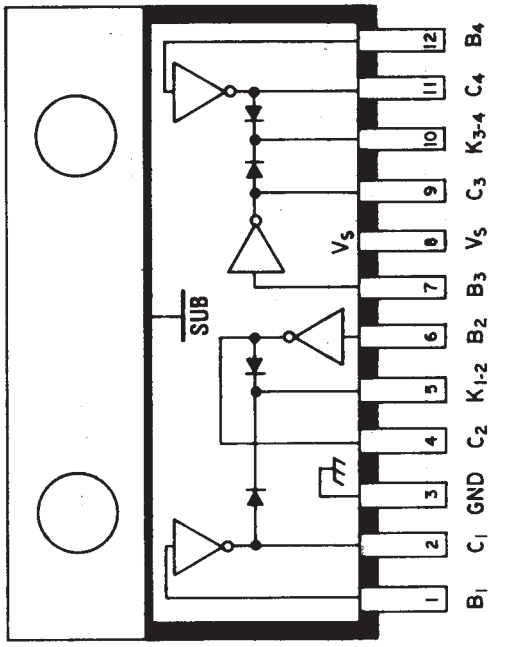
2878 AND 2879

Data Sheet
29305.10B*

QUAD HIGH-CURRENT DARLINGTON SWITCHES



Dwg. No. A-11,974

ABSOLUTE MAXIMUM RATINGS
at +25°C Free-Air Temperature for any driver (unless otherwise noted)

Output Voltage, V_{CEX}
(UDN2878W) . . . . . **50 V**
(UDN2879W & UDN2879W-2) . . **80 V**
Output Current, I_C
(UDN2878W & UDN2879W) . . . **5.0 A**
(UDN2879W-2) . . . . . **4.0 A**
Input Voltage, V_{IN} . . . . . **15 V**
Input Current, I_{IN} . . . . . **25 mA**
Supply Voltage, V_S . . . . . **10 V**
Total Package Power Dissipation, P_D . . . . . **See Graph**
Operating Ambient Temperature Range, T_A . . . . . **-20°C to +85°C**
Storage Temperature Range, T_S . . . . . **-55°C to +150°C**

These quad Darlington arrays are designed to serve as interface between low-level logic and peripheral power devices such as solenoids, motors, incandescent displays, heaters, and similar loads of up to 320 W per channel. Both integrated circuits include transient-suppression diodes that enable use with inductive loads. The input logic is compatible with most TTL, DTL, LSTTL, and 5 V CMOS logic.

Type UDN2878W and UDN2879W 4 A arrays are identical except for output-voltage ratings. The former is rated for operation to 50 V (35 V sustaining), while the latter has a minimum output breakdown rating of 80 V (50 V sustaining). The lower-cost UDN2879W-2 is recommended for applications requiring load currents of 3 A or less. These less expensive devices are identical to the basic parts except for the maximum allowable load-current rating.

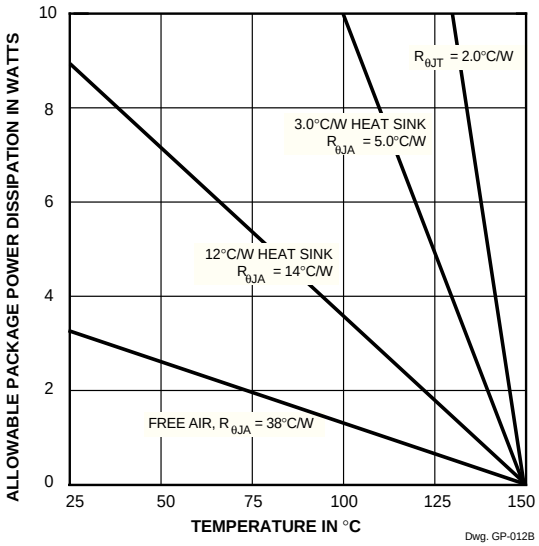
For maximum power-handling capability, all drivers are supplied in a 12-pin single in-line power-tab package. The tab needs no insulation. External heat sinks are usually required for proper operation of these devices.

