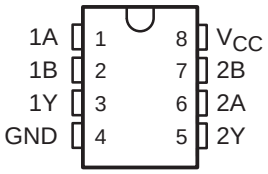
PERIPHERAL DRIVERS FOR HIGH-CURRENT SWITCHING AT VERY HIGH SPEEDS

- **Characterized for Use to 300 mA**
- **High-Voltage Outputs**
- **No Output Latch-Up at 20 V (After Conducting 300 mA)**
- **High-Speed Switching**
- **Circuit Flexibility for Varied Applications**
- **TTL-Compatible Diode-Clamped Inputs**
- **Standard Supply Voltages**
- **Plastic DIP (P) With Copper Lead Frame Provides Cooler Operation and Improved Reliability**
- **Package Options Include Plastic Small-Outline Packages, Ceramic Chip Carriers, and Standard Plastic and Ceramic 300-mil DIPs**

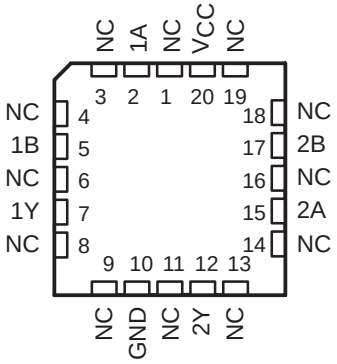
SUMMARY OF DEVICES

DEVICE	LOGIC OF COMPLETE CIRCUIT	PACKAGES
SN55451B	AND	FK, JG
SN55452B	NAND	JG
SN55453B	OR	FK, JG
SN55454B	NOR	JG
SN75451B	AND	D, P
SN75452B	NAND	D, P
SN75453B	OR	D, P
SN75454B	NOR	D, P

SN55451B, SN55452B, SN55453B, SN55454B . . . JG PACKAGE
SN75451B, SN75452B, SN75453B, SN75454B . . . D OR P PACKAGE
(TOP VIEW)



SN55451B, SN55452B
SN55453B, SN55454B . . . FK PACKAGE
(TOP VIEW)



NC – No internal connection

description

The SN55451B through SN55454B and SN75451B through SN75454B are dual peripheral drivers designed for use in systems that employ TTL logic. This family is functionally interchangeable with and replaces the SN75450 family and the SN75450A family devices manufactured previously. The speed of the devices is equal to that of the SN75450 family, and the parts are designed to ensure freedom from latch-up. Diode-clamped inputs simplify circuit design. Typical applications include high-speed logic buffers, power drivers, relay drivers, lamp drivers, MOS drivers, line drivers, and memory drivers.

The SN55451B/SN75451B, SN55452B/SN75452B, SN55453B/SN75453B, and SN55454B/SN75454B are dual peripheral AND, NAND, OR, and NOR drivers, respectively (assuming positive logic), with the output of the logic gates internally connected to the bases of the npn output transistors.

The SN55’ drivers are characterized for operation over the full military range of –55°C to 125°C. The SN75’ drivers are characterized for operation from 0°C to 70°C.

PRODUCTION DATA information is current as of publication date. Products conform to specifications per the terms of Texas Instruments standard warranty. Production processing does not necessarily include testing of all parameters.

Copyright © 1999, Texas Instruments Incorporated

absolute maximum ratings over operating free-air temperature range (unless otherwise noted)

		SN55'	SN75'	UNIT
Supply voltage, V_{CC} (see Note 1)		7	7	V
Input voltage, V_I		5.5	5.5	V
Inter-emitter voltage (see Note 2)		5.5	5.5	V
Off-state output voltage, V_O		30	30	V
Continuous collector or output current, I_{OK} (see Note 3)		400	400	mA
Peak collector or output current, I_I ($t_W \le 10$ ms, duty cycle $\le 50\%$, see Note 4)		500	500	mA
Continuous total power dissipation		See Dissipation Rating Table		
Operating free-air temperature range, T_A		–55 to 125	0 to 70	°C
Storage temperature range, T_{stg}		–65 to 150	–65 to 150	°C
Case temperature for 60 seconds	FK package	260		°C
Lead temperature 1,6 mm (1/16 inch) from case for 60 seconds	JG package	300		°C
Lead temperature 1,6 mm (1/16 inch) from case for 10 seconds	D or P package		260	°C

NOTES: 1. Voltage values are with respect to network GND, unless otherwise specified.
2. This is the voltage between two emitters of a multiple-emitter transistor.
3. This value applies when the base-emitter resistance (R_{BE}) is equal to or less than 500 Ω.
4. Both halves of these dual circuits may conduct rated current simultaneously; however, power dissipation averaged over a short time interval must fall within the continuous dissipation rating.

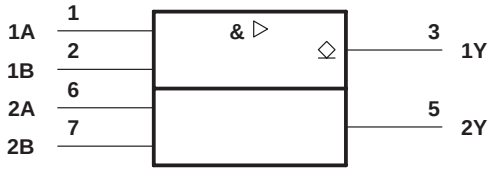
DISSIPATION RATING TABLE

PACKAGE	$T_A \le 25°C$ POWER RATING	DERATING FACTOR ABOVE $T_A = 25°C$	$T_A = 70°C$ POWER RATING	$T_A = 125°C$ POWER RATING
D	725 mW	5.8 mW/°C	464 mW	—
FK	1375 mW	11.0 mW/°C	880 mW	275 mW
JG	1050 mW	8.4 mW/°C	672 mW	210 mW
P	1000 mW	8.0 mW/°C	640 mW	—

recommended operating conditions

	SN55'			SN75'			UNIT
	MIN	NOM	MAX	MIN	NOM	MAX	
Supply voltage, V_{CC}	4.5	5	5.5	4.75	5	5.25	V
High-level input voltage, V_{IH}	2			2			V
Low-level input voltage, V_{IL}			0.8			0.8	V
Operating free-air temperature, T_A	–55		125	0		70	°C

logic symbol†



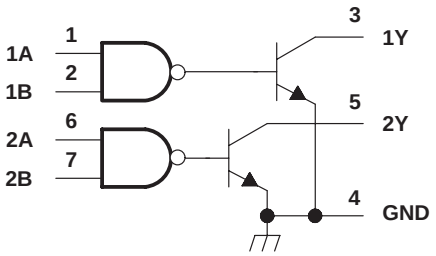
† This symbol is in accordance with ANSI/IEEE Std 91-1984 and IEC publication 617-12.
Pin numbers shown are for the D, JG, and P packages.

