MAS9124

150 mA LDO Voltage Regulator IC

- **Low Noise: 20 µVrms**
- **Low Minimum Output Capacitance Requirement: 0.23 µF**
- **Excellent Ripple Rejection: 65 dB**
- **Very Low Dropout: 70 mV**
- **Regulator Enable/Disable Control**
- **Stable with Low-ESR Output Capacitors**

DESCRIPTION

MAS9124 is a low dropout voltage regulator with very low output noise, high PSRR and small output capacitance requirement.

Due to the low noise level of only 20 µVrms, MAS9124 is suitable for sensitive circuits, e.g., in RF applications. In addition to the noise levels, MAS9124 excels in dropout voltage (70 mV typical at 50 mA) and rise time (16 µs typical without bypass capacitor). Also its ripple rejection ability of 65 dB at 10 kHz exceeds that of competition.

The Equivalent Series Resistance (ESR) range of output capacitors that can be used with MAS9124 is very wide. This ESR range from a few mΩ up to a couple of Ohms combined with no minimum output current requirement makes the usage of MAS9124 easier and low in cost.

MAS9124 features an enable/disable pin, which allows device to be turned off or on by pulling control to low or high. In order to save power the device goes into sleep mode when the regulator is disabled.

MAS9124 also includes an auto-discharge function, wherein a shutdown transistor turns on and discharges the output capacitor, when MAS9124 is turned off.

An internal thermal protection circuit prevents the device from overheating. Also the maximum output current is internally limited.

FEATURES

- Low Noise
- Functionally and Pin Compatible with LP2985/LP3985
- Can be used w/o C_{BYPASS}, see p. 6
- Auto-discharge Function
- Internal Thermal Shutdown
- Short Circuit Protection
- Small SOT23-5 or Thin TSOT-5 Package
- Several Output Voltage Options Available, see Ordering Information p. 12

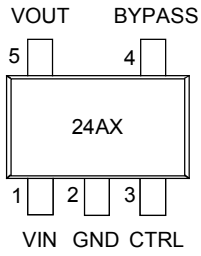
APPLICATIONS

- Mobile Phones
- WLAN Chipsets
- Cordless Phones
- Accessories
- Pagers
- Battery Powered Systems
- Portable Systems
- Radio Control Systems
- Low Voltage Systems

PIN CONFIGURATION

SOT23-5/TSOT-5

Top View

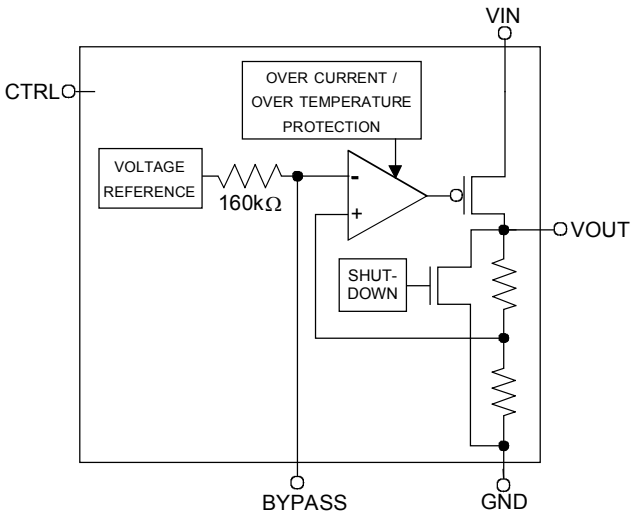


For top marking information see
ordering information p. 12

PIN DESCRIPTION

Pin Name	Pin Number in SOT23-5 / TSOT-5	Type	Function
VIN	1	P	Power Supply Voltage
GND	2	G	Ground
CTRL	3	I	Enable/Disable Pin for Regulator
BYPASS	4	I	Pin for Bypass Capacitor
VOUT	5	O	Output

BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS

All voltages with respect to ground

Parameter	Symbol	Conditions	Min	Max	Unit
Supply Voltage	V_{IN}		-0.3	6	V
Voltage Range for All Pins			-0.3	V_{IN} + 0.3	V
ESD Rating		HBM		2	kV
Junction Temperature	T_{Jmax}			+175 (limited)	°C
Storage Temperature	T_S		-55	+150	°C

Stresses beyond those listed may cause permanent damage to the device. The device may not operate under these conditions, but it will not be destroyed.