FEATURES

- Output Currents to 4 A
- Output Voltages to 80 V
- Loads to 1280 W
- TTL, DTL, or CMOS Compatible Inputs
- Internal Clamp Diodes
- Plastic Single In-Line Package
- Heat-Sink Tab

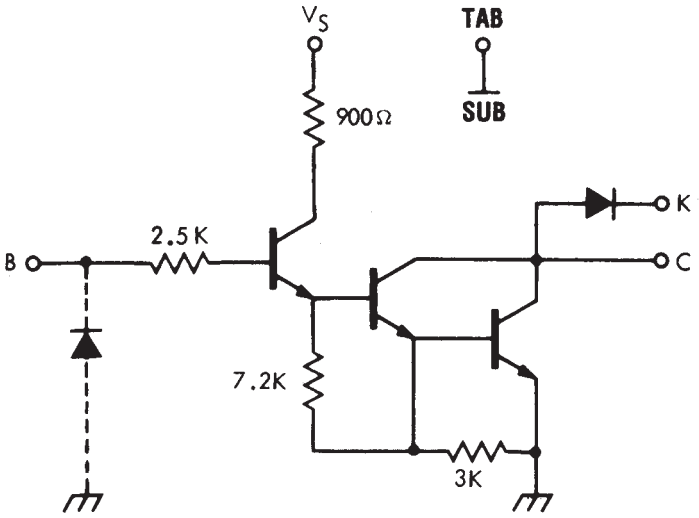
Always order by complete part number:

Part Number	Max. I_C	Max. V_{CEX}	Min. $V_{CE\ (sus)}$
UDN2878W	5.0 A	50 V	35 V
UDN2879W	5.0 A	80 V	50 V
UDN2879W-2	4.0 A	80 V	50 V



PARTIAL SCHEMATIC

One of 4 Drivers



Dwg. No. A-12,037

NOTE: Pin 3 must be connected to ground for proper operation.

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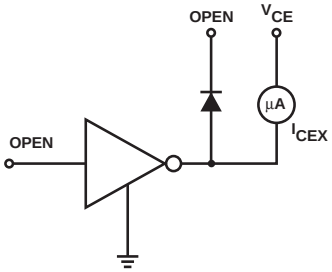
ELECTRICAL CHARACTERISTICS at V_S = 5.0 V, T_A = +25°C (unless otherwise noted).

Characteristic	Symbol	Test Fig.	Applicable Devices	Test Conditions	Limits Min.	Limits Max.	Units
Output Leakage Current	I_{CEX}	1	UDN2878W	V_{CE} = 50 V	—	100	µA
				V_{CE} = 50 V, T_A = +70°C	—	500	µA
			UDN2879W/W-2	V_{CE} = 80 V	—	100	µA
				V_{CE} = 80 V, T_A = +70°C	—	500	µA
Output Sustaining Voltage	$V_{CE(sus)}$	—	UDN2878W	I_C = 4 A, L = 10 mH	35	—	V
			UDN2879W	I_C = 4 A, L = 10 mH	50	—	V
			UDN2879W-2	I_C = 3 A, L = 10 mH	50	—	V
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	2	All	I_C = 500 mA, V_{IN} = 2.75 V	—	1.1	V
				I_C = 1.0 A, V_{IN} = 2.75 V	—	1.3	V
				I_C = 2.0 A, V_{IN} = 2.75 V	—	1.5	V
				I_C = 3.0 A, V_{IN} = 2.75 V	—	1.9	V
			UDN2878/79W	I_C = 4.0 A, V_{IN} = 3.0 V	—	2.4	V
Input Current	I_{IN}	3	All	V_{IN} = 2.75 V	—	550	µA
				V_{IN} = 3.75 V	—	1000	µA
Input Voltage	$V_{IN(ON)}$	4	All	V_{CE} = 2.2 V, I_C = 3.0 A	—	2.75	V
			UDN2878/79W	V_{CE} = 2.2 V, I_C = 4.0 A	—	2.75	V
Supply Current per Driver	I_S	7	All	I_C = 500 mA, V_{IN} = 2.75 V	—	6.0	mA
Turn-On Delay	t_{PLH}	—	All	0.5 E_{in} to 0.5 E_{out}	—	1.0	µs
Turn-Off Delay	t_{PHL}	—	All	0.5 E_{in} to 0.5 E_{out}, I_C = 3.0 A	—	1.5	µs
Clamp Diode Leakage Current	I_R	5	All	V_R = 50 V	—	50	µA
				V_R = 50 V, T_A = +70°C	—	100	µA
			UDN2879W/W-2	V_R = 80 V	—	50	µA
				V_R = 80 V, T_A = +70°C	—	100	µA
Clamp Diode Forward Voltage	V_F	6	All	I_F = 3.0 A	—	2.5	V
			UDN2878/79W	I_F = 4.0 A	—	3.0	V

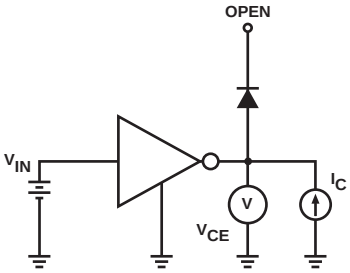
Caution: High-current tests are pulse tests or require heat sinking.

