

	No. 3232A	Monolithic Linear IC
	<b>LA5528N, 5528NM</b>	
Low-Voltage DC Motor Speed Controllers		

Especially suited for controlling speed of a low-voltage (3V min.) DC motor for cassette tape recorders, 8mm motion-picture cameras, record players

#### Features

- Wide operating voltage range LA5528N : 1.8 to 10V  
LA5528NM : 1.8 to 6V
- Easy to vary speed
- Large starting torque
- Easy to control rotational speed from very low speed to high speed

#### Maximum Ratings at Ta = 25°C

			unit
Maximum Supply Voltage	V <sub>CC</sub> max	LA5528N	12.0 V
		LA5528NM	8.0 V
Allowable Power Dissipation	Pd max	LA5528N	1.0 W
		LA5528NM	0.3 W
Operating Temperature	T <sub>opr</sub>		-20 to +80 °C
Storage Temperature	T <sub>stg</sub>		-40 to +150 °C
Motor Current	I <sub>m</sub>	LA5528N	1000 mA
		LA5528NM	700 mA

#### Operating Conditions at Ta = 25°C

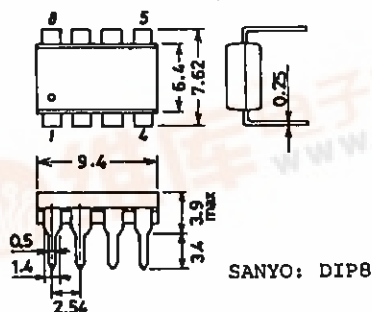
			unit
Recommended Supply Voltage	V <sub>CC</sub>	LA5528N	1.8 to 10 V
		LA5528NM	1.8 to 6 V
Recommended Operating Temperature	T <sub>opg</sub>		-10 to +60 °C

#### Operating Characteristics at Ta = 25°C

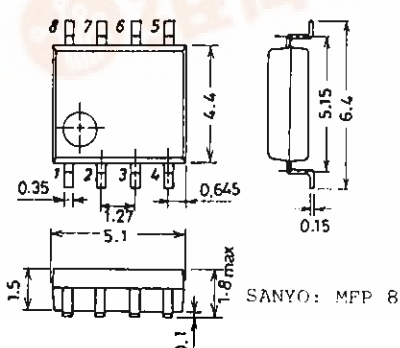
			min	typ	max	unit
Reference Voltage	V <sub>ref</sub>	V <sub>CC</sub> = 3V, I <sub>m</sub> = 100mA	1.15	1.25	1.3	V
Quiescent Current Dissipation	I <sub>d</sub>	V <sub>CC</sub> = 3V, I <sub>m</sub> = 100mA		3.0	6.0	mA
Shunt Ratio	K	V <sub>CC</sub> = 3V, I <sub>m</sub> = 50 - 150mA	45	50	55	

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#### Package Dimensions 3001B (unit: mm) [LA5528N]