FUNCTION TABLE (each driver)

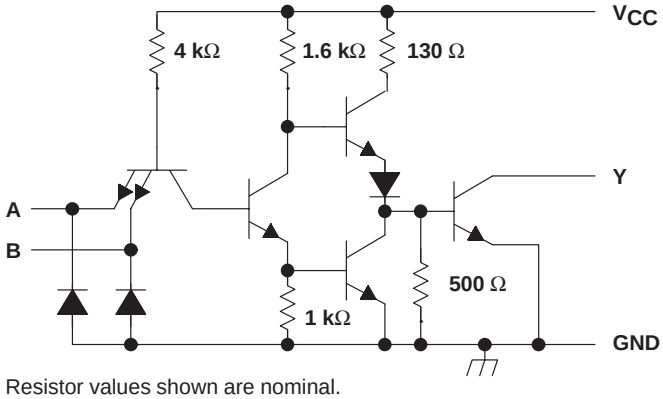
A	B	Y
L	L	L (on state)
L	H	L (on state)
H	L	L (on state)
H	H	H (off state)

positive logic: $Y = AB$ or $\overline{A}+\overline{B}$

logic diagram (positive logic)



schematic (each driver)



Resistor values shown are nominal.

electrical characteristics over recommended operating free-air temperature range

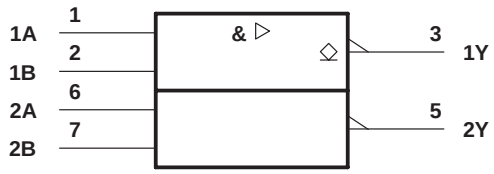
PARAMETER		TEST CONDITIONS‡		SN55451B			SN75451B			UNIT
				MIN	TYP§	MAX	MIN	TYP§	MAX	
V_{IK}	Input clamp voltage	V_{CC} = MIN,	I_I = –12 mA		–1.2	–1.5		–1.2	–1.5	V
V_{OL}	Low-level output voltage	V_{CC} = MIN, I_{OL} = 100 mA	V_{IL} = 0.8 V,		0.25	0.5		0.25	0.4	V
		V_{CC} = MIN, I_{OL} = 300 mA	V_{IL} = 0.8 V,		0.5	0.8		0.5	0.7	
I_{OH}	High-level output current	V_{CC} = MIN, V_{OH} = 30 V	V_{IH} = MIN,			300			100	µA
I_I	Input current at maximum input voltage	V_{CC} = MAX,	V_I = 5.5 V			1			1	mA
I_{IH}	High-level input current	V_{CC} = MAX,	V_I = 2.4 V			40			40	µA
I_{IL}	Low-level input current	V_{CC} = MAX,	V_I = 0.4 V		–1	–1.6		–1	–1.6	mA
I_{CCH}	Supply current, outputs high	V_{CC} = MAX,	V_I = 5 V		7	11		7	11	mA
I_{CCL}	Supply current, outputs low	V_{CC} = MAX,	V_I = 0		52	65		52	65	mA

‡ For conditions shown as MIN or MAX, use the appropriate value specified under recommended operating conditions.
§ All typical values are at V_{CC} = 5 V, T_A = 25°C.

switching characteristics, V_{CC} = 5 V, T_A = 25°C

PARAMETER			TEST CONDITIONS		MIN	TYP	MAX	UNIT
t_{PLH}	Propagation delay time, low-to-high-level output		$I_O \approx$ 200 mA, R_L = 50 Ω,	C_L = 15 pF, See Figure 1		18	25	ns
t_{PHL}	Propagation delay time, high-to-low-level output					18	25	
t_{TLH}	Transition time, low-to-high-level output					5	8	
t_{THL}	Transition time, high-to-low-level output					7	12	
V_{OH}	High-level output voltage after switching	SN55451B	V_S = 20 V, See Figure 2	$I_O \approx$ 300 mA,	V_S–6.5			mV
		SN75451B			V_S–6.5			

logic symbol†



† This symbol is in accordance with ANSI/IEEE Std 91-1984 and IEC publication 617-12.

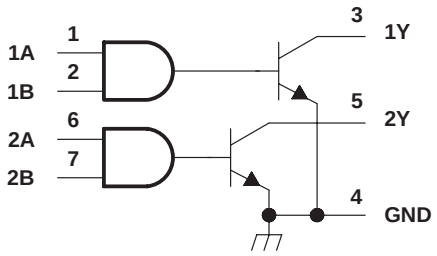
Pin numbers shown are for the D, JG, and P packages.

FUNCTION TABLE (each driver)

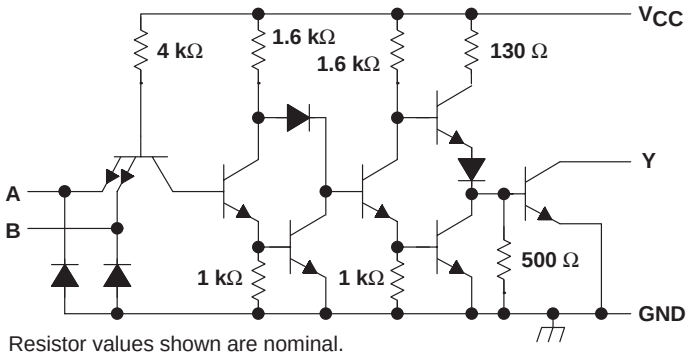
A	B	Y
L	L	H (off state)
L	H	H (off state)
H	L	H (off state)
H	H	L (on state)

positive logic:
$Y = \overline{AB}$ or $\overline{A}+\overline{B}$

logic diagram (positive logic)



schematic (each driver)



Resistor values shown are nominal.

electrical characteristics over recommended operating free-air temperature range

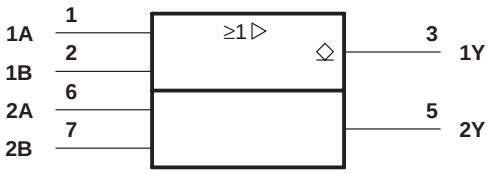
PARAMETER		TEST CONDITIONS‡	SN55452B			SN75452B			UNIT
			MIN	TYP§	MAX	MIN	TYP§	MAX	
V_{IK}	Input clamp voltage	V_{CC} = MIN, I_I = –12 mA		–1.2	–1.5		–1.2	–1.5	V
V_{OL}	Low-level output voltage	V_{CC} = MIN, V_{IH} = MIN, I_{OL} = 100 mA		0.25	0.5		0.25	0.4	V
		V_{CC} = MIN, V_{IH} = MIN, I_{OL} = 300 mA		0.5	0.8		0.5	0.7	
I_{OH}	High-level output current	V_{CC} = MIN, V_{IL} = 0.8 V, V_{OH} = 30 V			300			100	µA
I_I	Input current at maximum input voltage	V_{CC} = MAX, V_I = 5.5 V			1			1	mA
I_{IH}	High-level input current	V_{CC} = MAX, V_I = 2.4 V			40			40	µA
I_{IL}	Low-level input current	V_{CC} = MAX, V_I = 0.4 V		–1.1	–1.6		–1.1	–1.6	mA
I_{CCH}	Supply current, outputs high	V_{CC} = MAX, V_I = 0		11	14		11	14	mA
I_{CCL}	Supply current, outputs low	V_{CC} = MAX, V_I = 5 V		56	71		56	71	mA

‡ For conditions shown as MIN or MAX, use the appropriate value specified under recommended operating conditions.
§ All typical values are at V_{CC} = 5 V, T_A = 25°C.

