

HD29026A/HD29027

Dual CCD Drivers

REJ03D0302-0200Z
 (Previous ADE-205-001 (Z))
 Rev.2.00
 Jul.16.2004

Description

HD29026A and HD29027 include two on-chip drivers on a single chip, making it the optimal choice as a CCD driver. Operation is provided with a TTL level input, and output current of 1 A is available for both sink and source.

Features

- High speed output rise and fall (20 ns typ) at load capacitance (C_L) of 1000 pF
- Direct drive of input block by TTL eliminates the need for external components
- Output swing voltage of 12 V; output current of 1 A available for both sink and source
- Output wave cross point 50% typ
- Ordering Information

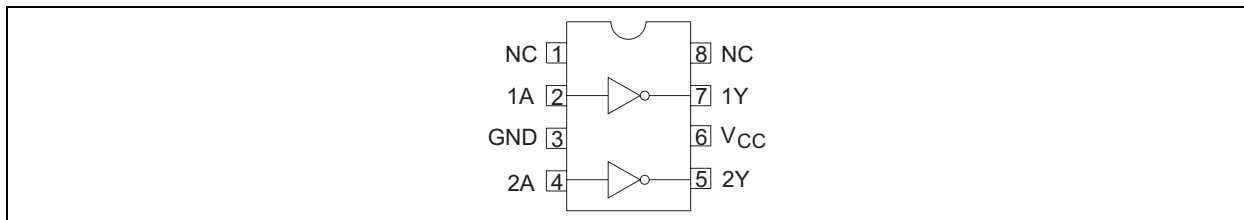
Part Name	Package Type	Package Code	Package Abbreviation	Taping Abbreviation (Quantity)
HD29026AFPEL	SOP-8 pin (JEITA)	FP-8DGV	FP	EL (2,500 pcs/reel)
HD29027FPEL	SOP-8 pin (JEITA)	FP-8DGV	FP	EL (2,500 pcs/reel)

Function Table

Input A	Output Y
H	L
L	H

Note: H: High level
 L: Low level

Pin Arrangement



Absolute Maximum Ratings

Item	Symbol	Rating	Unit	
Supply voltage	HD29026A	V_{CC}^{*1}	15	V
	HD29027		10	
Input voltage	V_I	7	V	
Output peak current	$I_{O(peak)}$	± 1	A	
Operating temperature range	T_a	-20 to +75	$^{\circ}C$	
Storage temperature range	T_{stg}	-65 to +150	$^{\circ}C$	
Junction temperature	T_j	150	$^{\circ}C$	
Total dissipation	P_T^{*2}	0.735	W	

- Notes: 1. If no value is specified, the voltage is defined by the GND pin.
 2. Value when $T_a = 25^{\circ}C$. Heat dissipation is required for large-capacitance, high-frequency drivers, so derating of 5.9 mW/ $^{\circ}C$ are required.

