Ordering number: EN 1188D

Monolithic Digital IC

NO.1188D

LB1231 Series

High-Voltage, Large Current Darlington Transistor Array

The circuit configuration of this IC is of 7-channel Darlington transistor array consisting of NPN transistors. It is especially suited for use in hammer drivers and lamp, relay drivers. It contains spark killer diodes against L load.

Features High-voltage (V_{CEO}≧50V), large-current ($I_C$max=500mA) drive

- LB1231 . Drivable by TTL, MOS output
- LB1232 . Contains base current limiting resistors, Zener diodes for level shift.
  . Direct drivable by 24V P MOS.
- LB1233 . Contains base current limiting resistors.
  . Direct drivable by TTL, C MOS output.
- LB1234 . Contains base current limiting resistors.
  . Direct drivable by C MOS, P MOS output.

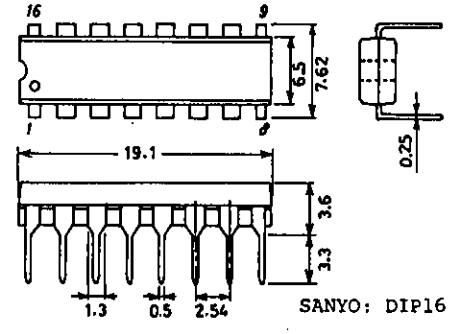
Absolute Maximum Ratings at T_a=25°C

				unit
Output Supply Voltage	V_{OUT}		50	V
Output Current	I_{OUT}	Per unit	500	mA
Input Supply Voltage	V_{IN}	LB1232/33/34	30	V
Input Current	I_{IN}	LB1231 only	25	mA
GND Pin Current	I_{GND}	7ch simultaneously on, f=10Hz, duty,=23%	2.8	A
Allowable Power Dissipation	$P_d$max		1.5	W
Operating Temperature	Topr		-20 to +75	°C
Storage Temperature	Tstg		-40 to +150	°C

Allowable Operating Conditions at Ta=25°C

					unit
Output Supply Voltage	V_{OUT}			50	V
Input "H" Level Voltage	V_{IH}	LB1232	I_{OUT}=350mA	11 to 30	V
		LB1233	I_{OUT}=350mA	3 to 30	V
		LB1234	I_{OUT}=350mA	5 to 30	V
Input "L" Level Voltage	V_{IL}	LB1231/33	I_{OUT}≦100μA	-0.3 to +0.3	V
		LB1232	I_{OUT}≦100μA	-0.3 to +6.0	V
		LB1234	I_{OUT}≦100μA	-0.3 to +0.7	V

Package Dimensions 3064-D16TR
(unit : mm)



SANYO: DIP16

SANYO Electric Co., Ltd. Semiconductor Business Headquarters
TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110 JAPAN

