

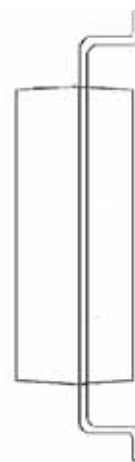
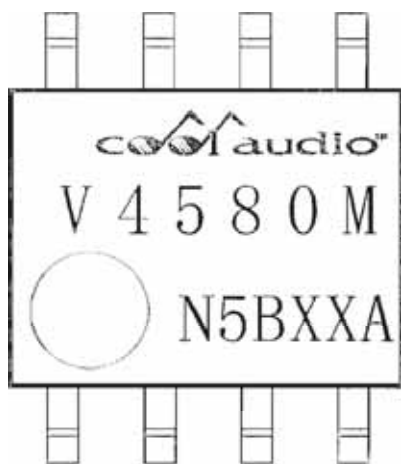
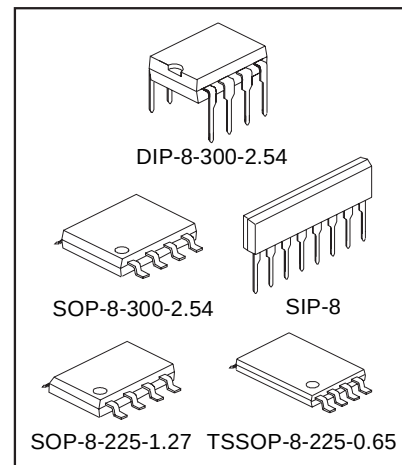
Dual Operational Amplifier

1. Description

V4580 is a state-of-the-art dual operational amplifier, specially designed for low-noise and low-distortion audio and measurement applications. The bi-polar design also offers wide gain-bandwidth and high current, short-circuit proof outputs to drive for example headphones, etc. Its excellent specifications make the V4580 a universal component for many applications.

2. Features

- **Operating voltage** ($\pm 2 \sim \pm 18 \text{ V}$)
- **Ultra-low input noise voltage** ($0.8 \mu\text{Vrms typ.}$)
- **Wide gain-bandwidth** (15 Mhz typ.)
- **Ultra-low distortion** ($0.0005 \% \text{ typ.}$)
- **Package outlines** SOP-8/225 (V4580E), SOP-8/300 (V4580M), DIP-8 (V4580D), SIP-8 (V4580L)
- **ROHS compliant (PB-free)**



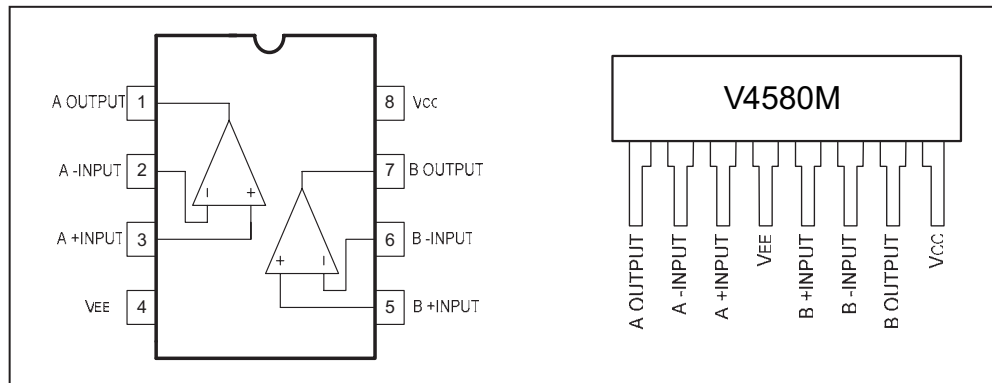
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Rev. 1.0

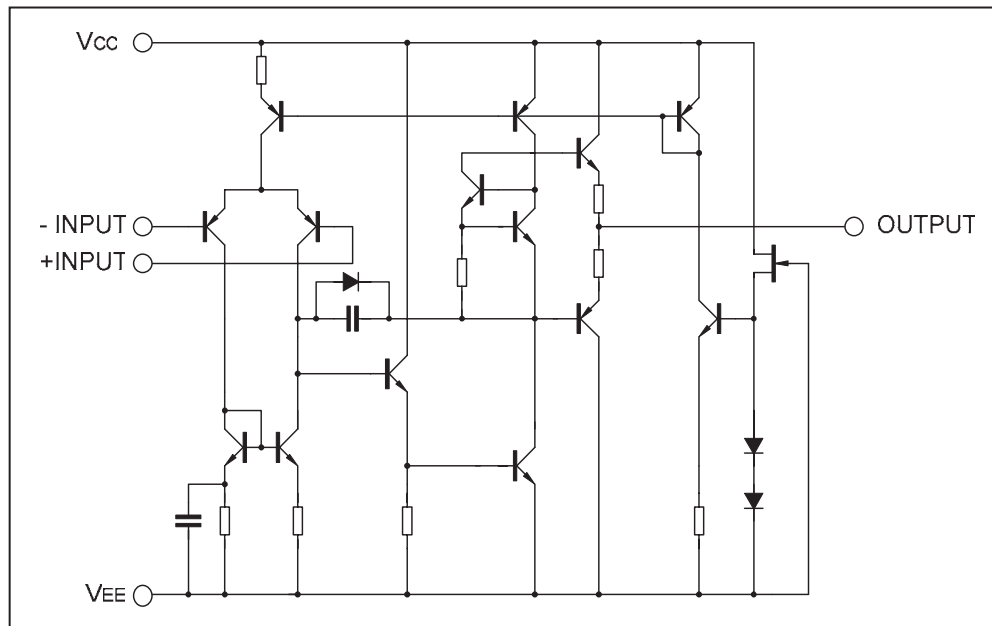
3. Applications

- Professional audio applications
- Headphone amplifiers
- Measurement amplifiers
- General purpose application