TEST FIGURES



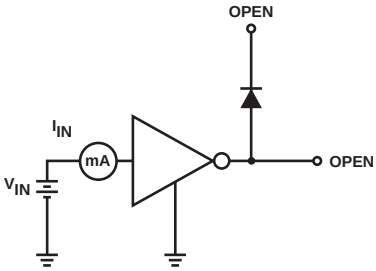
Dwg. No. A-9729A

FIGURE 1



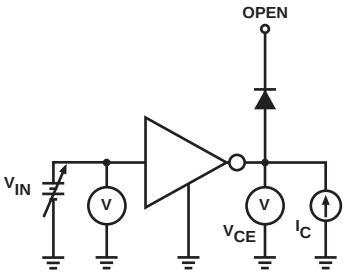
Dwg. No. A-10,350

FIGURE 2



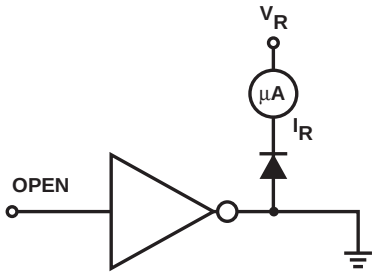
Dwg. No. A-9732

FIGURE 3



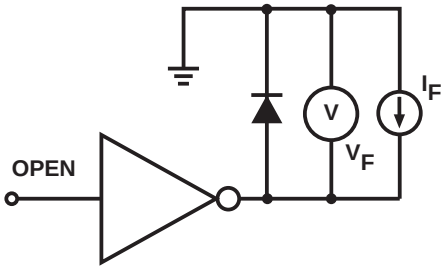
Dwg. No. A-9734A

FIGURE 4



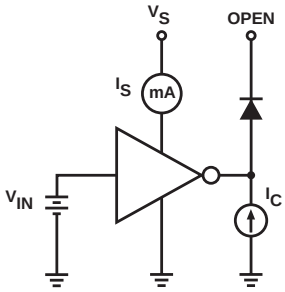
Dwg. No. A-9735A

FIGURE 5



Dwg. No. A-9736

FIGURE 6



Dwg. No. A-10,351

FIGURE 7

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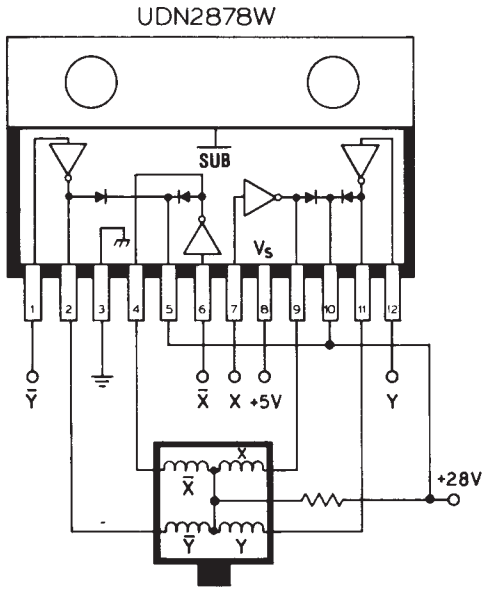
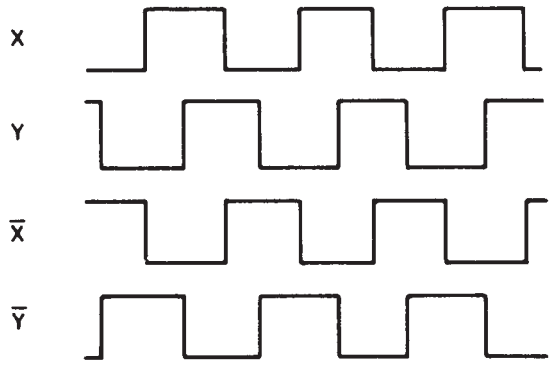
TYPICAL APPLICATIONS

