

**Supertex inc.**

**AP0332**

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## 8 P-Channel Latchable Power MOSFET Array

### Ordering Information

V <sub>DD</sub> (max)	R <sub>O(ON)</sub> (max)	I <sub>O(ON)</sub> (min)	I <sub>O(OFF)</sub> (max)	Order Number/Package	
				SO-16	Die
-320V	700Ω	-15mA	-1.0nA	AP0332CG	AP0332ND

\*Average current per channel, measured with all eight channels connected in parallel.

### Features

- Low drain to source leakage
- Interfaces directly to TTL and CMOS logic
- 8 independent channels
- Low crosstalk between channels
- Low power dissipation
- Freedom from secondary breakdown
- Serial data input
- On-chip decoder, latch with set and write disable circuitry

### Applications

- High impedance/low leakage measurements for bare board testers
- High voltage piezoelectric transducer drivers
- High voltage electroluminescent panel drivers
- High voltage electrostatic array drivers
- General multi-channel driver arrays

### Absolute Maximum Ratings<sup>1</sup>

Off-state output voltage, V <sub>OO</sub>	-320V
Logic supply voltage, V <sub>DD</sub>	-0.5V to +15V
Logic input levels, all inputs	-0.5V to V <sub>DD</sub>
Operating and storage temperature range	-55°C to +150°C
Soldering temperature <sup>2</sup>	300°C
Channel-to-channel crosstalk	10mV/V

**Notes:**

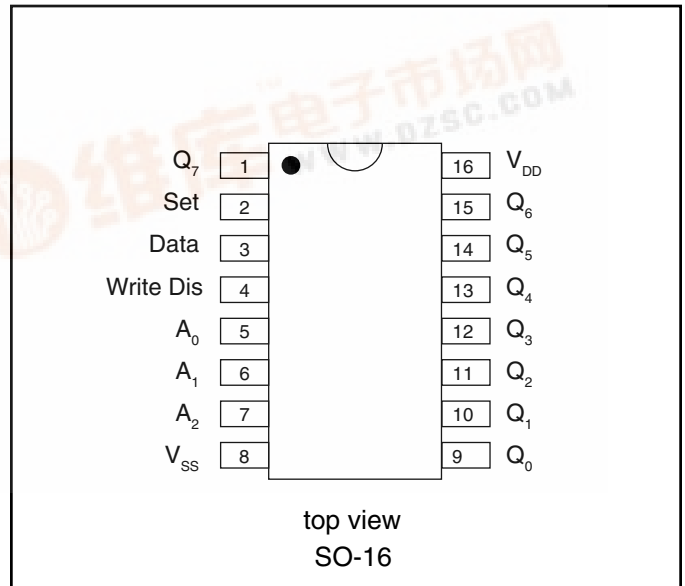
1. All voltages are referenced to V<sub>SS</sub>.
2. Distance of 1.6mm from case for 10 seconds

### General Description

The Supertex AP0332 is an 8 P-Channel 320V common source power MOSFET array with a CMOS 8 bit addressable latch. The outputs are guaranteed to have very low leakage current. The outputs are addressed by logic inputs A<sub>0</sub>, A<sub>1</sub>, and A<sub>2</sub>. The addressed and unaddressed output can be turned on or off by the data, set, and write disable inputs.

The AP0332 is ideally suited for low leakage/high impedance measurements, providing excellent accuracy as well as resolution for automatic bare board test equipment and other applications.

### Pin Configuration



Note: See Package Outline section for dimensions.

## Electrical Characteristics (@ 25°C and $V_{DD} = 12V$ unless otherwise specified)

### DC Characteristics

Symbol	Parameter	Min	Typ	Max	Unit	Conditions
$I_{O(OFF)}$	Off-State Output Current			-8.0	nA	$V_O = \text{max. rating}$ , 8 outputs connected in parallel
$I_{O(ON)}$	On-State Output Current	-15			mA	$V_O = 25V$
$R_{O(ON)}$	On-State Output Resistance			700	$\Omega$	$I_O = -10mA$
$\Delta R_{O(ON)}$	Change in $R_{O(ON)}$ with High Temperature		0.8		%/°C	$I_O = -10mA$
$I_{DDQ}$	Quiescent Logic Supply Current		0.05	16.5	$\mu A$	
$V_{IL}$	Input Low Voltage			3.5	V	
$V_{IH}$	Input High Voltage	12			V	
$I_{IN}$	Input Current			1.0	$\mu A$	

**Note:**

- All voltages are referenced to  $V_{SS}$ .

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### AC Characteristics

Symbol	Parameter	Min	Typ	Max	Unit	Fig. 1*	Conditions
$t_{D(ON)}$	Turn-On Delay Time		800		ns	1a	$V_O = 25V, I_O = -10mA$
$t_{D(OFF)}$	Turn-Off Delay Time		800		ns	1b	
$t_r$	Rise Time		200		ns	10	
$t_f$	Fall Time		200		ns	11	
$t_{PHL}, t_{PLH}$	Propagation Delay Time from Write Disable to Output		87		ns	2	
$t_{PHL}, t_{PLH}$	Propagation Delay Time from Set to Output		87		ns	3	
$t_{PHL}, t_{PLH}$	Propagation Delay Time from Address to Output		107		ns	9	
$t_W$	Minimum Pulse Width – Data		50	100	ns	4	
$t_W$	Minimum Pulse Width – Address		100	200	ns	8	
$t_W$	Minimum Pulse Width – Set		40	75	ns	5	
$t_S$	Setup Time – Data to Write Disable	50			ns	6	
$t_H$	Hold Time – Data to Write Disable	75			ns	7	
$C_{IN}$	Input capacitance – Any Input		5.0	7.5	pF		

\*Refer to circled numbers on Timing Diagram (Figure 1).

