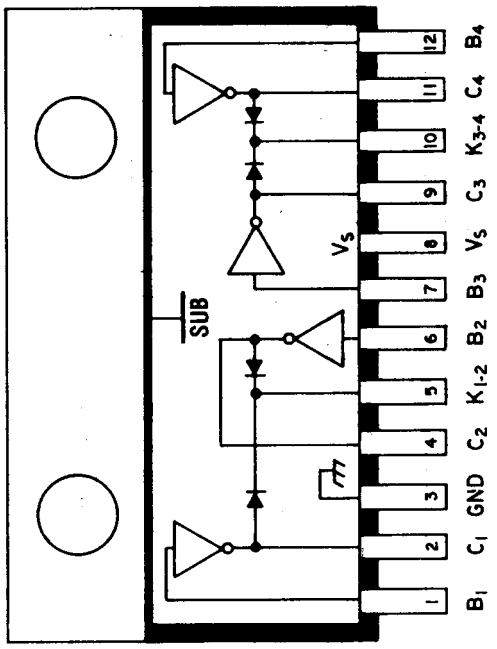
2878 AND 2879

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.

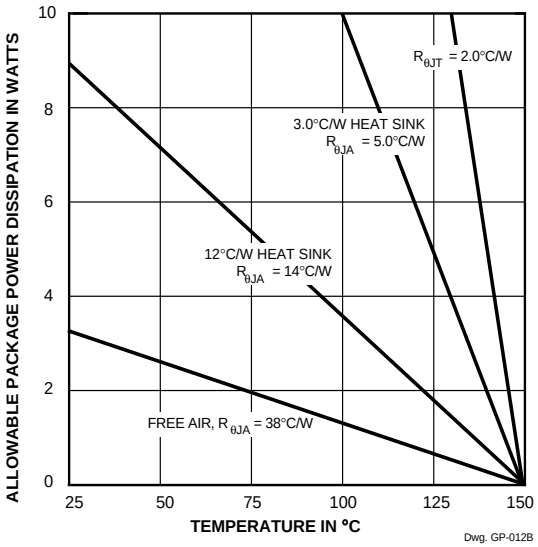
For maximum power-handling capability, all drivers are supplied in a 12-pin single in-line power-tab package. The tab needs no insulation. External heat sinks are usually required for proper operation of these devices.

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

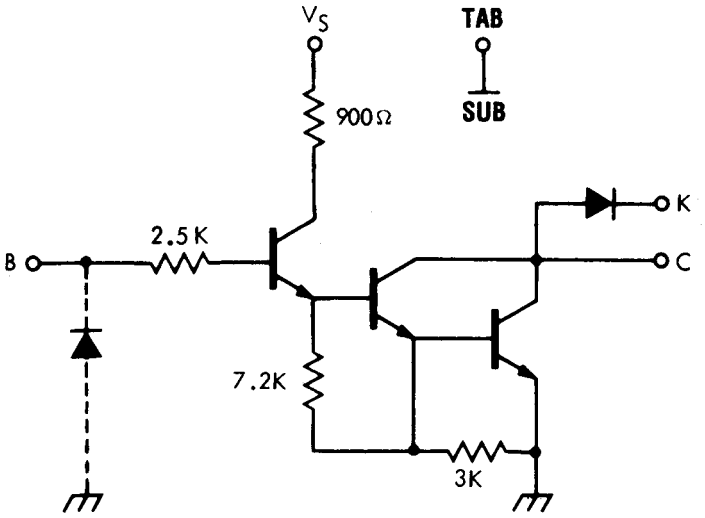
Always order by complete part number:

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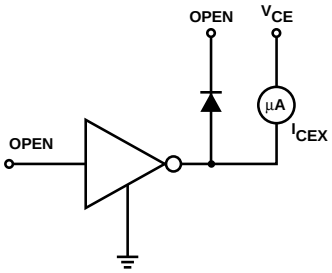
ELECTRICAL CHARACTERISTICS at V_S = 5.0 V, T_A = +25°C (unless otherwise noted).