switching characteristics, V_{CC} = 5 V, T_A = 25°C

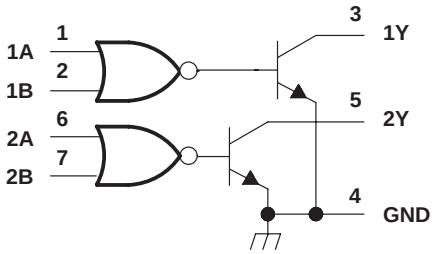
PARAMETER			TEST CONDITIONS	MIN	TYP	MAX	UNIT
t_{PLH}	Propagation delay time, low-to-high-level output		$I_O \approx$ 200 mA, C_L = 15 pF, R_L = 50 Ω, See Figure 1		26	35	ns
t_{PHL}	Propagation delay time, high-to-low-level output				24	35	
t_{TLH}	Transition time, low-to-high-level output				5	8	
t_{THL}	Transition time, high-to-low-level output				7	12	
V_{OH}	High-level output voltage after switching	SN55452B	V_S = 20 V, $I_O \approx$ 300 mA, See Figure 2		V_S–6.5		mV
		SN75452B		V_S–6.5			

logic symbol†



† This symbol is in accordance with ANSI/IEEE Std 91-1984 and IEC publication 617-12.
Pin numbers shown are for the D, JG, and P packages.

logic diagram (positive logic)

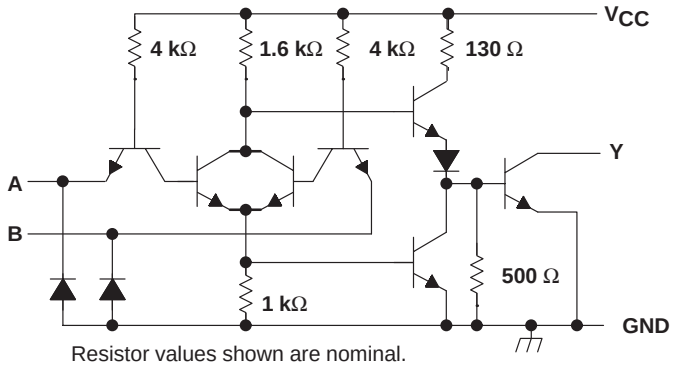


FUNCTION TABLE (each driver)

A	B	Y
L	L	L (on state)
L	H	H (off state)
H	L	H (off state)
H	H	H (off state)

positive logic: $Y = A+B$ or $Y = \overline{\overline{A}\,\overline{B}}$

schematic (each driver)



Resistor values shown are nominal.

electrical characteristics over recommended operating free-air temperature range

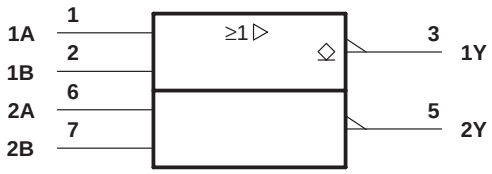
PARAMETER		TEST CONDITIONS‡		SN55453B			SN75453B			UNIT
				MIN	TYP§	MAX	MIN	TYP§	MAX	
V_{IK}	Input clamp voltage	V_{CC} = MIN,	I_I = –12 mA		–1.2	–1.5		–1.2	–1.5	V
V_{OL}	Low-level output voltage	V_{CC} = MIN, I_{OL} = 100 mA	V_{IL} = 0.8 V,		0.25	0.5		0.25	0.4	V
		V_{CC} = MIN, I_{OL} = 300 mA	V_{IL} = 0.8 V,		0.5	0.8		0.5	0.7	
I_{OH}	High-level output current	V_{CC} = MIN, V_{OH} = 30 V	V_{IH} = MIN,			300			100	µA
I_I	Input current at maximum input voltage	V_{CC} = MAX,	V_I = 5.5 V			1			1	mA
I_{IH}	High-level input current	V_{CC} = MAX,	V_I = 2.4 V			40			40	µA
I_{IL}	Low-level input current	V_{CC} = MAX,	V_I = 0.4 V		–1	–1.6		–1	–1.6	mA
I_{CCH}	Supply current, outputs high	V_{CC} = MAX,	V_I = 5 V		8	11		8	11	mA
I_{CCL}	Supply current, outputs low	V_{CC} = MAX,	V_I = 0		54	68		54	68	mA

‡ For conditions shown as MIN or MAX, use the appropriate value specified under recommended operating conditions.
§ All typical values are at V_{CC} = 5 V, T_A = 25°C.

switching characteristics, V_{CC} = 5 V, T_A = 25°C

PARAMETER			TEST CONDITIONS		MIN	TYP	MAX	UNIT
t_{PLH}	Propagation delay time, low-to-high-level output		$I_O \approx$ 200 mA, R_L = 50 Ω,	C_L = 15 pF, See Figure 1		18	25	ns
t_{PHL}	Propagation delay time, high-to-low-level output					18	25	
t_{TLH}	Transition time, low-to-high-level output					5	8	
t_{THL}	Transition time, high-to-low-level output					7	12	
V_{OH}	High-level output voltage after switching	SN55453B	V_S = 20 V, See Figure 2	$I_O \approx$ 300 mA,	V_S–6.5			mV
		SN75453B			V_S–6.5			

logic symbol†



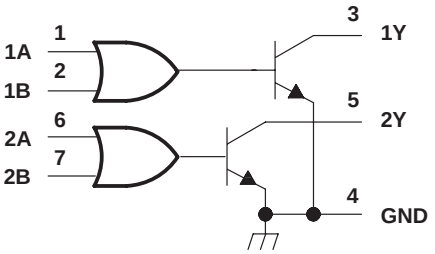
† This symbol is in accordance with ANSI/IEEE Std 91-1984 and IEC publication 617-12.
Pin numbers shown are for the D, JG, and P packages.

FUNCTION TABLE (each driver)

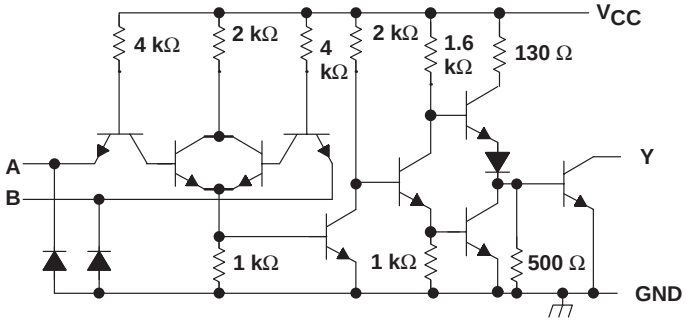
A	B	Y
L	L	H (off state)
L	H	L (on state)
H	L	L (on state)
H	H	L (on state)

positive logic:
$Y = \overline{A+B}$ or $\overline{AB}$

logic diagram (positive logic)



schematic (each driver)



Resistor values shown are nominal.

