Is Now Part of

ON Semiconductor®

To learn more about ON Semiconductor, please visit our website at
www.onsemi.com

KA4558

Dual Operational Amplifier

Features

- No frequency compensation required.
- No latch up.
- Large common mode and differential voltage range.
- Parameter tracking over temperature range.
- Gain and phase match between amplifiers.
- Internally frequency compensated.
- Low noise input transistors.

Descriptions

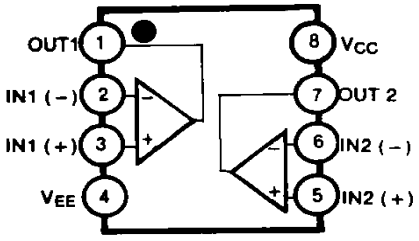
The KA4558 is a monolithic integrated circuit designed for dual operational amplifier.

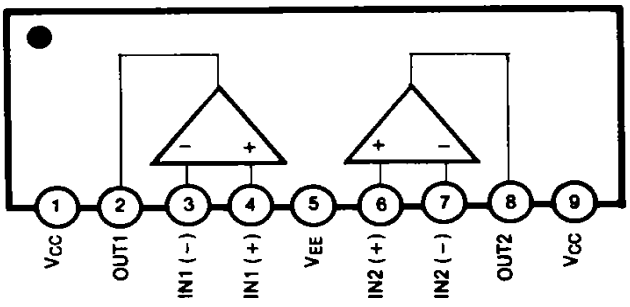
8-DIP

8-SOP

9-SIP

Internal Block Diagram

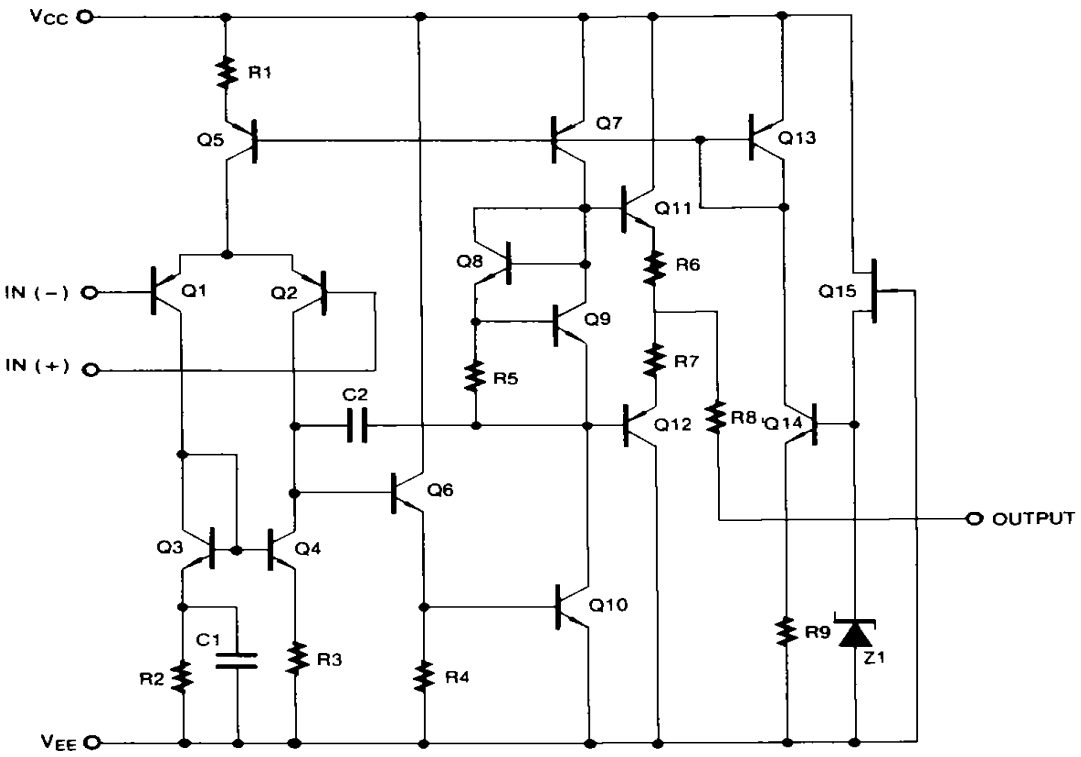




Rev. 1.0.1

Schematic Diagram

(One Section Only)



Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Supply Voltage	V_{CC}	±22	V
Differential Input Voltage	$V_{I(DIFF)}$	30	V
Input Voltage	V_I	±15	V
Power Dissipation	P_D	400	mW
Operating Temperature Range KA4558 KA4558I	T_{OPR}	 0 ~ 70 -40 ~ 85	°C
Storage Temperature Range	T_{STG}	-65 ~ 150	°C

Electrical Characteristics

(V_{CC} = 15V, V_{EE} = - 15V ,T_A = 25 °C unless otherwise specified)

Parameter	Symbol	Conditions		KA4558/KA4558I			Unit
				Min	Typ	Max	
Input Offset Voltage	V_{IO}	R_S≤10KΩ		-	2	6	mV
			Note 1	-	-	7.5	
Input Offset Current	I_{IO}			-	5	200	nA
			T_A=$T_{A(MAX)}$	-	-	300	
			T_A =$T_{A(MIN)}$	-	-	300	
Input Bias Current	I_{BIAS}			-	30	500	nA
			T_A=$T_{A(MAX)}$	-	-	800	
			T_A =$T_{A(MIN)}$	-	-	800	
Large Signal Voltage Gain	G_V	$V_{O(P-P)}$= ±10V,R_L≤2KΩ		20	200	-	V/mV
			Note 1	-	-	-	
Common Mode Input Voltage Range	$V_{I(R)}$			±12	±13	-	V
			Note 1	-	-	-	
Common Mode Rejection Ratio	CMRR	R_S≤10KΩ		70	90	-	dB
			Note 1	-	-	-	
Supply Voltage Rejection Ratio	PSRR	R_S≤10KΩ		76	90	-	dB
			Note 1	76	90	-	
Output Voltage Swing	$V_{O(P-P)}$	R_L≥10KΩ	Note1	±12	±14	-	V
		R_L≥2KΩ		±10	±13	-	
Supply Current (Both Amplifiers)	I_{CC}			-	3.5	5.8	mA
			T_A =$T_{A(MAX)}$	-	-	5.0	
			T_A =$T_{A(MIN)}$	-	-	6.7	
Power Consumption (Both Amplifiers)	P_C			-	70	170	mW
			T_A =$T_{A(MAX)}$	-	-	150	
			T_a = $T_{A(MIN)}$	-	-	200	
Slew Rate (Note2)	SR	V_I =10V, R_L≥2KΩ C_I≤100pF		1.2	-	-	V/μs
Rise Time (Note2)	T_R	V_I =20mV, R_L≥2KΩ C_I≤100pF		-	0.3	-	μs
Overshoot (Note2)	OS	V_I =20mV, R_L≥2KΩ C_I≤100pF		-	15	-	%

Note :

1. KA4558 : $T_{A(MIN)}$ ≤T_A≤$T_{A(MAX)}$ = 0≤T_A≤ 70 °C , KA4558I : $T_{A(MIN)}$ ≤T_A≤$T_{A(MAX)}$ = -40≤T_A≤ +85 °C
2. Guaranteed by design.

