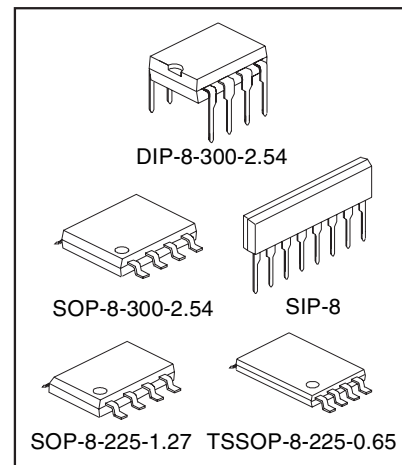


Dual Operational Amplifier

1. Description

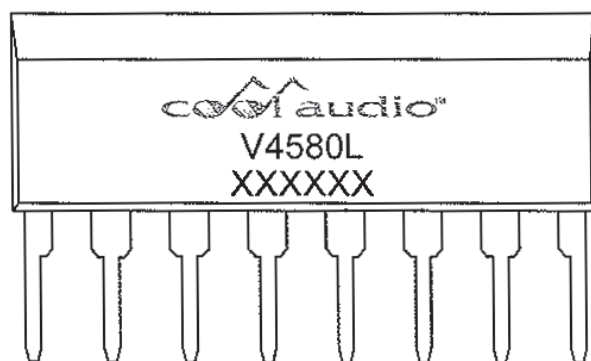
V4580L is the dual operational amplifier, specially designed for improving the tone control, which is most suitable for the audio application.

Featuring noiseless, higher gain bandwidth, high output current and low distortion ratio, and it is most suitable not only for acoustic electronic parts of audio per-amp and active filter, but also for the industrial measurement tools. It is also suitable for the head phone amp at higher output current, and further more, it can be applied for the handy type set operational amplifier of general purpose in application of low voltage single supply type which is properly biased of the input low voltage source.



2. Features

- **Operating voltage** **($\pm 2 \sim \pm 18V$)**
- **Low input noise voltage** **($0.8\mu V_{rms}$ typ.)**
- **Wide gain bandwidth produce** **($15Mhz$ typ.)**
- **Low distortion** **(0.0005% typ.)**
- **Slew rate** **($5V/\mu s$ typ.)**
- **Package outline** **SOP8, SIP-8, DIP-8, TSSOP-8**



REV. 0

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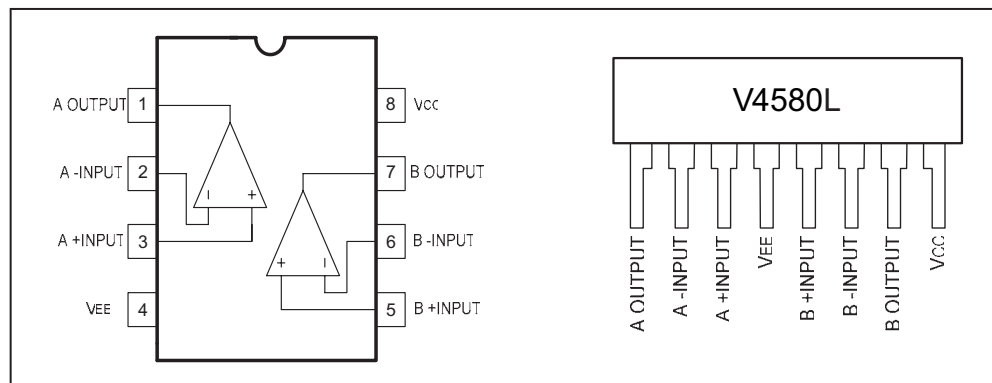
3. Applications

