AN8377N

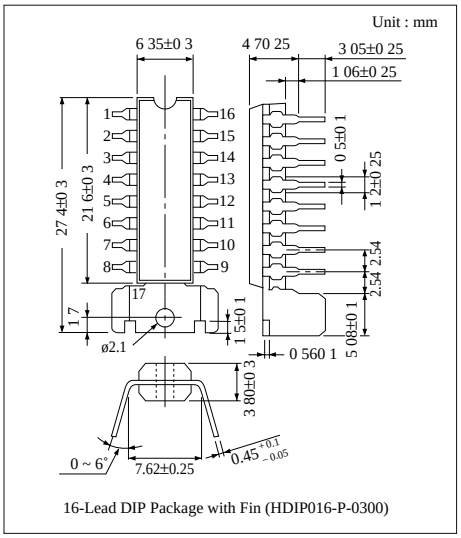
3-channel Linear Driver

■ Overview

The AN8377N is an IC which incorporates 3 circuits of BTL drivers for driving various DC motors such as actuators (focus, tracking, traverse), spindles, and loading of the CD players, and the +5V low drop type power supply.

■ Features

- Operating supply voltage range ; V_{CC}=5.5V to 18V
- Built-in 3 circuits of voltage BTL drivers
  (maximum drive current : 500mA)
- Stable circuit operation against supply voltage change and temperature change due to the built-in stabilized power supply
- Built-in +5V low drop power supply (external PNP power transistor)
- Built-in reset circuit (reset voltage : 4.82V)
- Built-in thermal protective circuit (operating temperature : 159 ; typ.)
- Built-in power cut circuit (motor driver 1 only)

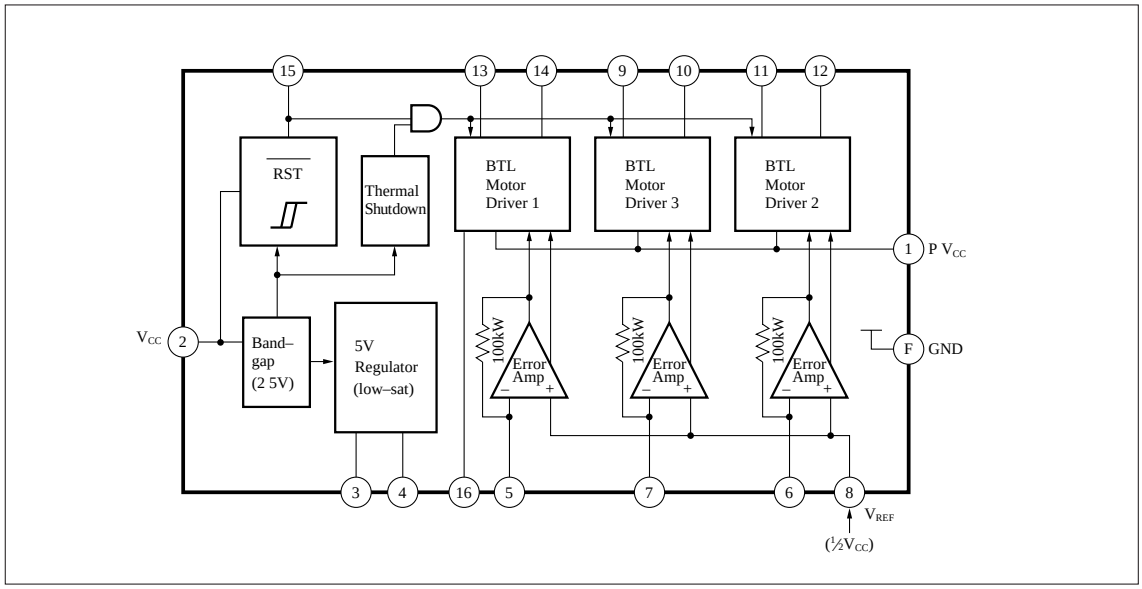


16-Lead DIP Package with Fin (HDIP016-P-0300)

■ Applications

Linear driving of the DC motors and actuators of the CD players, CD radio cassette tape recorder, and so on.