RECOMMENDED OPERATING CONDITIONS

All voltages with respect to ground

Parameter	Symbol	Conditions	Min	Max	Unit
Operating Junction Temperature			-40	+125	°C
Operating Ambient Temperature	T_A		-40	+85	°C
Operating Supply Voltage	V_{IN}	$V_{OUT(NOM)}$ < 2.2 V	2.5	5.3	V
		$V_{OUT(NOM)}$ ≥ 2.2 V	$V_{OUT(NOM)}$ + 0.3		
		$V_{OUT(NOM)}$ = 5 V	$V_{OUT(NOM)}$ + 0.3	5.8	

ELECTRICAL CHARACTERISTICS

◆ Thermal Protection

T_A = -40°C to +85°C, typical values at T_A = +27°C, V_{IN} = $V_{OUT(NOM)}$ + 1.0 V (or min 3.8 V), I_{OUT} = 1.0 mA, C_{IN} = 1.0 µF, C_L = 1.0 µF, C_{BYPASS} = 10 nF, V_{CTRL} = V_{IN}, unless otherwise specified

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Threshold High	T_H		145	160	175	°C
Threshold Low	T_L		135	150	165	°C

The hysteresis of 10°C prevents the device from turning on too soon after thermal shut-down.

◆ Control Terminal Specifications

T_A = -40°C to +85°C, typical values at T_A = +27°C, V_{IN} = $V_{OUT(NOM)}$ + 1.0 V (or min 3.8 V), I_{OUT} = 1.0 mA, C_{IN} = 1.0 µF, C_L = 1.0 µF, C_{BYPASS} = 10 nF, V_{CTRL} = V_{IN}, unless otherwise specified

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Control Voltage OFF State (Note 1) ON State	V_{CTRL}		 –0.3 1.6		 0.55 V_{IN} + 0.3	V
Control Current	I_{CTRL}	V_{CTRL} = V_{IN} V_{CTRL} = 0 V		5 0	 0.9	µA

If CTRL-pin is not connected, MAS9124 is in OFF state (900 kΩ pull-down resistor to ground).

Note 1: If $V_{OUT(NOM)}$ = 5 V, the device should always be in the ON state.

◆ Voltage Parameters

T_A = -40°C to +85°C, typical values at T_A = +27°C, V_{IN} = $V_{OUT(NOM)}$ + 1.0 V (or min 3.8 V), I_{OUT} = 1.0 mA, C_{IN} = 1.0 µF, C_L = 1.0 µF, C_{BYPASS} = 10 nF, V_{CTRL} = V_{IN}, unless otherwise specified

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Output Voltage Tolerance	V_{OUT}	$V_{OUT(NOM)}$ ≤ 3.3 V I_{OUT} = 0 mA I_{OUT} = 150 mA	 $V_{OUT(NOM)}$ − 0.05 $V_{OUT(NOM)}$ − 0.10		 $V_{OUT(NOM)}$ + 0.05 $V_{OUT(NOM)}$ + 0.05	V
		$V_{OUT(NOM)}$ > 3.3 V I_{OUT} = 0 mA I_{OUT} = 150 mA	 $V_{OUT(NOM)}$ − 0.10 $V_{OUT(NOM)}$ − 0.10		 $V_{OUT(NOM)}$ + 0.10 $V_{OUT(NOM)}$ + 0.10	
Dropout Voltage	V_{DROP}	 I_{OUT} = 1 mA I_{OUT} = 50 mA I_{OUT} = 150 mA MAS9124A4 (150 mA) MAS9124A5 (150 mA)		 1.7 70 200	 320 800 1100	mV

◆ Current Parameters

T_A = -40°C to +85°C, typical values at T_A = +27°C, V_{IN} = $V_{OUT(NOM)}$ + 1.0 V (or min 3.8 V), I_{OUT} = 1.0 mA, C_{IN} = 1.0 µF, C_L = 1.0 µF, C_{BYPASS} = 10 nF, V_{CTRL} = V_{IN}, unless otherwise specified

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Continuous Output Current	I_{OUT}		0		150	mA
Short Circuit Current	I_{MAX}	R_L = 0 Ω	200	450	675	mA
Peak Output Current	I_{PK}	V_{OUT} > 95%* $V_{OUT(NOM)}$		410		mA
Ground Pin Current	I_{GND}	 I_{OUT} = 0 mA I_{OUT} = 10 mA I_{OUT} = 50 mA I_{OUT} = 150 mA		 120 130 160 220	 200 400	µA
Ground Pin Current, Sleep Mode	I_{GND}	V_{CTRL} = 0 V		0.01	5	µA

◆ Power Dissipation

T_A = -40°C to +85°C, typical values at T_A = +27°C, V_{IN} = $V_{OUT(NOM)}$ + 1.0 V (or min 3.8 V), I_{OUT} = 1.0 mA, C_{IN} = 1.0 µF, C_L = 1.0 µF, C_{BYPASS} = 10 nF, V_{CTRL} = V_{IN}, unless otherwise specified

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Junction to Ambient Thermal Resistance	R_{JA}	thermal test board according to JESD51-7 (4 layers), SOT23-5 package TSOT-5 package		 191 207		°C/W
Maximum Power Dissipation	P_d	any ambient temperature	$P_{dMAX} = \frac{T_{J(MAX)} - T_A}{R_{JA}}$ Note 1			W

Note 1: $T_{J(MAX)}$ denotes maximum operating junction temperature (+125°C), T_A ambient temperature, and R_{JA} junction-to-air thermal resistance specified above. See also application information p. 7.