- Audio per-amp
- Head phone amp
- Handy type set
- Measurement tool

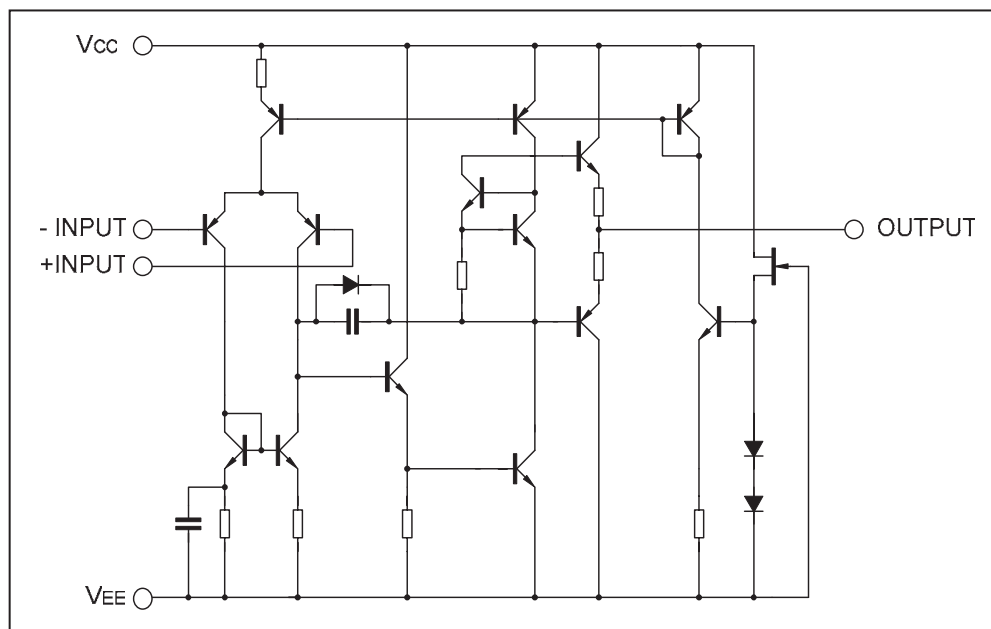
4. Ordering Information

Device	Package
V4580M	SOP-8-300-1.27
V4580L	SIP-8
V4580D	DIP-8-300-2.54

5. Pin Configuration



6. Block Diagram (1/2 Shown)



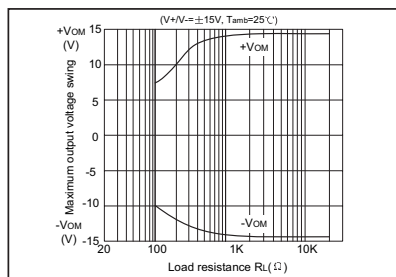
7. Absolute Maximum Ratings (Tamb=25°C)

Characteristic	Symbol	Value	Unit
Differential Input Voltage	V _{+/-}	±18	V
Supply Voltage	V _{ic}	±15(note)	V
Input Voltage	V _{ID}	±30(note)	V
Output Current	I _o	±50	mA
Power Dissipation	P _D	(V4580D) 800 (V4580L) 800 (V4580M) 350	mW
Operating Temperature Range	T _{opr}	-20~+75	°C
Storage Temperature Range	T _{stg}	-20~+125	°C

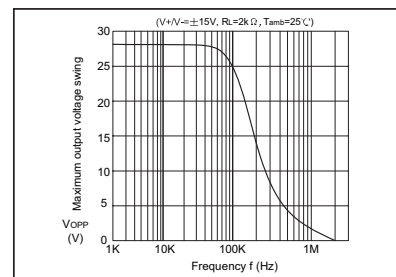
8. Electrical Characteristics (Tamb=25°C, V+/V- =±15)

Characteristic	Symbol	Test Condition	Min	Typ.	Max	Unit
Input Offset Voltage	V_{IO}	$R_S \leq 10k\Omega$	-	0.5	3	mV
Input Offset Current	V_{IO}		-	5	200	nA
Input Bias Current	I_{IS}		-	100	500	nA
Large Signal Voltage Gain	A_V	$R_L \geq 2k\Omega$, $V_O = \pm 10V$	90	110	-	dB
Output Voltage Swing	V_{OM}	$R_L \geq 2k\Omega$	± 12	± 13.5	-	V
Input Common Mode Voltage Range	V_{ICM}		± 12	± 13.5	-	V
Common Mode Rejection Ratio	CMR	$R_S \leq 10k\Omega$	80	110	-	dB
Supply Voltage Rejection Ratio	SVR	$R_S \leq 10k\Omega$	90	110	-	dB
Operating Current	I_{CC}		-	5	7	mA
Slew Rate	SR	$R_L \geq 2k\Omega$	-	5	-	V/ μ s
Gain Bandwidth Product	GB	$f = 10kHz$	-	15	-	MHz
Total Harmonic Distortion	THD	$A_V = 20dB$, $V_O = 5V$, $R_L = 2k\Omega$, $f = 1kHz$	-	0.0005	-	%
Input Noise Voltage	V_{NI}	RIAA $R_S = 2.2k\Omega$, 30kHzLPF	-	0.8	-	μ Vrms

