

2878 AND 2879

Data Sheet
29305.10B†

QUAD HIGH-CURRENT DARLINGTON SWITCHES

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.

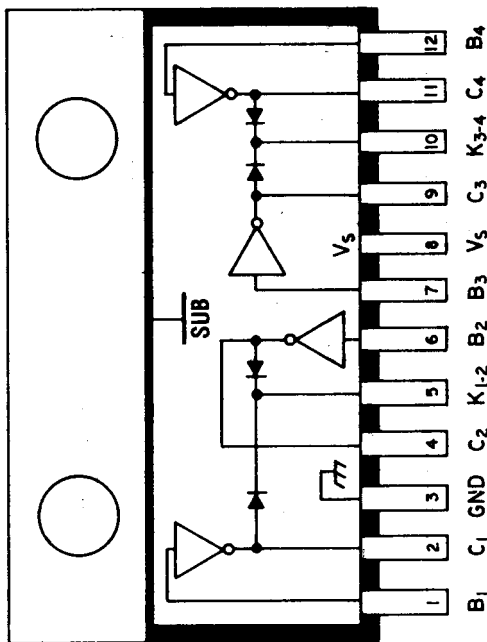
For maximum power-handling capability, all drivers are supplied in a 12-pin single in-line power-tab package. The tab needs no insulation. External heat sinks are usually required for proper operation of these devices.

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

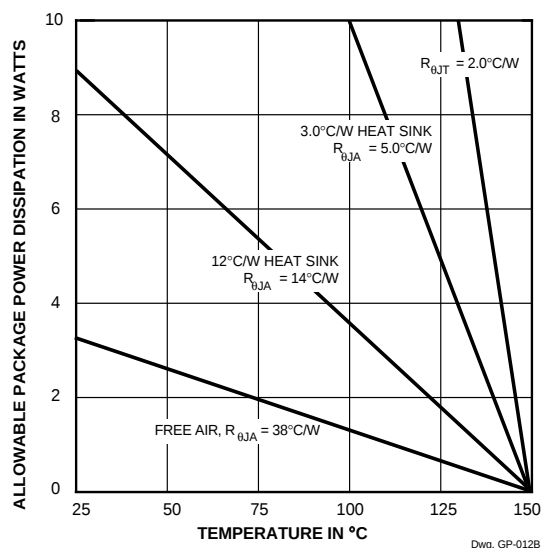


Dwg. No. A-11,974

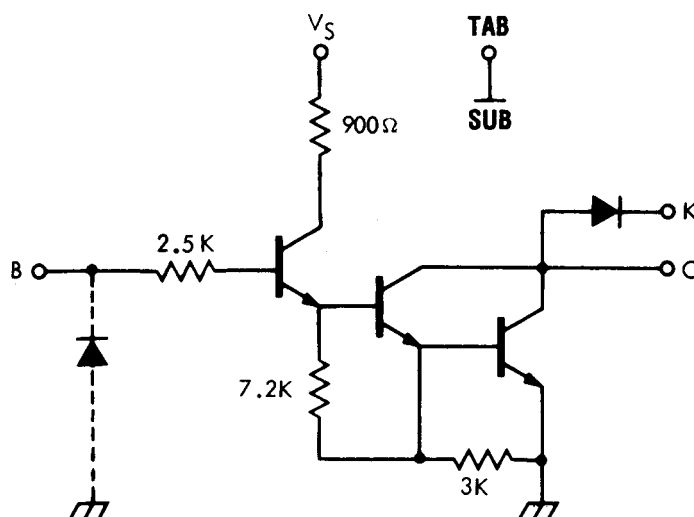
ABSOLUTE MAXIMUM RATINGS at +25°C Free-Air Temperature for any driver (unless otherwise noted)

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

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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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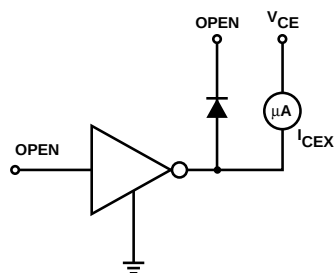
ELECTRICAL CHARACTERISTICS at $V_S = 5.0\text{ V}$, $T_A = +25^\circ\text{C}$ (unless otherwise noted).

