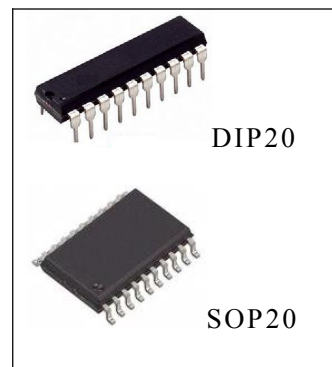


DESCRIPTION

The D5015 is an noise reduction IC for cordless phone. It is a comparator IC that consist of a compressor and an expander. Comparator reduces transmission noise by compressing and transmitting out going signals and expanding received signals.

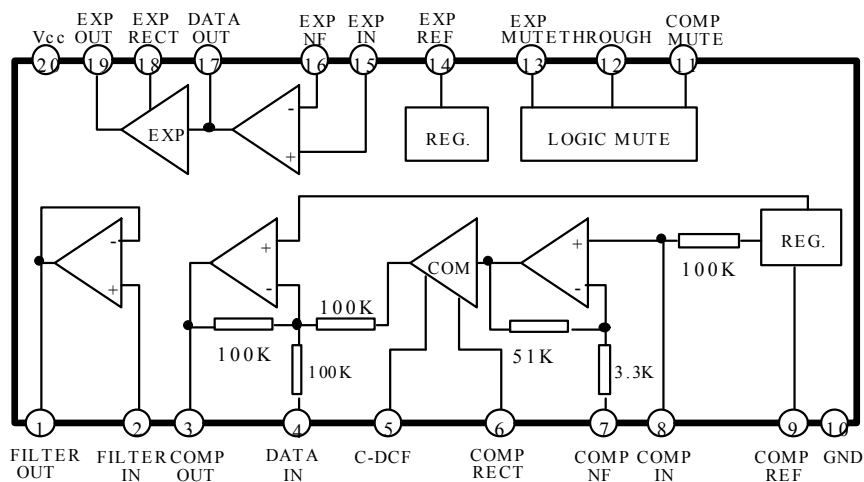
The IC is designed for minimum requirement of external components and for low voltage operation. Small size is an advantage when used in equipment in which space is a premium. For DATA, input and output terminals are provided for convenience. Two styles of packaging, DIP and SOP, are available to meet different requirements.



Features

- Low voltage operation
 $V_{opr.} = 2.4 \sim 7.0V$
- Low current consumption
 $I_{cc} = 4mA (V_{cc}=3V)$
- Microphone amplifier used in compressor
- Has data input output terminals
- Has a buffer amplifier for filter
- Mute can be set up independently
- Through Functions
- Built in limiter (for compressor)

BLOCK DIAGRAM AND PIN CONNECTION

PIN VOLTAGE ($V_{cc}=3V$, NO INPUT SIGNAL)

Pin No.	Name	TYPE.	VOL	Unit	Pin No.	Name	TYPE.	VOL	Unit
1	FILTER OUT	1.5	V		11	COMP MUTE	1.3	V	
2	FILTER IN	1.5	V		12	THROUGH	1.3	V	
3	COMP OUT	1.5	V		13	EXP MUTE	1.3	V	
4	DATA IN	1.5	V		14	EXP REF	1.5	V	
5	C-DCF	1.5	V		15	EXP IN	1.5	V	
6	COMP RECT	0.6	V		16	EXP NF	1.5	V	
7	COMP NF	1.5	V		17	DATA OUT	1.5	V	
8	COMP IN	1.5	V		18	EXP RECT	0.6	V	
9	COMP REF	1.5	V		19	EXP OUT	1.5	V	
10	GND	GND	V		20	Vcc	Vcc	V	

ABSOLUTE MAXIMUM RATINGS ($T_a=25^{\circ}C$)

Characteristic	Symbol	Value	Unit
Maximum Supply Voltage	Vcc	10	V
Power Dissipation	Pd	1000(DIP) note 1	mW
		410(SOP) note 2	
Operating Temperature	Topr	-20~70	$^{\circ}C$
Storage Temperature	Tstg	-55~150	$^{\circ}C$

