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## *8-Bit Latched, DMOS Power Driver*

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### **Discontinued Product**

These parts are no longer in production. The device should not be purchased for new design applications. Samples are no longer available.

Date of status change: April 28, 2007

#### **Recommended Substitutions:**

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NOTE: For detailed information on purchasing options, contact your local Allegro field applications engineer or sales representative.

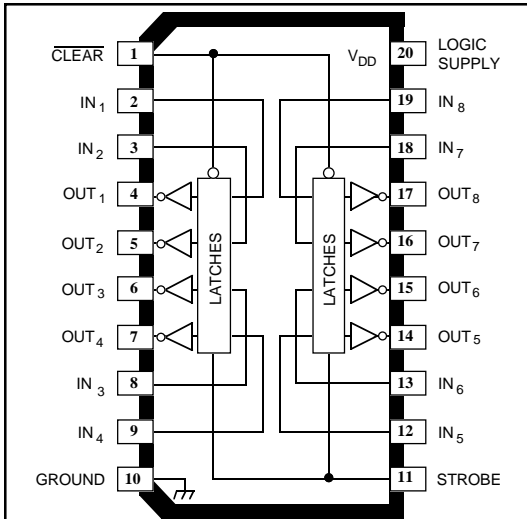
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# 6273

## 8-BIT LATCHED DMOS POWER DRIVER



Dwg. PP-015-2A

Note that the A6273KA (DIP) and the A6273KLW (SOIC) are electrically identical and share a common terminal number assignment.

### ABSOLUTE MAXIMUM RATINGS at $T_A = 25^\circ\text{C}$

Output Voltage, $V_O$ .....	50 V
Output Drain Current,	
Continuous, $I_O$ .....	250 mA*
Peak, $I_{OM}$ .....	750 mA*†
Peak, $I_{OM}$ .....	2.0 A†
Single-Pulse Avalanche Energy,	
$E_{AS}$ .....	75 mJ
Logic Supply Voltage, $V_{DD}$ .....	7.0 V
Input Voltage Range,	
$V_I$ .....	-0.3 V to +7.0 V
Package Power Dissipation,	
$P_D$ .....	See Graph
Operating Temperature Range,	
$T_A$ .....	-40°C to +125°C
Storage Temperature Range,	
$T_S$ .....	-55°C to +150°C

\* Each output, all outputs on.

† Pulse duration  $\leq 100 \mu\text{s}$ , duty cycle  $\leq 2\%$ .

Caution: These CMOS devices have input static protection (Class 3) but are still susceptible to damage if exposed to extremely high static electrical charges.

The A6273KA and A6273KLW combine eight (positive-edge-triggered D-type) data latches and DMOS outputs for systems requiring relatively high load power. Driver applications include relays, solenoids, and other medium-current or high-voltage peripheral power loads. The CMOS inputs and latches allow direct interfacing with microprocessor-based systems. Use with TTL may require appropriate pull-up resistors to ensure an input logic high.

The DMOS output inverts the DATA input. All of the output drivers are disabled (the DMOS sink drivers turned OFF) with the CLEAR input low. The A6273KA/KLW DMOS open-drain outputs are capable of sinking up to 750 mA.

The A6273KA is furnished in a 20-pin dual in-line plastic package. The A6273KLW is furnished in a 20-lead wide-body, small-outline plastic package (SOIC) with gull-wing leads for surface-mount applications. Copper lead frames, reduced supply current requirements, and low on-state resistance allow both devices to sink 150 mA from all outputs continuously, to ambient temperatures over 85°C.

### FEATURES

- 50 V Minimum Output Clamp Voltage
- 250 mA Output Current (all outputs simultaneously)
- 1.3  $\Omega$  Typical  $r_{DS(on)}$
- Low Power Consumption
- Replacements for TPIC6273N and TPIC6273DW