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

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

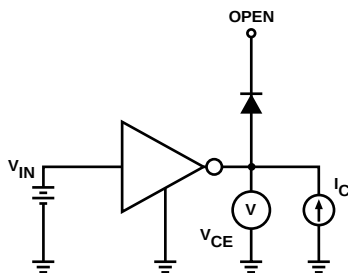
2878 AND 2879 QUAD HIGH-CURRENT DARLINGTON SWITCHES

TEST FIGURES



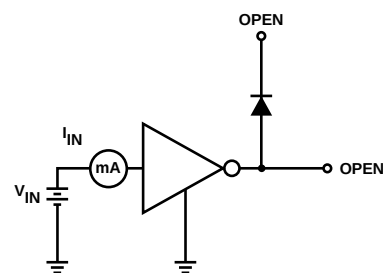
Dwg. No. A-9729A

FIGURE 1



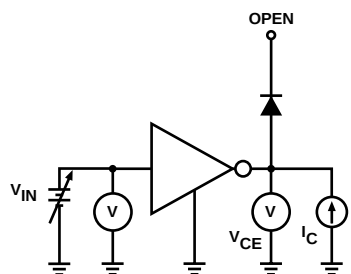
Dwg. No. A-10,350

FIGURE 2



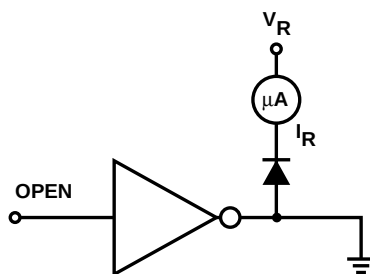
Dwg. No. A-9732

FIGURE 3



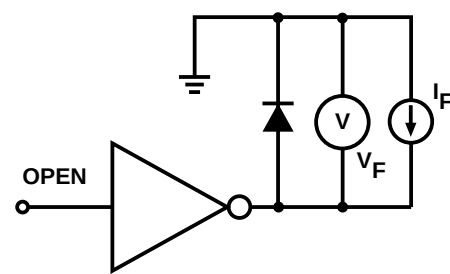
Dwg. No. A-9734A

FIGURE 4



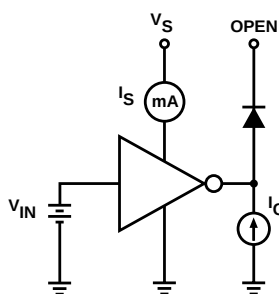
Dwg. No. A-9735A

