

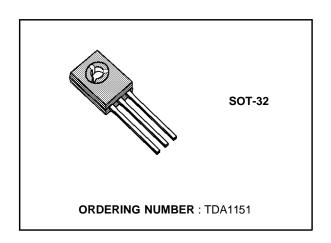


MOTOR SPEED REGULATOR

- EXCELLENT VERSATILITY IN USE
- HIGH OUTPUT CURRENT (UP TO 800mA)
- LOW QUIESCENT CURRENT (1.7mA)
- LOW REFERENCE VOLTAGE (1.2V)
- EXCELLENT PARAMETERS STABILITY VERSUS TEMPERATURE

DESCRIPTION

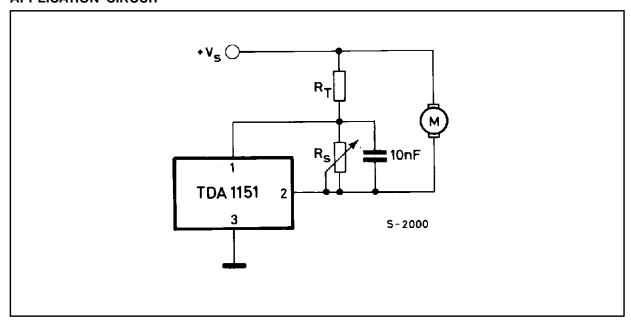
The TDA1151 is a monolithic integrated circuit in SOT-32 plastic package. It is intended for use as speed regulator for DC motors of record players, tape and cassette recorders, movie cameras, toys etc.



ABSOLUTE MAXIMUM RATINGS

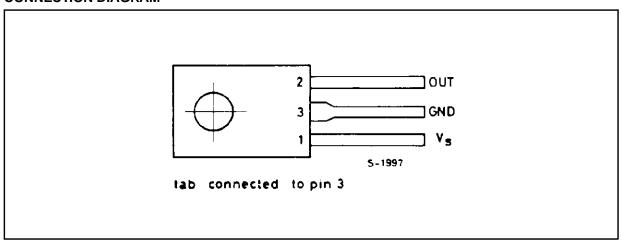
Symbol	Parameter		Unit
Vs	Supply voltage	20	V
P _{tot}	Total power dissipation at T _{amb} = 70°C	0.8	W
	at T _{case} = 100°C	5	W
T _{stg} , T _j	Storage and junction temperature	-40 to 150	°C

APPLICATION CIRCUIT

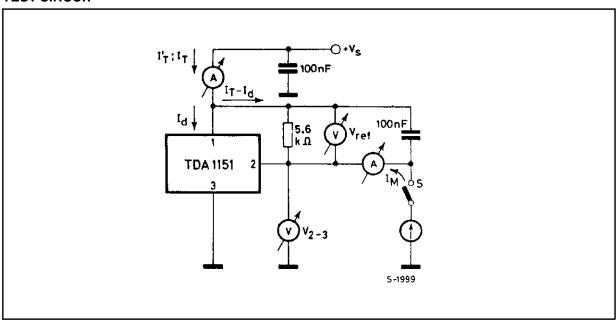


March 1993 1/8

CONNECTION DIAGRAM



TEST CIRCUIT



THERMAL DATA

Symbol	pol Parameter		Unit
R _{th j-case}	Thermal resistance junction-case max	10	°C/W
R _{th j-amb}	Thermal resistance junction-ambient max	100	°C/W

ELECTRICAL CHARACTERISTICS (Refer to the test circuit, $T_{amb} = 25 \, ^{\circ}C$)

Symbol	Parameter	Test conditions		Min.	Тур.	Max.	Unit
Vref	Reference voltage (between pins 1 and 2)	Vs = 6V	I _M = 0.1A	1.1	1.2	1.3	V
I _d	Quiescent drain current	V _s = 6V	$I_M = 100 \mu A$		1.7		mA
I _{MS}	Starting current	V _s = 5V	$\Delta V_{ref}/V_{ref} = -50\%$	0.8			Α
V ₁₋₃	Minimum supply voltage	I _m = 0.1 A	$\Delta V_{ref}/V_{ref} = -5\%$			2.5	V
K=I _m /I' _T	Reflection coefficient	V _s = 6V	$I_M = 0.1A$	18	20	22	
$\frac{\Delta K}{K} / \Delta V_s$		V _s = 6V to 18	3V I _m = 0.1A		0.45		%/V
$\frac{\Delta K}{K} / \Delta I_{M}$		V _s = 6V	I _m = 25 to 400 mA		0.005		%/mA
$\frac{\Delta K}{K} / \Delta T$		$V_s = 6V$ $T_{amb} = -20 \text{ to}$			0.02		%/°C
$\frac{\Delta V_{ref}}{V_{ref}} / \Delta V_{s}$	Line regulation	V _s = 6V to 18	3V I _M = 0.1A		0.02		%/V
$\frac{\Delta V_{ref}}{V_{ref}} / \Delta I_{M}$	Load regulation	V _s = 6V	I _m = 25 to 400 mA		0.009		%/mA
$\frac{\Delta \text{ V}_{\text{ref}}}{\text{V}_{\text{ref}}} / \Delta \text{ T}$	Temperature coefficient	$V_s = 6V$ $T_{amb} = -20 \text{ to}$			0.02		%/°C