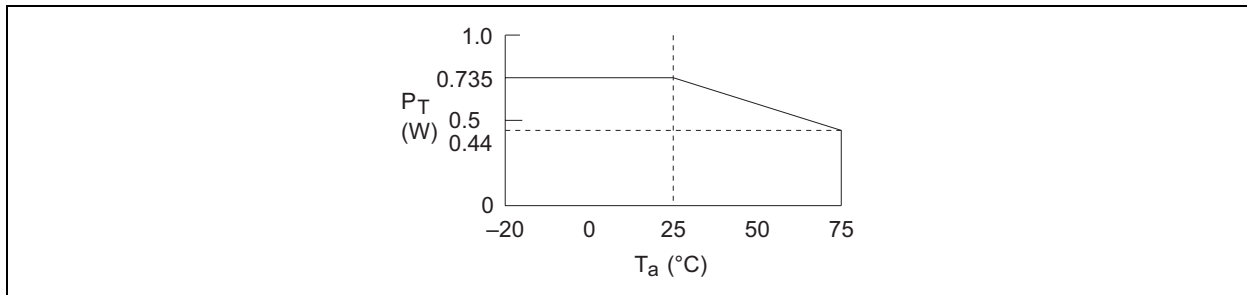
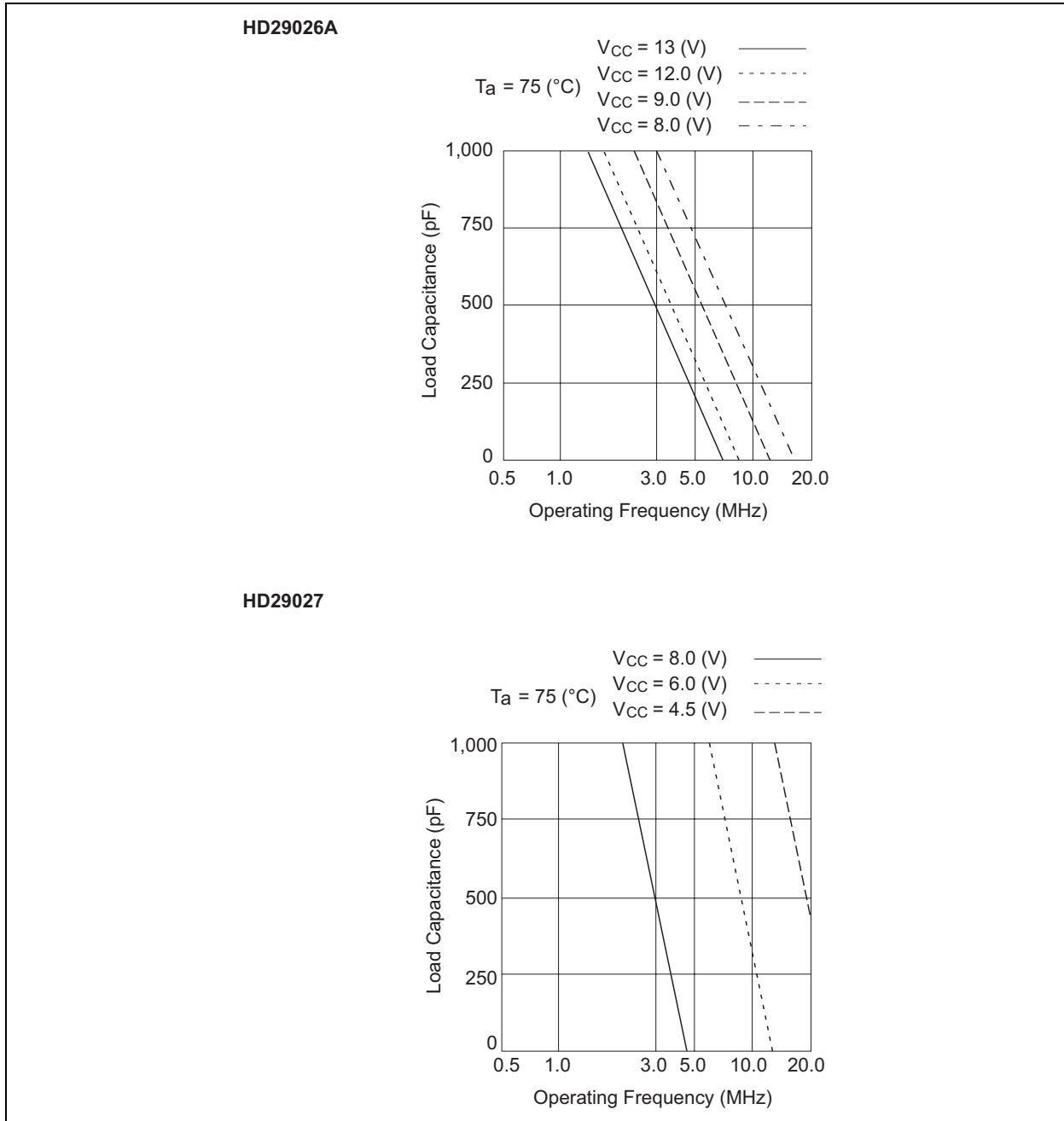


Figure 1 Package Derating Curves

Recommended Operating Conditions

Item	Symbol	Min	Typ	Max	Unit	
Supply voltage	HD29026A	V_{CC}	8	12	13	V
	HD29027	V_{CC}	4.5	6	8	
Operating temperature	T_a	-20	25	75	$^{\circ}C$	

Recommended Operating Frequency Area



Electrical Characteristics (Ta = -20 to +75°C)

Item		Symbol	Min	Typ	Max	Unit	Test Conditions
Input voltage		V _{IH}	2.0	—	—	V	
		V _{IL}	—	—	0.6		
Output voltage		V _{OH}	V _{CC} -1	—	—	V	V _{IL} = 0.6 V, I _{OH} = -1 mA
		V _{OL}	—	—	0.5		V _{IH} = 2.0 V, I _{OL} = 1 mA
Input current		I _{IH}	—	—	20	μA	V _I = 2.7 V
	HD29026A	I _{IL}	—	—	-100		V _I = 0.4 V
	HD29027		—	—	-200		
Supply current	HD29026A	I _{CCH}	—	—	12	mA	
	HD29027		—	—	20		
	HD29026A	I _{CCL}	—	—	20		
	HD29027		—	—	30		
Input current		I _I	—	—	100	μA	V _I = 7 V
Input clamp voltage		V _{IK}	—	—	-1.5	V	I _{IN} = -18 mA