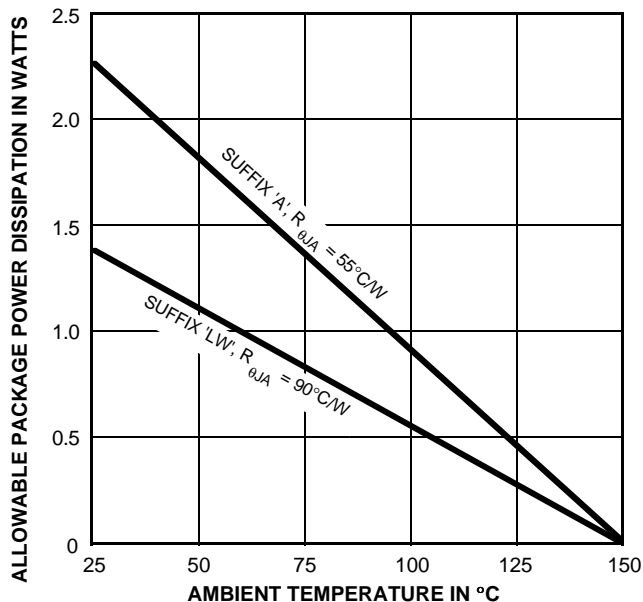
Always order by complete part number:

Part Number	Package	$R_{\theta JA}$	$R_{\theta JC}$
A6273KA	20-pin DIP	55°C/W	25°C/W
A6273KLW	20-lead SOIC	70°C/W	17°C/W