**Note:**

- All voltages are referenced to  $V_{SS}$ .

# Recommended Operating Conditions

(For maximum reliability, nominal operating conditons should be selected so that operation is always within the following ranges.)

Symbol	Parameter	V <sub>DD</sub>	Min	Max	Unit
V <sub>DD</sub>	Logic supply voltage		10.0	13.2	V
V <sub>O</sub>	Output Voltage referenced to V <sub>DD</sub>		0	-320	V
V <sub>IH</sub>	Input High Voltage	12V	V <sub>DD</sub> - 2	V <sub>DD</sub>	V
V <sub>IL</sub>	Input Low Voltage	12V	0	2.0	V
T <sub>A</sub>	Operating Free-Air Temperature		0	70	°C

**Note:**

- All voltages are referenced to V<sub>SS</sub>.

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## Mode Selection

Data	Write Disable	Set	Addressed Output	Unaddressed Outputs
H L	L	L	Off On	Holdspriv.
H L	H	L	Holdspriv.	Holdspriv.
H L	L	H	Off On	Off
H L	H	H	Off	Off

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## Timing Diagram

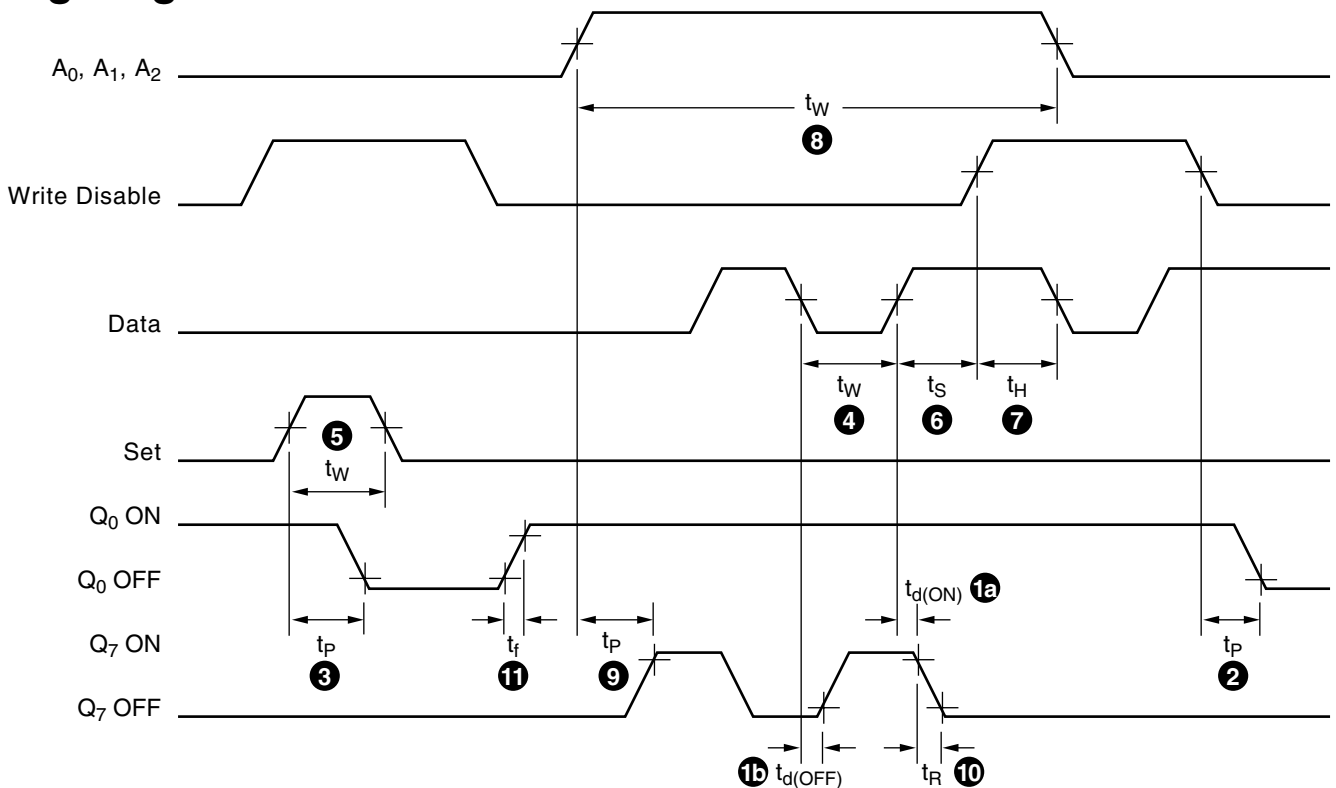


Figure 1

# Functional Block Diagram

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