◆ Line and Load Regulation

T_A = -40°C to +85°C, typical values at T_A = +27°C, V_{IN} = $V_{OUT(NOM)}$ + 1.0 V (or min 3.8 V), I_{OUT} = 1.0 mA, C_{IN} = 1.0 µF, C_L = 1.0 µF, C_{BYPASS} = 10 nF, V_{CTRL} = V_{IN}, unless otherwise specified

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Line Regulation		$V_{OUT(NOM)}$ + 1 V < V_{IN} < 5.3 V, I_{OUT} = 60 mA		0.7		mV
Load Regulation		 I_{OUT} = 1 mA to 50 mA I_{OUT} = 1 mA to 150 mA		 5 10		mV

◆ Noise and Ripple Rejection

T_A = -40°C to +85°C, typical values at T_A = +27°C, V_{IN} = $V_{OUT(NOM)}$ + 1.0 V (or min 3.8 V), I_{OUT} = 1.0 mA, C_{IN} = 1.0 µF, C_L = 1.0 µF, C_{BYPASS} = 10 nF, V_{CTRL} = V_{IN}, unless otherwise specified

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Output Noise Voltage	V_{RMS}	300Hz < f < 50 kHz C_{BYPASS} = 10 nF w/o C_{BYPASS}		 20 110		µVrms
Noise Density	V_N	I_{OUT} = 50 mA, f = 1 kHz		100		$nV/\sqrt{Hz}$
PSRR		f = 1 kHz f = 10 kHz f = 100 kHz		67 65 48		dB

◆ Dynamic Parameters

T_A = -40°C to +85°C, typical values at T_A = +27°C, V_{IN} = $V_{OUT(NOM)}$ + 1.0 V (or min 3.8 V), I_{OUT} = 1.0 mA, C_{IN} = 1.0 µF, C_L = 1.0 µF, C_{BYPASS} = 10 nF, V_{CTRL} = V_{IN}, unless otherwise specified

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Rise Time (10%…90%)		V_{CTRL} = 0 to 2.4 V, I_{OUT} = 30mA C_{BYPASS} = 10 nF w/o C_{BYPASS}		 4 16		 ms µs
Overshoot		V_{CTRL} = 0 to 2.4 V, w/o C_{BYPASS}		3	10	%
Start-up Delay		V_{CTRL} to V_{OUT} , w/o C_{BYPASS} (see figure 1 below)		17		µs

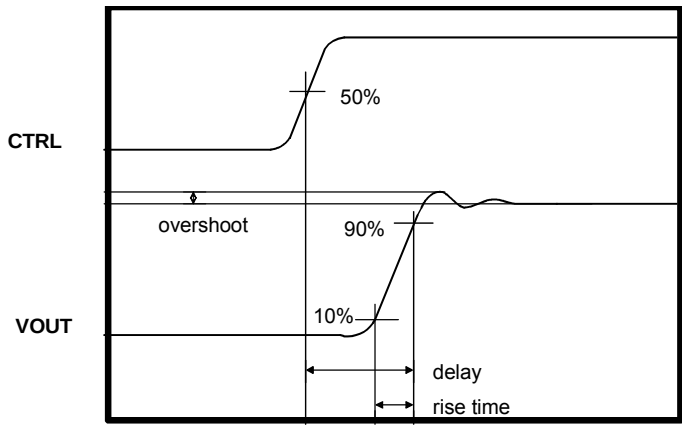
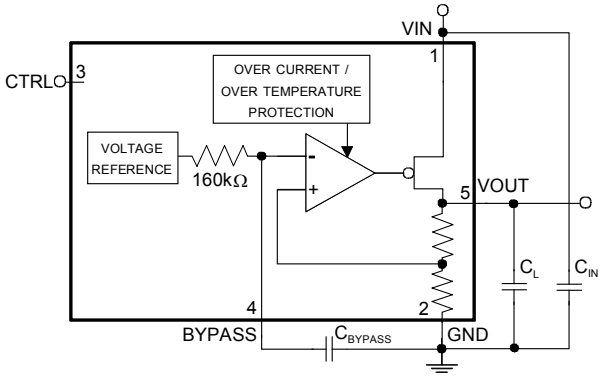