Characteristic	Symbol	Test Fig.	Applicable Devices	Test Conditions	Limits Min.	Limits Max.	Limits 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

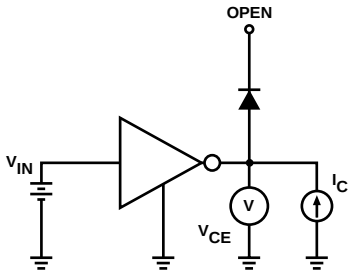
Caution: High-current tests are pulse tests or require heat sinking.

TEST FIGURES



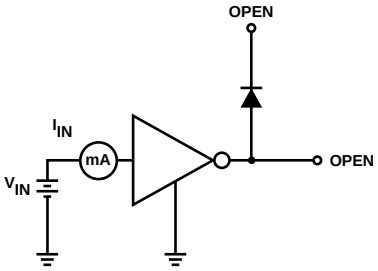
Dwg. No. A-9729A

FIGURE 1



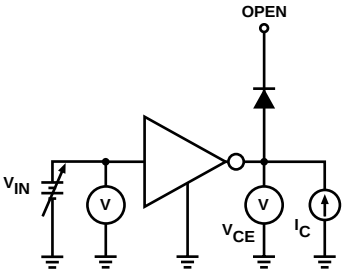
Dwg. No. A-10,350

FIGURE 2



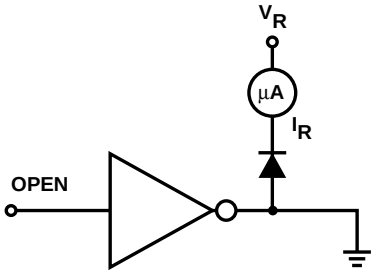
Dwg. No. A-9732

FIGURE 3



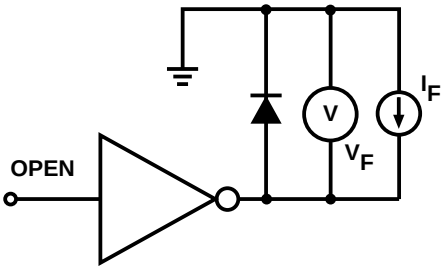
Dwg. No. A-9734A

FIGURE 4



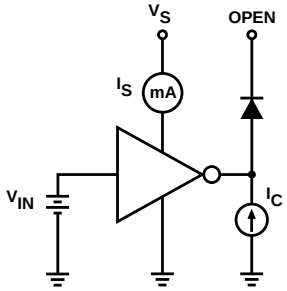
Dwg. No. A-9735A

FIGURE 5



Dwg. No. A-9736

FIGURE 6



Dwg. No. A-10,351

FIGURE 7

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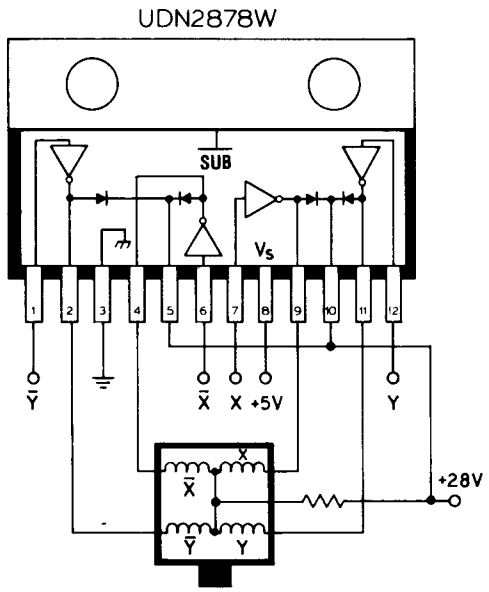
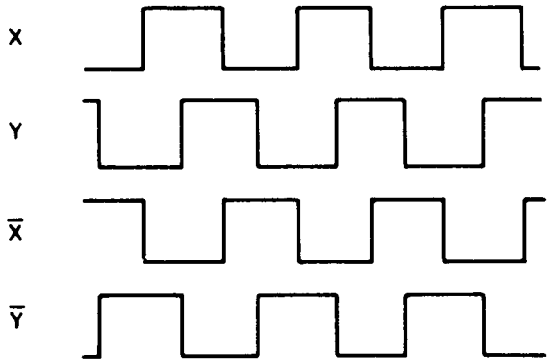
TYPICAL APPLICATIONS