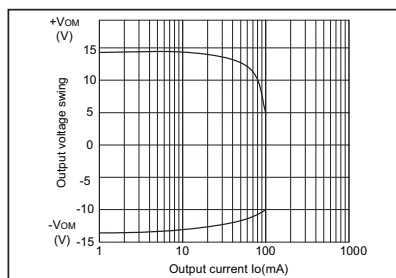
9. Typical Characteristics Curves



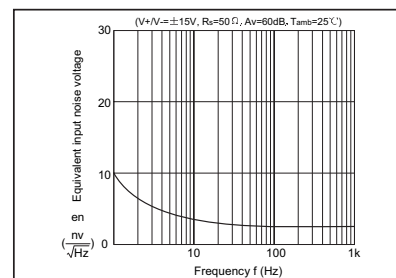
Maximum output voltage swing
vs Load resistance



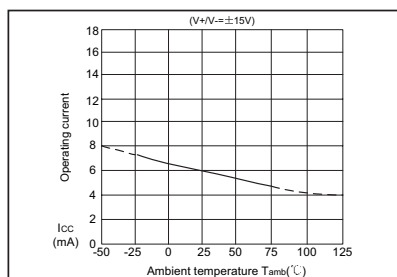
Maximum output voltage swing vs Frequency



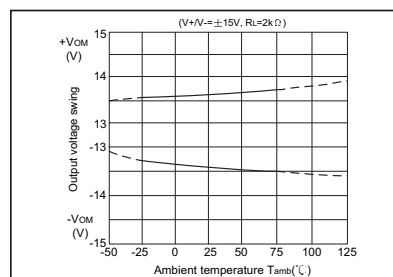
Output voltage swing vs. Output current



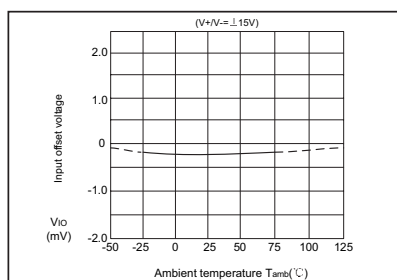
Equivalent input noise voltage vs. Frequency



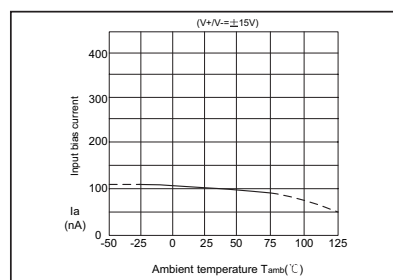
Operating current vs. Temperature



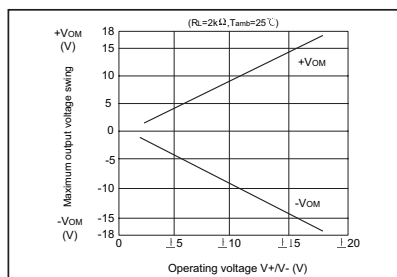
Output voltage swing vs. Temperature



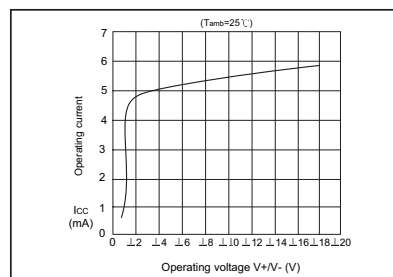
Input offset voltage vs. Temperature



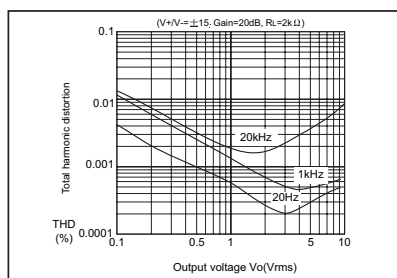
Input bias current vs. Temperature



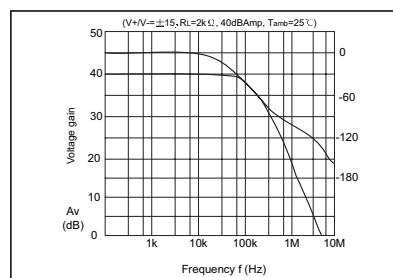
Maximum output voltage swing vs. Operating voltage