# 6273

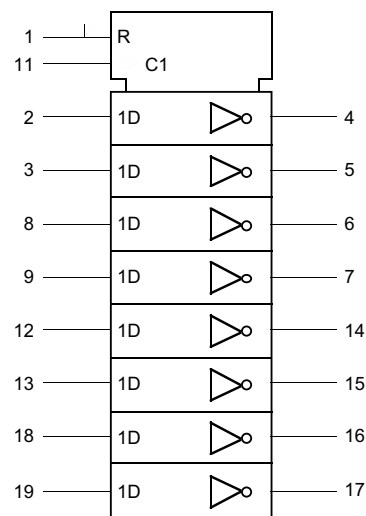
## 8-BIT LATCHED

### DMOS POWER DRIVER

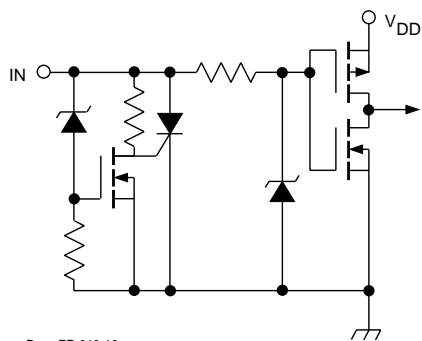


Dwg. GS-004B

### LOGIC SYMBOL

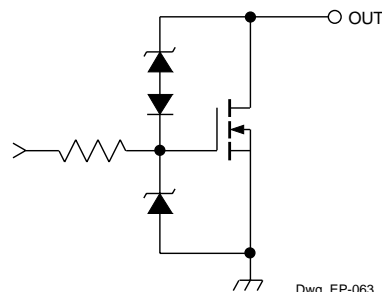


Dwg. FP-046-1A



Dwg. EP-010-16

### LOGIC INPUTS



Dwg. EP-063

### DMOS POWER DRIVER OUTPUT

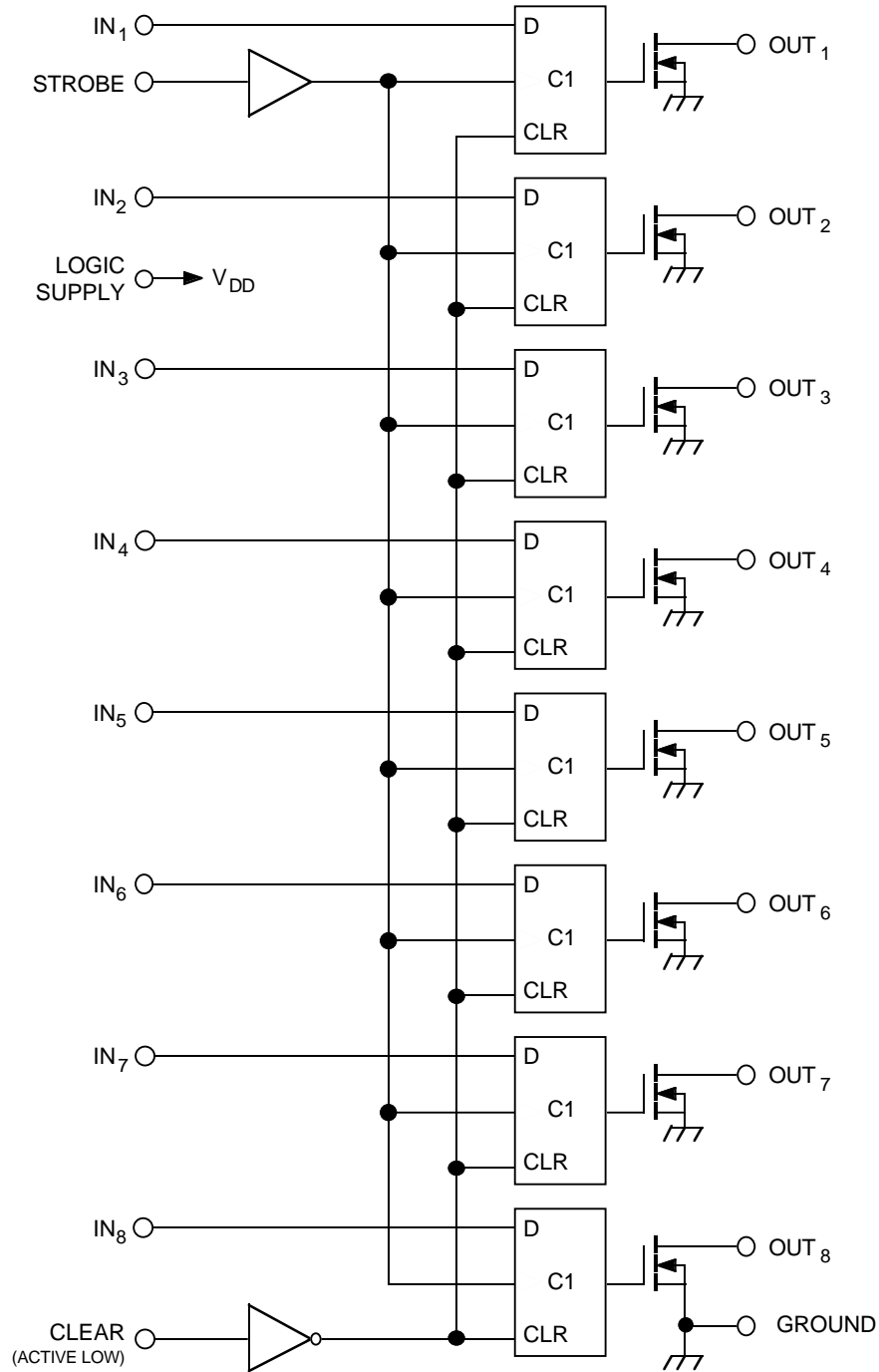
### FUNCTION TABLE

$\overline{\text{CLEAR}}$	Inputs		OUT <sub>x</sub>
	STROBE	IN <sub>x</sub>	
L	X	X	H
H		H	L
H		L	H
H	L	X	R

L = Low Logic Level  
H = High Logic Level  
X = Irrelevant  
R = Previous State

**6273**  
**8-BIT LATCHED**  
**DMOS POWER DRIVER**

**FUNCTIONAL BLOCK DIAGRAM**



Dwg. FP-016-2

# 6273

## 8-BIT LATCHED

### DMOS POWER DRIVER

#### RECOMMENDED OPERATING CONDITIONS

over operating temperature range

Logic Supply Voltage Range,  $V_{DD}$  ..... 4.5 V to 5.5 V

High-Level Input Voltage,  $V_{IH}$  .....  $\geq 0.85V_{DD}$

Low-level input voltage,  $V_{IL}$  .....  $\leq 0.15V_{DD}$

#### ELECTRICAL CHARACTERISTICS at $T_A = +25^\circ\text{C}$ , $V_{DD} = 5\text{ V}$ , $t_{ir} = t_{if} \leq 10\text{ ns}$ (unless otherwise specified).