*Note 1. Above $T_a=25^{\circ}C$, derate at 8mW/ $^{\circ}C$

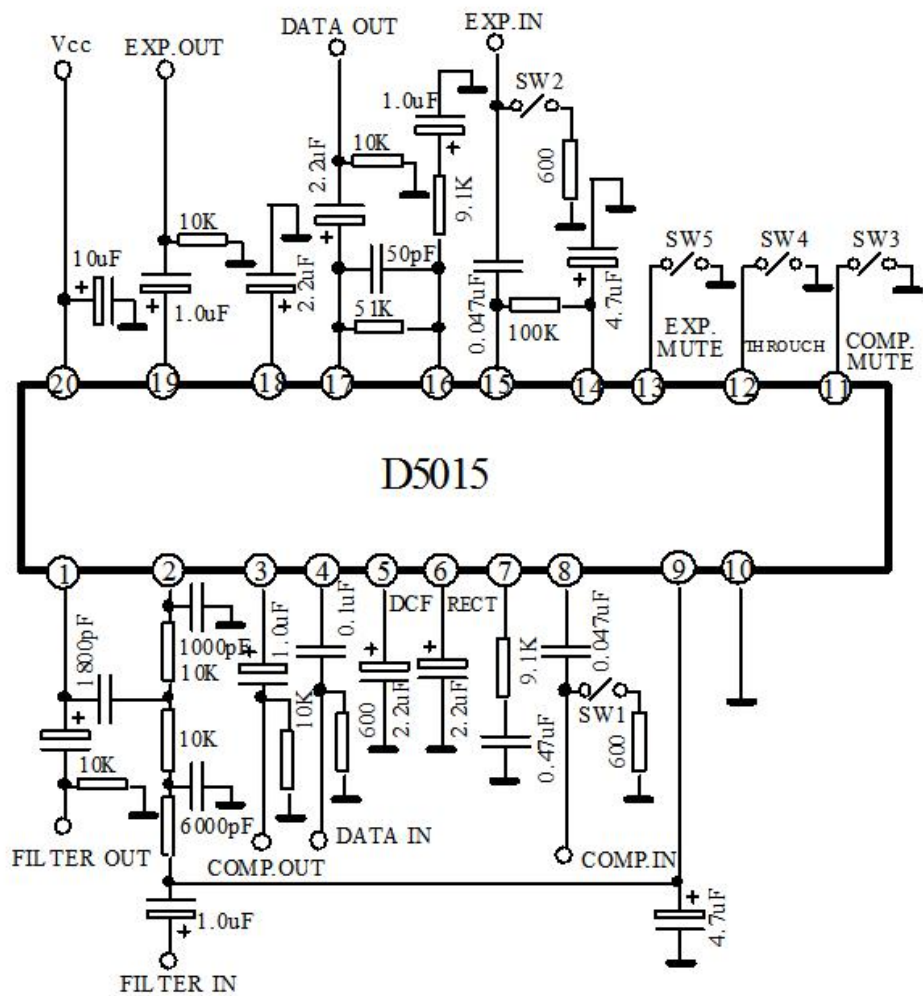
2. Above $T_a=25^{\circ}C$, derate at 3.3mW/ $^{\circ}C$

ELECTRICAL CHARACTERISTICS

(Unless otherwise specified: Ta=25°C, Vcc=3V; f=1kHz, RL=10kΩ)

