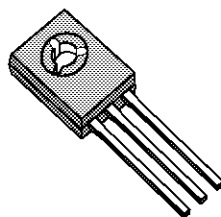


## MOTOR SPEED REGULATOR

- 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.



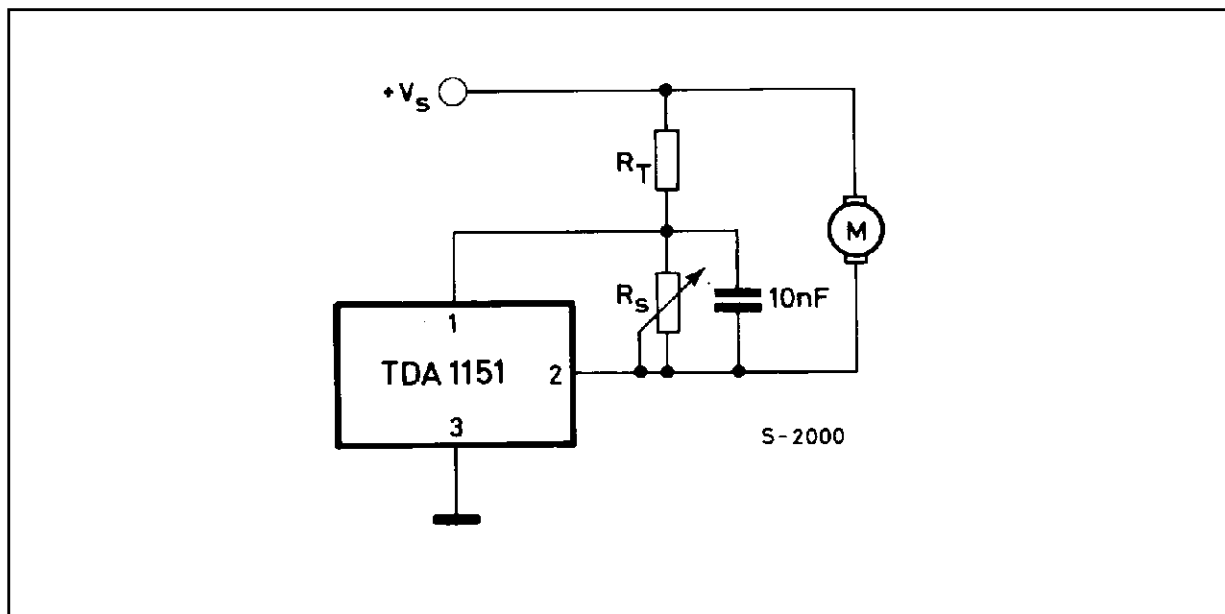
SOT-32

ORDERING NUMBER : TDA1151

### ABSOLUTE MAXIMUM RATINGS

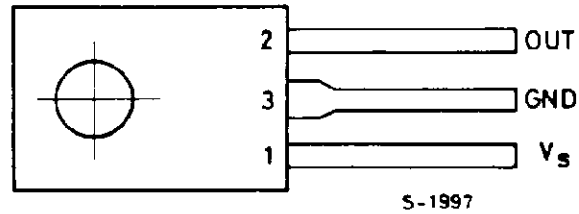
Symbol	Parameter	Value	Unit
$V_s$	Supply voltage	20	V
$P_{tot}$	Total power dissipation at $T_{amb} = 70^\circ\text{C}$	0.8	W
	at $T_{case} = 100^\circ\text{C}$	5	W
$T_{stg}, T_j$	Storage and junction temperature	-40 to 150	$^\circ\text{C}$