INPUT WAVEFORMS



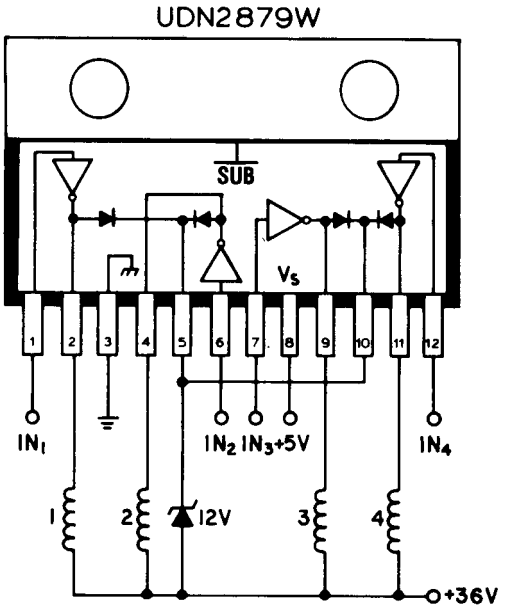
Dwg. No. A-11,975

STEPPER-MOTOR DRIVER



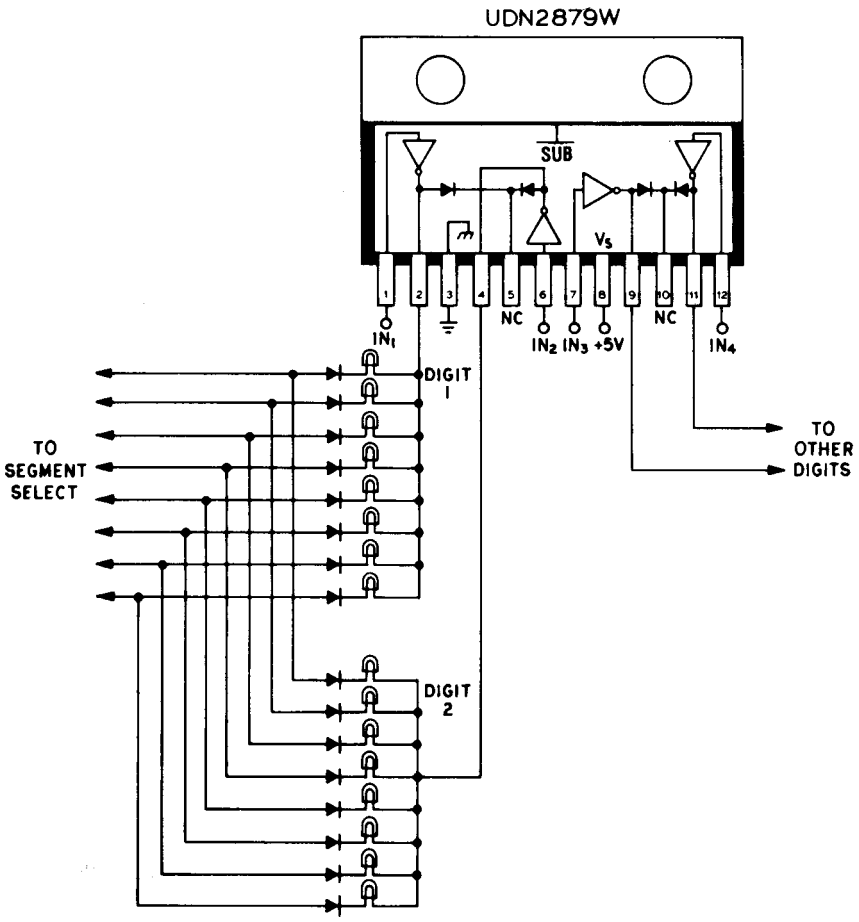
Dwg. No. A-11,795

PRINT-HAMMER DRIVER