Characteristic	Symbol	Test Conditions	Limits			Units
			Min.	Typ.	Max.	
Logic Supply Voltage	$V_{DD}$	Operating	4.5	5.0	5.5	V
Output Breakdown Voltage	$V_{(BR)DSX}$	$I_O = 1\text{ mA}$	50	—	—	V
Off-State Output Current	$I_{DSX}$	$V_O = 40\text{ V}$	—	0.05	1.0	$\mu\text{A}$
		$V_O = 40\text{ V}$ , $T_A = 125^\circ\text{C}$	—	0.15	5.0	$\mu\text{A}$
Static Drain-Source On-State Resistance	$r_{DS(on)}$	$I_O = 250\text{ mA}$ , $V_{DD} = 4.5\text{ V}$	—	1.3	2.0	$\Omega$
		$I_O = 250\text{ mA}$ , $V_{DD} = 4.5\text{ V}$ , $T_A = 125^\circ\text{C}$	—	2.0	3.2	$\Omega$
		$I_O = 500\text{ mA}$ , $V_{DD} = 4.5\text{ V}$ (see note)	—	1.3	2.0	$\Omega$
Nominal Output Current	$I_{O(nom)}$	$V_{DS(on)} = 0.5\text{ V}$ , $T_A = 85^\circ\text{C}$	—	250	—	mA
Logic Input Current	$I_{IH}$	$V_I = V_{DD} = 5.5\text{ V}$	—	—	1.0	$\mu\text{A}$
	$I_{IL}$	$V_I = 0$ , $V_{DD} = 5.5\text{ V}$	—	—	-1.0	$\mu\text{A}$
Prop. Delay Time	$t_{PLH}$	$I_O = 250\text{ mA}$ , $C_L = 30\text{ pF}$	—	625	—	ns
	$t_{PHL}$	$I_O = 250\text{ mA}$ , $C_L = 30\text{ pF}$	—	150	—	ns
Output Rise Time	$t_r$	$I_O = 250\text{ mA}$ , $C_L = 30\text{ pF}$	—	675	—	ns
Output Fall Time	$t_f$	$I_O = 250\text{ mA}$ , $C_L = 30\text{ pF}$	—	400	—	ns
Supply Current	$I_{DD(off)}$	$V_{DD} = 5.5\text{ V}$ , Outputs OFF	—	15	100	$\mu\text{A}$
	$I_{DD(on)}$	$V_{DD} = 5.5\text{ V}$ , Outputs ON	—	150	300	$\mu\text{A}$

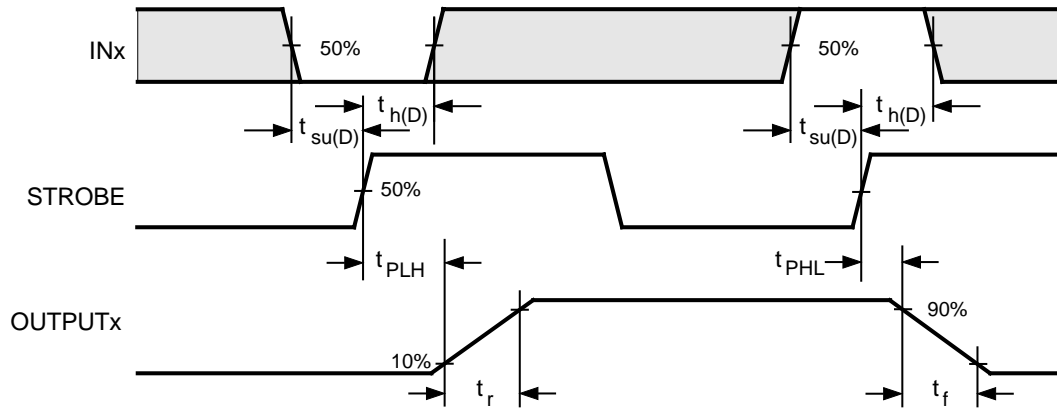
Typical Data is at  $V_{DD} = 5\text{ V}$  and is for design information only.

NOTE — Pulse test, duration  $\leq 100\text{ }\mu\text{s}$ , duty cycle  $\leq 2\%$ .