Figure 1. Quiescent drain current vs. power supply

Figure 2. Quiescent drain current vs. ambient temperature

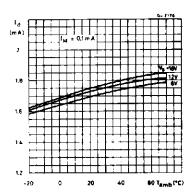


Figure 3. Reference voltage vs. supply voltage

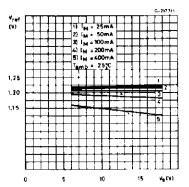


Figure 4. Reference voltage vs. motor current

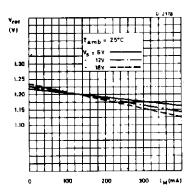


Figure 5. Reference voltage vs. ambient temperature

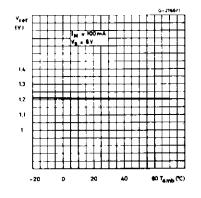


Figure 6. Reflection coefficient vs. supply voltage

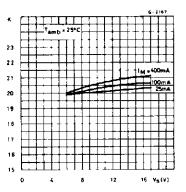


Figure 7. Reflection coefficient vs. motor current

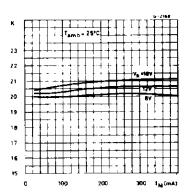


Figure 8. Reflection coefficient vs. ambient temperature

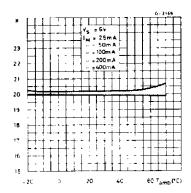


Figure 9. Typical minimum supply voltage vs. motor current

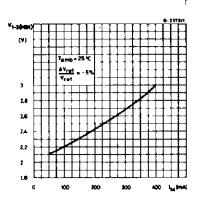
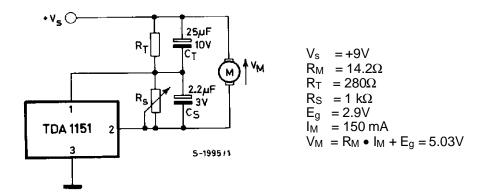


Figure 10. Application circuit



Note: A ceramic capacitor of 10 nF between pins, 1 and 2 improves stability in some applications.

Figure 11. P.C. board and component layout of the circuit of Fig. 10 (1:1 scale)

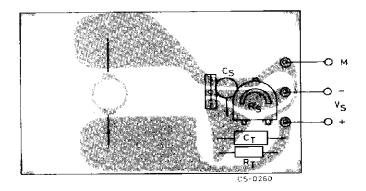


Figure 12. Speed variation vs. supply voltage

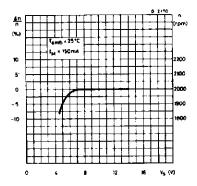


Figure 13. Speed variation vs. motor current

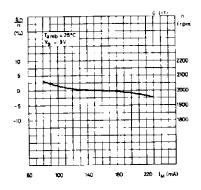


Figure 14. Speed variation vs. ambient temperature

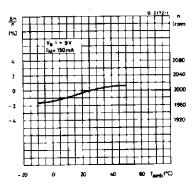


Figure 15. Low cost application circuit

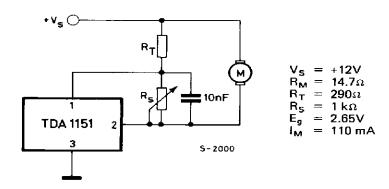


Figure 16. Speed variation vs. supply voltage

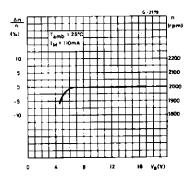


Figure 17. Speed variation vs. motor current

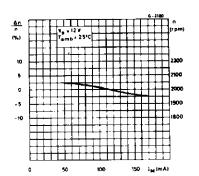
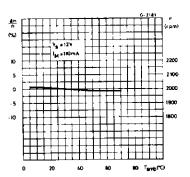
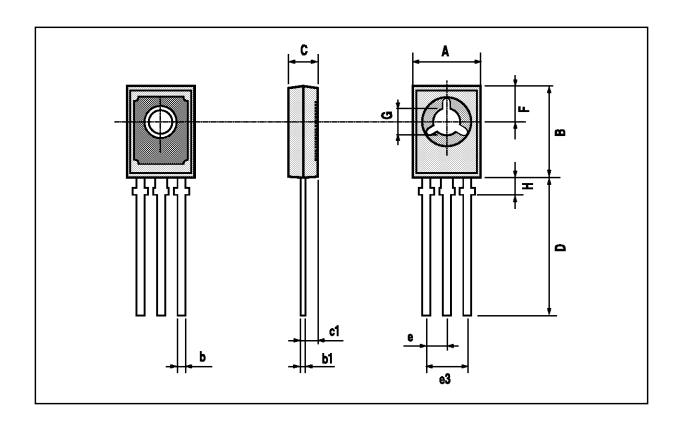


Figure 18. Speed variation vs. ambient temperature



SOT-32 PACKAGE MECHANICAL DATA

DIM.		mm		inch			
Diwi.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	
Α	7.4		7.8	0.291		0.307	
В	10.5		10.8	0.413		0.425	
b	0.7		0.9	0.028		0.035	
b1	0.49		0.75	0.019		0.030	
С	2.4		2.7	0.094		0.106	
c1		1.2			0.047		
D		15.7			0.618		
е		2.2			0.087		
e3		4.4			0.173		
F		3.8			0.150		
G	3		3.2	0.118		0.126	
Н			2.54			0.100	



Information furnished is believed to be accurate and reliable. However, SGS-THOMSON Microelectronics assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of SGS-THOMSON Microelectronics. Specifications mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied. SGS-THOMSON Microelectronics products are not authorized for use as critical components in life support devices or systems without express written approval of SGS-THOMSON Microelectronics.

© 1994 SGS-THOMSON Microelectronics - All Rights Reserved

SGS-THOMSON Microelectronics GROUP OF COMPANIES

Australia - Brazil - France - Germany - Hong Kong - Italy - Japan - Korea - Malaysia - Malta - Morocco - The Netherlands - Singapore - Spain - Sweden - Switzerland - Taiwan - Thaliand - United Kingdom - U.S.A.