### APPLICATION CIRCUIT



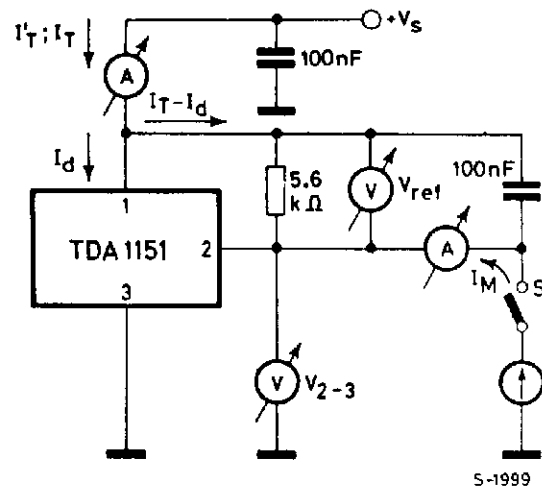
## TDA1151

### CONNECTION DIAGRAM



tab connected to pin 3

### TEST CIRCUIT



**THERMAL DATA**

Symbol	Parameter	Value	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,  $T_{amb} = 25\ ^\circ\text{C}$ )

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
$V_{ref}$	Reference voltage (between pins 1 and 2)	$V_s = 6V$ $I_M = 0.1A$	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			A
$V_{1-3}$	Minimum supply voltage	$I_M = 0.1A$ $\Delta V_{ref}/V_{ref} = -5\%$			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 $18V$ $I_M = 0.1A$		0.45		%/V
$\frac{\Delta K}{K} / \Delta I_M$		$V_s = 6V$ $I_M = 25$ to $400\ mA$		0.005		%/mA
$\frac{\Delta K}{K} / \Delta T$		$V_s = 6V$ $I_M = 0.1A$ $T_{amb} = -20$ to $70^\circ\text{C}$		0.02		%/°C
$\frac{\Delta V_{ref}}{V_{ref}} / \Delta V_s$	Line regulation	$V_s = 6V$ to $18V$ $I_M = 0.1A$		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
$\frac{\Delta V_{ref}}{V_{ref}} / \Delta T$	Temperature coefficient	$V_s = 6V$ $I_M = 0.1A$ $T_{amb} = -20$ to $70^\circ\text{C}$		0.02		%/°C