INPUT WAVEFORMS



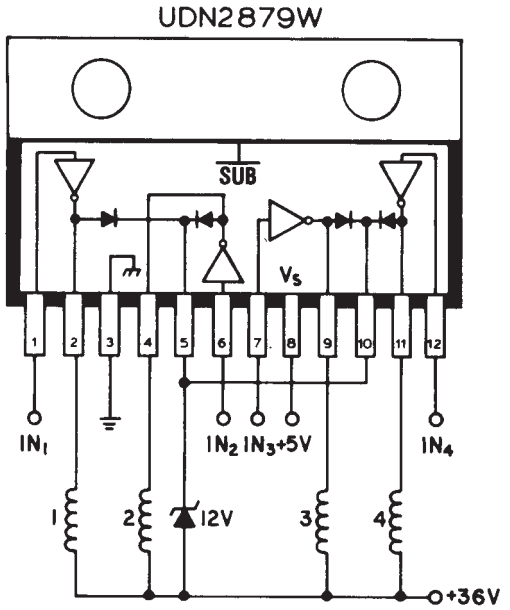
Dwg. No. A-11,975

STEPPER-MOTOR DRIVER



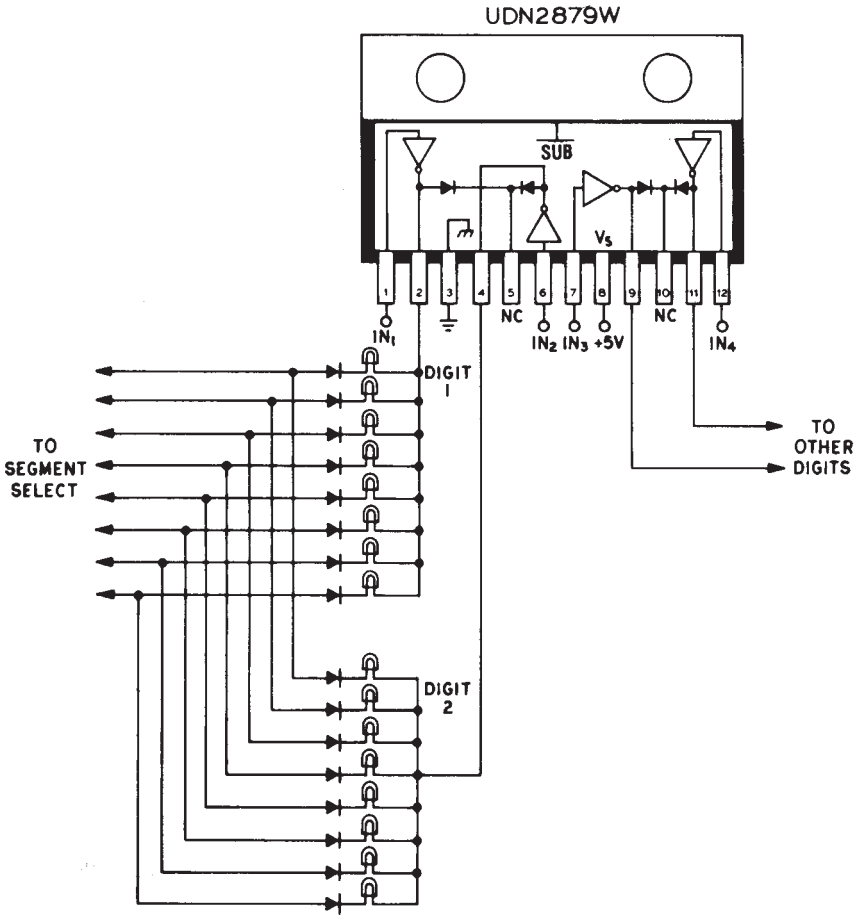
Dwg. No. A-11,795

PRINT-HAMMER DRIVER



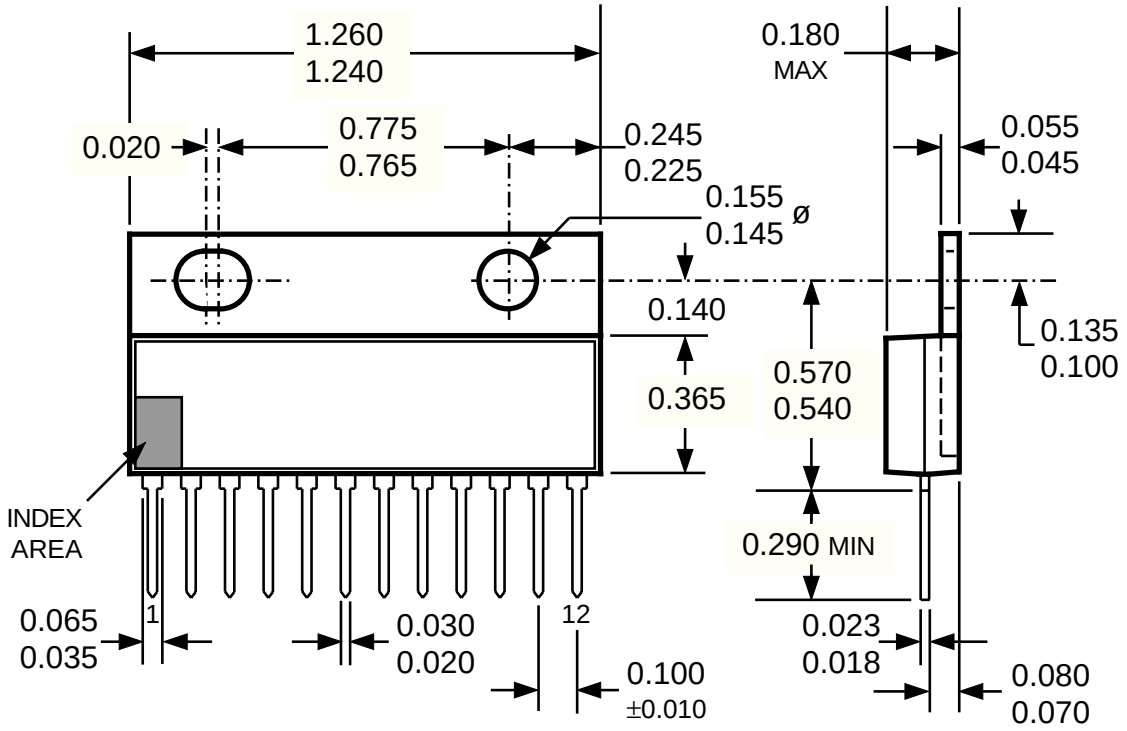
Dwg. No. A-11,976

DIGIT DRIVER FOR MULTIPLEXED INCANDESCENT LAMP DISPLAY



Dwg. No. B-1512

Dimensions in Inches
(controlling dimensions)



Dwg. MP-007 in