Figure1. Definitions of rise time, overshoot and start-up delay

APPLICATION INFORMATION



Parameter	Symbol	Min	Max	Unit	Note
Output Capacitance	C_L	0.23		µF	1. The selected capacitor has to meet the minimum capacitance requirement in all operating conditions. 2. Ceramic and film capacitors can be used. 3. The value of C_L should be smaller than or equal to the value of C_{IN}.
Effective Series Resistance	ESR	0.01	3	Ohm	1. When within this range, stable with all I_{OUT} = 0 mA…150 mA values.
Bypass Capacitance (Optional: if C_{BYPASS} is not used, noise performance declines, but rise time is improved.)	C_{BYPASS}	Typically 0.01		µF	1. Ceramic and film capacitors are best suited. For maximum output voltage accuracy DC leakage current through capacitor should be kept as low as possible. In any case DC leakage current must be below 100 nA.
Input Capacitance	C_{IN}	0.5		µF	1. A big enough input capacitance is needed to prevent possible impedance interactions between the supply and MAS9124. 2. Ceramic, tantalum, and film capacitors can be used. If a tantalum capacitor is used, it should be checked that the surge current rating is sufficient for the application. 3. In the case that the inductance between a **battery** and MAS9124 is very small (< 0.1 µH), a 0.47 µF input capacitor is sufficient. 4. The value of C_{IN} should not be smaller than the value of C_L.
Control Voltage for $V_{OUT(NOM)}$ = 5 V Versions	V_{CTRL}	1.6	V_{IN} + 0.3	V	1. The device should always be in the ON state if $V_{OUT(NOM)}$ = 5 V.

Values given on the table are minimum requirements unless otherwise specified. When selecting capacitors, tolerance and temperature coefficient must be considered to **make sure that the requirement is met in all operating conditions.**

APPLICATION INFORMATION

◆ Auto-Discharge Function

MAS9124 has a shutdown transistor that turns on, when the device is disabled, and discharges the output capacitor.

◆ Calculating Maximum Power Dissipation

Maximum power dissipation of the package may limit output current or input voltage, which can be used, especially with the combination of low output voltage and high input voltage.

The power dissipation can be calculated by using the formula:

$$P_d = (V_{IN} - V_{OUT}) * I_{OUT} + V_{IN} * I_{GND}$$

It shall not exceed the maximum power dissipation, allowed by the package:

$$P_{dMAX} = \frac{T_{JMAX} - T_A}{R_{JA}}$$

where T_{JMAX} is maximum junction temperature (T_{JMAX} = 125°C), T_A is ambient temperature and R_{JA} is junction-to-ambient thermal resistance of the package.

When assumed that:

T_A = +55°C, V_{OUT} = 1.5 V, V_{IN} = 5.0 V and used package is SOT23-5 the equation yields:

$$P_{dMAX} = \frac{125°C - 55°C}{191°C/W} = 0.366\ W$$

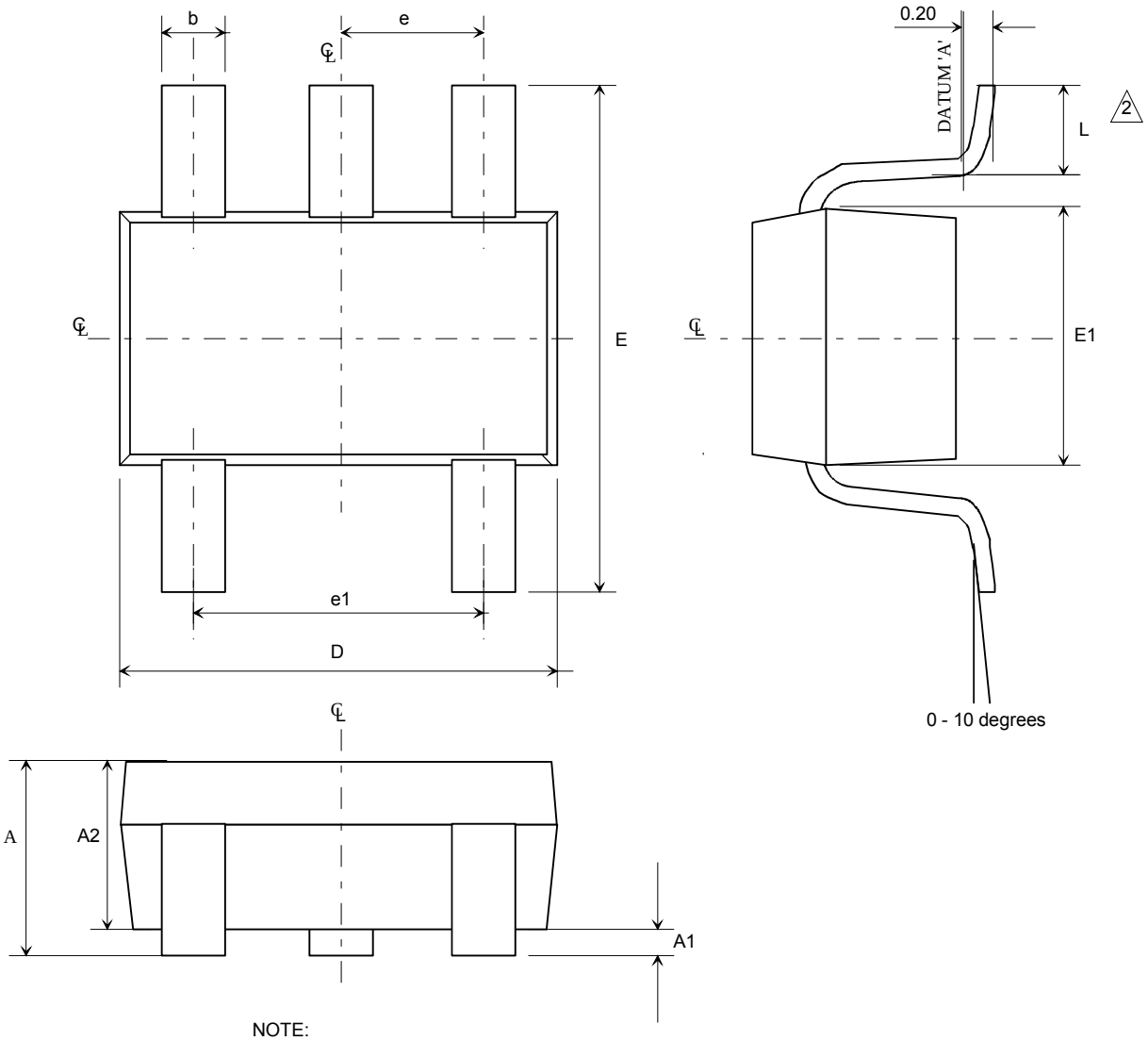
from which can be calculated:

$$I_{OUTMAX} = \frac{P_{dMAX}}{V_{IN} - V_{OUT}} = 105\ mA$$

V_{IN} * I_{GND} is negligible and can be omitted.

Consequently, it can be seen that under these conditions the average output current should not exceed 105 mA.

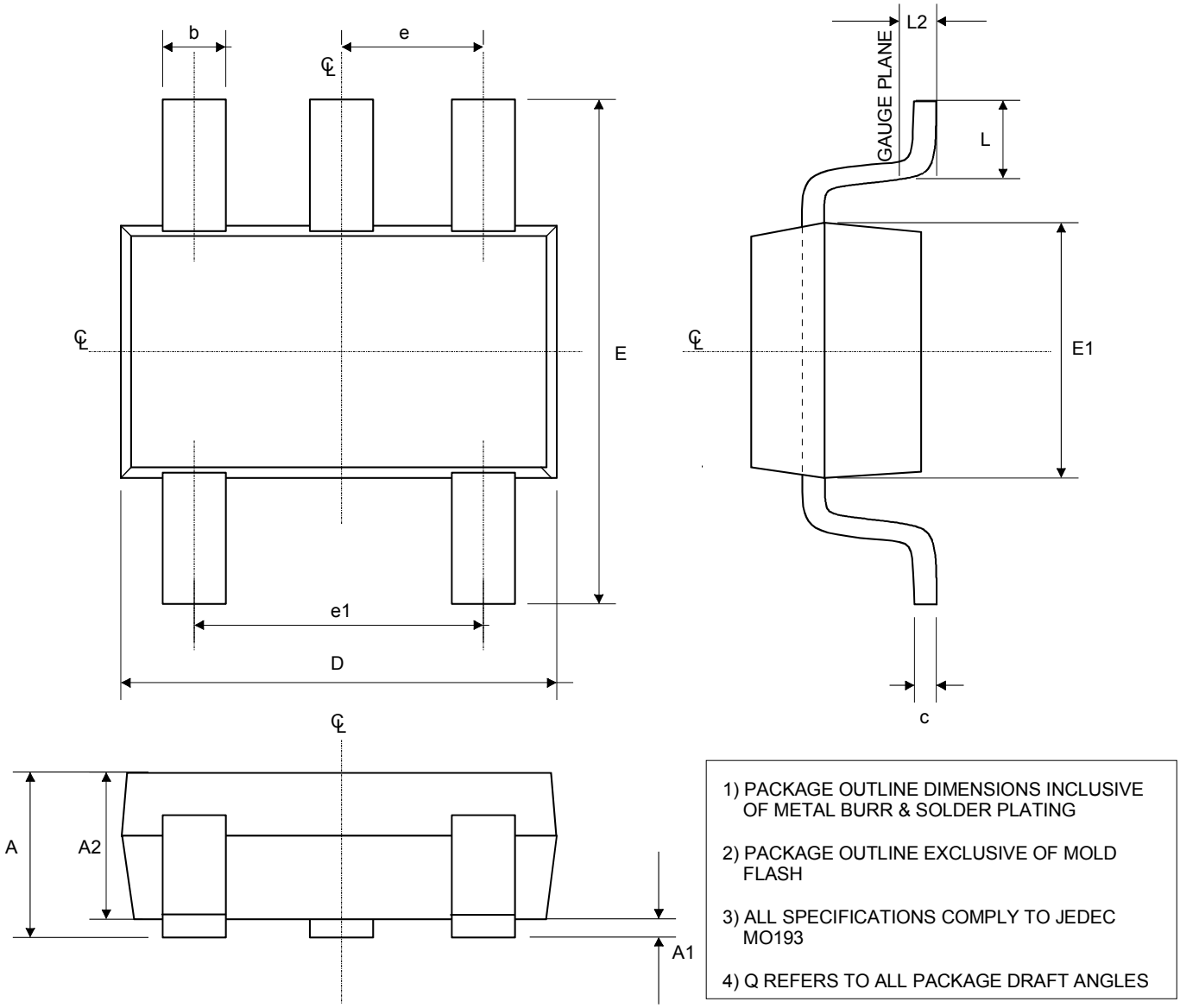
PACKAGE (SOT23-5) OUTLINE



NOTE:
1. ALL DIMENSIONS ARE IN MILLIMETERS
2. FOOT LENGHT MEASURED AT INTERCEPT POINT BETWEEN DATUM A & LEAD SURFACE.
3. PACKAGE OUTLINE EXCLUSIVE OF MOLD FLASH & METAL BURR
4. PACKAGE OUTLINE INCLUSIVE OF SOLDER PLATING.
5. COMPLY TO EIAJ SC74

Symbol	Min	Max	Unit
A	0.90	1.45	mm
A1	0.00	0.15	mm
A2	0.90	1.30	mm
b	0.25	0.50	mm
C	0.09	0.20	mm
D	2.80	3.10	mm
E	2.60	3.00	mm
E1	1.50	1.75	mm
L	0.35	0.55	mm
e	0.95ref		mm
e1	1.90ref		mm

PACKAGE (TSOT-5) OUTLINE



1) PACKAGE OUTLINE DIMENSIONS INCLUSIVE OF METAL BURR & SOLDER PLATING

