

ELM742xxC CMOS Low power voltage comparator

<http://www.elm-tech.com>

■General description

ELM742xxC is a low voltage and low power comparator which can input and output signals in full range of Vdd to Vss. ELM742xxC can operate with single power source and low voltage supply (operating voltage range : $V_{DD} \geq 1.0V$) condition. ELM742xxC provides 2 kinds of output style: N-ch opendrain and CMOS output.

■Features

- Low voltage operation : $V_{DD} \geq 1.0V$
- Low current consumption : Typ. $1\mu A$ ($V_{DD}=3.6V$, $V_{out}="Low"$)
Typ. $0.6\mu A$ ($V_{DD}=3.6V$, $V_{out}="High"$)
- Operating voltage range : $1.0V \leq V_{DD} \leq 7.0V$
- Input voltage range : V_{SS} to V_{DD}
- Output stage : N-ch open drain or CMOS output
- Package : SOT-25, SC-70-5(SOT-353)

■Application

- Battery-operated devices
- Micropower signal processing
- Low voltage analog circuits

■Maximum absolute ratings

Parameter	Symbol	Limit	Unit
Power supply voltage	Vdd	$V_{SS}-0.3$ to $+8.0$	V
Input voltage	Vin	$V_{SS}-0.3$ to $V_{DD}+0.3$	V
Output voltage	Vout	N-ch : $V_{SS}-0.3$ to $+8.0$	V
		CMOS : $V_{SS}-0.3$ to $V_{DD}+0.3$	
Power dissipation	Pd	300 (SOT-25)	mW
		150 (SC-70-5)(SOT-353)	
Operating temperature	Top	-20 to $+70$	$^{\circ}C$
Storage temperature	Tstg	-55 to $+125$	$^{\circ}C$

■Selection guide

ELM742xxC-x

Symbol		
a	Output form	N : N-ch open drain
		C : CMOS
b	Package	B : SOT-25
		C : SC-70-5(SOT-353)
c	Product version	C(fixed)
d	Taping direction	S: Refer to PKG file
		N: Refer to PKG file

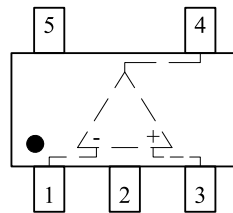
ELM742 x x C - x
↑ ↑ ↑ ↑
a b c d

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■Pin configuration

TOP VIEW



Pin No.	Pin name
1	IN-
2	VDD
3	IN+
4	OUT
5	VSS

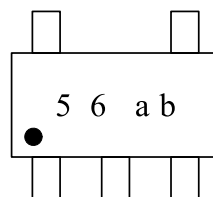
■Electrical characteristics

V_{ss}=0V, T_{op}=25°C

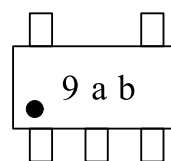
Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Power supply voltage	V _{dd}		1.0		7.0	V
Common-mode input voltage	V _{icr}	V _{dd} =1.0 to 7.0V	V _{ss}		V _{dd}	V
Input offset voltage	V _{io-1}	V _{dd} =1.0V, V _{icr} =0.5V	-8		8	mV
	V _{io-2}	V _{dd} =3.6V, V _{icr} =1.8V	-8		8	
	V _{io-3}	V _{dd} =7.0V, V _{icr} =3.5V	-8		8	
Input current	I _{in}	V _{dd} =1.0 to 7.0V			100	pA
Output current	I _{outN-1}	V _{dd} =1.0V, V _{out} =0.4V	0.4	1.5		mA
	I _{outN-2}	V _{dd} =1.5V, V _{out} =0.4V	4.0	6.0		
	I _{outP-1}	V _{dd} =1.0V, V _{out} =0.6V	0.06	0.15		mA
	I _{outP-2}	V _{dd} =1.5V, V _{out} =1.1V	0.35	0.45		
Current consumption	I _{ss-1}	V _{dd} =3.6V, V _{out} :"L"		2.0	5.6	μA
	I _{ss-2}	V _{dd} =7.0V, V _{out} :"L"		2.2	6.0	
Response time	t _{HL}	V _{dd} =3.6V		30		μs
	t _{LH}	V _{dd} =3.6V		30		

