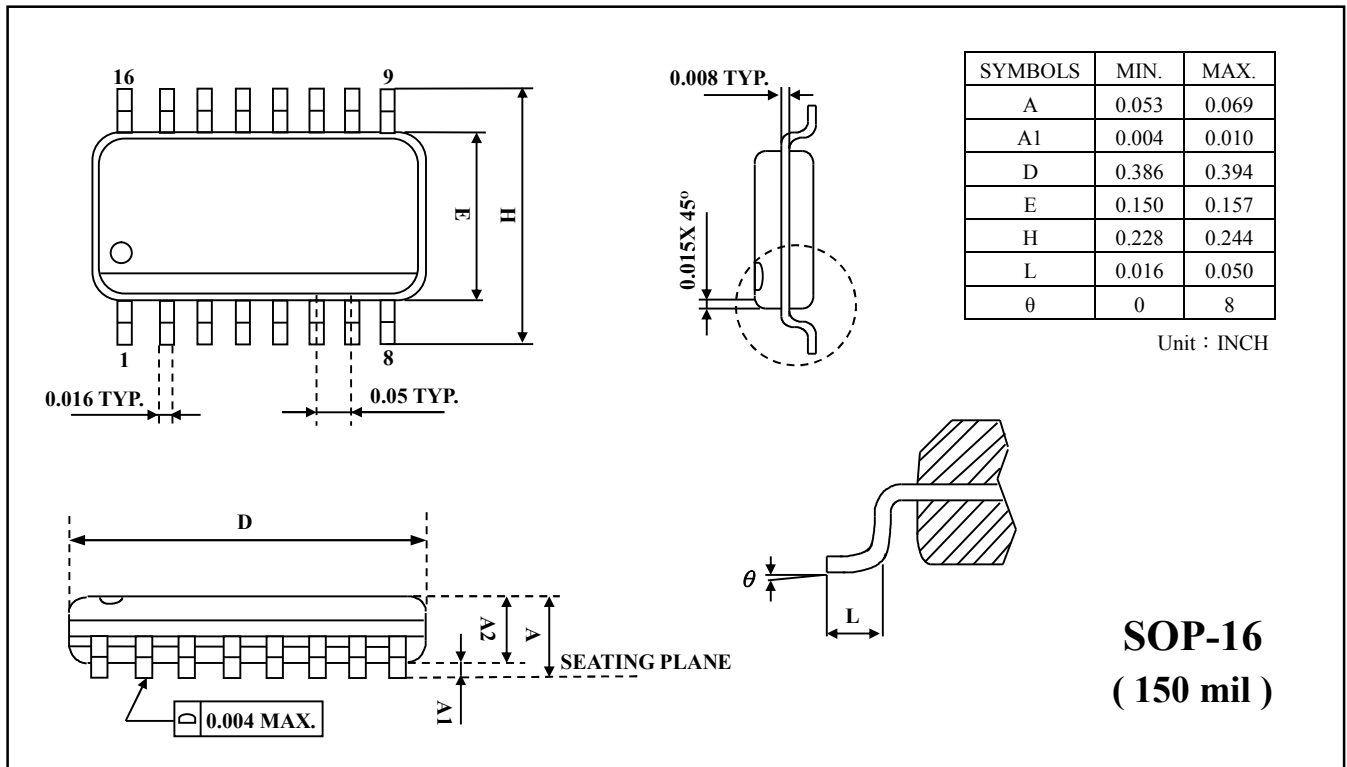
\* Internal code A7 = "O"

直接發射 (VDD)



\* Internal code A7 = "X"

PACKAGE OUTLINE





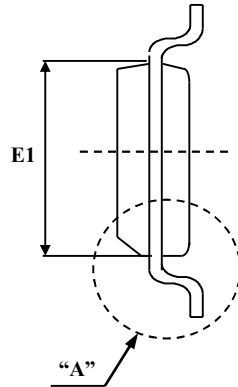
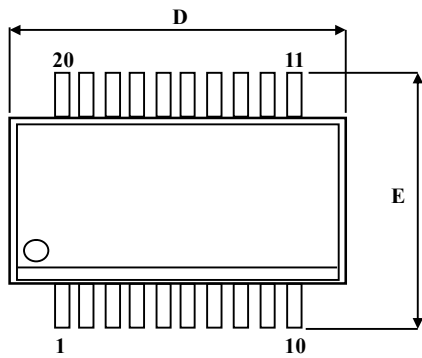