2) PACKAGE OUTLINE EXCLUSIVE OF MOLD FLASH

3) ALL SPECIFICATIONS COMPLY TO JEDEC MO193

4) Q REFERS TO ALL PACKAGE DRAFT ANGLES

Symbol	Min	Nom	Max	Unit
A	--	--	1.00	mm
A1	0.01	0.05	0.10	mm
A2	0.84	0.87	0.90	mm
b	0.30	--	0.45	mm
c	0.12	0.127	0.20	mm
D		2.90BSC		mm
E		2.80BSC		mm
E1		1.60BSC		mm
e		0.95BSC		mm
e1		1.90BSC		mm
L	0.30	0.40	0.50	mm
L2		0.25BSC		mm
Q	4°	10°	12°	

SOLDERING INFORMATION

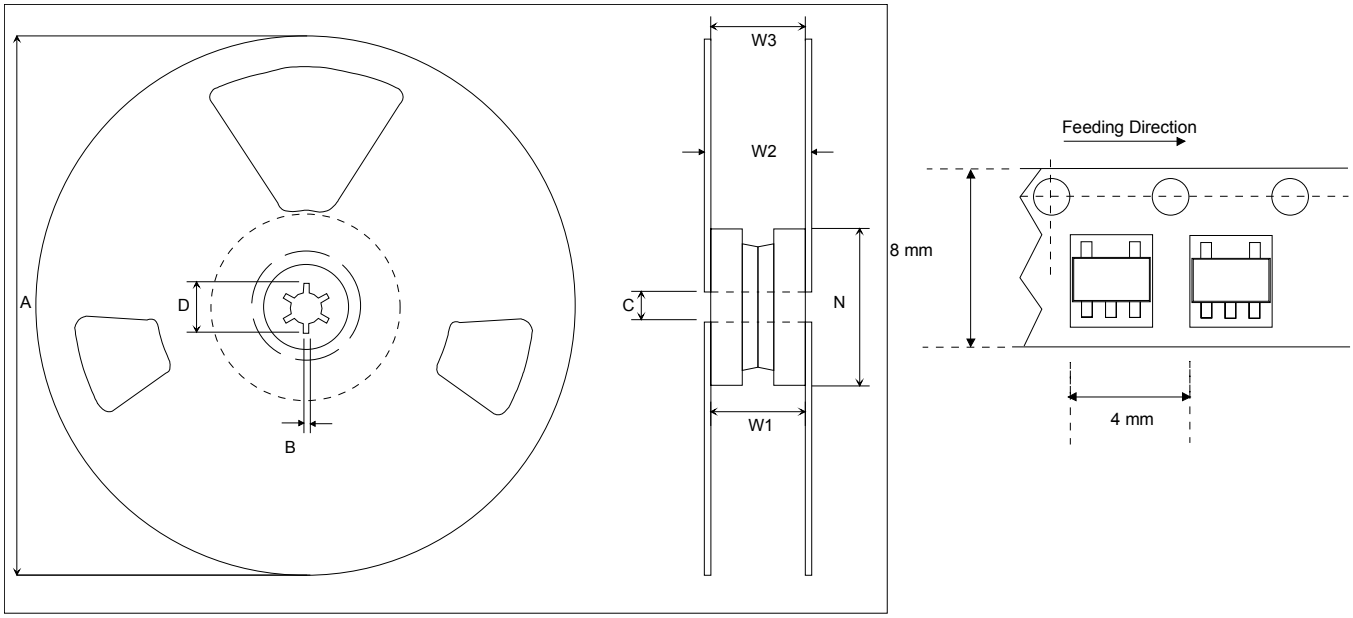
◆ **For Eutectic Sn/Pb SOT23-5**

Resistance to Soldering Heat	According to RSH test IEC 68-2-58/20 2*220°C
Maximum Temperature	240°C
Maximum Number of Reflow Cycles	3
Reflow profile	Thermal profile parameters stated in JESD22-A113 should not be exceeded. http://www.jedec.org
Seating Plane Co-planarity	max 0.08 mm
Lead Finish	Solder plate 7.62 - 25.4 µm, material Sn 85% Pb 15%