Note: HD29026A: V_{CC} = 8 to 13 V

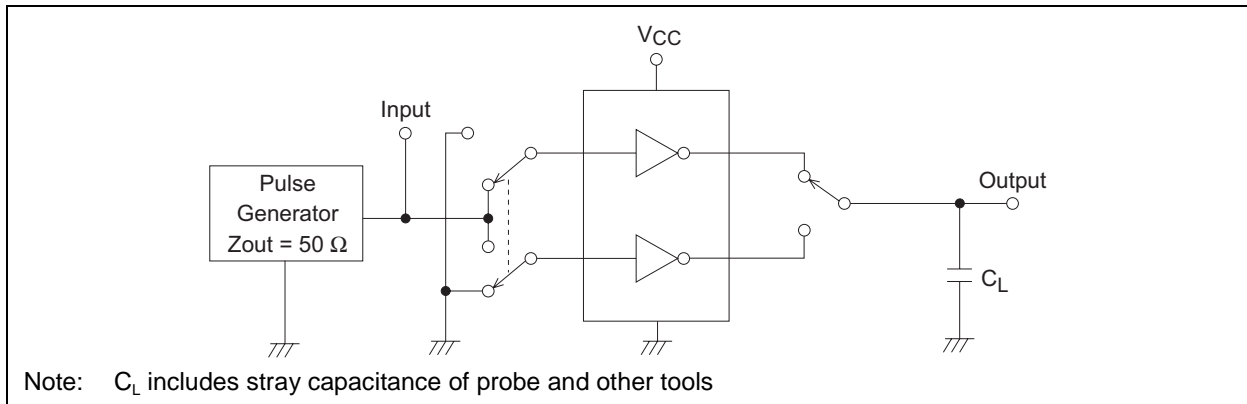
HD29027: V_{CC} = 4.5 to 8 V

Switching Characteristics (Ta = 25°C)

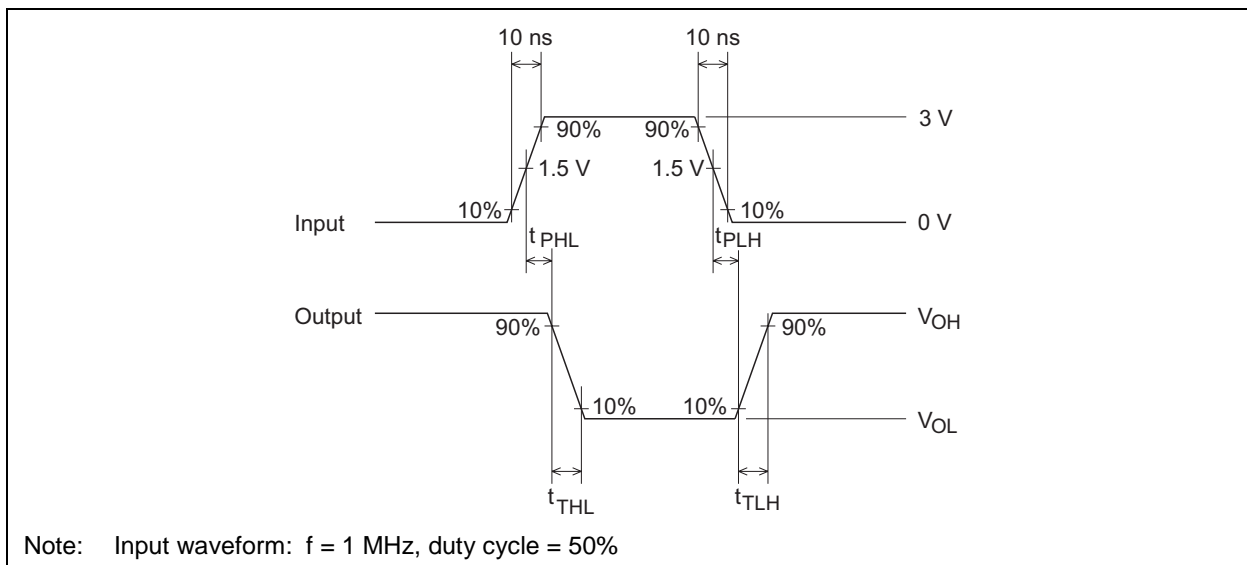
Item		Symbol	Min	Typ	Max	Unit	Test Conditions	
Fall propagation delay time	HD29026A	t _{PHL}	—	16	20	ns	C _L = 1000 pF	V _{CC} = 8 V
			—	11	15			V _{CC} = 12 V
	HD29027		—	10	15			V _{CC} = 6 V
Rise propagation delay time	HD29026A	t _{PLH}	—	18	25	ns	C _L = 1000 pF	V _{CC} = 8 V
			—	13	20			V _{CC} = 12 V
	HD29027		—	10	15			V _{CC} = 6 V
Fall (transition) time	HD29026A	t _{THL}	—	17	21	ns	C _L = 250 pF	V _{CC} = 8 V
			—	12	16			V _{CC} = 12 V
			—	9	14			V _{CC} = 6 V
	HD29026A		C _L = 500 pF	—	20		23	V _{CC} = 8 V
				—	15		18	V _{CC} = 12 V
	HD29027		C _L = 500 pF	—	12		17	V _{CC} = 6 V
				C _L = 1000 pF	—		25	40
	—		20		35		V _{CC} = 12 V	
	—		20		25		V _{CC} = 6 V	
	Rise (transition) time		HD29026A	t _{TLH}	—		15	20
—		10			15	V _{CC} = 12 V		
—		9			14	V _{CC} = 6 V		
HD29026A		C _L = 500 pF	—		21	25	V _{CC} = 8 V	
			—		16	20	V _{CC} = 12 V	
HD29027		C _L = 500 pF	—		12	17	V _{CC} = 6 V	
			C _L = 1000 pF		—	22	30	V _{CC} = 8 V
—		17			25	V _{CC} = 12 V		
—		20			25	V _{CC} = 6 V		