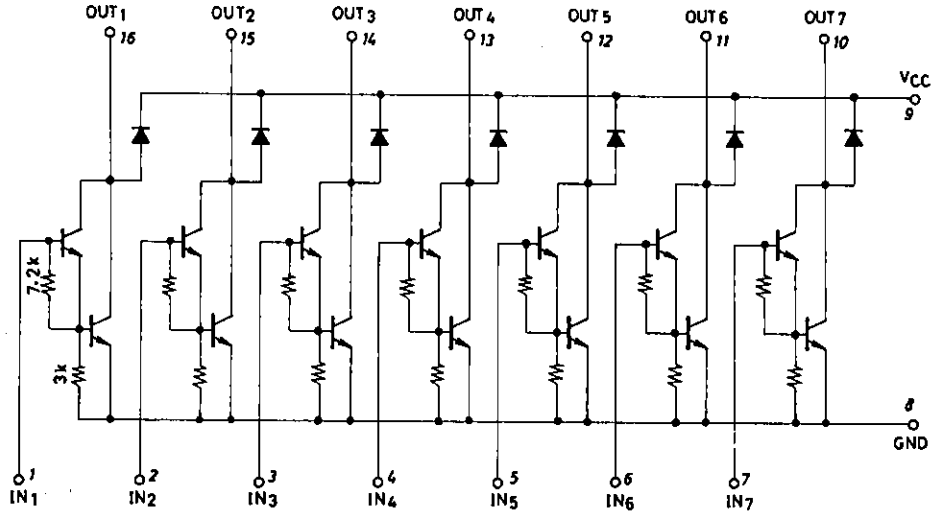
Electrical Characteristics at T_a=25°C

			min	typ	max	unit
Output Leak Current	I_{OFF}	V_{OUT}=50V			100	μA
Output Voltage	V_{OH1}	I_{IN}=0.25mA, I_{OUT}=100mA		0.9	1.1	V
	V_{OH2}	I_{IN}=0.35mA, I_{OUT}=200mA		1.1	1.3	V
	V_{OH3}	I_{IN}=0.5mA, I_{OUT}=350mA		1.3	1.6	V
	V_{OH4}	I_{IN}=1mA, I_{OUT}=400mA			2.4	V
Input Voltage	V_{IN}	LB1231 I_{IN}=1mA		1.35	1.7	V
Input Current	V_{IN}	LB1232 V_{IN}=17V		0.82	1.25	mA
		LB1233 V_{IN}=3.85V		0.93	1.35	mA
		LB1234 V_{IN}=5V		0.35	0.5	mA
		LB1234 V_{IN}=12V		1.00	1.45	mA
Spark Killer Diode Leak Currnet	$I_{R(S)}$	$V_{R(S)}$=50V			100	μA
Spark Killer Diode Forward Voltage	$V_{F(S)1}$	$I_{F(S)}$=350mA			2.0	V
	$V_{F(S)2}$	$I_{F(S)}$=400mA			2.4	V

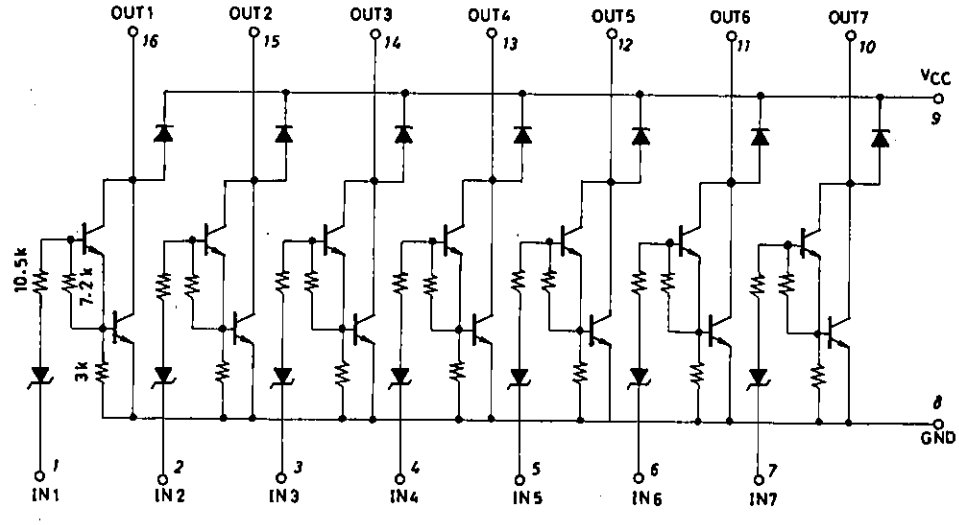
Equivalent Circuits

Unit (resistance: Ω)