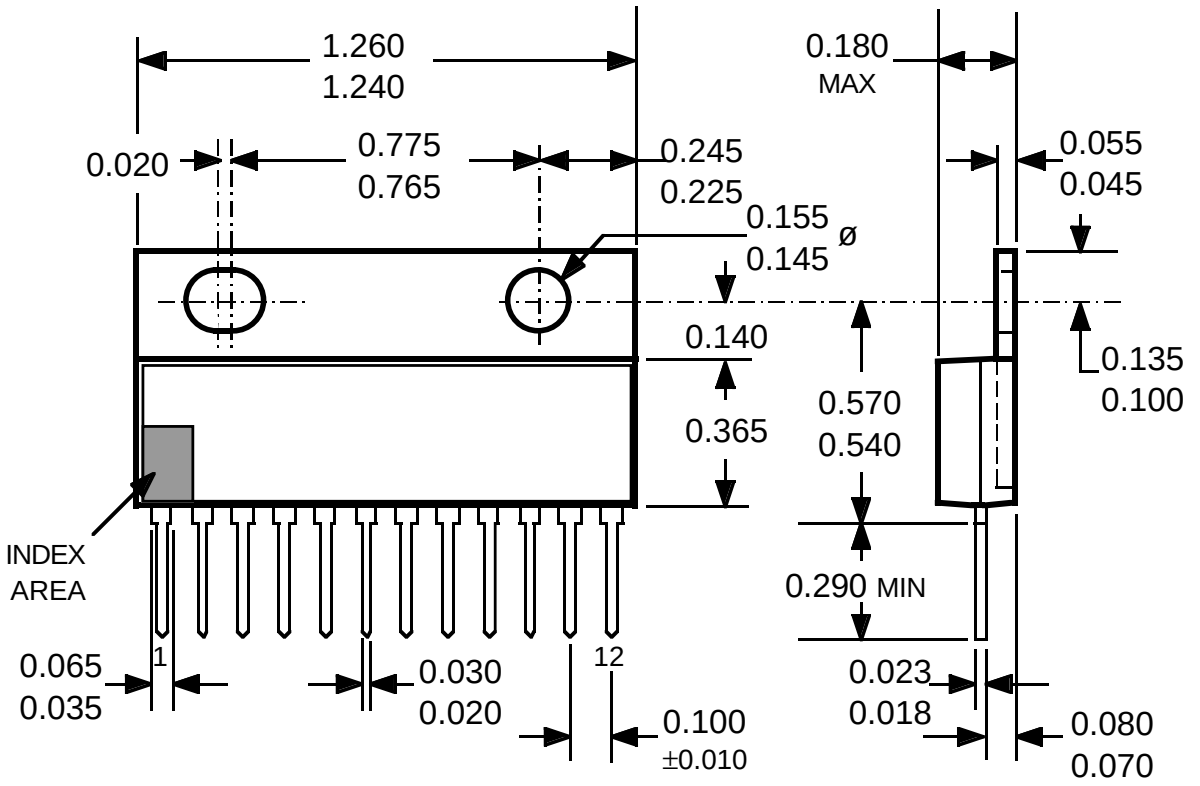
Dwg. No. A-11,976

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.
5. Supplied in standard sticks/tubes of 15 devices.