Operating current vs. Operating voltage

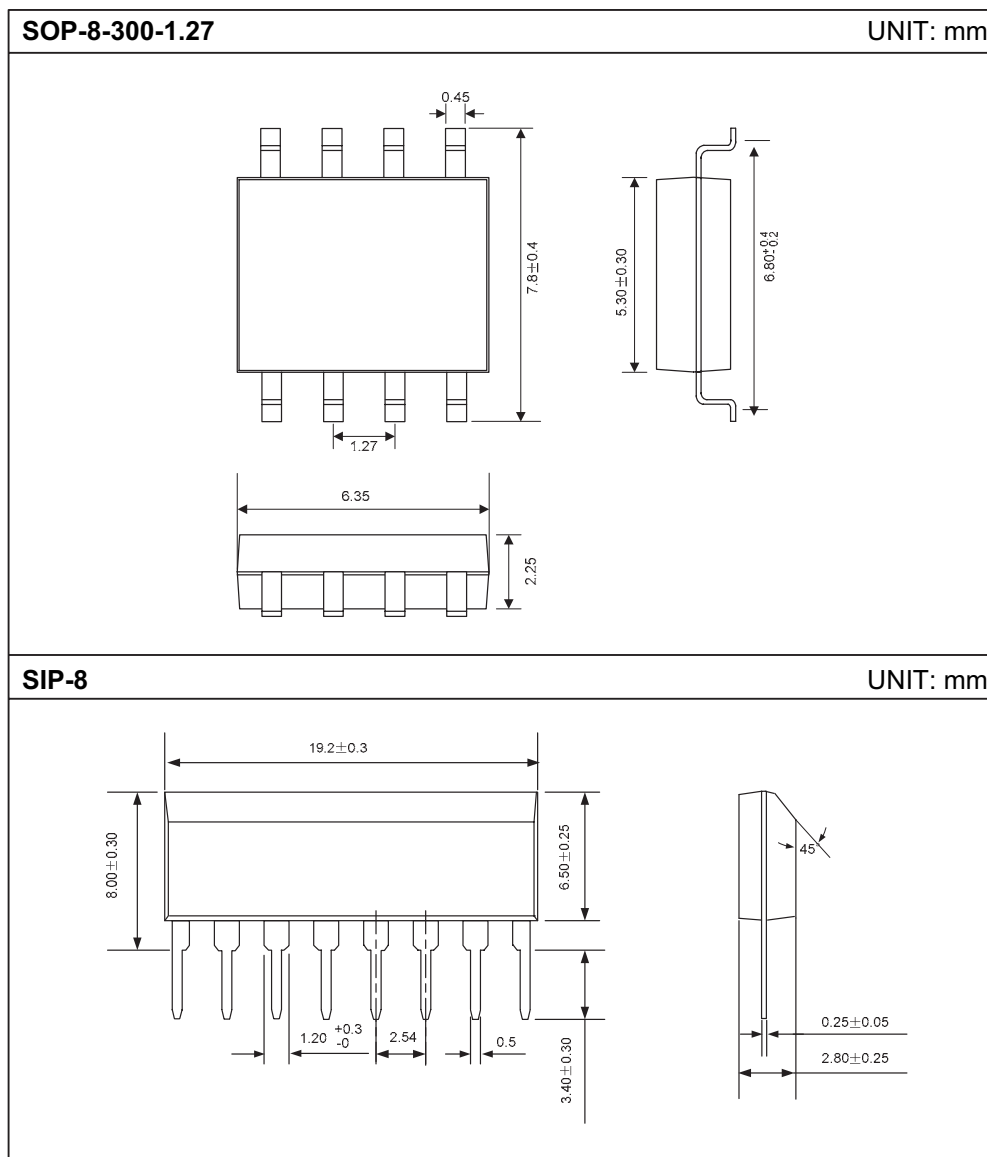


Total harmonic distortion vs. Output voltage



Voltage Gain, Phase vs. Frequency

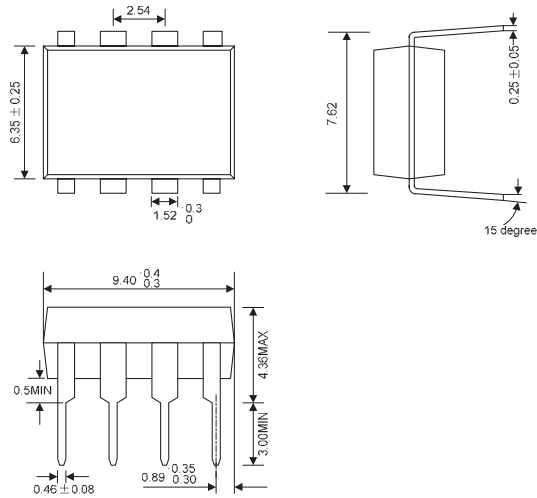
10. Package Outline



Package Outline (Continued)