◆ **For Lead-Free TSOT-5 and Lead-Free, RoHS Compliant TSOT-5**

Resistance to Soldering Heat	According to RSH test IEC 68-2-58/20
Maximum Temperature	260°C
Maximum Number of Reflow Cycles	3
Reflow profile	Thermal profile parameters stated in IPC/JEDEC J-STD-020 should not be exceeded. http://www.jedec.org
Seating Plane Co-planarity	max 0.08 mm
Lead Finish	Solder plate 7.62 - 25.4 µm, material Matte Tin

TAPE & REEL SPECIFICATIONS (SOT23-5/TSOT-5)



Other Dimensions according to EIA-481 Standard.

3000 Components on Each Reel.

Dimension	Min	Max	Unit
A		178	mm
B	1.5		mm
C	12.80	13.50	mm
D	20.2		mm
N	50		mm
W_1 (measured at hub)	8.4	9.9	mm
W_2 (measured at hub)		14.4	mm
W_3 (includes flange distortion at outer edge)	7.9	10.9	mm
Trailer	160		mm
Leader	390, of which minimum 160 mm of empty carrier tape sealed with cover tape		mm

ORDERING INFORMATION

Product Code	Output Voltage	Top Marking	Package	Comments
MAS9124AST5-T	1.50 V	24A5	SOT23-5	Tape and Reel
MAS9124A5GB06	1.50 V	24A5 (B in the bottom marking to indicate lead-free)	TSOT-5 lead-free	Tape and Reel
MAS9124A5GC06	1.50 V	24A5 (G in the bottom marking to indicate lead-free, RoHS compliant)	TSOT-5 lead-free, RoHS compliant	Tape and Reel
MAS9124AST4-T	1.80 V	24A4	SOT23-5	Tape and Reel
MAS9124A4GB06	1.80 V	24A4 (B in the bottom marking to indicate lead-free)	TSOT-5 lead-free	Tape and Reel
MAS9124A4GC06	1.80 V	24A4 (G in the bottom marking to indicate lead-free, RoHS compliant)	TSOT-5 lead-free, RoHS compliant	Tape and Reel
MAS9124ASTU-T	2.00 V	24AU	SOT23-5	Tape and Reel
MAS9124AUGB06	2.00 V	24AU (B in the bottom marking to indicate lead-free)	TSOT-5 lead-free	Tape and Reel
MAS9124AUGC06	2.00 V	24AU (G in the bottom marking to indicate lead-free, RoHS compliant)	TSOT-5 lead-free, RoHS compliant	Tape and Reel
MAS9124ASTA-T	2.30 V	24AA	SOT23-5	Tape and Reel
MAS9124AAGB06	2.30 V	24AA (B in the bottom marking to indicate lead-free)	TSOT-5 lead-free	Tape and Reel
MAS9124AAGC06	2.30 V	24AA (G in the bottom marking to indicate lead-free, RoHS compliant)	TSOT-5 lead-free, RoHS compliant	Tape and Reel
MAS9124ASTB-T	2.40 V	24AB	SOT23-5	Tape and Reel
MAS9124ABGB06	2.40 V	24AB (B in the bottom marking to indicate lead-free)	TSOT-5 lead-free	Tape and Reel
MAS9124ABGC06	2.40 V	24AB (G in the bottom marking to indicate lead-free, RoHS compliant)	TSOT-5 lead-free, RoHS compliant	Tape and Reel
MAS9124AST3-T	2.50 V	24A3	SOT23-5	Tape and Reel
MAS9124A3GB06	2.50 V	24A3 (B in the bottom marking to indicate lead-free)	TSOT-5 lead-free	Tape and Reel
MAS9124A3GC06	2.50 V	24A3 (G in the bottom marking to indicate lead-free, RoHS compliant)	TSOT-5 lead-free, RoHS compliant	Tape and Reel
MAS9124ASTC-T	2.60 V	24AC	SOT23-5	Tape and Reel
MAS9124ACGB06	2.60 V	24AC (B in the bottom marking to indicate lead-free)	TSOT-5 lead-free	Tape and Reel