■ Block Diagram



■ Absolute Maximum Ratings (Ta=25˚C)

Parameter	Symbol	Rating	Unit
Supply Voltage	V_{CC}	20	V
Power Dissipation	P_D	1500	mW
Operating Ambient Temperature	T_{opr}	–25 ~ +80	C
Storage Temperature	T_{stg}	–55 ~ +150	C

■ Recommended Operating Range (Ta=25˚C)

Parameter	Symbol	Range
Operating Supply Voltage Range	V_{CC}	5.5V ~ 16V

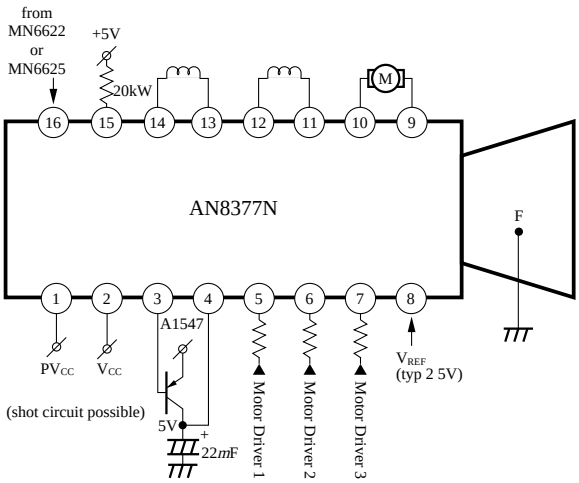
■ Electrical Characteristics (Ta=25˚C)

Parameter	Symbol	Condition	min.	typ.	max.	Unit
No Load Current	I_{CC}	V_{CC}=12V	7	10.5	15	mA
5V Regulator Output Voltage	V_{RO}	V_{CC}=12V, R_L=50W	4.75	5	5.25	V
5V Regulator Load Change	DV_{RI}	V_{CC}=12V, R_L=50W ~ 25W	–15	—	30	mV
5V Regulator Input Change	DV_{RVC}	V_{CC}=15.5V~ 5.5V, R_L=50W	–15	—	50	mV
Reset Threshold Voltage	V_{RST}		4.55	4.82	5.1	V
Reset Threshold Hysteresis Width	V_{HYS}		90	170	310	mV
Reset Operating Minimum Voltage	$V_{R\ (min.)}$	Minimum V_{CC} Voltage at which V15=Low	3.1	—	—	V
Input Offset Voltage	V_{IOF}	V_{CC}=18V, R_L=20W, R_{IN}=10kW	–7	—	7	mV
Output Offset Voltage	V_{OOF}	V_{CC}=18V, R_L=20W, R_{IN}=10kW	–50	—	50	mV
Gain (+)	G_+	V_{CC}=18V, R_L=20W, R_{IN}=10kW	16.5	20	22.5	dB
(+) (–) Relative Gain	G_R	V_{CC}=18V, R_L=20W, R_{IN}=10kW	– 0.85	—	0.85	dB
Limit Voltage (+)	V_{L+}	V_{CC}=18V, R_L=20W, R_{IN}=10kW	7.1	—	10.9	V
Limit Voltage (–)	V_{L-}	V_{CC}=18V, R_L=20W, R_{IN}=10kW	–10.9	—	–7.1	V
Dead Zone Width	V_{DZ}	V_{CC}=18V, R_L=20W, R_{IN}=10kW	–10	—	30	mV
PC Input Threshold (L)	V_{PCL}	V_{CC}=18V	—	—	1.2	V
PC Input Threshold (H)	V_{PCH}	V_{CC}=18V	2.8	—	—	V
Motor Driver 2 Output Voltage at Reset	V_{2RS}	V_{CC}=3.5V, R_L=10kW	–50	—	50	mV
Motor Driver 3 Output Voltage at Reset	V_{3RS}	V_{CC}=3.5V, R_L=10kW	–50	—	50	mV
Motor Driver 1 Output Voltage at Reset	V_{1RS}	V_{CC}=3.5V, R_L=10kW	–50	—	50	mV
5V Regulator External Transistor Base Current Limit Value	I_{3LIM}		9	12	16	mA
Thermal Protective Circuit Operating Temperature Balancing Value	T_{THD}		—	159	—	C
Thermal Protective Circuit Operating Temperature Hysteresis Width	DT_{THD}		—	64	—	C