Typical Performance Characteristics

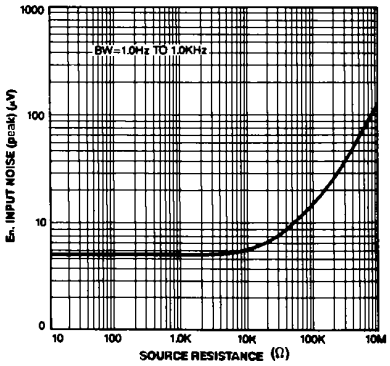


Figure 1. Burst Noise vs Source Resistance

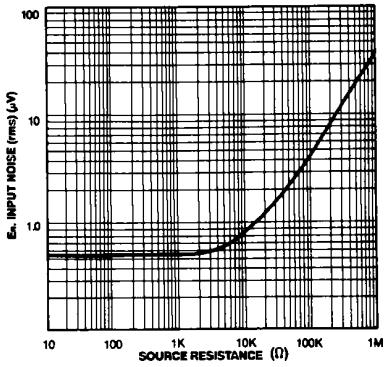


Figure 2. RMS Noise vs Source Resistance

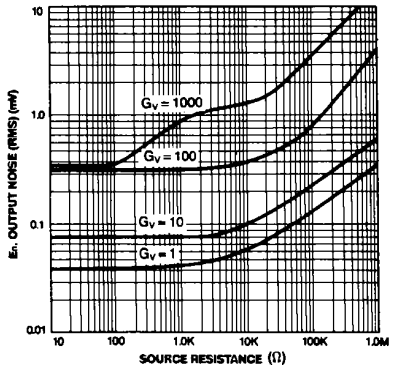


Figure 3. Output Noise vs Source Resistance

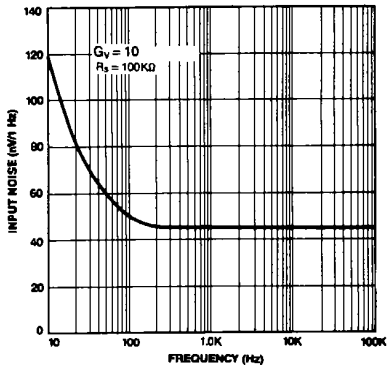


Figure 4. Spectral Noise Density

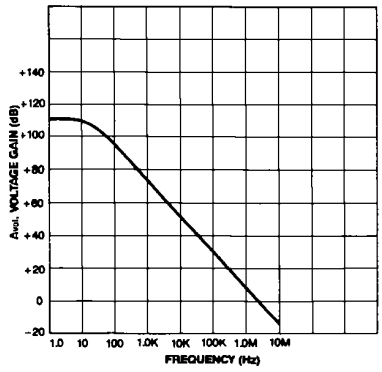


Figure 5. Open Loop Frequency Response

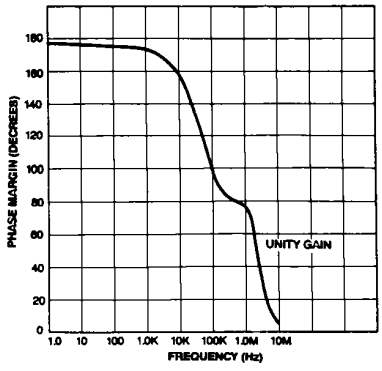


Figure 6. Phase Margin vs Frequency

Typical Performance Characteristics (continued)