NOTES:
1. Lead thickness is measured at seating plane or below.
2. Lead spacing tolerance is non-cumulative
3. Exact body and lead configuration at vendor's option within limits shown.
4. Lead gauge plane is 0.030" below seating plane.

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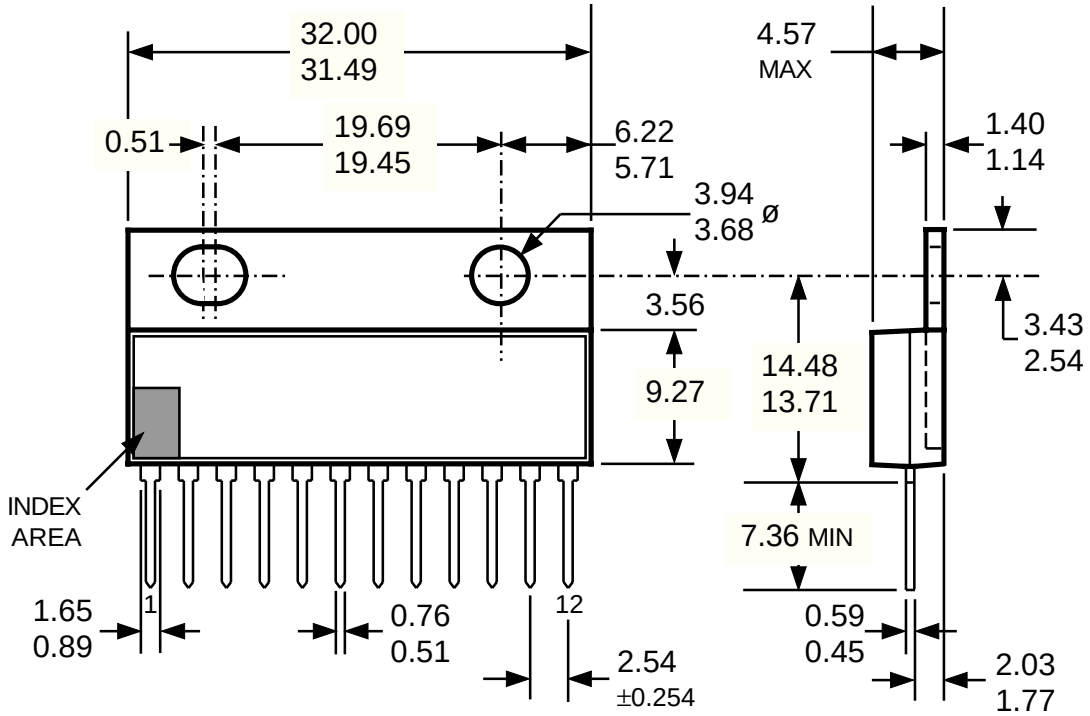
Dimensions in Millimeters
(for reference only)