Switching Time Test Method

Test circuit



Waveforms



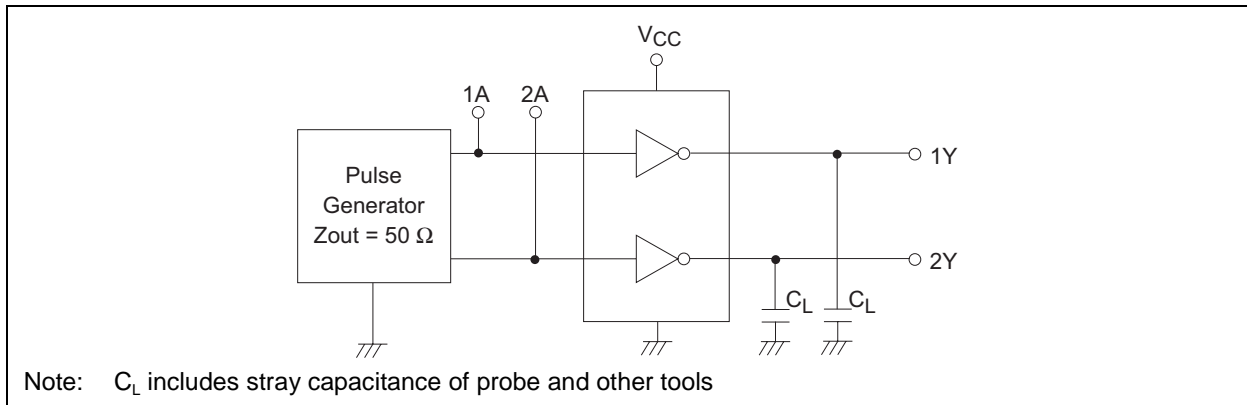
Output Timing Characteristics (Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Output wave cross point	V _x	30	50	70	%	C _L = 250 pF
		30	50	70		C _L = 500 pF
		30	50	70		C _L = 1000 pF