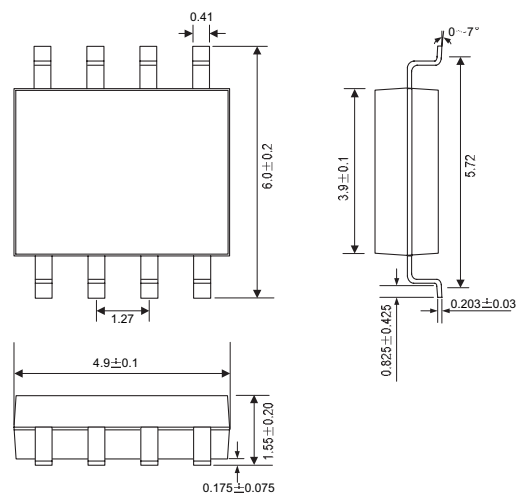
DIP-8-300-2.54

UNIT: mm

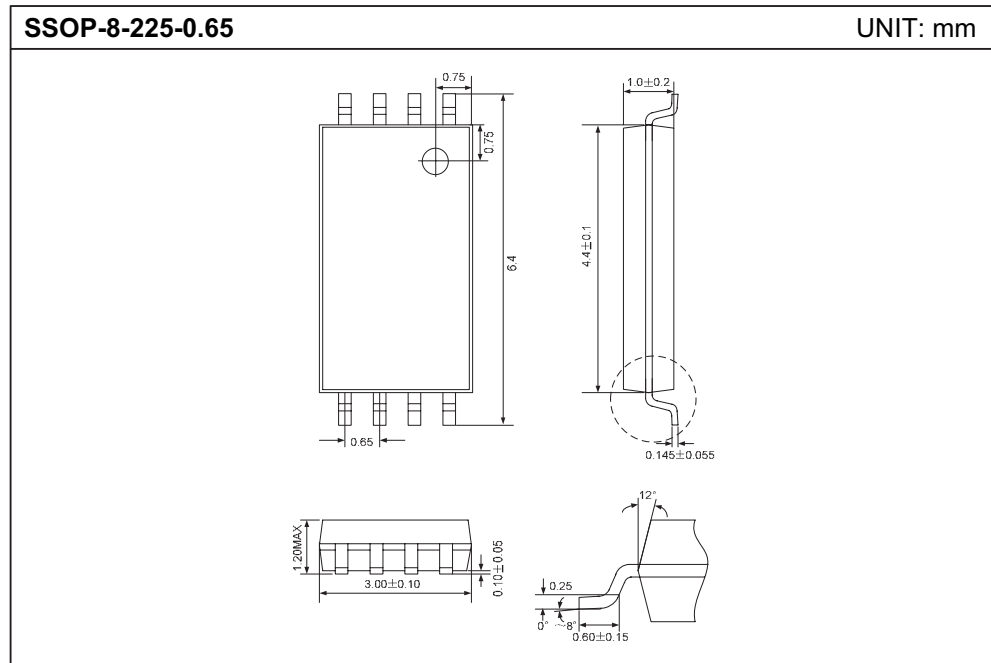


SOP-8-225-1.27

UNIT: mm

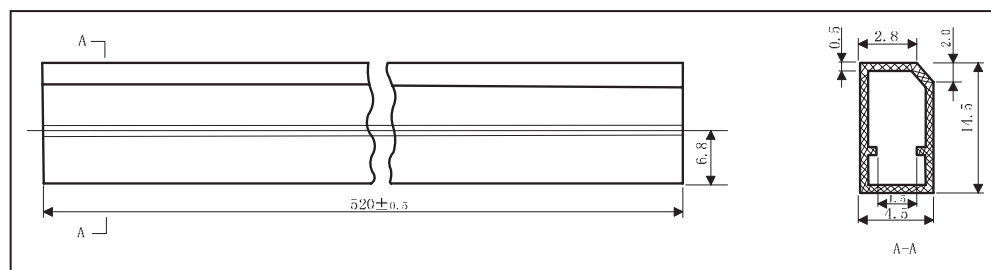


Package Outline (Continued)

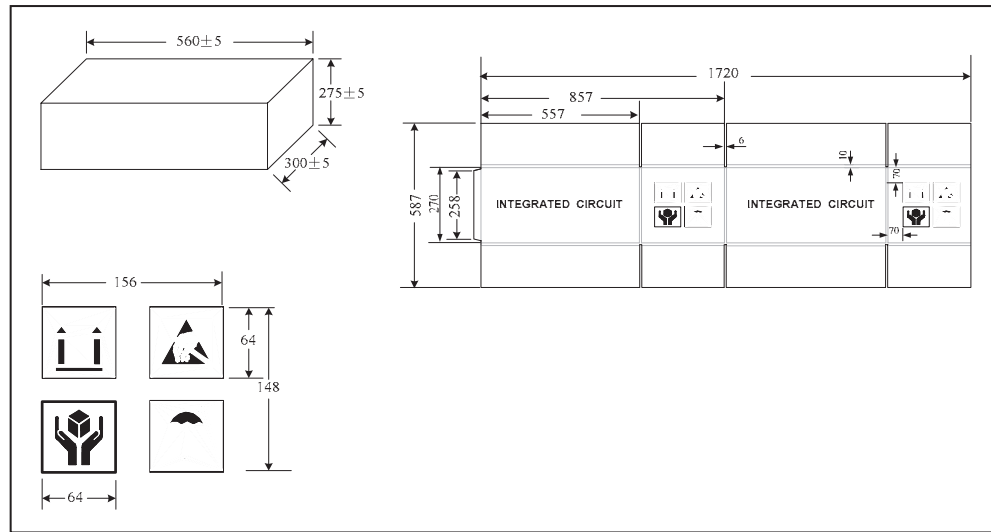