FIGURE 5



Dwg. No. A-9736

FIGURE 6



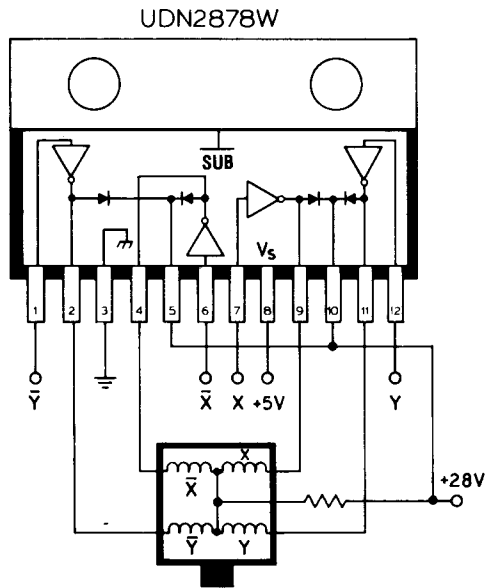
Dwg. No. A-10,351

FIGURE 7

2878 AND 2879 QUAD HIGH-CURRENT DARLINGTON SWITCHES

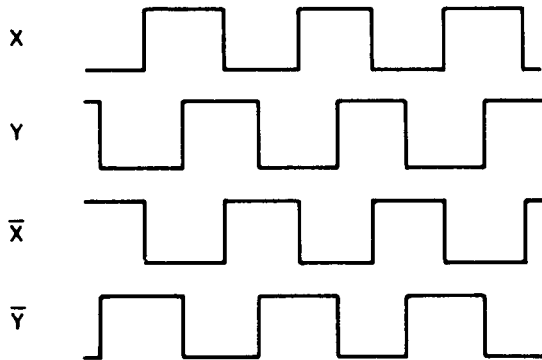
TYPICAL APPLICATIONS

INPUT WAVEFORMS



Dwg. No. A-11,975

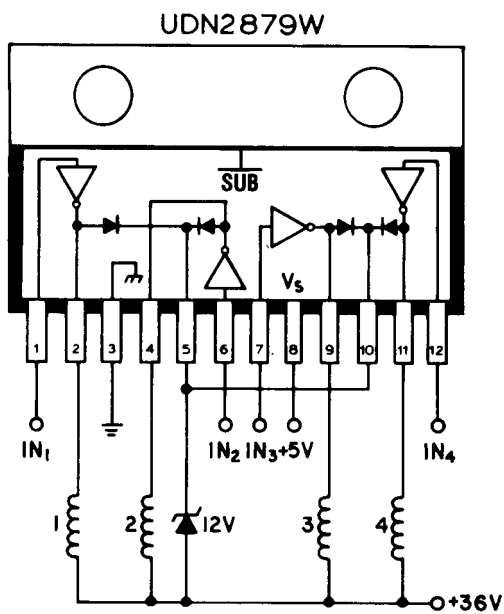
STEPPER-MOTOR DRIVER



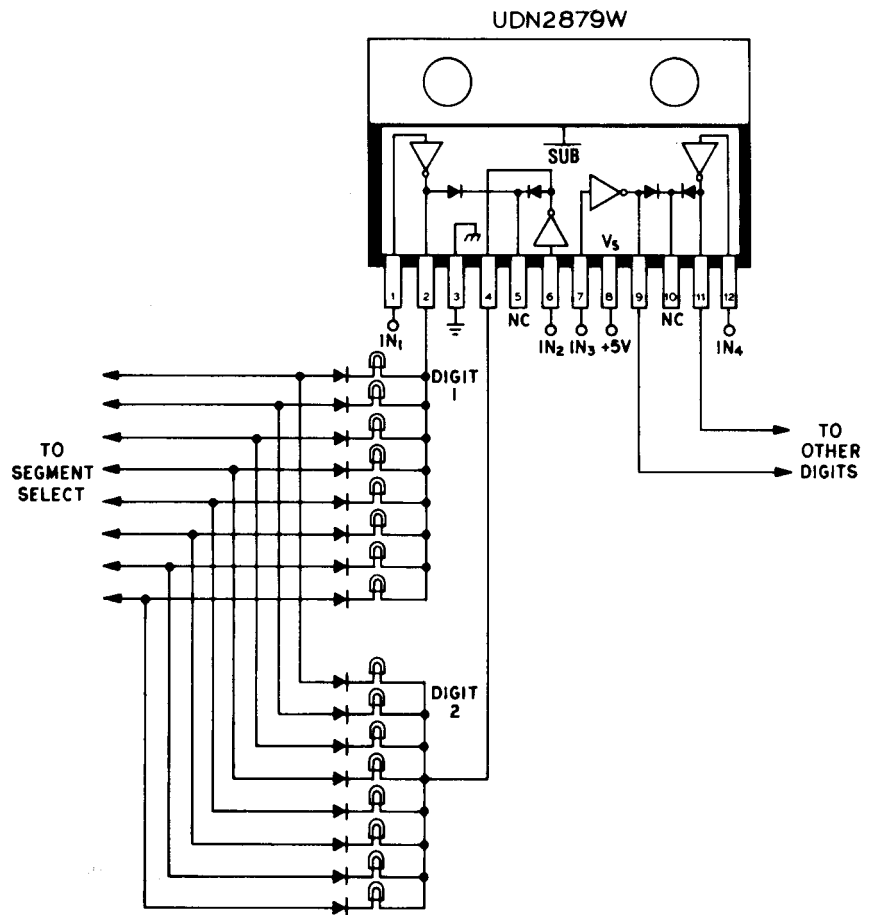
Dwg. No. A-11,795

DIGIT DRIVER FOR MULTIPLEXED INCANDESCENT LAMP DISPLAY

PRINT-HAMMER DRIVER



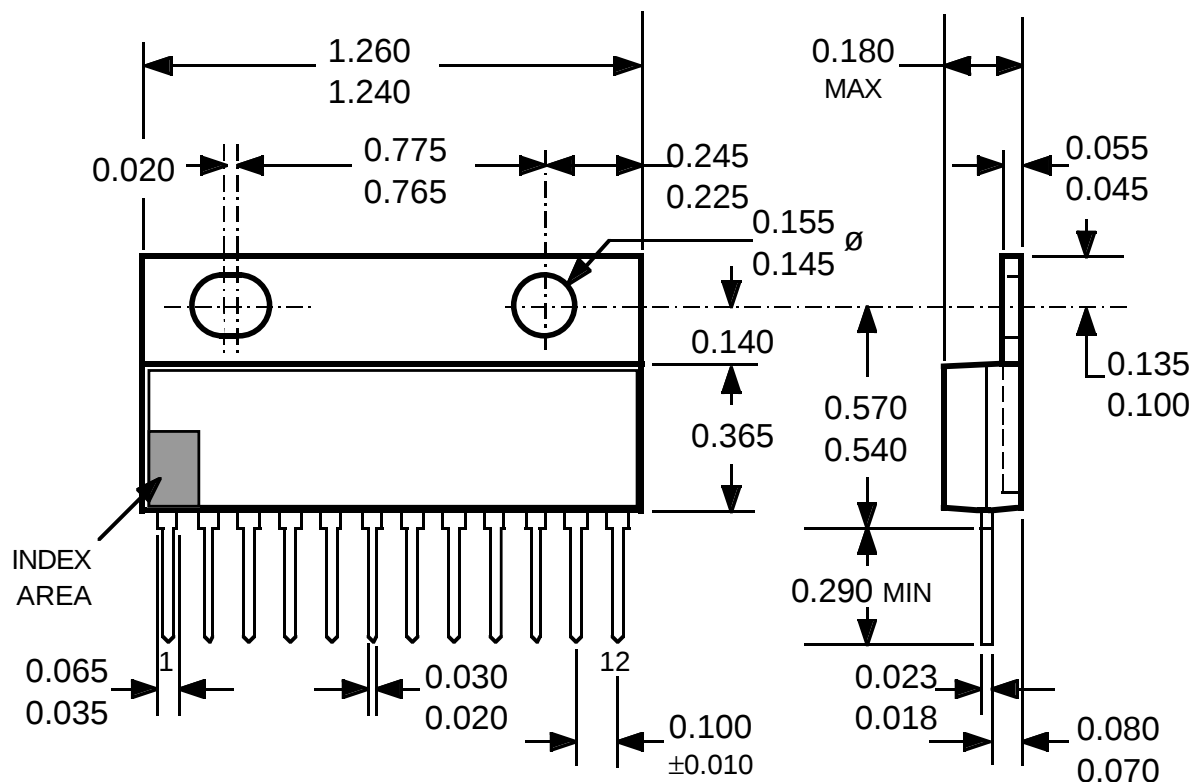
Dwg. No. A-11,976



Dwg. No. B-1512