Figure 1. Quiescent drain current vs. power supply

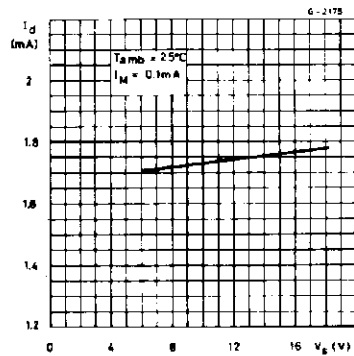


Figure 2. Quiescent drain current vs. ambient temperature

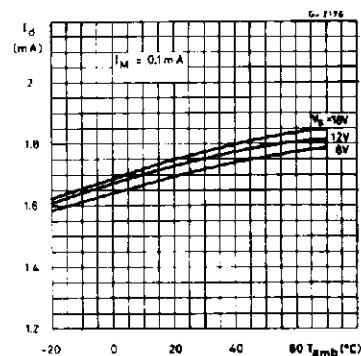


Figure 3. Reference voltage vs. supply voltage

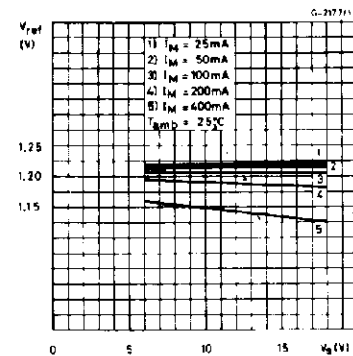


Figure 4. Reference voltage vs. motor current

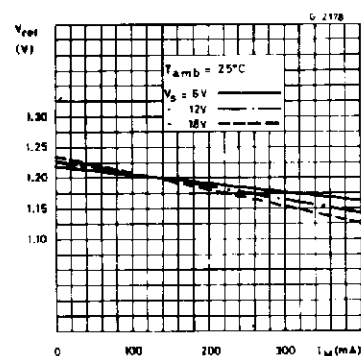


Figure 5. Reference voltage vs. ambient temperature

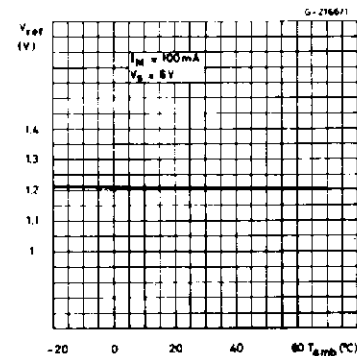


Figure 6. Reflection coefficient vs. supply voltage

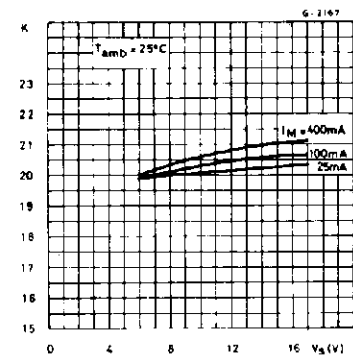


Figure 7. Reflection coefficient vs. motor current

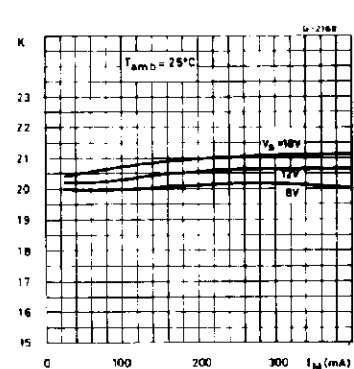


Figure 8. Reflection coefficient vs. ambient temperature

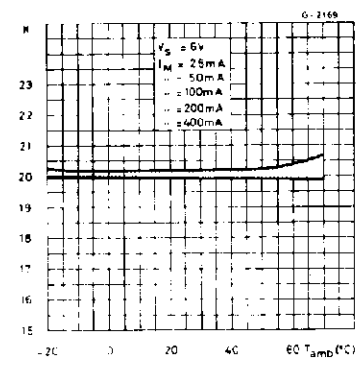


Figure 9. Typical minimum supply voltage vs. motor current

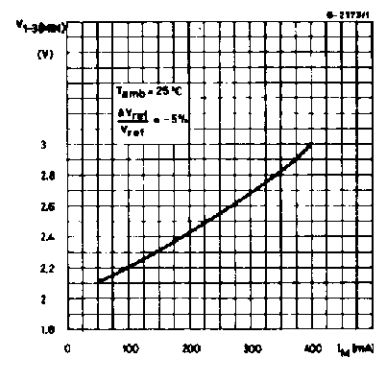
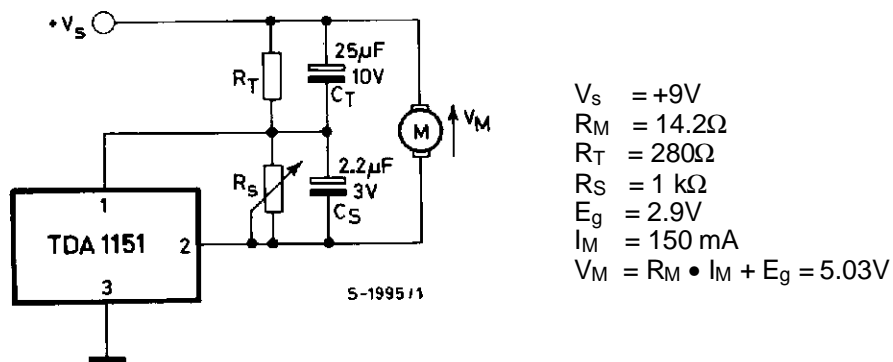


Figure 10. Application circuit



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)