V4580L Stick Package Graphics (unit: mm)	Date	
	Made by	
	Auditor	
	Approved by	

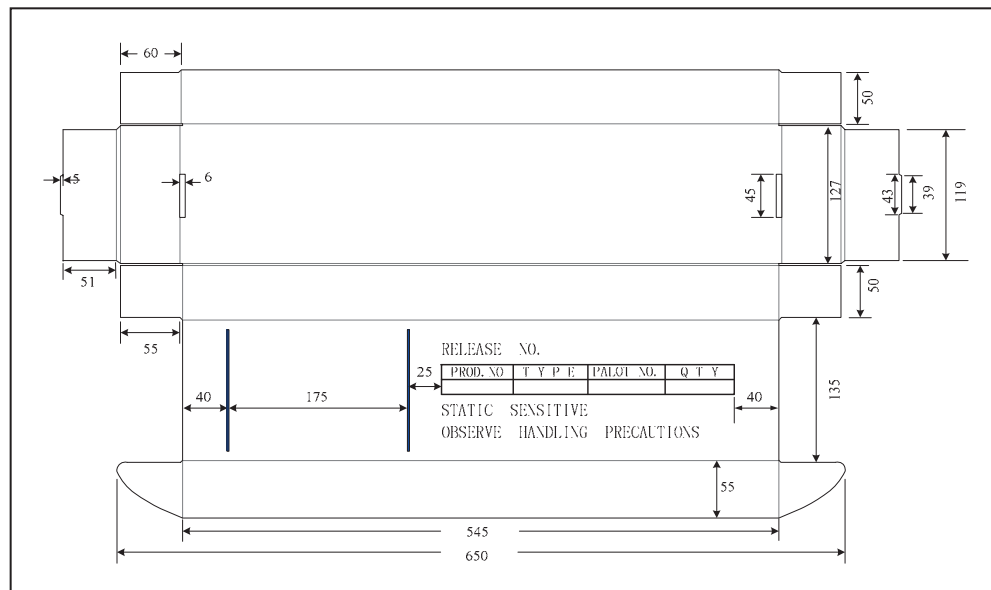
a. Stick



b. Box1



c. Box2



	Stick	Box		
Package Format	Pcs/Stick	Stick/Box2	Box2/Box1	Pcs/Box1
SIP-8	25	40	10	10,000