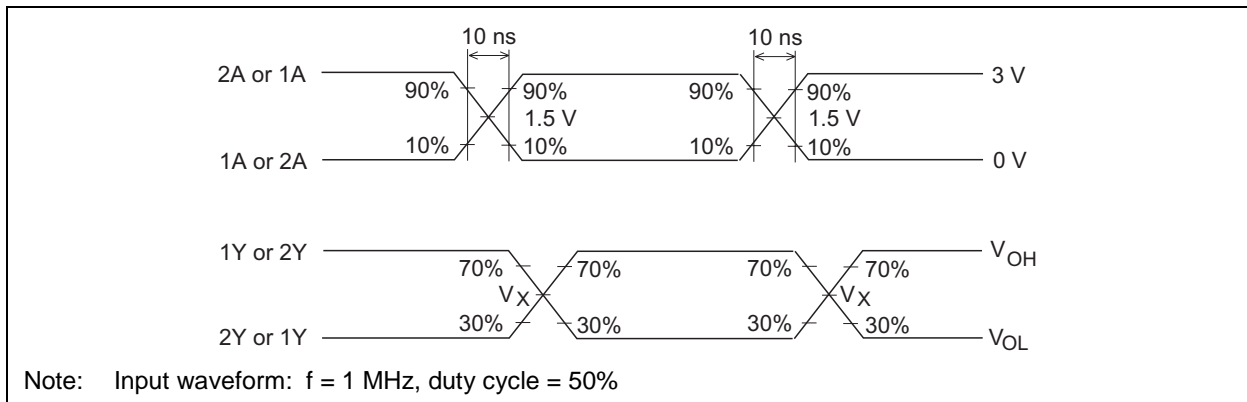
HD29027; V_{CC} = 6 V

Output Timing Characteristics Test Method (HD29027)