electrical characteristics over recommended operating free-air temperature range

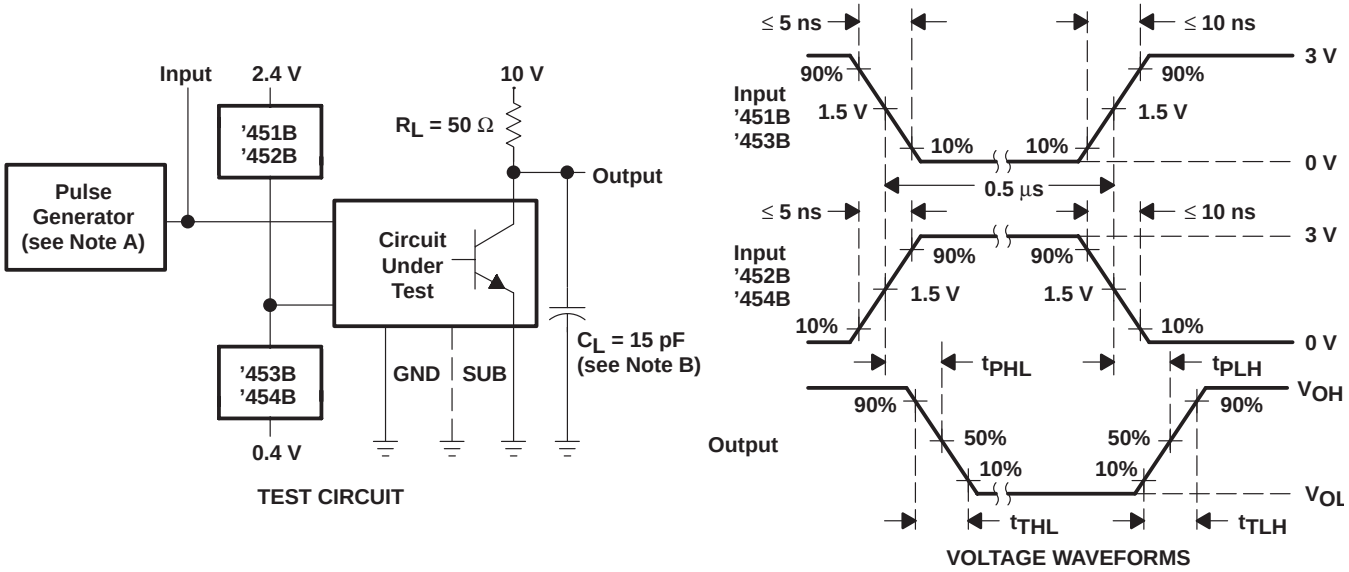
PARAMETER		TEST CONDITIONS‡		SN55454B			SN75454B			UNIT
				MIN	TYP§	MAX	MIN	TYP§	MAX	
V_{IK}	Input clamp voltage	V_{CC} = MIN,	I_I = –12 mA		–1.2	–1.5		–1.2	–1.5	V
V_{OL}	Low-level output voltage	V_{CC} = MIN, I_{OL} = 100 mA	V_{IH} = MIN,		0.25	0.5		0.25	0.4	V
		V_{CC} = MIN, I_{OL} = 300 mA	V_{IH} = MIN,		0.5	0.8		0.5	0.7	
I_{OH}	High-level output current	V_{CC} = MIN, V_{OH} = 30 V	V_{IL} = 0.8 V,			300			100	µA
I_I	Input current at maximum input voltage	V_{CC} = MAX,	V_I = 5.5 V			1			1	mA
I_{IH}	High-level input current	V_{CC} = MAX,	V_I = 2.4 V			40			40	µA
I_{IL}	Low-level input current	V_{CC} = MAX,	V_I = 0.4 V		–1	–1.6		–1	–1.6	mA
I_{CCH}	Supply current, outputs high	V_{CC} = MAX,	V_I = 0		13	17		13	17	mA
I_{CCL}	Supply current, outputs low	V_{CC} = MAX,	V_I = 5 V		61	79		61	79	mA

‡ For conditions shown as MIN or MAX, use the appropriate value specified under recommended operating conditions.
§ All typical values are at V_{CC} = 5 V, T_A = 25°C.

switching characteristics, V_{CC} = 5 V, T_A = 25°C

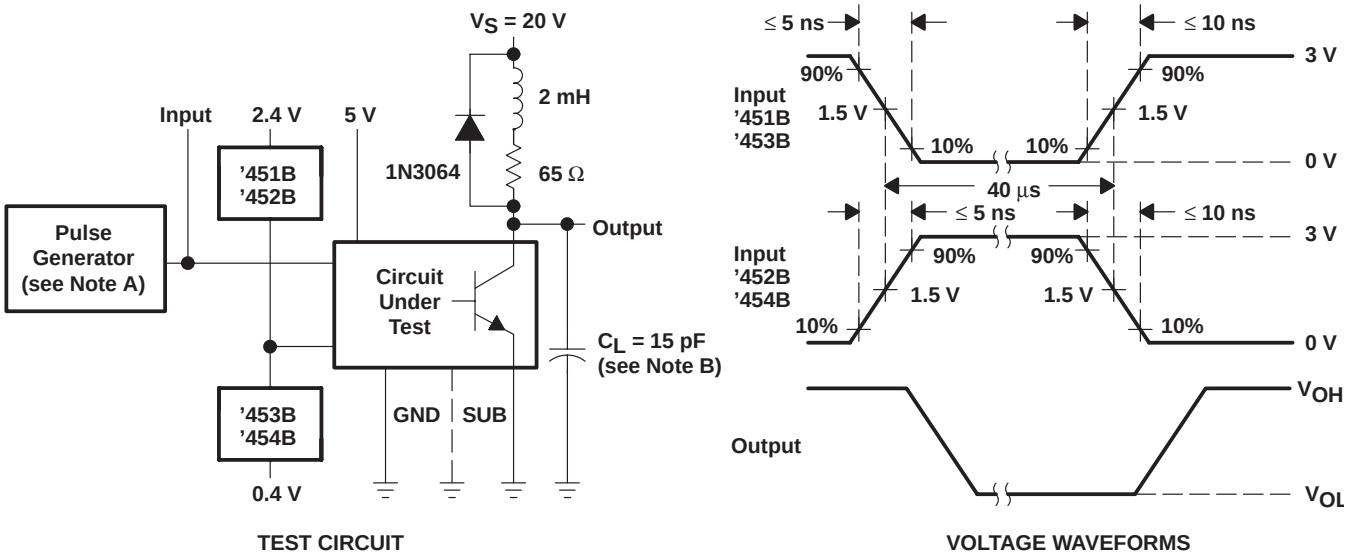
PARAMETER			TEST CONDITIONS		MIN	TYP	MAX	UNIT
t_{PLH}	Propagation delay time, low-to-high-level output		$I_O \approx$ 200 mA, R_L = 50 Ω,	C_L = 15 pF, See Figure 1		27	35	ns
t_{PHL}	Propagation delay time, high-to-low-level output					24	35	
t_{TLH}	Transition time, low-to-high-level output					5	8	
t_{THL}	Transition time, high-to-low-level output					7	12	
V_{OH}	High-level output voltage after switching	SN55454B	V_S = 20 V, See Figure 2	$I_O \approx$ 300 mA,	V_S–6.5			mV
		SN75454B			V_S–6.5			

PARAMETER MEASUREMENT INFORMATION



NOTES: A. The pulse generator has the following characteristics: PRR ≤ 1 MHz, Z_O = 50 Ω.
B. C_L includes probe and jig capacitance.