4. Pin Configuration



6. Block Diagram



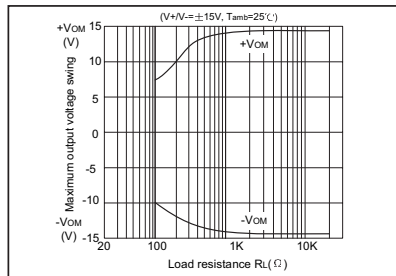
7. Absolute Maximum Ratings (Tamb=25°C)

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

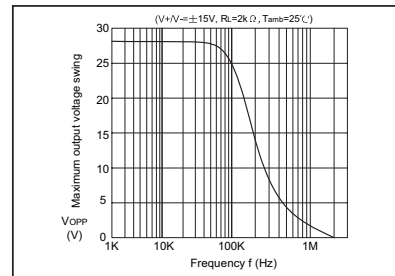
8. Electrical Characteristics (Tamb=25°C, V_{+/-} =±15)

Characteristic	Symbol	Test Condition	Min	Typ.	Max	Unit
Input Offset Voltage	V _{io}	R _s ≤10kΩ	-	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 ≥2KΩ, V _O =±10V	90	110	-	dB
Output Voltage Swing	V _{OM}	R _L ≥2KΩ	±12	±13.5	-	V
Input Common Mode Voltage Range	V _{icM}		±12	±13.5	-	V
Common Mode Rejection Ratio	CMR	R _s ≤10kΩ	80	110	-	dB
Supply Voltage Rejection Ratio	SVR	R _s ≤10kΩ	90	110	-	dB
Operating Current	I _{cc}		-	5	7	mA
Slew Rate	SR	R _L ≥2KΩ	-	5	-	V/μs
Gain Bandwidth Product	GB	f=10kHz	-	15	-	MHz
Total Harmonic Distortion	THD	A _v =20dB, V _O =5V, R _L =2kΩ, f=1kHz	-	0.0005	-	%
Input Noise Voltage	V _{NI}	RIAA R _s =2.2kΩ, 30kHzLPF	-	0.8	-	μVrms

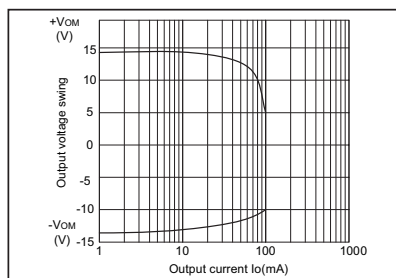
9. Typical Characteristics Curves



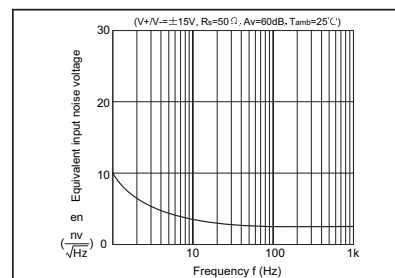
Maximum output voltage swing
vs Load resistance



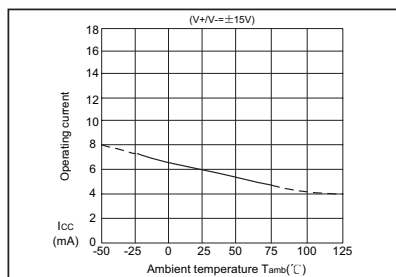
Maximum output voltage swing vs Frequency



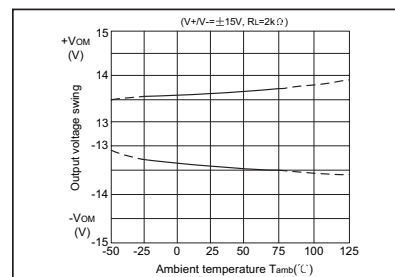
Output voltage swing vs. Output current



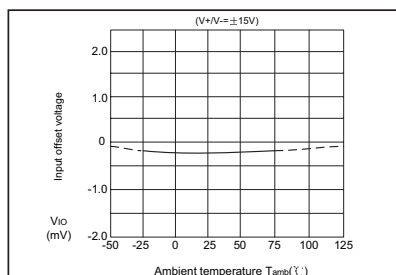
Equivalent input noise voltage vs. Frequency