Characteristics	Symbol	Test conditions	Min	Typ	Max	Unit
Squelch Current	I _{CCQ}	No Signal	-	4.0	6.5	mA
Reference Voltage	V _{ref}	-	1.4	1.5	1.55	V
Compressor						
Input Resistance	R _{IN}	-	90	120	-	kΩ
Standard Input Level	V _{IN}	V _{OUT} =300mV _{rms} =0dB	8.0	12.5	17.0	mV _{rms}
Gain Error (1)	ΔG _{V(1)}	V _{IN} =-20dB	-0.5	0	0.5	dB
Gain Error (2)	ΔG _{V(2)}	V _{IN} =-40dB	-0.1	0	1.0	dB
Through ON/OFF Diff.	ΔG _V	V _{IN} =0dB, 12 pin GND	-1.5	0	1.5	dB
Distortion	THD	V _{IN} =0dB	-	0.5	1.0	%
Noise output	V _{NO}	R _g =620Ω	-	3.0	5.5	mV _{rms}
Muting attenuation	M _{ATT}	V _{IN} =0dB, 11 pin GND	60	80	-	dB
Limiting voltage	V _{LI}	-	1.15	1.35	1.50	Vp-p
Expander						
Standard output Level	V _{OUT}	V _{IN} =30mV _{rms} =0dB	110	130	160	mV _{rms}
Gain Error (1)	ΔG _{V(1)}	V _{IN} =-10dB	-0.5	0	0.5	dB
Gain Error (2)	ΔG _{V(2)}	V _{IN} =-20dB	-1.0	0	1.0	dB
Gain Error (3)	ΔG _{V(3)}	V _{IN} =-30dB	-1.5	0	1.5	dB
Through ON/OFF Diff.	ΔG _V	V _{IN} =0dB, 12 pin GND	-2.5	-1.0	0.5	dB
Distortion	THD	V _{IN} =0dB	-	0.5	1.5	%
Noise output	V _{NO}	R _g =620Ω	-	10	30	μV _{rms}
Muting attenuation	M _{ATT}	V _{IN} =0dB, 13 pin	60	80	-	dB
Max. output voltage	V _{OUT(max)}	THD 10% level	700	800	-	mV _{rms}
Buffer Amp(LPF)						
Voltage Gain	G _V	V _{IN} =300mV _{rms}	-0.5	0	0.5	dB
Freq Charact (1)	Δf ₁	V _{IN} =300mV _{rms} , f=3kHz	-4.5	-3	0	dB
Freq Charact (2)	Δf ₂	V _{IN} =300mV _{rms} , f=30kHz	-75	-60	-55	dB
Distortion	THD	V _{IN} =300mV _{rms}	-	0.02	0.1	%

TEST CIRCUIT

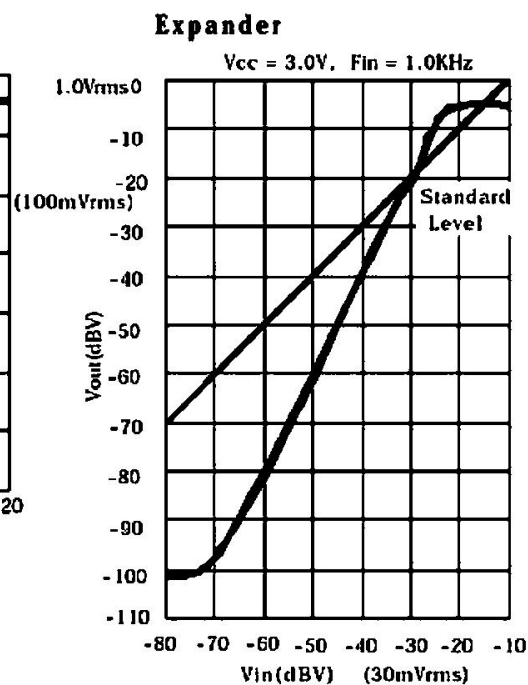
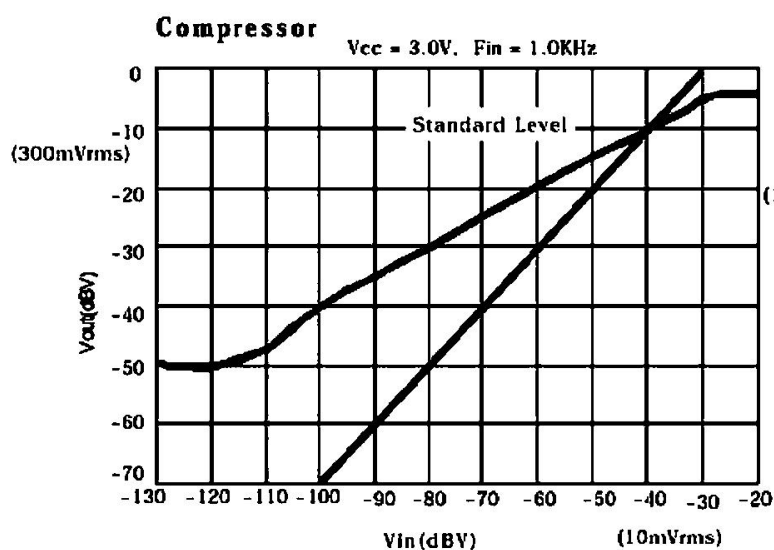