■Marking

SOT-25



SC-70-5(SOT-353)



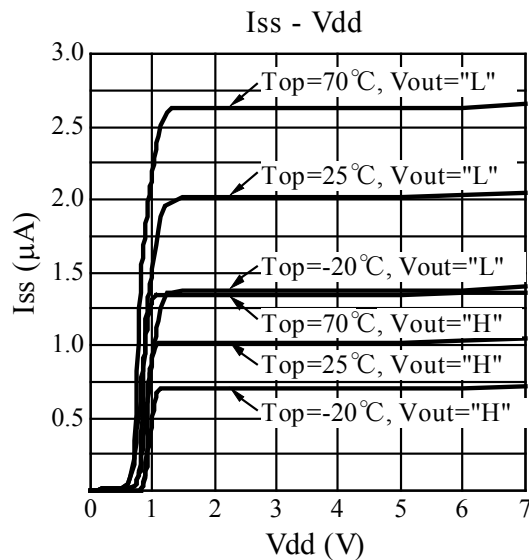
Symbol	Mark	Content
a	N : N-ch open drain	Output stage
	C : CMOS	
b	1 to 0 and A to Z(I,O,X excepted)	Assembly Lot No.

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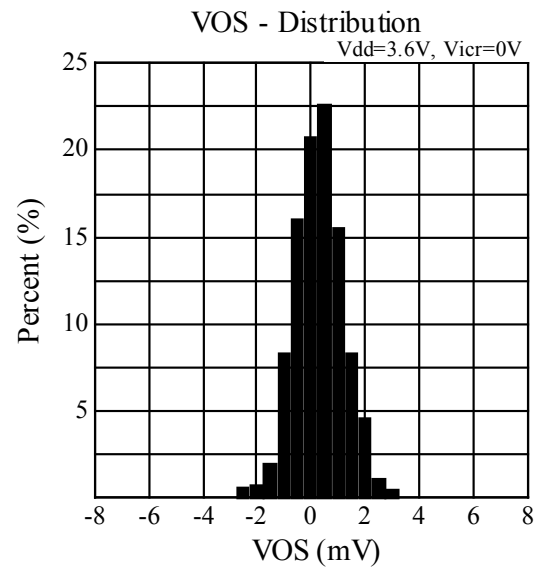
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■ Typical operating characteristics

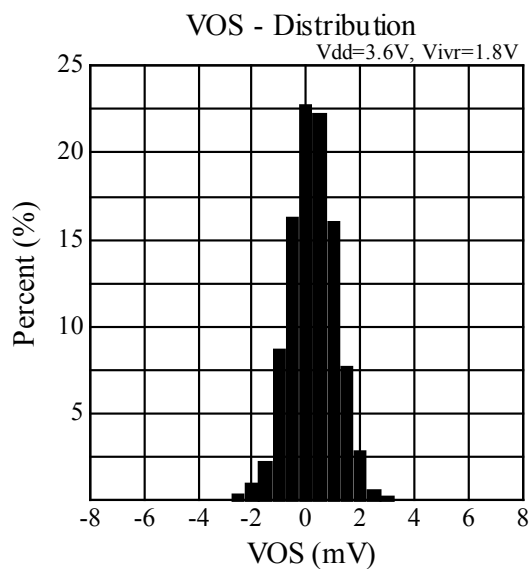
Iss-Vdd



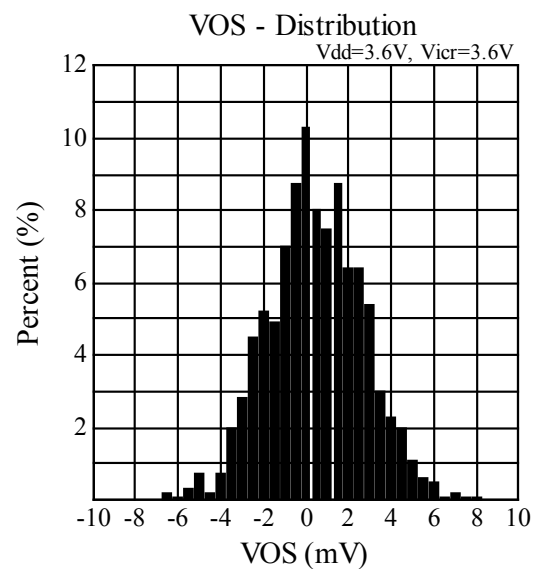
Offset voltage distribution ($V_{icr}=V_{ss}$)