MAS9124ACGC06	2.60 V	24AC (G in the bottom marking to indicate lead-free, RoHS compliant)	TSOT-5 lead-free, RoHS compliant	Tape and Reel
MAS9124AST9-T	2.70 V	24A9	SOT23-5	Tape and Reel
MAS9124A9GB06	2.70 V	24A9 (B in the bottom marking to indicate lead-free)	TSOT-5 lead-free	Tape and Reel
MAS9124A9GC06	2.70 V	24A9 (G in the bottom marking to indicate lead-free, RoHS compliant)	TSOT-5 lead-free, RoHS compliant	Tape and Reel
MAS9124AST2-T	2.80 V	24A2	SOT23-5	Tape and Reel
MAS9124A2GB06	2.80 V	24A2 (B in the bottom marking to indicate lead-free)	TSOT-5 lead-free	Tape and Reel
MAS9124A2GC06	2.80 V	24A2 (G in the bottom marking to indicate lead-free, RoHS compliant)	TSOT-5 lead-free, RoHS compliant	Tape and Reel
MAS9124AST8-T	2.86 V	24A8	SOT23-5	Tape and Reel
MAS9124A8GB06	2.86 V	24A8 (B in the bottom marking to indicate lead-free)	TSOT-5 lead-free	Tape and Reel
MAS9124A8GC06	2.86 V	24A8 (G in the bottom marking to indicate lead-free, RoHS compliant)	TSOT-5 lead-free, RoHS compliant	Tape and Reel
MAS9124AST7-T	2.90 V	24A7	SOT23-5	Tape and Reel
MAS9124A7GB06	2.90 V	24A7 (B in the bottom marking to indicate lead-free)	TSOT-5 lead-free	Tape and Reel
MAS9124A7GC06	2.90 V	24A7 (G in the bottom marking to indicate lead-free, RoHS compliant)	TSOT-5 lead-free, RoHS compliant	Tape and Reel
MAS9124AST6-T	3.00 V	24A6	SOT23-5	Tape and Reel
MAS9124A6GB06	3.00 V	24A6 (B in the bottom marking to indicate lead-free)	TSOT-5 lead-free	Tape and Reel
MAS9124A6GC06	3.00 V	24A6 (G in the bottom marking to indicate lead-free, RoHS compliant)	TSOT-5 lead-free, RoHS compliant	Tape and Reel
MAS9124ASTD-T	3.10 V	24AD	SOT23-5	Tape and Reel
MAS9124ADGB06	3.10 V	24AD (B in the bottom marking to indicate lead-free)	TSOT-5 lead-free	Tape and Reel
MAS9124ADGC06	3.10 V	24AD (G in the bottom marking to indicate lead-free, RoHS compliant)	TSOT-5 lead-free, RoHS compliant	Tape and Reel
MAS9124AST1-T	3.30 V	24A1	SOT23-5	Tape and Reel
MAS9124A1GB06	3.30 V	24A1 (B in the bottom marking to indicate lead-free)	TSOT-5 lead-free	Tape and Reel
MAS9124A1GC06	3.30 V	24A1 (G in the bottom marking to indicate lead-free, RoHS compliant)	TSOT-5 lead-free, RoHS compliant	Tape and Reel

MAS9124ASTV-T	3.60 V	24AV	SOT23-5	Tape and Reel
MAS9124AVGB06	3.60 V	24AV (B in the bottom marking to indicate lead-free)	TSOT-5 lead-free	Tape and Reel
MAS9124AVGC06	3.60 V	24AV (G in the bottom marking to indicate lead-free, RoHS compliant)	TSOT-5 lead-free, RoHS compliant	Tape and Reel
MAS9124ASTF-T	4.00 V	24AF	SOT23-5	Tape and Reel
MAS9124AFGB06	4.00 V	24AF (B in the bottom marking to indicate lead-free)	TSOT-5 lead-free	Tape and Reel
MAS9124AFGC06	4.00 V	24AF (G in the bottom marking to indicate lead-free, RoHS compliant)	TSOT-5 lead-free, RoHS compliant	Tape and Reel
MAS9124ASTG-T	5.00 V	24AG	SOT23-5	Tape and Reel
MAS9124AGGB06	5.00 V	24AG (B in the bottom marking to indicate lead-free)	TSOT-5 lead-free	Tape and Reel
MAS9124AGGC06	5.00 V	24AG (G in the bottom marking to indicate lead-free, RoHS compliant)	TSOT-5 lead-free, RoHS compliant	Tape and Reel

For more voltage options contact Micro Analog Systems Oy.

Offered in North America by

EVOX RIFA

Evox Rifa, Inc.
300 Tri-State International, Suite 375
Lincolnshire, IL 60069 USA
Tel: 1 847 948 9511
Fax: 1 847 948 9320
Email: service@evoxrifa.com
Web: http://www.evoxrifa.com/n_america

MICRO ANALOG SYSTEMS OY CONTACTS

Micro Analog Systems Oy Kamreerintie 2, P.O.Box 51 FIN-02771 Espoo, FINLAND	Tel. +358 9 80 521 Fax +358 9 805 3213 http://www.mas-oy.com