SWITCH POSITION

Switch terminal	High (Open or Vcc)	Low (GND)
PIN 11 (SW3)	Comp Mute OFF	Comp Mute ON
PIN 12 (SW4)	Compandor	Through
PIN 13 (SW5)	Exp Mute OFF	Exp Mute ON
PIN 8 (SW1)	Signal Input → OFF	
PIN 15 (SW2)	Signal Input → OFF	

CHARACTERISTIC CURVES

Input Voltage VS Output Voltage



Outline Dimensions

DIP20

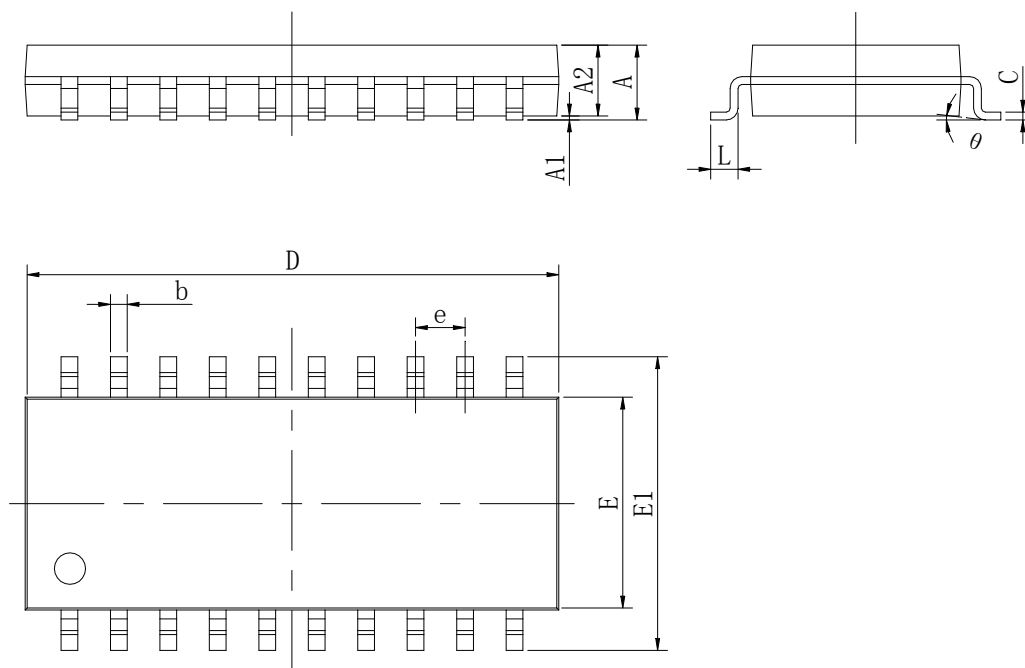
Unit:mm

The diagram illustrates the mechanical specifications of a DIP20 package through three views: a side view, an end view, and a top view. The side view (top) shows the package height (A), pin height (A1), body height (A2), pin pitch (B), pin width (B1), and pin thickness (C). The end view (bottom right) shows the pin width (E1) and body width (E2). The top view (bottom) shows the package width (D) and body width (E). The pin pitch (e) is also indicated in the side view.

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	3.710	4.310	0.146	0.170
A1	0.510		0.020	
A2	3.200	3.600	0.126	0.142
B	0.380	0.570	0.015	0.022
B1	1.524(BSC)		0.060(BSC)	
C	0.204	0.360	0.008	0.014
D	25.950	26.550	1.022	1.045
E	6.200	6.600	0.244	0.260
E1	7.320	7.920	0.288	0.312
e	2.540(BSC)		0.100(BSC)	
L	3.000	3.600	0.118	0.142
E2	8.400	9.000	0.331	0.354

SOP20

Unit:mm



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	2.350	2.650	0.093	0.104
A1	0.100	0.300	0.004	0.012
A2	2.100	2.500	0.083	0.098
b	0.330	0.510	0.013	0.020
c	0.204	0.330	0.008	0.013
D	12.520	13.000	0.493	0.512
E	7.400	7.600	0.291	0.299
E1	10.210	10.610	0.402	0.418
e	1.270(BSC)		0.050(BSC)	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°

Statements

- Silicore Technology reserves the right to make changes without further notice to any products or specifications herein. Before customers place an order, customers need to confirm whether datasheet obtained is the latest version, and to verify the integrity of the relevant information.
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