Test circuit

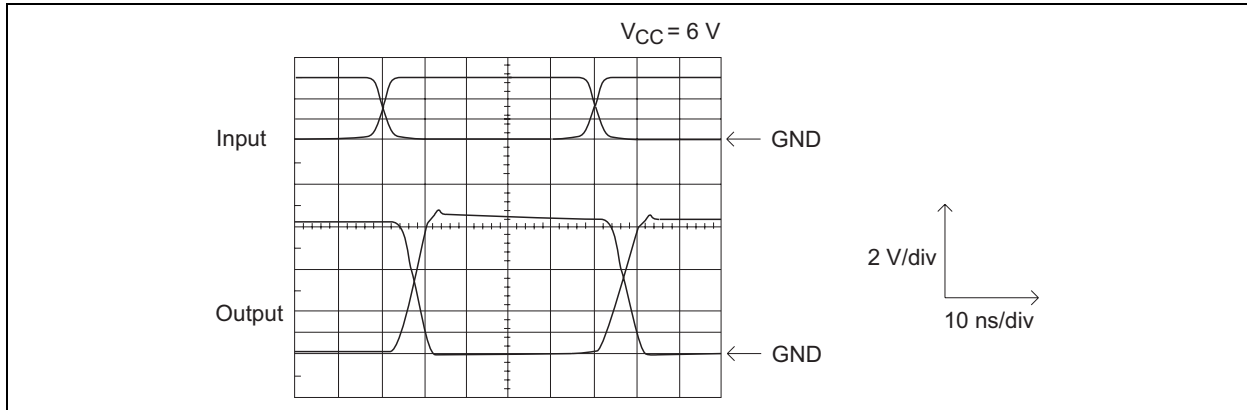


Waveform



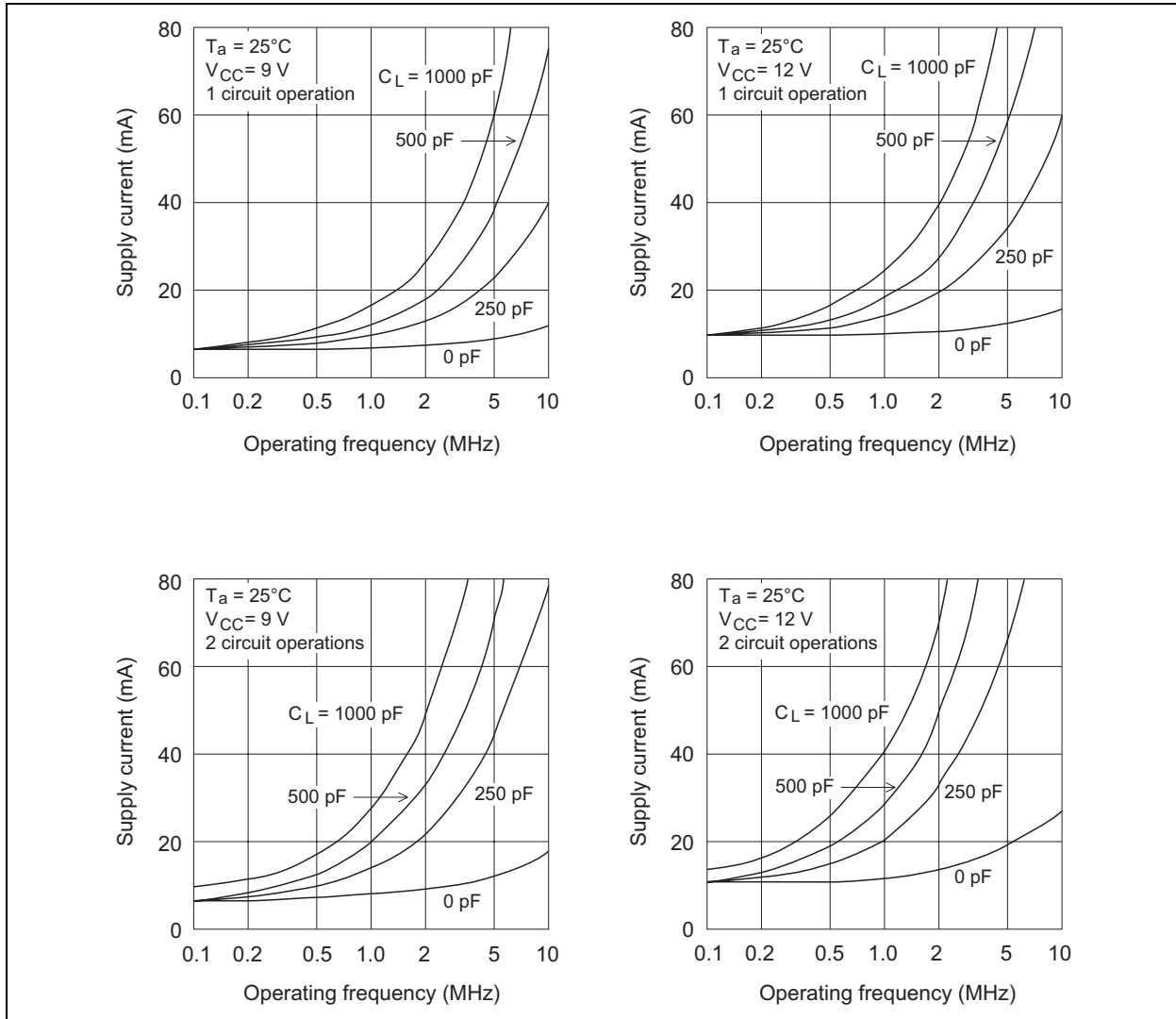
Output Timing Characteristics

HD29027

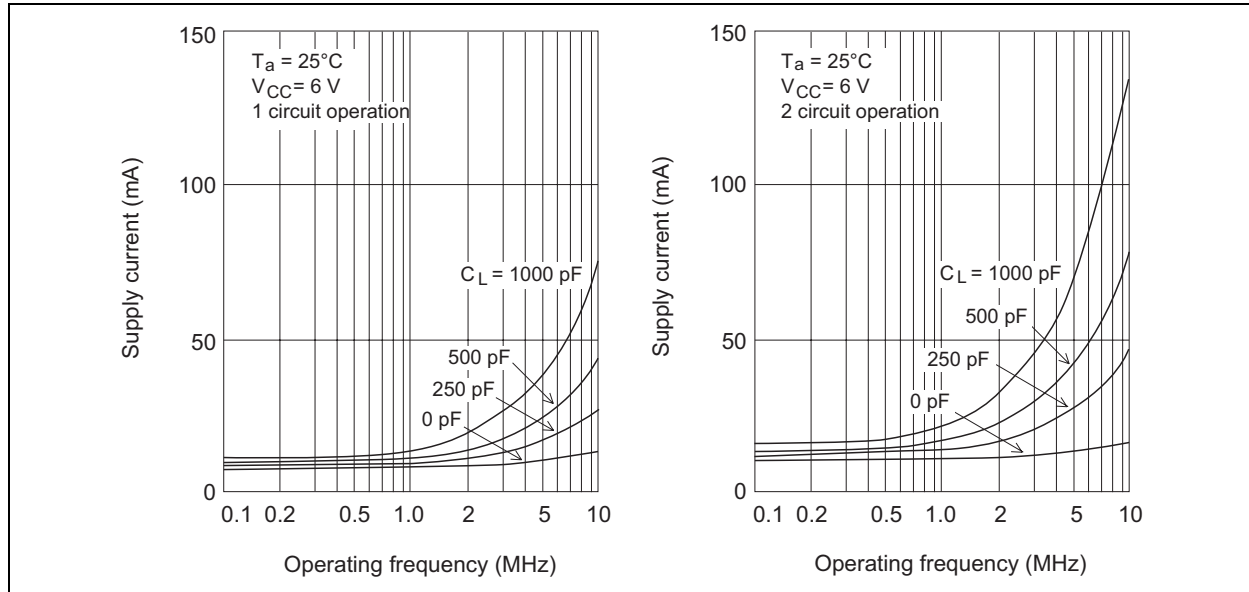


Typical Characteristic Curves

Supply current vs. operating frequency (HD29026A)