# 6273 8-BIT LATCHED DMOS POWER DRIVER

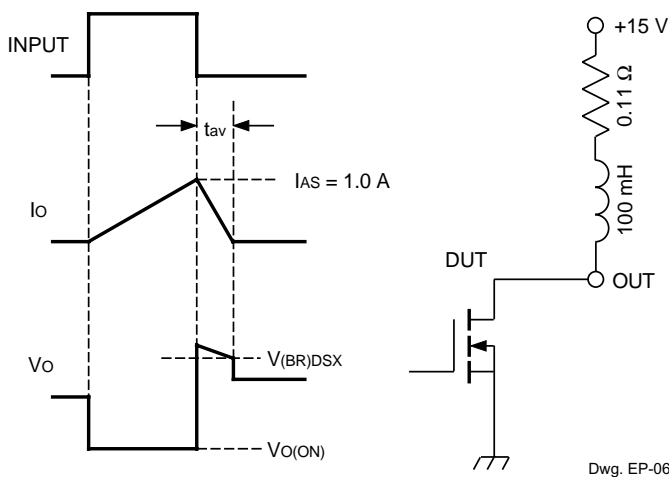
## TIMING REQUIREMENTS



Dwg. WP-036-1

Input Active Time Before Strobe (Data Set-Up Time), $t_{su(D)}$ .....	<b>20 ns</b>
Input Active Time After Strobe (Data Hold Time), $t_{h(D)}$ .....	<b>20 ns</b>
Input Pulse Width, $t_w(D)$ .....	<b>40 ns</b>
Input Logic High, $V_{IH}$ .....	<b><math>\geq 0.85V_{DD}</math></b>
Input Logic Low, $V_{IL}$ .....	<b><math>\leq 0.15V_{DD}</math></b>

## TEST CIRCUIT



**Single-Pulse Avalanche Energy Test Circuit and Waveforms**

Dwg. EP-066-1

$$E_{AS} = I_{AS} \times V_{(BR)DSX} \times t_{AV}/2$$

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**8-BIT LATCHED**  
**DMOS POWER DRIVER**

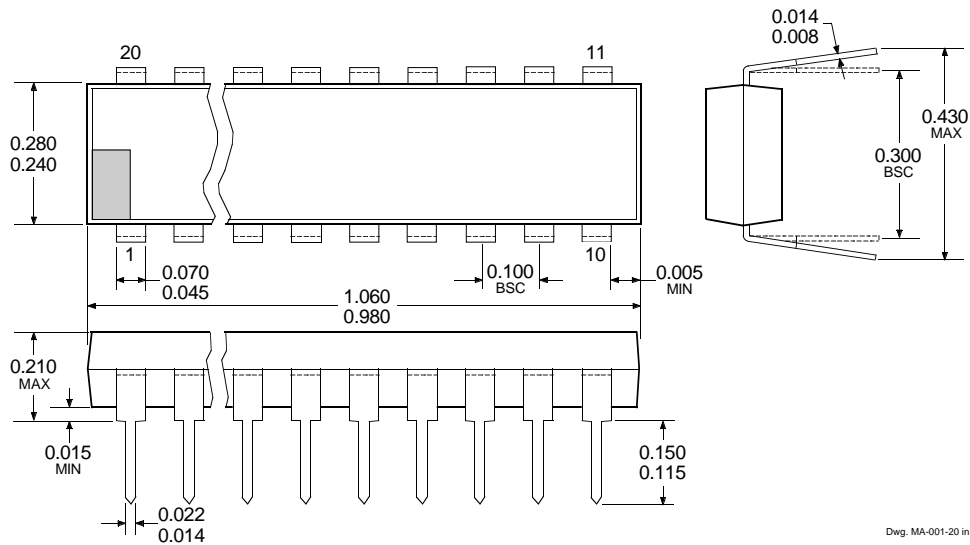
**TERMINAL DESCRIPTIONS**

Terminal No.	Terminal Name	Function
1	CLEAR	When (active) LOW, all latches are reset and all outputs go HIGH (turn OFF).
2	IN <sub>1</sub>	CMOS data input to a latch. When strobed, the output then inverts the data input (IN <sub>1</sub> = HIGH, OUT <sub>1</sub> = LOW).
3	IN <sub>2</sub>	CMOS data input to a latch. When strobed, the output then inverts the data input (IN <sub>2</sub> = HIGH, OUT <sub>2</sub> = LOW).
4	OUT <sub>1</sub>	Current-sinking, open-drain DMOS output.
5	OUT <sub>2</sub>	Current-sinking, open-drain DMOS output.
6	OUT <sub>3</sub>	Current-sinking, open-drain DMOS output.
7	OUT <sub>4</sub>	Current-sinking, open-drain DMOS output.
8	IN <sub>3</sub>	CMOS data input to a latch. When strobed, the output then inverts the data input (IN <sub>3</sub> = HIGH, OUT <sub>3</sub> = LOW).
9	IN <sub>4</sub>	CMOS data input to a latch. When strobed, the output then inverts the data input (IN <sub>4</sub> = HIGH, OUT <sub>4</sub> = LOW).
10	GROUND	Reference terminal for all voltage measurements.
11	STROBE	A CMOS dynamic input to all latches. Data on each IN <sub>x</sub> terminal is loaded into its associated latch on a low-to-high STROBE transition.
12	IN <sub>5</sub>	CMOS data input to a latch. When strobed, the output then inverts the data input (IN <sub>5</sub> = HIGH, OUT <sub>5</sub> = LOW).
13	IN <sub>6</sub>	CMOS data input to a latch. When strobed, the output then inverts the data input (IN <sub>6</sub> = HIGH, OUT <sub>6</sub> = LOW).
14	OUT <sub>5</sub>	Current-sinking, open-drain DMOS output.
15	OUT <sub>6</sub>	Current-sinking, open-drain DMOS output.
16	OUT <sub>7</sub>	Current-sinking, open-drain DMOS output.
17	OUT <sub>8</sub>	Current-sinking, open-drain DMOS output.
18	IN <sub>7</sub>	CMOS data input to a latch. When strobed, the output then inverts the data input (IN <sub>7</sub> = HIGH, OUT <sub>7</sub> = LOW).
19	IN <sub>8</sub>	CMOS data input to a latch. When strobed, the output then inverts the data input (IN <sub>8</sub> = HIGH, OUT <sub>8</sub> = LOW).
20	LOGIC SUPPLY	(V <sub>DD</sub> ) The logic supply voltage (typically 5 V).