Offset voltage distribution ($V_{icr}=V_{dd}/2$)



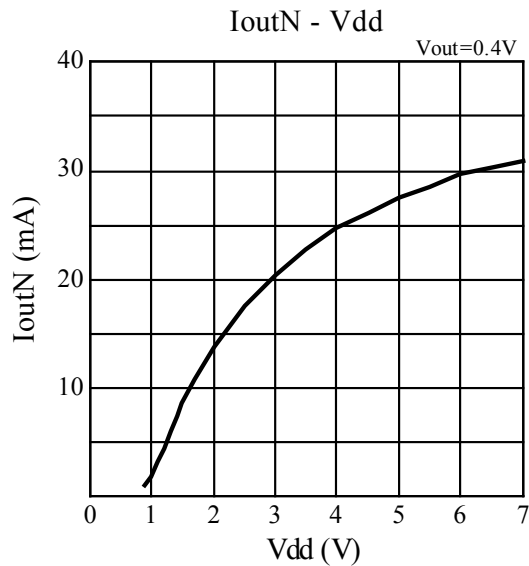
Offset voltage distribution ($V_{icr}=V_{dd}$)



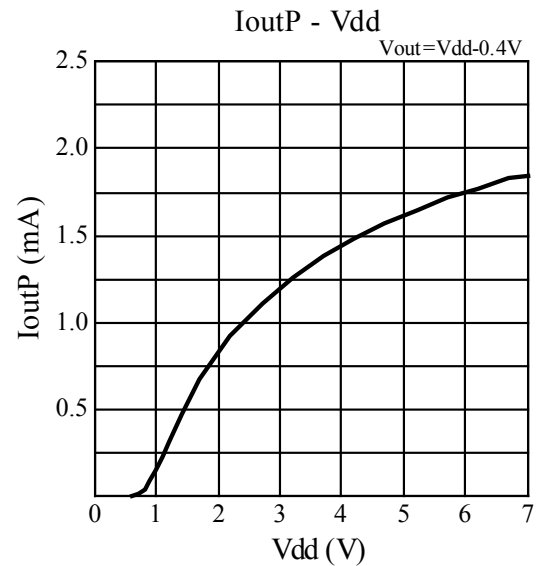
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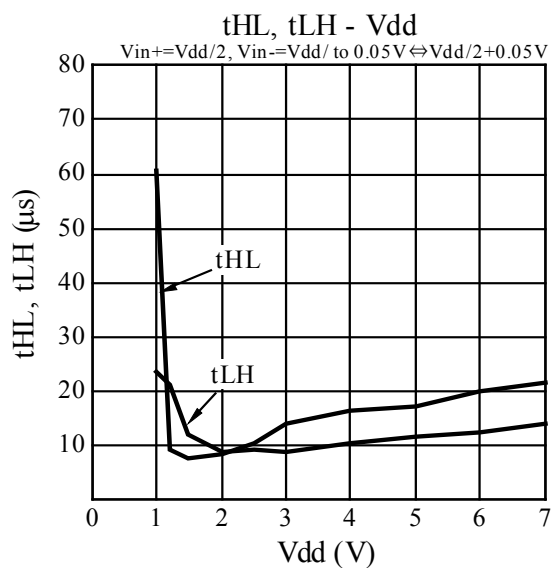
$I_{outN}-V_{dd}$ ($V_{out}=0.4V$)



$I_{outP}-V_{dd}$ ($V_{out}=V_{dd}$ to $0.4V$)



$t_{HL}, t_{LH}-V_{dd}$



$t_{HL}, t_{LH}-Top$ ($V_{dd}=3.6V$)