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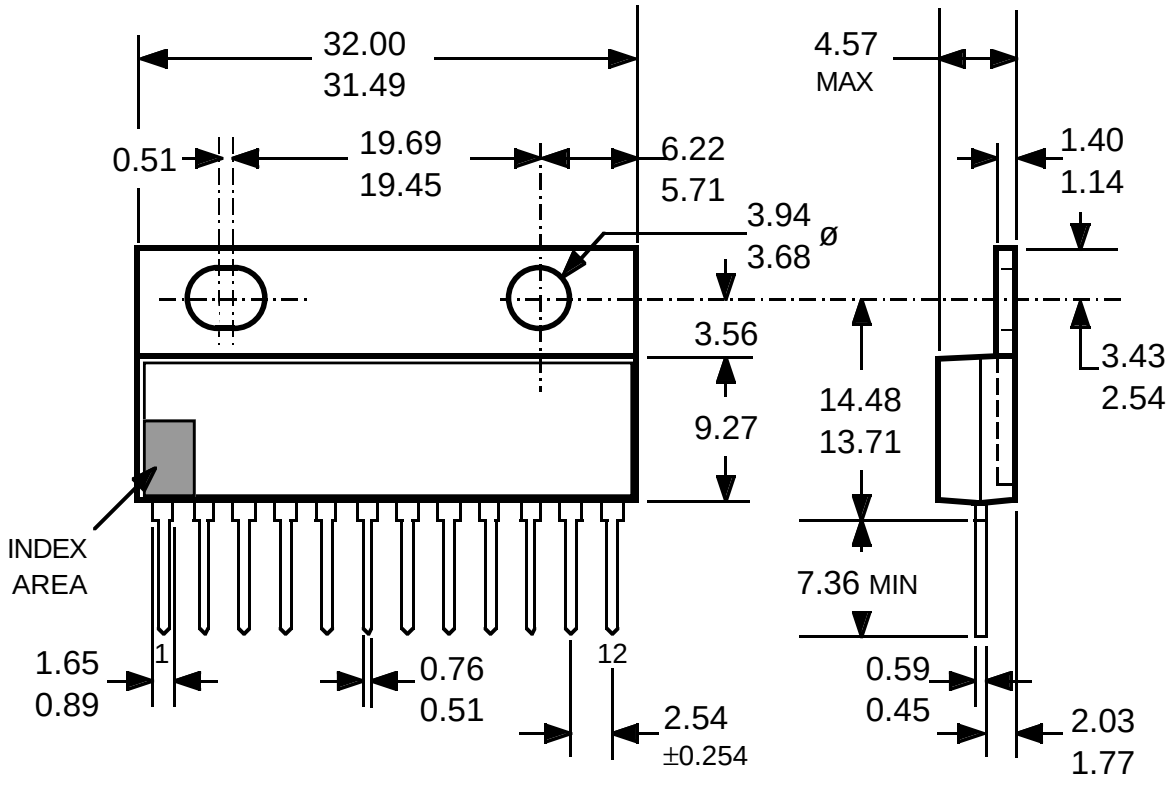
Dimensions in Millimeters
(for reference only)



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.
5. Supplied in standard sticks/tubes of 15 devices.

2878 AND 2879
QUAD HIGH-CURRENT DARLINGTON SWITCHES

POWER SINK DRIVERS

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

Output Ratings *			Features					
			Serial	Latched	Diode		Internal	
mA	V	#	Input	Drivers	Clamp	Outputs	Protection	Part Number†
75	17	8	X	X	–	constant current	–	6275
	17	16	X	X	–	constant current	–	6276
100	20	8	–	–	–	saturated	–	2595
	30	32	X	X	–	–	–	5833
	40	32	X	X	–	saturated	–	5832
	50	8	addressable decoder/driver			DMOS	–	6B259
	50	8	–	X	–	DMOS	–	6B273
	50	8	X	X	–	DMOS	–	6B595
120	24	8	X	X	–	constant current	–	6277
250	50	8	addressable decoder/driver			DMOS	–	6259
	50	8	–	X	–	DMOS	–	6273
	50	8	X	X	–	DMOS	–	6595
	50	8	–	–	X	saturated	–	2596
	60	4	–	–	X	saturated	X	2557
350	50	4	–	X	X	–	–	5800
	50	7	–	–	X	–	–	2003
	50	7	–	–	X	–	–	2004
	50	8	–	–	X	–	–	2803
	50	8	–	X	X	–	–	5801
	50	8	X	X	–	–	–	5821
	50	8	X	X	X	–	–	5841
	50	8	addressable decoder/driver			DMOS	–	6A259
	50	8	X	X	–	DMOS	–	6A595
	80	8	X	X	–	–	–	5822
	80	8	X	X	X	–	–	5842
	95	7	–	–	X	–	–	2023
	95	7	–	–	X	–	–	2024
450	30	28	dual 4- to 14-line decoder/driver			–	–	6817
600	60	4	–	–	–	saturated	X	2547
	60	4	–	–	X	saturated	X	2549 and 2559
700	60	4	–	–	X	saturated	X	2543
750	50	8	–	–	X	saturated	–	2597
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
1800	50	4	–	–	X	–	–	2540
3000	46	4	stepper motor controller/driver			MOS	–	7026
	46	4	microstepping controller/driver			MOS	–	7044

* 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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