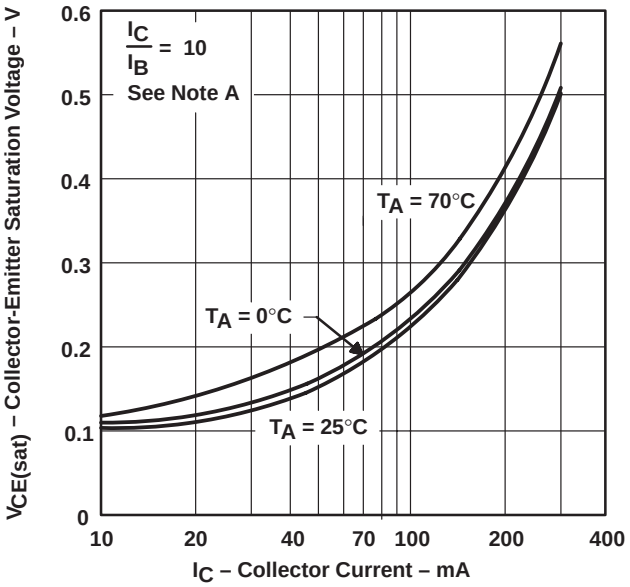
Figure 1. Test Circuit and Voltage Waveforms, Complete Drivers



NOTES: A. The pulse generator has the following characteristics: PRR ≤ 12.5 kHz, Z_O = 50 Ω.
B. C_L includes probe and jig capacitance.

Figure 2. Test Circuit and Voltage Waveforms for Latch-Up Test of Complete Drivers

TYPICAL CHARACTERISTICS



NOTE A: These parameters must be measured using pulse techniques, t_W = 300 µs, duty cycle ≤ 2%.

Figure 3

IMPORTANT NOTICE

Texas Instruments Incorporated and its subsidiaries (TI) reserve the right to make corrections, modifications, enhancements, improvements, and other changes to its products and services at any time and to discontinue any product or service without notice. Customers should obtain the latest relevant information before placing orders and should verify that such information is current and complete. All products are sold subject to TI's terms and conditions of sale supplied at the time of order acknowledgment.

TI warrants performance of its hardware products to the specifications applicable at the time of sale in accordance with TI's standard warranty. Testing and other quality control techniques are used to the extent TI deems necessary to support this warranty. Except where mandated by government requirements, testing of all parameters of each product is not necessarily performed.

TI assumes no liability for applications assistance or customer product design. Customers are responsible for their products and applications using TI components. To minimize the risks associated with customer products and applications, customers should provide adequate design and operating safeguards.

TI does not warrant or represent that any license, either express or implied, is granted under any TI patent right, copyright, mask work right, or other TI intellectual property right relating to any combination, machine, or process in which TI products or services are used. Information published by TI regarding third-party products or services does not constitute a license from TI to use such products or services or a warranty or endorsement thereof. Use of such information may require a license from a third party under the patents or other intellectual property of the third party, or a license from TI under the patents or other intellectual property of TI.

Reproduction of information in TI data books or data sheets is permissible only if reproduction is without alteration and is accompanied by all associated warranties, conditions, limitations, and notices. Reproduction of this information with alteration is an unfair and deceptive business practice. TI is not responsible or liable for such altered documentation.

Resale of TI products or services with statements different from or beyond the parameters stated by TI for that product or service voids all express and any implied warranties for the associated TI product or service and is an unfair and deceptive business practice. TI is not responsible or liable for any such statements.

TI products are not authorized for use in safety-critical applications (such as life support) where a failure of the TI product would reasonably be expected to cause severe personal injury or death, unless officers of the parties have executed an agreement specifically governing such use. Buyers represent that they have all necessary expertise in the safety and regulatory ramifications of their applications, and acknowledge and agree that they are solely responsible for all legal, regulatory and safety-related requirements concerning their products and any use of TI products in such safety-critical applications, notwithstanding any applications-related information or support that may be provided by TI. Further, Buyers must fully indemnify TI and its representatives against any damages arising out of the use of TI products in such safety-critical applications.

TI products are neither designed nor intended for use in military/aerospace applications or environments unless the TI products are specifically designated by TI as military-grade or "enhanced plastic." Only products designated by TI as military-grade meet military specifications. Buyers acknowledge and agree that any such use of TI products which TI has not designated as military-grade is solely at the Buyer's risk, and that they are solely responsible for compliance with all legal and regulatory requirements in connection with such use.

TI products are neither designed nor intended for use in automotive applications or environments unless the specific TI products are designated by TI as compliant with ISO/TS 16949 requirements. Buyers acknowledge and agree that, if they use any non-designated products in automotive applications, TI will not be responsible for any failure to meet such requirements.

Following are URLs where you can obtain information on other Texas Instruments products and application solutions:

Products		**Applications**	
Amplifiers	amplifier.ti.com	Audio	www.ti.com/audio
Data Converters	dataconverter.ti.com	Automotive	www.ti.com/automotive
DSP	dsp.ti.com	Broadband	www.ti.com/broadband
Interface	interface.ti.com	Digital Control	www.ti.com/digitalcontrol
Logic	logic.ti.com	Military	www.ti.com/military
Power Mgmt	power.ti.com	Optical Networking	www.ti.com/opticalnetwork
Microcontrollers	microcontroller.ti.com	Security	www.ti.com/security
Low Power Wireless	www.ti.com/lpw	Telephony	www.ti.com/telephony
		Video & Imaging	www.ti.com/video
		Wireless	www.ti.com/wireless

Mailing Address: Texas Instruments, Post Office Box 655303, Dallas, Texas 75265
Copyright © 2007, Texas Instruments Incorporated

PACKAGING INFORMATION

Orderable Device	Status (1)	Package Type	Package Drawing	Pins	Package Qty	Eco Plan (2)	Lead/Ball Finish	MSL Peak Temp (3)
5962-9563301Q2A	ACTIVE	LCCC	FK	20	1	TBD	POST-PLATE	N / A for Pkg Type
5962-9563301QPA	ACTIVE	CDIP	JG	8	1	TBD	A42 SNPB	N / A for Pkg Type
77049012A	ACTIVE	LCCC	FK	20	1	TBD	POST-PLATE	N / A for Pkg Type
7704901PA	ACTIVE	CDIP	JG	8	1	TBD	A42 SNPB	N / A for Pkg Type
77049022A	ACTIVE	LCCC	FK	20	1	TBD	POST-PLATE	N / A for Pkg Type
7704902PA	ACTIVE	CDIP	JG	8	1	TBD	A42 SNPB	N / A for Pkg Type
JM38510/12902BPA	ACTIVE	CDIP	JG	8	1	TBD	A42 SNPB	N / A for Pkg Type
JM38510/12903BPA	ACTIVE	CDIP	JG	8	1	TBD	A42 SNPB	N / A for Pkg Type
JM38510/12905BPA	ACTIVE	CDIP	JG	8	1	TBD	A42 SNPB	N / A for Pkg Type
SN55451BJG	ACTIVE	CDIP	JG	8	1	TBD	A42 SNPB	N / A for Pkg Type
SN55452BJG	ACTIVE	CDIP	JG	8	1	TBD	A42 SNPB	N / A for Pkg Type
SN55453BJG	ACTIVE	CDIP	JG	8	1	TBD	A42 SNPB	N / A for Pkg Type
SN55454BJG	ACTIVE	CDIP	JG	8	1	TBD	A42 SNPB	N / A for Pkg Type
SN75451BD	ACTIVE	SOIC	D	8	75	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN75451BDE4	ACTIVE	SOIC	D	8	75	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN75451BDG4	ACTIVE	SOIC	D	8	75	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN75451BDR	ACTIVE	SOIC	D	8	2500	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN75451BDRE4	ACTIVE	SOIC	D	8	2500	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN75451BDRG4	ACTIVE	SOIC	D	8	2500	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN75451BP	ACTIVE	PDIP	P	8	50	Pb-Free (RoHS)	CU NIPDAU	N / A for Pkg Type
SN75451BPE4	ACTIVE	PDIP	P	8	50	Pb-Free (RoHS)	CU NIPDAU	N / A for Pkg Type
SN75451BPSR	ACTIVE	SO	PS	8	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN75451BPSRE4	ACTIVE	SO	PS	8	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN75451BPSRG4	ACTIVE	SO	PS	8	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN75452BD	ACTIVE	SOIC	D	8	75	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN75452BDE4	ACTIVE	SOIC	D	8	75	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN75452BDG4	ACTIVE	SOIC	D	8	75	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN75452BDR	ACTIVE	SOIC	D	8	2500	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN75452BDRE4	ACTIVE	SOIC	D	8	2500	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN75452BDRG4	ACTIVE	SOIC	D	8	2500	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM

Orderable Device	Status (1)	Package Type	Package Drawing	Pins	Package Qty	Eco Plan (2)	Lead/Ball Finish	MSL Peak Temp (3)
SN75452BP	ACTIVE	PDIP	P	8	50	Pb-Free (RoHS)	CU NIPDAU	N / A for Pkg Type
SN75452BPE4	ACTIVE	PDIP	P	8	50	Pb-Free (RoHS)	CU NIPDAU	N / A for Pkg Type
SN75452BPSR	ACTIVE	SO	PS	8	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN75452BPSRE4	ACTIVE	SO	PS	8	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN75452BPSRG4	ACTIVE	SO	PS	8	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN75453BD	ACTIVE	SOIC	D	8	75	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN75453BDE4	ACTIVE	SOIC	D	8	75	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN75453BDG4	ACTIVE	SOIC	D	8	75	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN75453BDR	ACTIVE	SOIC	D	8	2500	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN75453BDRE4	ACTIVE	SOIC	D	8	2500	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN75453BDRG4	ACTIVE	SOIC	D	8	2500	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN75453BP	ACTIVE	PDIP	P	8	50	Pb-Free (RoHS)	CU NIPDAU	N / A for Pkg Type
SN75453BPE4	ACTIVE	PDIP	P	8	50	Pb-Free (RoHS)	CU NIPDAU	N / A for Pkg Type
SN75453BPSR	ACTIVE	SO	PS	8	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN75453BPSRE4	ACTIVE	SO	PS	8	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN75453BPSRG4	ACTIVE	SO	PS	8	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN75454BD	ACTIVE	SOIC	D	8	75	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN75454BDE4	ACTIVE	SOIC	D	8	75	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN75454BDG4	ACTIVE	SOIC	D	8	75	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN75454BDR	ACTIVE	SOIC	D	8	2500	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN75454BDRE4	ACTIVE	SOIC	D	8	2500	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN75454BDRG4	ACTIVE	SOIC	D	8	2500	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN75454BP	ACTIVE	PDIP	P	8	50	Pb-Free (RoHS)	CU NIPDAU	N / A for Pkg Type
SN75454BPE4	ACTIVE	PDIP	P	8	50	Pb-Free (RoHS)	CU NIPDAU	N / A for Pkg Type
SN75454BPSR	ACTIVE	SO	PS	8	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN75454BPSRE4	ACTIVE	SO	PS	8	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM

Orderable Device	Status [1]	Package Type	Package Drawing	Pins	Package Qty	Eco Plan [2]	Lead/Ball Finish	MSL Peak Temp [3]
SN75454BPSRG4	ACTIVE	SO	PS	8	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SNJ55451BFK	ACTIVE	LCCC	FK	20	1	TBD	POST-PLATE	N / A for Pkg Type
SNJ55451BJG	ACTIVE	CDIP	JG	8	1	TBD	A42 SNPB	N / A for Pkg Type
SNJ55452BFK	ACTIVE	LCCC	FK	20	1	TBD	POST-PLATE	N / A for Pkg Type
SNJ55452BJG	ACTIVE	CDIP	JG	8	1	TBD	A42 SNPB	N / A for Pkg Type
SNJ55453BFK	ACTIVE	LCCC	FK	20	1	TBD	POST-PLATE	N / A for Pkg Type
SNJ55453BJG	ACTIVE	CDIP	JG	8	1	TBD	A42 SNPB	N / A for Pkg Type
SNJ55454BFK	OBSOLETE	LCCC	FK	20		TBD	POST-PLATE	N / A for Pkg Type
SNJ55454BJG	ACTIVE	CDIP	JG	8	1	TBD	A42 SNPB	N / A for Pkg Type

[1] The marketing status values are defined as follows:
ACTIVE: Product device recommended for new designs.
LIFEBUY: TI has announced that the device will be discontinued, and a lifetime-buy period is in effect.
NRND: Not recommended for new designs. Device is in production to support existing customers, but TI does not recommend using this part in a new design.
PREVIEW: Device has been announced but is not in production. Samples may or may not be available.
OBSOLETE: TI has discontinued the production of the device.

[2] Eco Plan - The planned eco-friendly classification: Pb-Free (RoHS), Pb-Free (RoHS Exempt), or Green (RoHS & no Sb/Br) - please check http://www.ti.com/productcontent for the latest availability information and additional product content details.
TBD: The Pb-Free/Green conversion plan has not been defined.
Pb-Free (RoHS): TI's terms "Lead-Free" or "Pb-Free" mean semiconductor products that are compatible with the current RoHS requirements for all 6 substances, including the requirement that lead not exceed 0.1% by weight in homogeneous materials. Where designed to be soldered at high temperatures, TI Pb-Free products are suitable for use in specified lead-free processes.
Pb-Free (RoHS Exempt): This component has a RoHS exemption for either 1) lead-based flip-chip solder bumps used between the die and package, or 2) lead-based die adhesive used between the die and leadframe. The component is otherwise considered Pb-Free (RoHS compatible) as defined above.
Green (RoHS & no Sb/Br): TI defines "Green" to mean Pb-Free (RoHS compatible), and free of Bromine (Br) and Antimony (Sb) based flame retardants (Br or Sb do not exceed 0.1% by weight in homogeneous material)

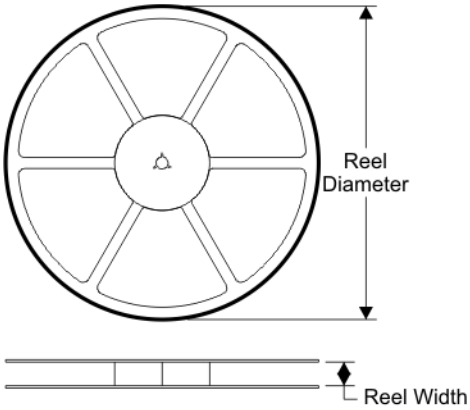
[3] MSL, Peak Temp. -- The Moisture Sensitivity Level rating according to the JEDEC industry standard classifications, and peak solder temperature.