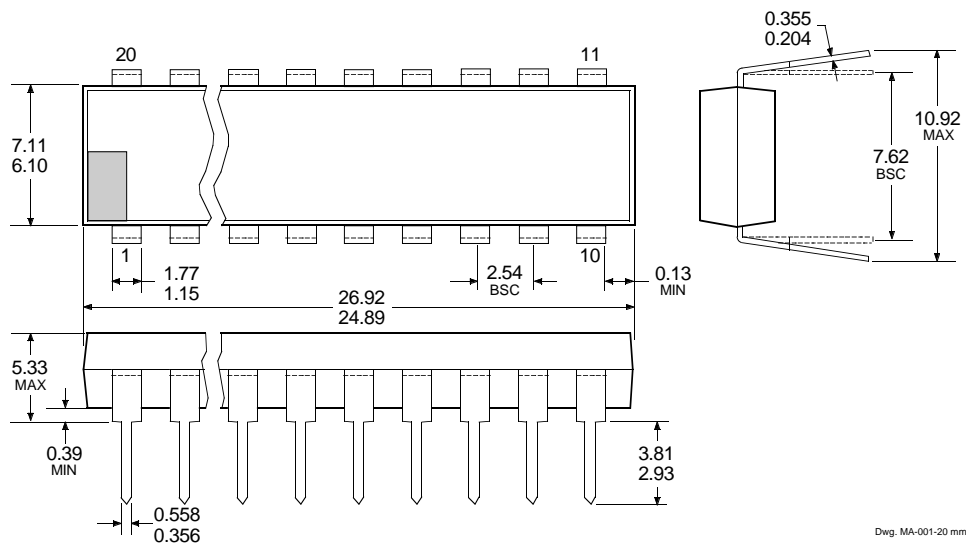


# 6273 8-BIT LATCHED DMOS POWER DRIVER

## A6273KA Dimensions in Inches (controlling dimensions)



## Dimensions in Millimeters (for reference only)

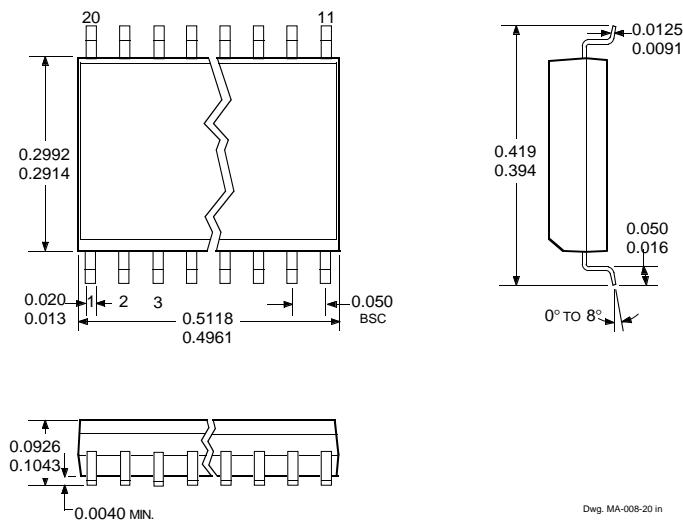


- NOTES: 1. Exact body and lead configuration at vendor's option within limits shown.  
 2. Lead spacing tolerance is non-cumulative.  
 3. Lead thickness is measured at seating plane or below.  
 4. Supplied in standard sticks/tubes of 18 devices.

