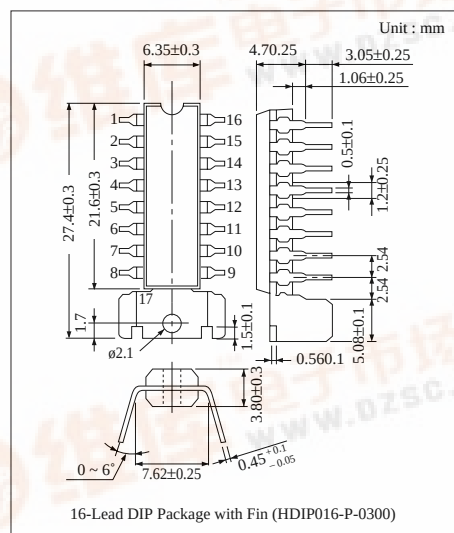


Panasonic

3-channel Linear Driver

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.

- 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)



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

The block diagram illustrates the internal architecture of the TMS320C49 evaluation module. It features three BTL Motor Drivers (1, 2, and 3) connected to a 5V Regulator (low-sat) and a Band-gap (2.5V). The diagram also shows the connection of the RST pin to the Thermal Shutdown pin. The module is powered by V_{CC} (pin 1) and GND (pin 8). The output of the 5V Regulator is connected to the V_{REF} pin (pin 8). The module includes three Error Amps (100kW) and three BTL Motor Drivers (1, 2, and 3). The diagram is labeled with various pins and components, including V_{CC}, GND, V_{REF}, and RST.

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■ 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

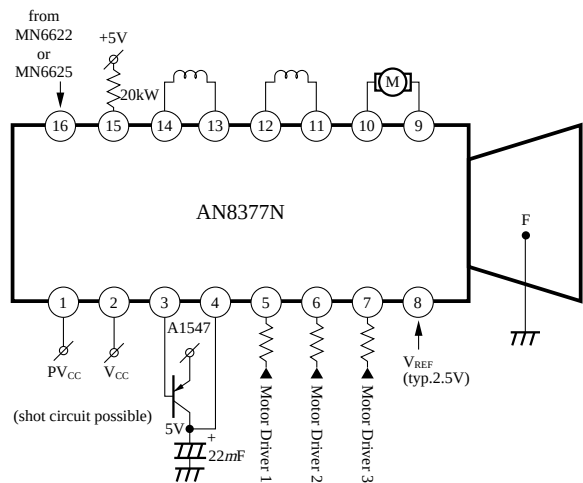
■ Electrical Characteristics (Ta=25°C)

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	$\overline{\text{RST}}$	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