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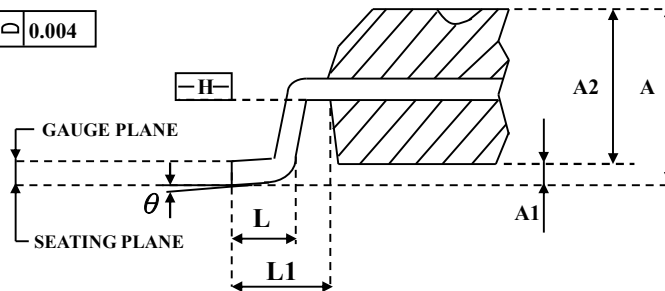
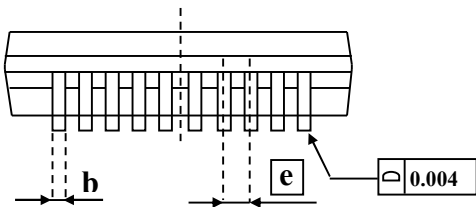
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**M5E**

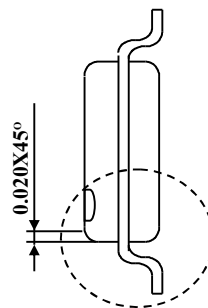
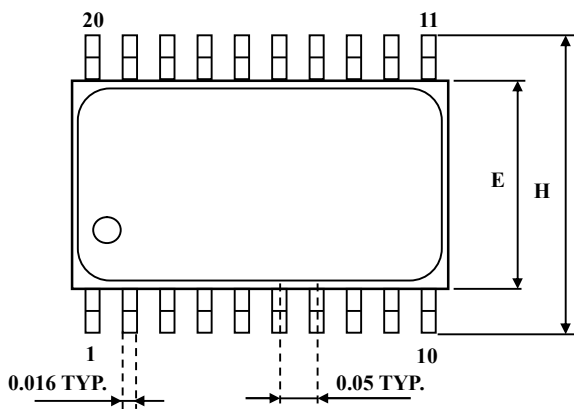


SYMBOLS	MIN	NOM.	MAX
A	0.053	0.064	0.069
A1	0.004	0.006	0.010
A2	—	—	0.059
b	0.008	—	0.012
C	0.007	—	0.010
D	0.337	0.341	0.344
E	0.228	0.236	0.244
E1	0.150	0.154	0.157
e	0.025 BASIC		
L	0.016	0.025	0.050
L1	0.041 BASIC		
$\theta^\circ$	0	—	8°

UNIT : INCH

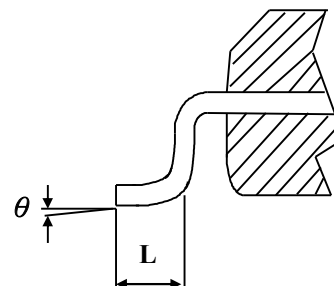
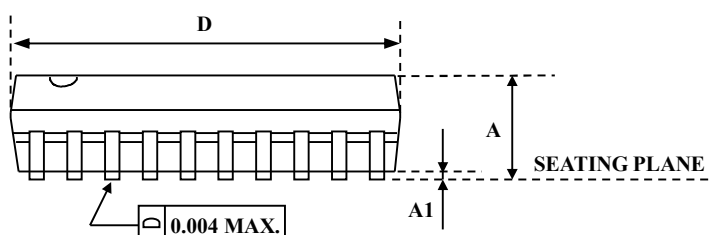


**SSOP-20**  
( 150 mil )



SYMBOLS	MIN	MAX
A	0.093	0.104
A1	0.004	0.012
D	0.496	0.508
E	0.291	0.299
H	0.394	0.419
L	0.016	0.050
$\theta$	0	8

UNIT : INCH



**SOP-20**  
( 300 mil )



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**M5E**