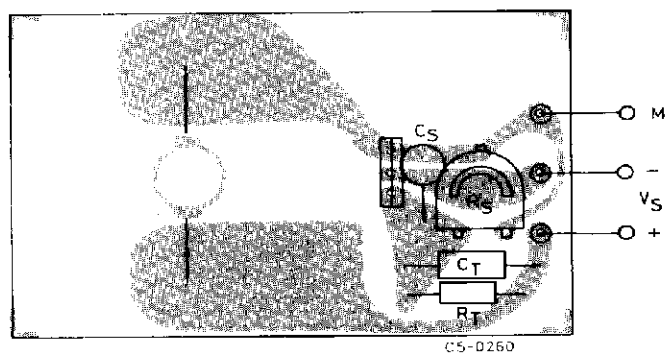


Figure 12. Speed variation vs. supply voltage

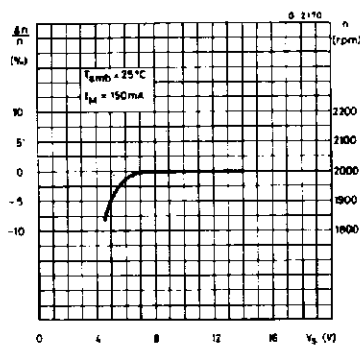


Figure 13. Speed variation vs. motor current

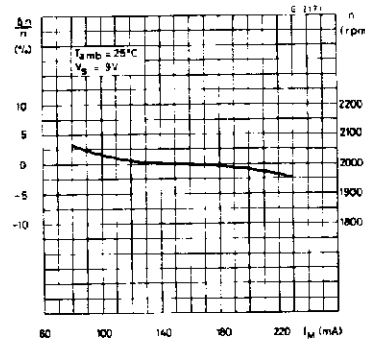


Figure 14. Speed variation vs. ambient temperature

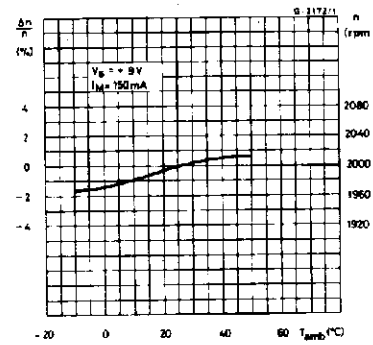


Figure 15. Low cost application circuit

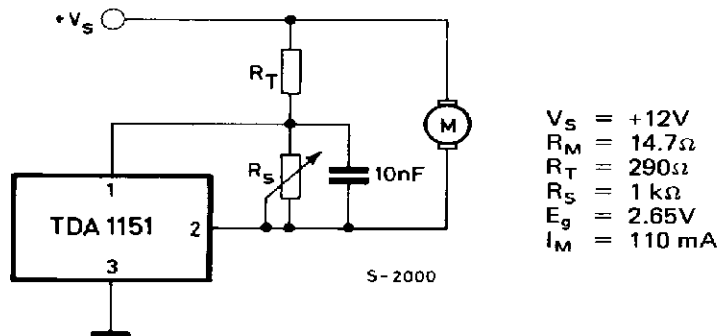


Figure 16. Speed variation vs. supply voltage

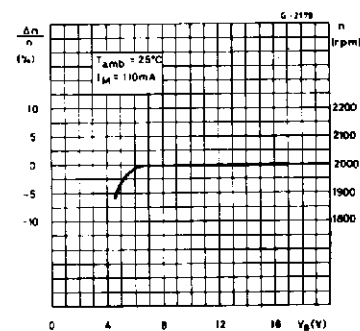


Figure 17. Speed variation vs. motor current