LB1231



LB1232



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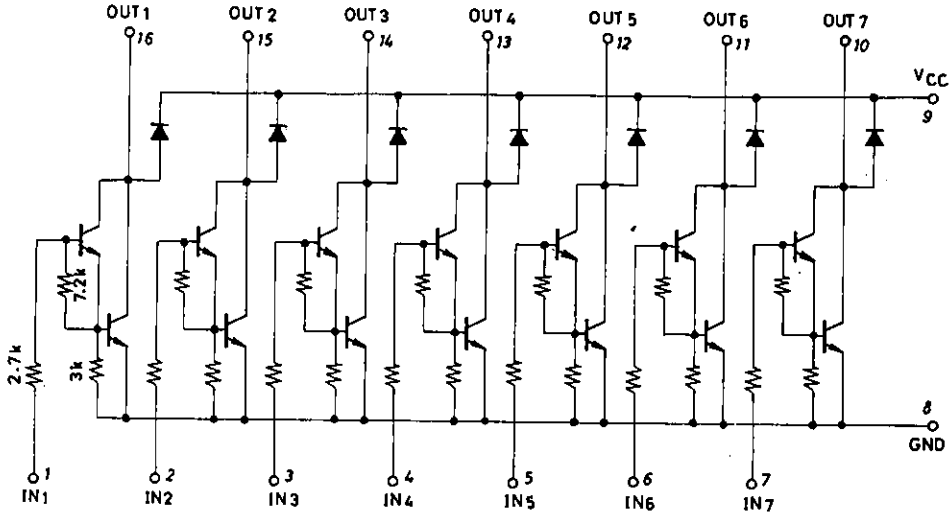
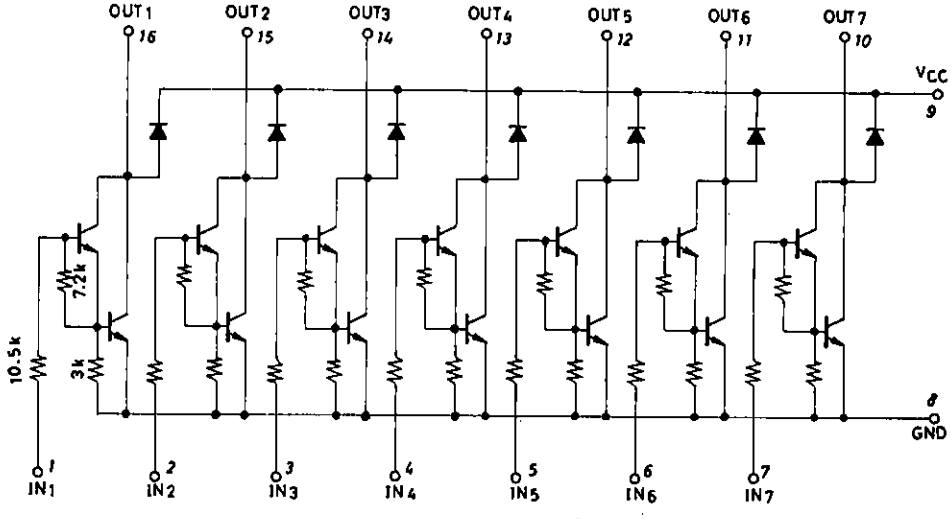
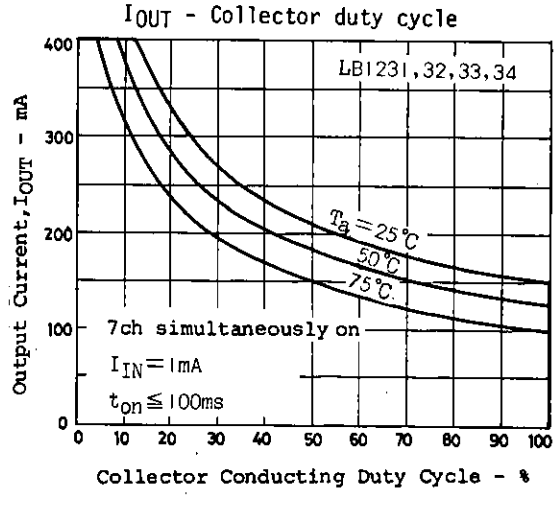
Unit (resistance: Ω)

LB1233



LB1234





Ordering number: EN 1281D

Monolithic Digital IC

NO.1281D

LB1268

3-Channel, High-Current, Low-Saturation Driver Array

Features and Functions

- 3-channel magnet driver
- High current (2.0A max.) and low saturation voltage (1.5V)
- Parallel operation capability (channel 1 + 2)
- On-chip spark killer diodes