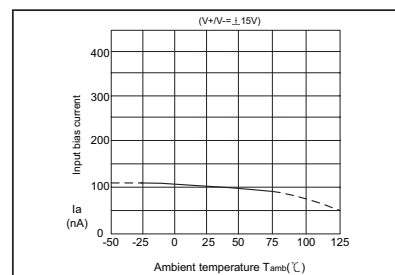
Operating current vs. Temperature



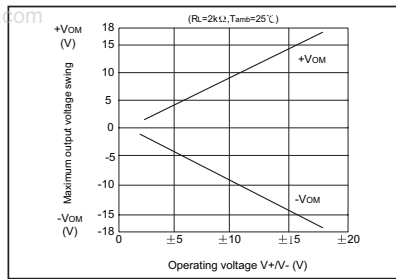
Output voltage swing vs. Temperature



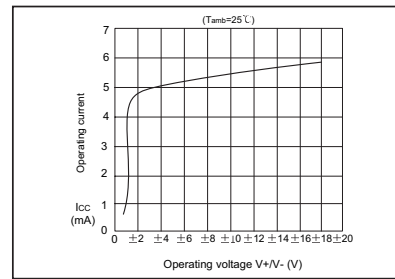
Input offset voltage vs. Temperature



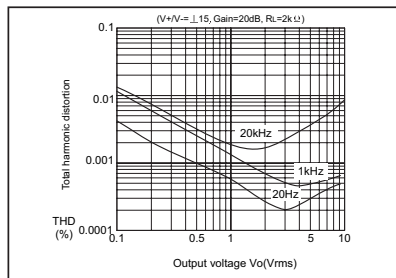
Input bias current vs. Temperature



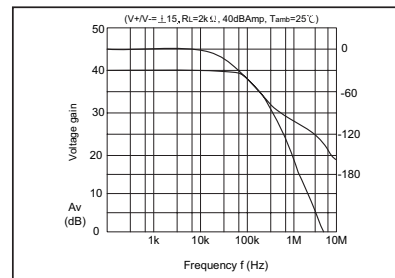
Maximum output voltage swing
vs. Operating voltage



Operating current vs. Operating voltage



Total harmonic distortion vs. Output voltage



Voltage Gain, Phase vs. Frequency

Green-Mark



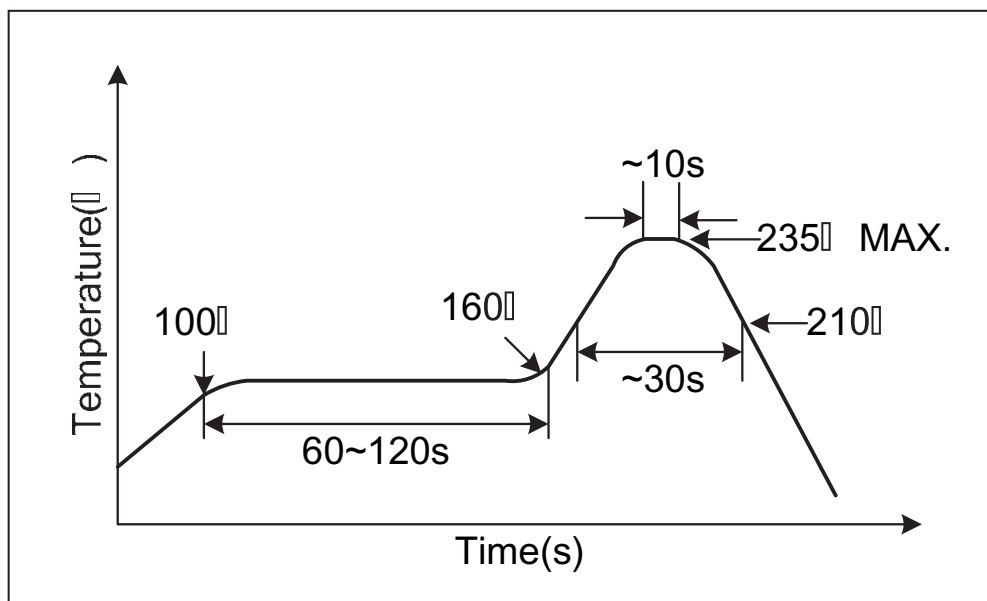
"Pb-FREE" label attached on the side of Plastic Pocket and attached above the bar code outside of BOX2.

V4580 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	120mg	KFC	Fe Zn P Cu	2.4% 0.12% 0.03% 95.8%
Plastic	150mg	Epoxy resin	Epoxy resin SiO ₂ 酚醛 脱膜剂 其它微量元素	10~15% 70~80% 7~10% 0.5%~2% 1~5%
Chip	1.25	Doped Silicon	Si Al	99.4% 0.6%
Die attach material	0.15mg	Glue	Ag Epoxy resin	60~100% 10~30%
Wires	0.42mg	Gold	Au	99.99%
Leads finishing	2.2mg	Lead-Free	Pb<100PPM	

V4580 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



V4580 Wave Soldering Condition (suggestion)	Date	
	Made by	
	Auditor	
	Approved by	

MAX. Temperature (Surface) : Below 265°C
 MAX. Temperature Duration : ≤10s
 Pre-heat Temperature : 120°C
 Soldering Times : 1 Time