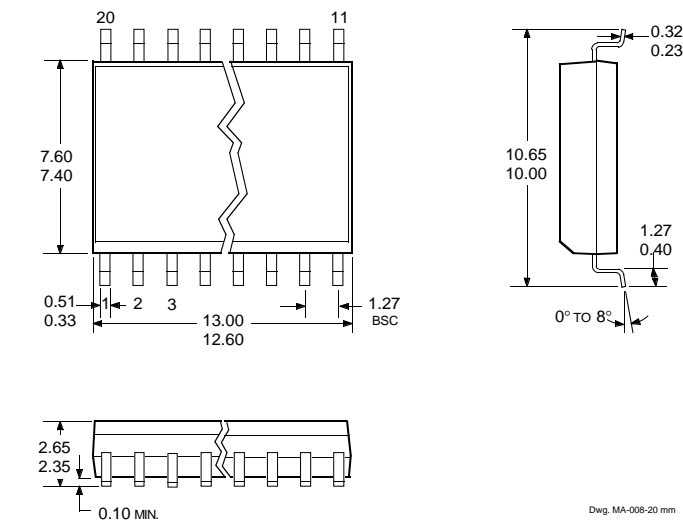


**6273**  
**8-BIT LATCHED**  
**DMOS POWER DRIVER**

**A6273KLW**  
 Dimensions in Inches  
 (for reference only)



Dimensions in Millimeters  
 (controlling dimensions)



- NOTES: 1. Exact body and lead configuration at vendor's option within limits shown.  
 2. Lead spacing tolerance is non-cumulative.  
 3. Supplied in standard sticks/tubes of 37 devices or add 'TR' to part number for tape and reel.

**6273**  
**8-BIT LATCHED**  
**DMOS POWER DRIVER**

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**6273**  
**8-BIT LATCHED**  
**DMOS POWER DRIVER**

**POWER**  
**INTERFACE DRIVERS**

Function	Output Ratings*		Part Number†
<b>SERIAL-INPUT LATCHED DRIVERS</b>			
8-Bit (saturated drivers)	-120 mA	50 V‡	5895
8-Bit	350 mA	50 V	5821
8-Bit	350 mA	80 V	5822
8-Bit	350 mA	50 V‡	5841
8-Bit	350 mA	80 V‡	5842
8-Bit (constant-current LED driver)	75 mA	17 V	6275
8-Bit (constant-current LED driver)	120 mA	24 V	6277
8-Bit (DMOS drivers)	250 mA	50 V	6595
8-Bit (DMOS drivers)	350 mA	50 V‡	6A595
8-Bit (DMOS drivers)	100 mA	50 V	6B595
10-Bit (active pull-downs)	-25 mA	60 V	5810-F and 6810
12-Bit (active pull-downs)	-25 mA	60 V	5811
16-Bit (constant-current LED driver)	75 mA	17 V	6276
20-Bit (active pull-downs)	-25 mA	60 V	5812-F and 6812
32-Bit (active pull-downs)	-25 mA	60 V	5818-F and 6818
32-Bit	100 mA	30 V	5833
32-Bit (saturated drivers)	100 mA	40 V	5832
<b>PARALLEL-INPUT LATCHED DRIVERS</b>			
4-Bit	350 mA	50 V‡	5800
8-Bit	-25 mA	60 V	5815
8-Bit	350 mA	50 V‡	5801
8-Bit (DMOS drivers)	100 mA	50 V	6B273
8-Bit (DMOS drivers)	250 mA	50 V	6273
<b>SPECIAL-PURPOSE DEVICES</b>			
Unipolar Stepper Motor Translator/Driver	1.25 A	50 V‡	5804
Addressable 8-Bit Decoder/DMOS Driver	250 mA	50 V	6259
Addressable 8-Bit Decoder/DMOS Driver	350 mA	50 V‡	6A259
Addressable 8-Bit Decoder/DMOS Driver	100 mA	50 V	6B259
Addressable 28-Line Decoder/Driver	450 mA	30 V	6817

\* Current is maximum specified test condition, voltage is maximum rating. See specification for sustaining voltage limits. Negative current is defined as coming out of (sourcing) the output.

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

‡ Internal transient-suppression diodes included for inductive-load protection.