Supply current vs. operating frequency (HD29027)



Cautions (HD29026A only)

The short output rise and fall time, as well as the large output amplitude of this product tends to generate overshooting and undershooting. The connection of 5 to 15 Ω damping resistance (R_D) to the output as illustrated in figure 2 serves to increase the output rise and fall time, making it possible to reduce the chance of overshooting and undershooting. Figure 3 shows the characteristics that result for a damping resistance (R_D) of 10 Ω .

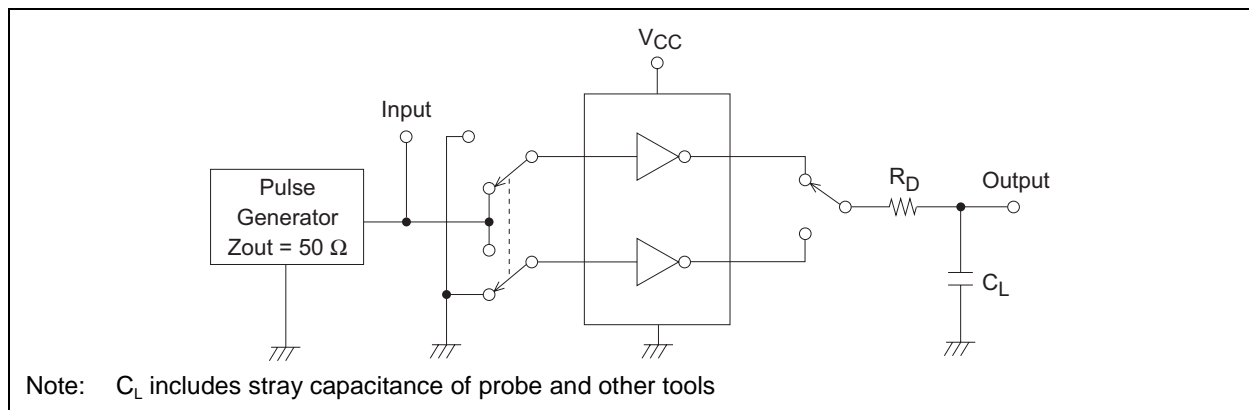


Figure 2

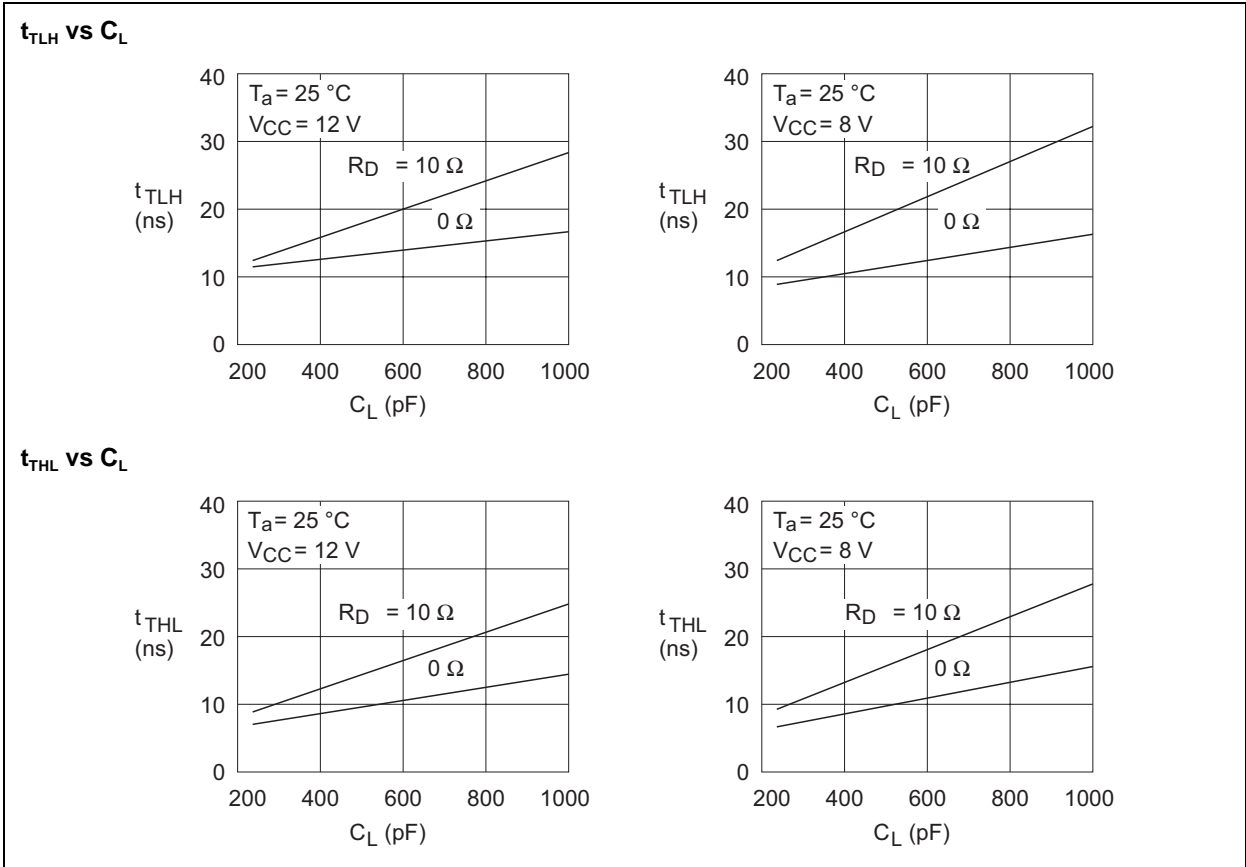
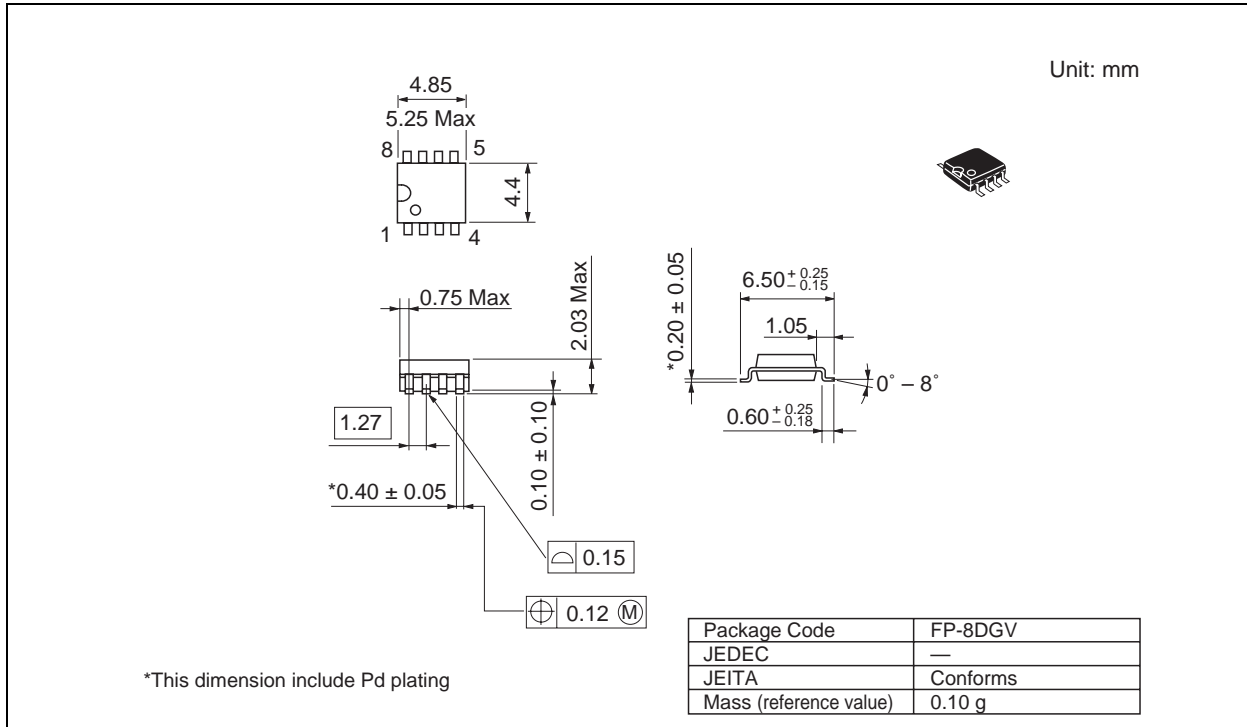


Figure 3

Package Dimensions



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