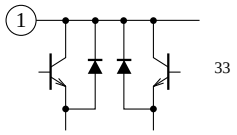
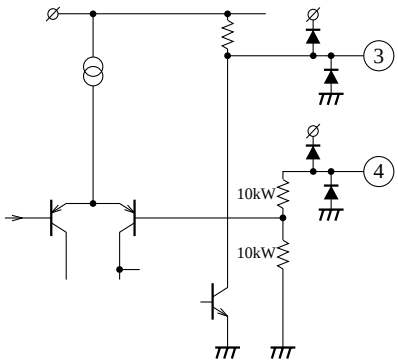
Note) The specified values of V_{IOF}, V_{OOF}, G_+, G_R, V_{L+}, V_{L-}, and V_{DZ} are common ones for each of the motor driver 1, motor driver 2, and motor driver 3 circuits.

■ Application Circuit

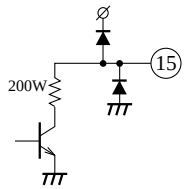
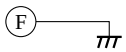
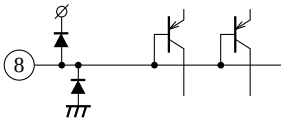
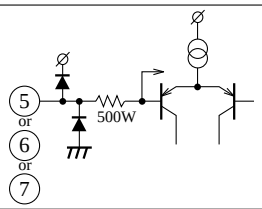
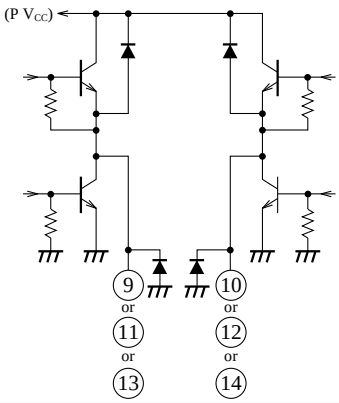
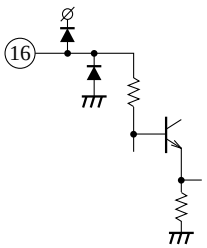
(Used when driving the focus, tracking actuator, and traverse motor)



■ Pin Descriptions (The following description applies when the 3 channels for the motor drivers 1, 2, and 3 are used.)

Pin No.	Symbol	I/O	DC Voltage (V_{CC}/12V)	Equivalent Circuit	Description
1	PV_{CC}	I	12V		Power V_{CC} pin. Supplies a current flowing to the output power transistor.
2	V_{CC}	I	12V		V_{CC} pin. Not connected to the power V_{CC} pin.
3	TB	O	11.3V		External PNP transistor base connection pin
4	V_{MON}	I	5V		External PNP transistor collector connection pin (=5V output pin)

■ Pin Descriptions (Cont.) (The following description applies when the 3 channels for the motor drivers 1, 2, and 3 are used.)

Pin No.	Symbol	I/O	DC Voltage (V_{CC}/12V)	Equivalent Circuit	Description
15	$\overline{RST}$	O	—		Reset output pin. Open collector output type.
F	GND	I	0V		GND pin
8	V_{REF}	I	2.5V		V_{REF} input pin
5	TVDI	I	2.5V		Driver 1 error input pin
6	FDI	I	2.5V		Driver 2 error input pin
7	TDI	I	2.5V		Driver 3 error input pin
9	TD –	O	(0.3V)		BTL driver 3 inverting output pin
10	TD+	O	(0.3V)		BTL driver 3 non-inverting output pin
11	FD –	O	(0.3V)		BTL driver 2 inverting output pin
12	FD+	O	(0.3V)		BTL driver 2 non-inverting output pin
13	TVD –	O	(0V)		BTL driver 1 inverting output pin
14	TVD+	O	(0V)		BTL driver 1 non-inverting output pin
16	PC	I	0V		PC (power cut) input pin