d. Green-Mark



“Pb-FREE” label attached on the side of BOX2 and attached above the bar code outside of BOX1.

V4580L---SIP8 Bill of Material	Date	
	Made by	
	Auditor	
	Approved by	

Name of the part	Material weight (mg/unit)	Material name	Material analysis (element)	Material analysis (weight%)
Leadframe	182	KFC	Fe Zn P Cu	2.4% 0.03% 0.12% 97.45%
Plastic	612	Epoxy resin	Epoxy resin SiO ₂ 酚醛 脱膜剂 其它微量元素	15% 73% 8% <1% 约3%
Chip	1.0	Doped Silicon	Si Al	99.4% 0.6%
Die attach material	0.6	Glue	Ag Epoxy resin	80% 20%
Wires	0.8	Gold	Au	99.99%
Leads finishing	3.0	Lead-Free	Pb<100PPM	

V4580L

Infrared Reflow Soldering Condition (suggestion)

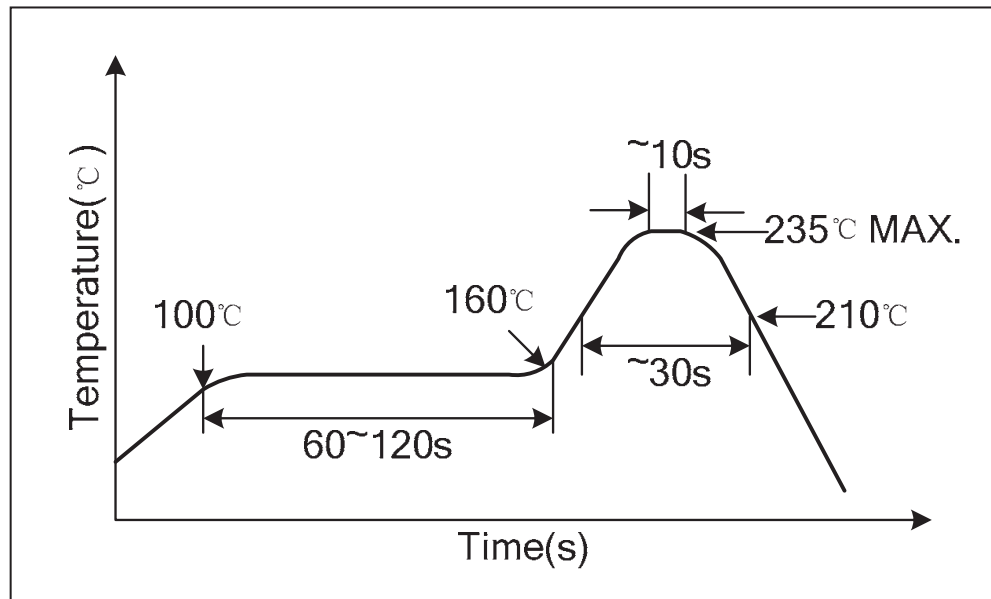
Date

Made by

Auditor

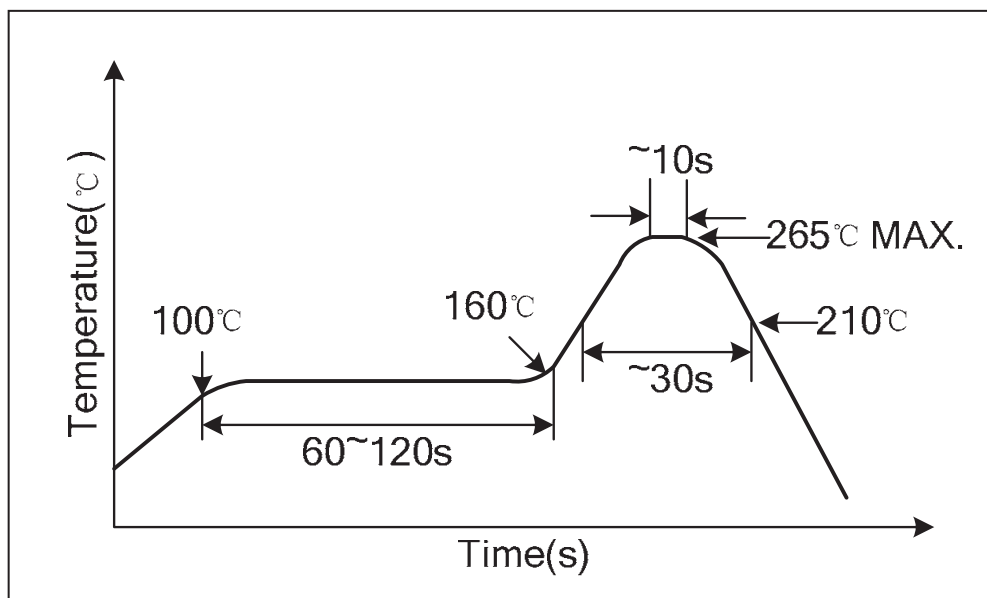
Approved by

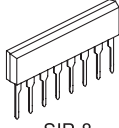
MAX. Temperature (Surface) : Below 235°C
MAX. Temperature Duration : ≤10s
Above 210°C Duration : ≤30s
Between 100°C and 160°C : 60~120s
Duration
Soldering Times : 3 Times