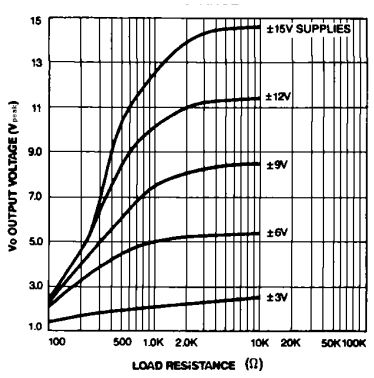


Figure 7. Positive Output Voltage Swing vs Load Resistance

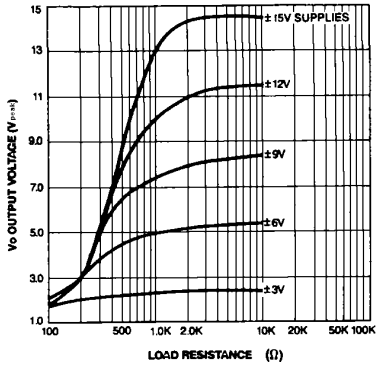


Figure 8. Negative Output Voltage Swing vs Load Resistance

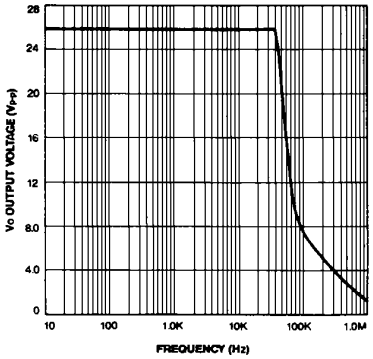
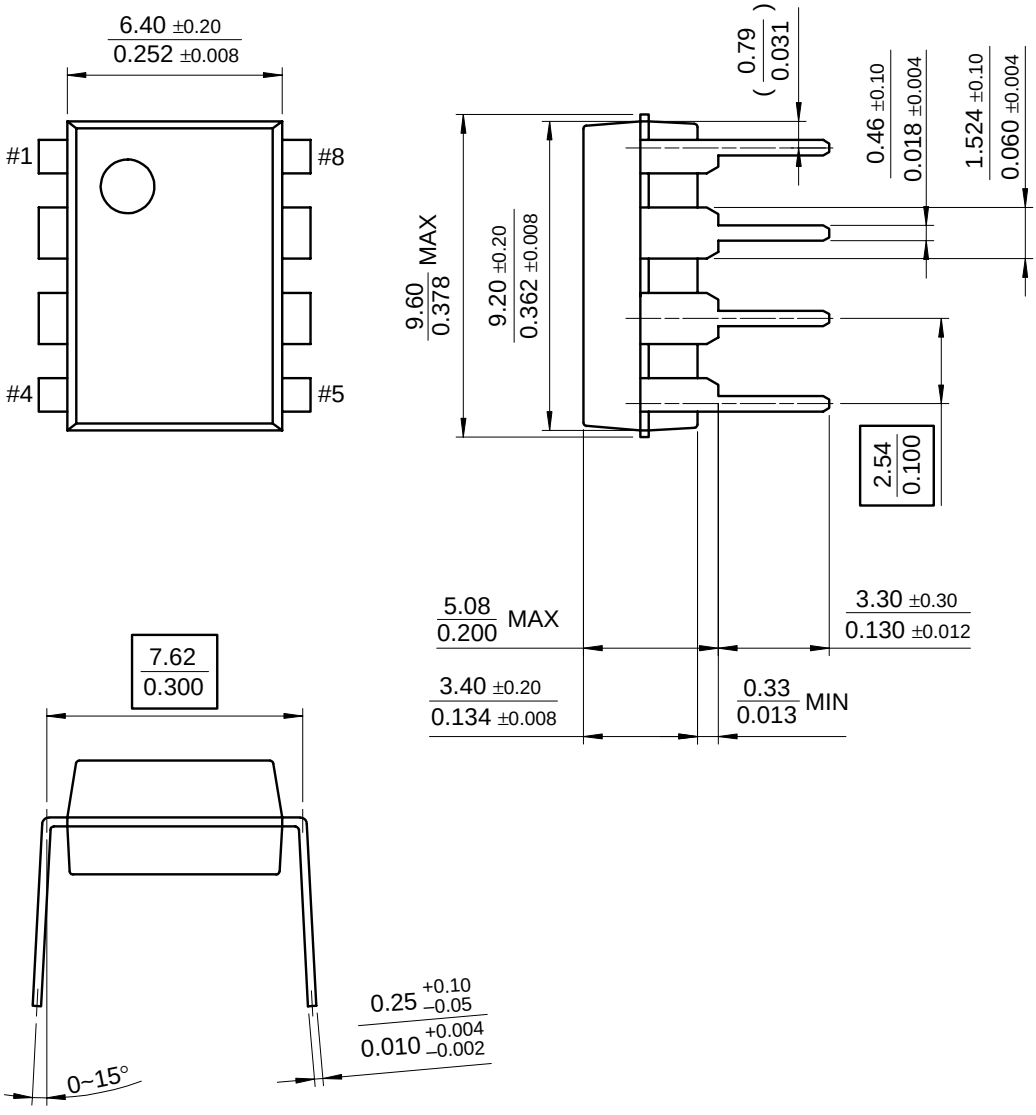


Figure 9. Power Bandwidth (Large Signal Output Swing vs Frequency)