Important Information and Disclaimer: The information provided on this page represents TI's knowledge and belief as of the date that it is provided. TI bases its knowledge and belief on information provided by third parties, and makes no representation or warranty as to the accuracy of such information. Efforts are underway to better integrate information from third parties. TI has taken and continues to take reasonable steps to provide representative and accurate information but may not have conducted destructive testing or chemical analysis on incoming materials and chemicals. TI and TI suppliers consider certain information to be proprietary, and thus CAS numbers and other limited information may not be available for release.

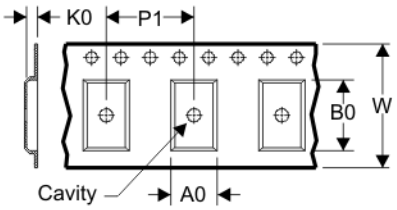
In no event shall TI's liability arising out of such information exceed the total purchase price of the TI part(s) at issue in this document sold by TI to Customer on an annual basis.

TAPE AND REEL BOX INFORMATION

REEL DIMENSIONS

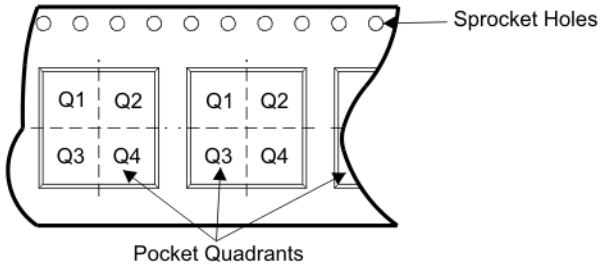


TAPE DIMENSIONS



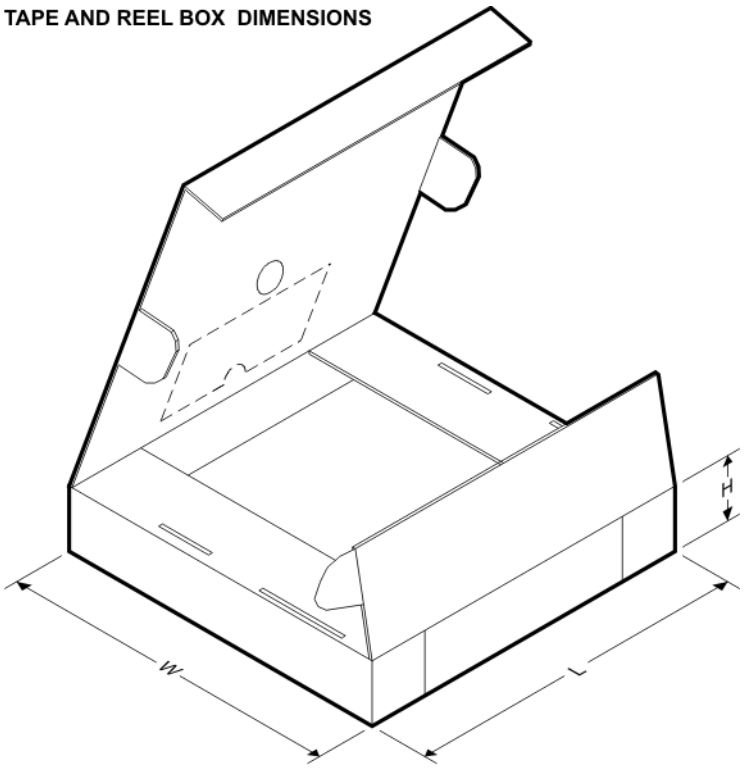
A0	Dimension designed to accommodate the component width
B0	Dimension designed to accommodate the component length
K0	Dimension designed to accommodate the component thickness
W	Overall width of the carrier tape
P1	Pitch between successive cavity centers

QUADRANT ASSIGNMENTS FOR PIN 1 ORIENTATION IN TAPE



Device	Package	Pins	Site	Reel Diameter (mm)	Reel Width (mm)	A0 (mm)	B0 (mm)	K0 (mm)	P1 (mm)	W (mm)	Pin1 Quadrant
SN75451BDR	D	8	SITE 27	330	12	6.4	5.2	2.1	8	12	Q1
SN75451BPSR	PS	8	SITE 41	330	16	8.2	6.6	2.5	12	16	Q1
SN75452BDR	D	8	SITE 27	330	12	6.4	5.2	2.1	8	12	Q1
SN75452BPSR	PS	8	SITE 41	330	16	8.2	6.6	2.5	12	16	Q1
SN75453BDR	D	8	SITE 27	330	12	6.4	5.2	2.1	8	12	Q1
SN75453BPSR	PS	8	SITE 41	330	16	8.2	6.6	2.5	12	16	Q1
SN75454BDR	D	8	SITE 27	330	12	6.4	5.2	2.1	8	12	Q1
SN75454BPSR	PS	8	SITE 41	330	16	8.2	6.6	2.5	12	16	Q1