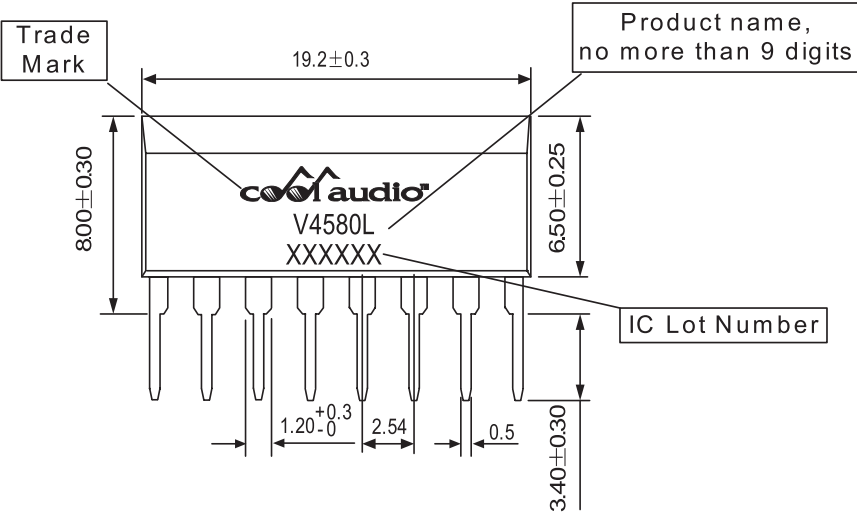


V4580L Wave Soldering Condition (suggestion)	Date	
	Made by	
	Auditor	
	Approved by	

MAX. Temperature (Surface) : Below 245°C
 MAX. Temperature Duration : ≤10s
 Pre-heat Temperature : 120°C
 Soldering Times : 1 Time



Package form	 SIP-8
SIP-8	



The diagram shows a top-down view of the V4580L SIP-8 package. It is a rectangular component with 8 pins on one side. Key dimensions and markings include:

- Overall width:** 19.2 ± 0.3
- Overall height:** 8.00 ± 0.30
- Pin pitch (center-to-center):** $1.20^{+0.3}_{-0}$
- Pin width:** 2.54
- Pin spacing from edge:** 0.5
- Pin height:** 3.40 ± 0.30
- Package body width (excluding pins):** 6.50 ± 0.25
- Markings on the package:**
 - Trade Mark (logo)
 - Product name: V4580L
 - Lot number: XXXXXX

Lot number:

The 1st digit : symbol of assembly factory

The 2nd digit: the last number of the year

The 3rd digit : symbol of month

The last three digits: the number of order