Mechanical Dimensions

Package

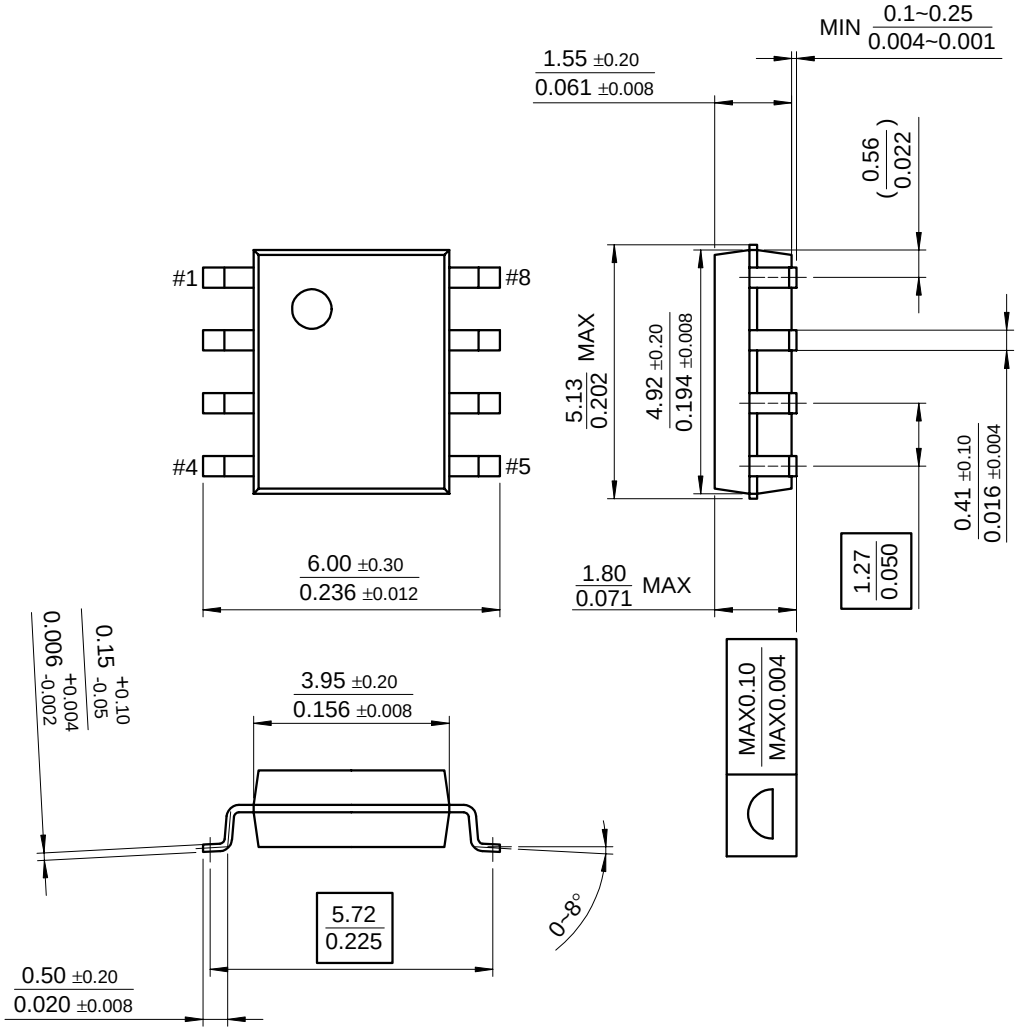
8-DIP



Mechanical Dimensions (Continued)