2878 AND 2879 QUAD HIGH-CURRENT DARLINGTON SWITCHES

Dimensions in Inches
(controlling dimensions)

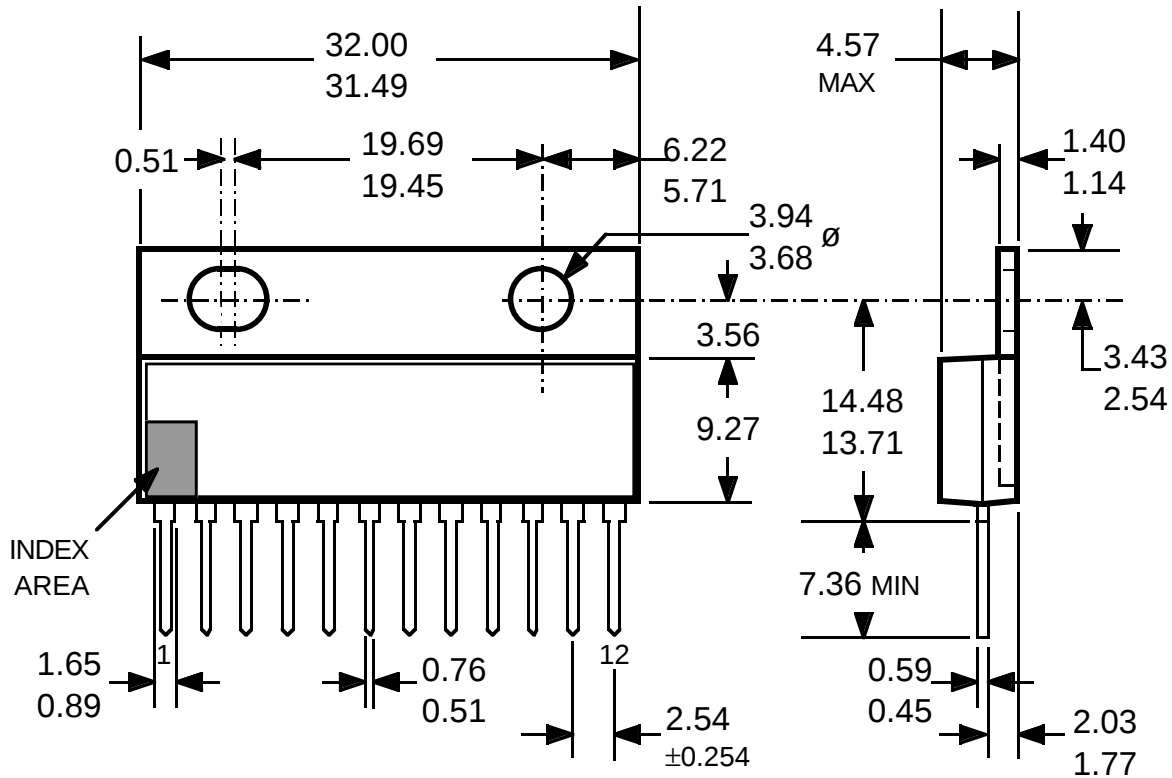


Dwg. MP-007 in

- 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.

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POWER SINK DRIVERS

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

Output Ratings *			Features					Part Number [†]
mA	V	#	Serial Input	Latched Drivers	Diode Clamp	Outputs	Internal Protection	
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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