#### Package Dimensions 3232B (unit: mm) [LA5528NM]

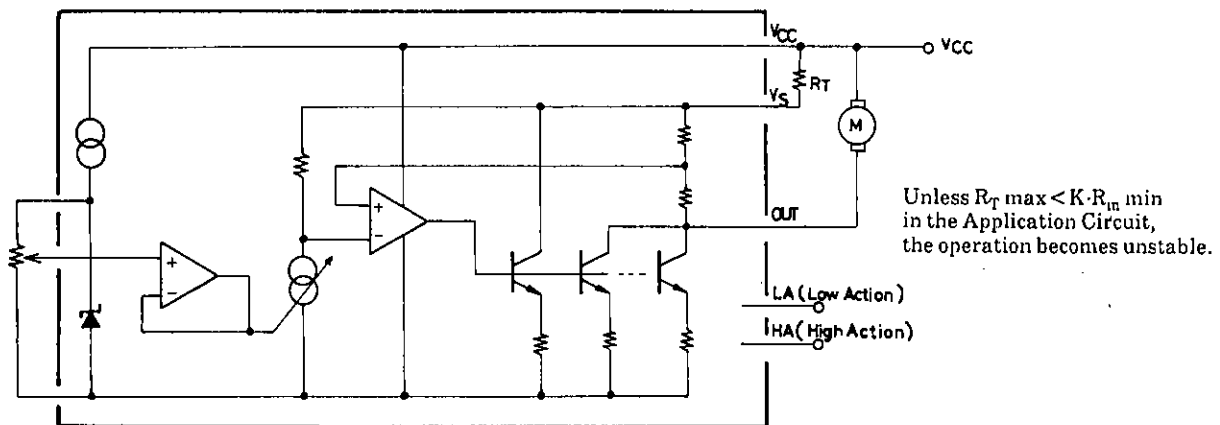


## LA5528N,5528NM

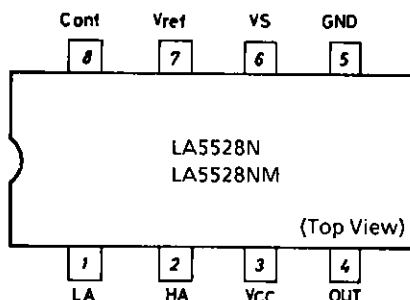
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			min	typ	max	unit
Residual Voltage	$V_{sat}$	$V_{CC}=3V, I_m=200mA, V_{ref}=V_{cont}$		0.3	0.5	V
Voltage Characteristic of Reference Voltage	$\frac{\Delta V_{ref}}{V_{ref}} / \Delta V_{CC}$	LA5528N: $V_{CC}=1.8$ to $10V$ , $I_m=100mA$ LA5528NM: $V_{CC}=1.8$ to $6V$ , $I_m=100mA$		0.1	0.3	%/V
Voltage Characteristic of Shunt Ratio	$\frac{\Delta K}{K} / \Delta V_{CC}$	LA5528N: $V_{CC}=1.8$ to $10V$ , $I_m=50-150mA$ LA5528NM: $V_{CC}=1.8$ to $6V$ , $I_m=50-150mA$		0.25	0.5	%/V
Current Characteristic of Reference Voltage	$\frac{\Delta V_{ref}}{V_{ref}} / \Delta I_m$	$I_m=20$ to $200mA, V_{CC}=3V$		0.005	0.01	%/mA
Current Characteristic of Shunt Ratio	$\frac{\Delta K}{K} / \Delta I_m$	$I_m=20-50mA$ to $170-200mA$ , $V_{CC}=3V$	-0.02	-0.005	0.02	%/mA
Temperature Characteristic of Reference Voltage	$\frac{\Delta V_{ref}}{V_{ref}} / \Delta T_a$	$V_{CC}=3V, I_m=100mA$ , $T_a=-20$ to $+80^\circ C$		0.02		%/°C
Temperature Characteristic of Shunt Ratio	$\frac{\Delta K}{K} / \Delta T_a$	$V_{CC}=3V, I_m=50-150mA$ , $T_a=-20$ to $+80^\circ C$		-0.002		%/°C
Bias Current at OFF-State	$I_{(st)}$	$V_{CC}=3V, R_L=100\Omega$		0.4	30	$\mu A$
HA ON-State Voltage	$V_{H(on)}$	$V_{CC}=3V, I_m=100mA$	1.8		$V_{CC}$	V
LA ON-State Voltage	$V_{L(on)}$	$V_{CC}=3V, I_m=100mA$	0		1.0	V

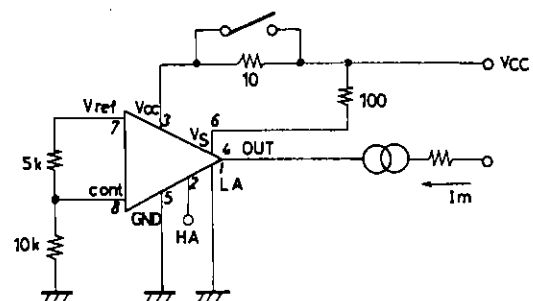
### Equivalent Circuit Block Diagram



### Pin Assignment

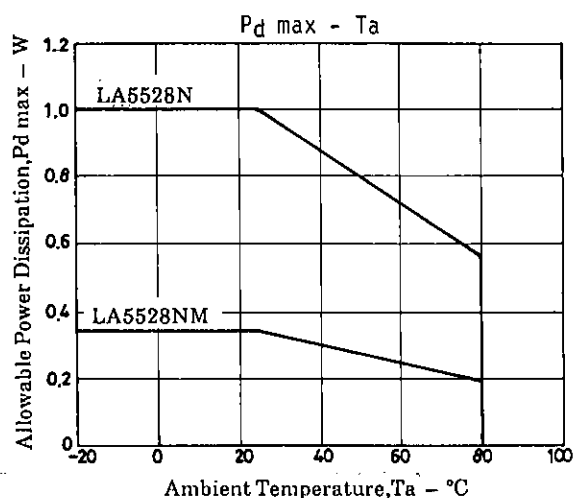


### Test Circuit

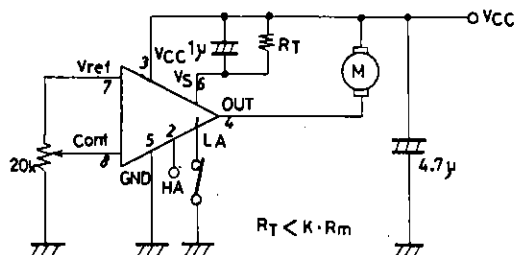


Unit (resistance:  $\Omega$ )

## LA5528N,5528NM



### Application Circuit



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