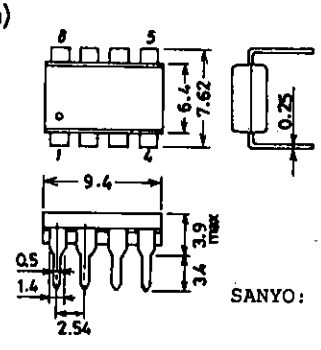
Absolute Maximum Ratings at Ta = 25°C

				unit
Maximum Supply Voltage	V_{CC} max		8.0	V
Output Supply Voltage	V_{OUT}		10.0	V
Input Supply Voltage	V_{IN}		12.0	V
Output Current	I_{OUT1}	ton≦50ms,duty=20%, solenoid drive stage (ch1,2)	1.0	A
	I_{OUT2}	ton≦50ms,duty=5%, motor drive stage (ch3)	2.5	A
Spark Killer Diode Forward Current	I_{FSM1}	t≦5ms,duty=5%, solenoid drive stage (ch1,2)	1.0	A
	I_{FSM2}	t≦5ms,duty=5%, motor drive stage (ch3)	2.5	A
V_{CC} Instantaneous Flow-Out Current	I_{CCP}	t≦5ms,duty=5%,	3.0	A
GND Pin Flow-Out Current	I_{GND}	t≦5ms,duty=20%,	3.0	A
Allowable Power Dissipation	Pd max		785	mW
Operating Temperature	Topr		−20 to +75	°C
Storage Temperature	Tstg		−40 to +125	°C

Allowable Operating Range at Ta = 25°C

				unit
Supply Voltage	V_{CC}		3.0 to 7.0	V
Input 'H'-Level Voltage	V_{IH}	I_{OUT}=300mA	3.0 to 11.0	V
Input 'L'-Level Voltage	V_{IL}	I_{OUT}≦100μA	−0.3 to +0.7	V

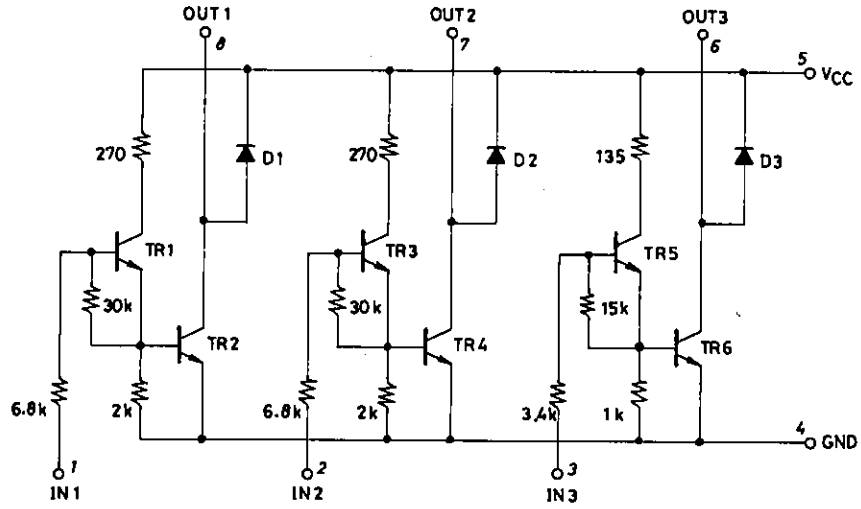
Package Dimensions 3001B-D8IC
(unit : mm)



SANYO: DIP8

Electrical Characteristics at Ta = 25°C			min	typ	max	unit
Output Voltage	V_{OH1}	V_{IN} = 4.5V, V_{CC} = 5.0V, I_{OUT} = 500mA (ch1,2)			0.65	V
	V_{OH2}	V_{IN} = 6.0V, V_{CC} = 7.0V, I_{OUT} = 1000mA (ch1,2)			1.4	V
	V_{OH3}	V_{IN} = 6.0V, V_{CC} = 7.0V, I_{OUT} = 1600mA (ch1,2 parallel)			1.4	V
	V_{OH4}	V_{IN} = 3.0V, V_{CC} = 3.0V, I_{OUT} = 300mA (ch3)			0.25	V
	V_{OH5}	V_{IN} = 4.5V, V_{CC} = 5.0V, I_{OUT} = 1000mA (ch3)		0.5	0.7	V
	V_{OH6}	V_{IN} = 6.0V, V_{CC} = 7.0V, I_{OUT} = 2000mA (ch3)		1.0	1.5	V
Input Current	I_{IN1}	V_{IN} = 6.0V (ch1,2)			1.0	mA
	I_{IN2}	V_{IN} = 6.0V (ch3)			2.0	mA
Power Source + Output Leakage Current	I_{OFF}	V_{IN} = 0.5V, V_{OUT} = V_{CC} = 6.0V			30	μA
Spark Killer Diode Forward Voltage	V_{F1}	I_F = 1000mA (ch1,2)			3.0	V
	V_{F2}	I_F = 2000mA (ch3)			3.0	V
Output Sustain Voltage	$V_{O(sus)}$	I_{OUT} = 400mA	10			V

Equivalent Circuit



Unit (resistance: Ω)