Dwg. MP-007 mm

NOTES: 1. Lead thickness is measured at seating plane or below.
2. Lead spacing tolerance is non-cumulative
3. Exact body and lead configuration at vendor's option within limits shown.
4. Lead gauge plane is 0.762 mm below seating plane.

Allegro MicroSystems, Inc. reserves the right to make, from time to time, such departures from the detail specifications as may be required to permit improvements in the design of its products.

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2878 AND 2879
QUAD HIGH-CURRENT DARLINGTON SWITCHES

POWER SINK DRIVERS SELECTION GUIDE

IN ORDER OF 1) OUTPUT CURRENT, 2) OUTPUT VOLTAGE, 3) NUMBER OF DRIVERS

Output Ratings *			Features					
mA	V	#	Serial Input	Latched Drivers	Diode Clamp	Saturated Outputs	Internal Protection	Part Number †
100	20	8	–	–	–	X	–	2595
	30	32	X	X	–	–	–	5833
	40	32	X	X	–	X	–	5832
250	135	7	–	–	X	–	–	7003
300	45	1		Hall Sensor/Driver	X	–	X	5140
	50	7	–	–	X	–	–	2003
	50	8	–	–	X	–	–	2803
	50	8	–	–	X	X	–	2596
	60	2		Hall Sensor/Driver	–	X	–	5275
	60	4	–	–	X	X	X	2557
	95	7	–	–	X	–	–	2023
	95	8	–	–	X	–	–	2823
350	50	4	–	X	X	–	–	5800
	50	7	–	–	X	–	–	2004
	50	8	–	–	X	–	–	2804
	50	8	–	X	X	–	–	5801
	50	8	X	X	–	–	–	5821
	80	8	X	X	–	–	–	5822
	50	8	X	X	X	–	–	5841
	80	8	X	X	X	–	–	5842
	95	7	–	–	X	–	–	2024
	95	8	–	–	X	–	–	2824
450	30	28		Dual 4 to 14-Line Decoder/Driver		–	–	6817
600	60	4	–	–	–	X	X	2547
	60	4	–	–	X	X	X	2549
700	60	4	–	–	X	X	X	2543 and 2559
750	50	8	–	–	X	X	–	2597
900	14	2		Hall Sensor/Driver	X	X	X	3625
	26	2		Hall Sensor/Driver	X	X	X	3626
1000	46	4		Stepper Motor Controller/Driver		MOS	–	7024 and 7029
1200	46	4		Microstepping Controller/Driver		MOS	–	7042
1250	50	4		Stepper Motor Translator/Driver		–	X	5804
	50	4	–	–	X	–	–	2064 and 2068
1500	80	4	–	–	X	–	–	2065 and 2069
1600	50	9	X	X	–	–	X	5829
1800	50	4	–	–	X	–	–	2544
	50	4	–	–	X	–	–	2540
3000	46	4		Stepper Motor Controller/Driver		MOS	–	7026
4000	50	4	–	–	X	–	–	2878
	80	4	–	–	X	–	–	2879

* Current is maximum specified test condition, voltage is maximum rating. See specification for sustaining voltage limits or over-current protection voltage limits.

† Complete part number includes additional characters to indicate operating temperature range and package style.

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