Package

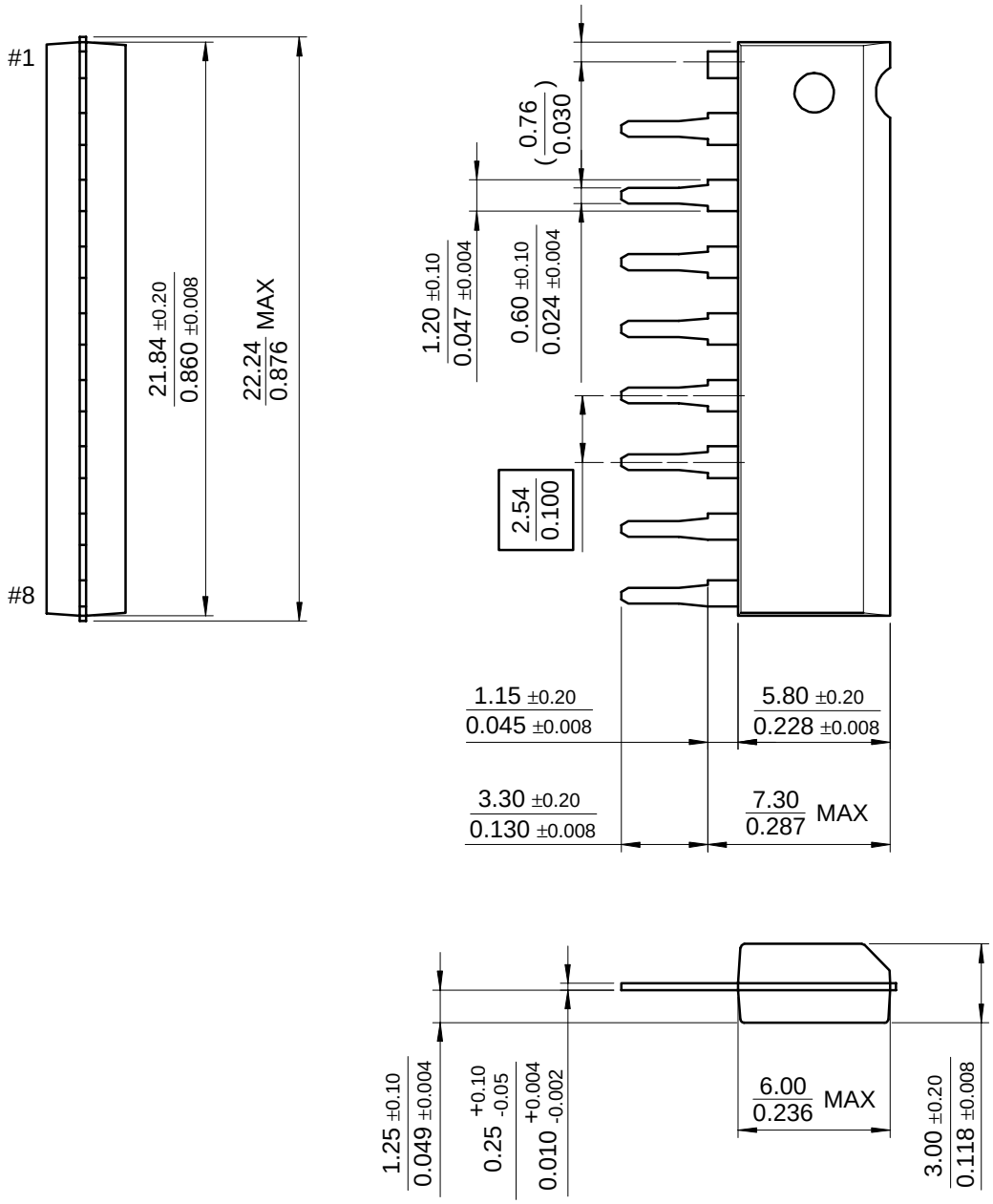
8-SOP



Mechanical Dimensions (Continued)

Package

9-SIP



Ordering Information

Product Number	Package	Operating Temperature
KA4558	8-DIP	0 ~ + 70°C
KA4558D	8-SOP	
KA4558S	9-SIP	
KA4558I	8-DIP	-40 ~ + 85°C

DISCLAIMER

FAIRCHILD SEMICONDUCTOR RESERVES THE RIGHT TO MAKE CHANGES WITHOUT FURTHER NOTICE TO ANY PRODUCTS HEREIN TO IMPROVE RELIABILITY, FUNCTION OR DESIGN. FAIRCHILD DOES NOT ASSUME ANY LIABILITY ARISING OUT OF THE APPLICATION OR USE OF ANY PRODUCT OR CIRCUIT DESCRIBED HEREIN; NEITHER DOES IT CONVEY ANY LICENSE UNDER ITS PATENT RIGHTS, NOR THE RIGHTS OF OTHERS.

LIFE SUPPORT POLICY

FAIRCHILD'S PRODUCTS ARE NOT AUTHORIZED FOR USE AS CRITICAL COMPONENTS IN LIFE SUPPORT DEVICES OR SYSTEMS WITHOUT THE EXPRESS WRITTEN APPROVAL OF THE PRESIDENT OF FAIRCHILD SEMICONDUCTOR CORPORATION. As used herein:

1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body, or (b) support or sustain life, and (c) whose failure to perform when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in a significant injury of the user.
2. A critical component in any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.

6/1/01 0.0m 001
Stock#DSxxxxxxxx