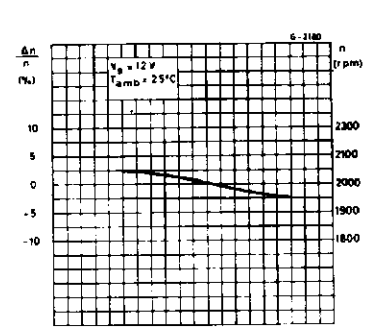
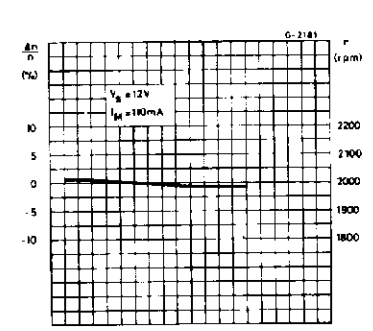
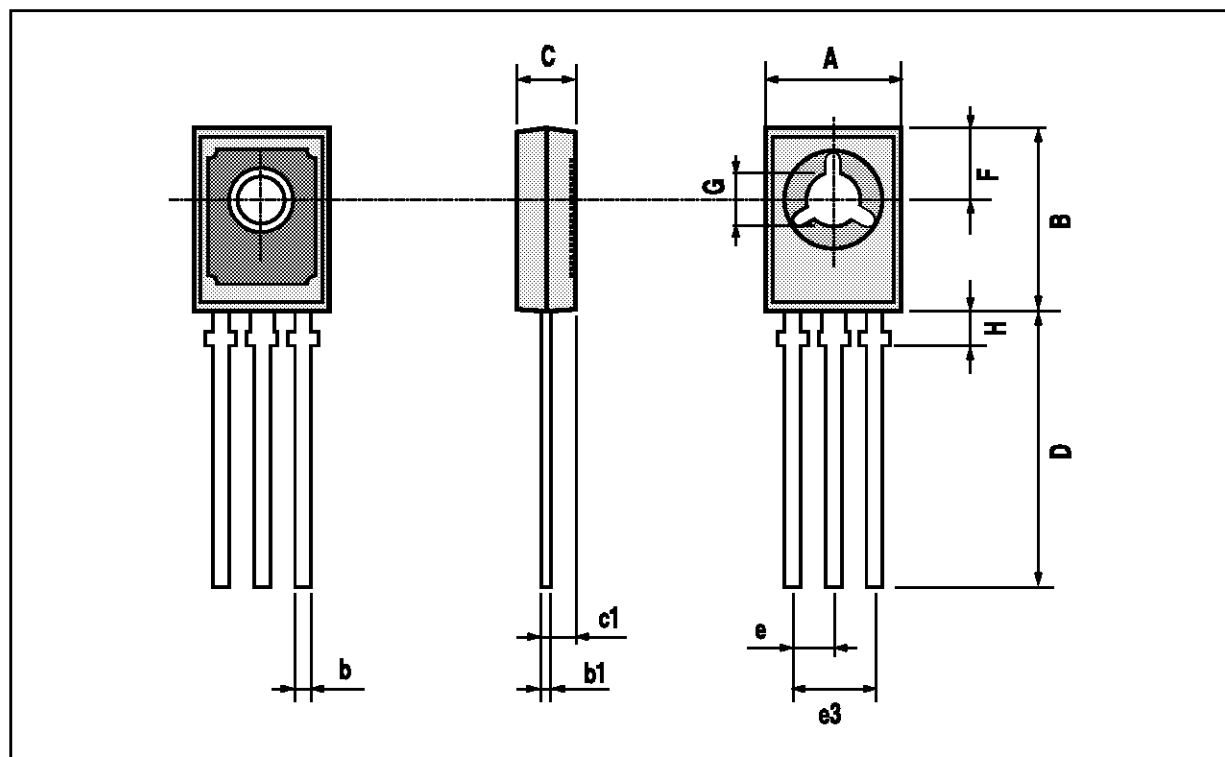


Figure 18. Speed variation vs. ambient temperature



## SOT-32 PACKAGE MECHANICAL DATA

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	7.4		7.8	0.291		0.307
B	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
C	2.4		2.7	0.094		0.106
c1		1.2			0.047	
D		15.7			0.618	
e		2.2			0.087	
e3		4.4			0.173	
F		3.8			0.150	
G	3		3.2	0.118		0.126
H			2.54			0.100



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