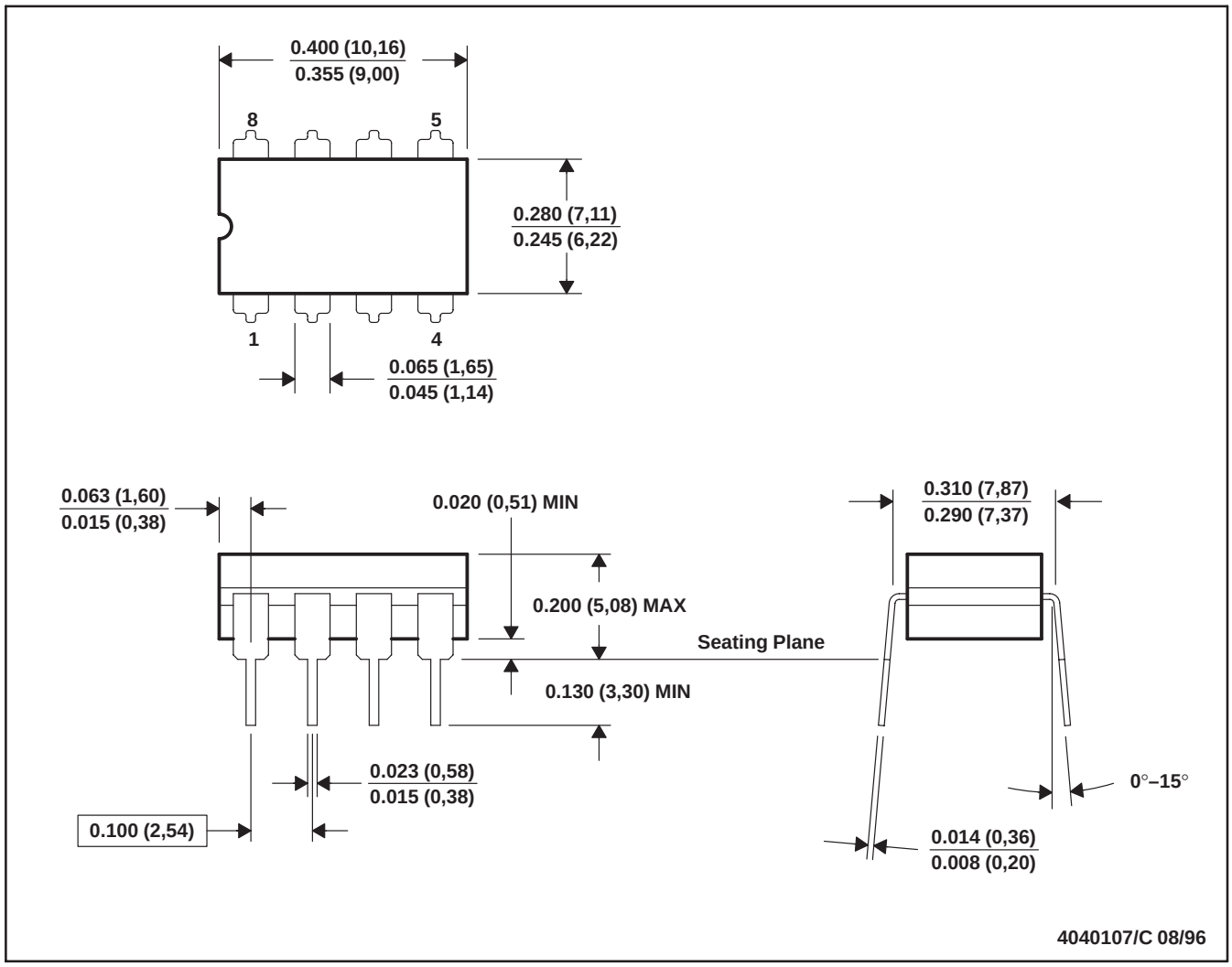
TAPE AND REEL BOX DIMENSIONS



Device	Package	Pins	Site	Length (mm)	Width (mm)	Height (mm)
SN75451BDR	D	8	SITE 27	342.9	336.6	20.64
SN75451BPSR	PS	8	SITE 41	346.0	346.0	33.0
SN75452BDR	D	8	SITE 27	342.9	336.6	20.64
SN75452BPSR	PS	8	SITE 41	346.0	346.0	33.0
SN75453BDR	D	8	SITE 27	342.9	336.6	20.64
SN75453BPSR	PS	8	SITE 41	346.0	346.0	33.0
SN75454BDR	D	8	SITE 27	342.9	336.6	20.64
SN75454BPSR	PS	8	SITE 41	346.0	346.0	33.0

MCER001A – JANUARY 1995 – REVISED JANUARY 1997

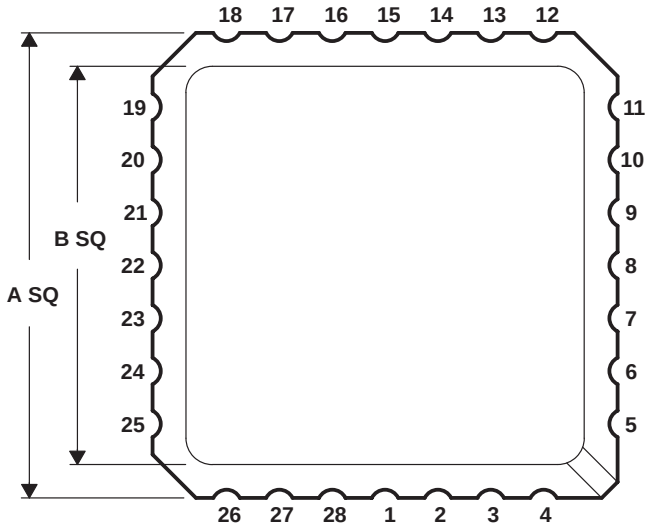
JG (R-GDIP-T8) **CERAMIC DUAL-IN-LINE**



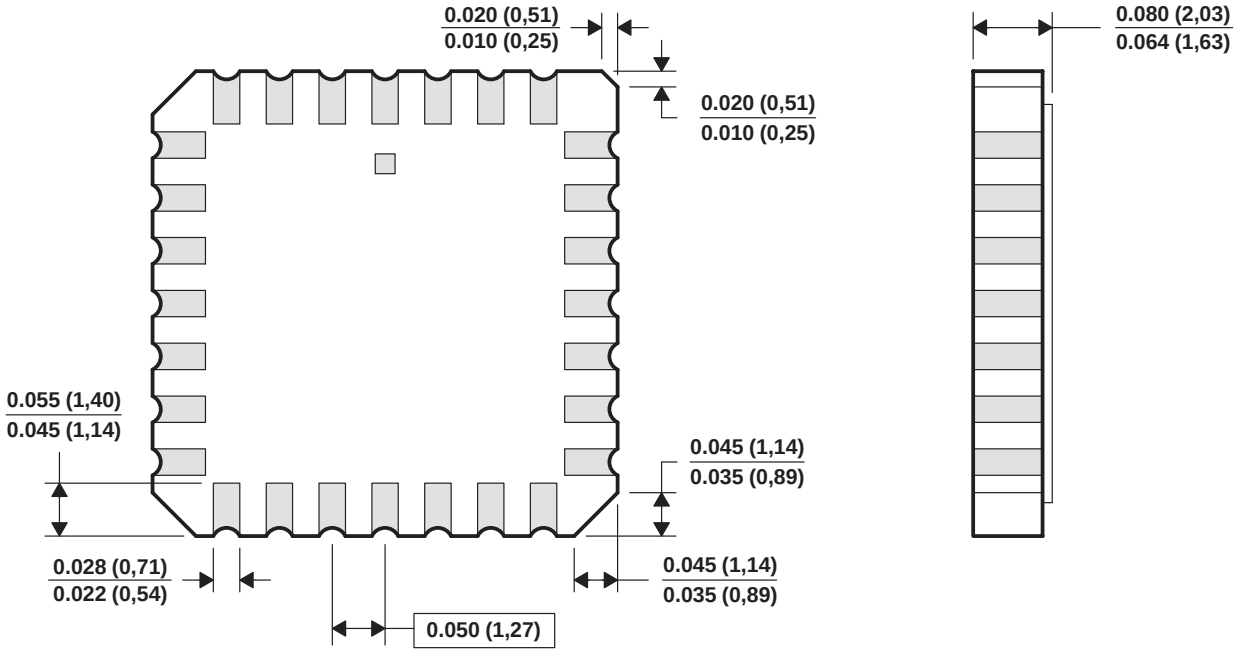
NOTES: A. All linear dimensions are in inches (millimeters).
B. This drawing is subject to change without notice.
C. This package can be hermetically sealed with a ceramic lid using glass frit.
D. Index point is provided on cap for terminal identification.
E. Falls within MIL STD 1835 GDIP1-T8

FK (S-CQCC-N)** **LEADLESS CERAMIC CHIP CARRIER**

28 TERMINAL SHOWN



NO. OF TERMINALS **	A		B	
	MIN	MAX	MIN	MAX
20	0.342 (8,69)	0.358 (9,09)	0.307 (7,80)	0.358 (9,09)
28	0.442 (11,23)	0.458 (11,63)	0.406 (10,31)	0.458 (11,63)
44	0.640 (16,26)	0.660 (16,76)	0.495 (12,58)	0.560 (14,22)
52	0.739 (18,78)	0.761 (19,32)	0.495 (12,58)	0.560 (14,22)
68	0.938 (23,83)	0.962 (24,43)	0.850 (21,6)	0.858 (21,8)
84	1.141 (28,99)	1.165 (29,59)	1.047 (26,6)	1.063 (27,0)

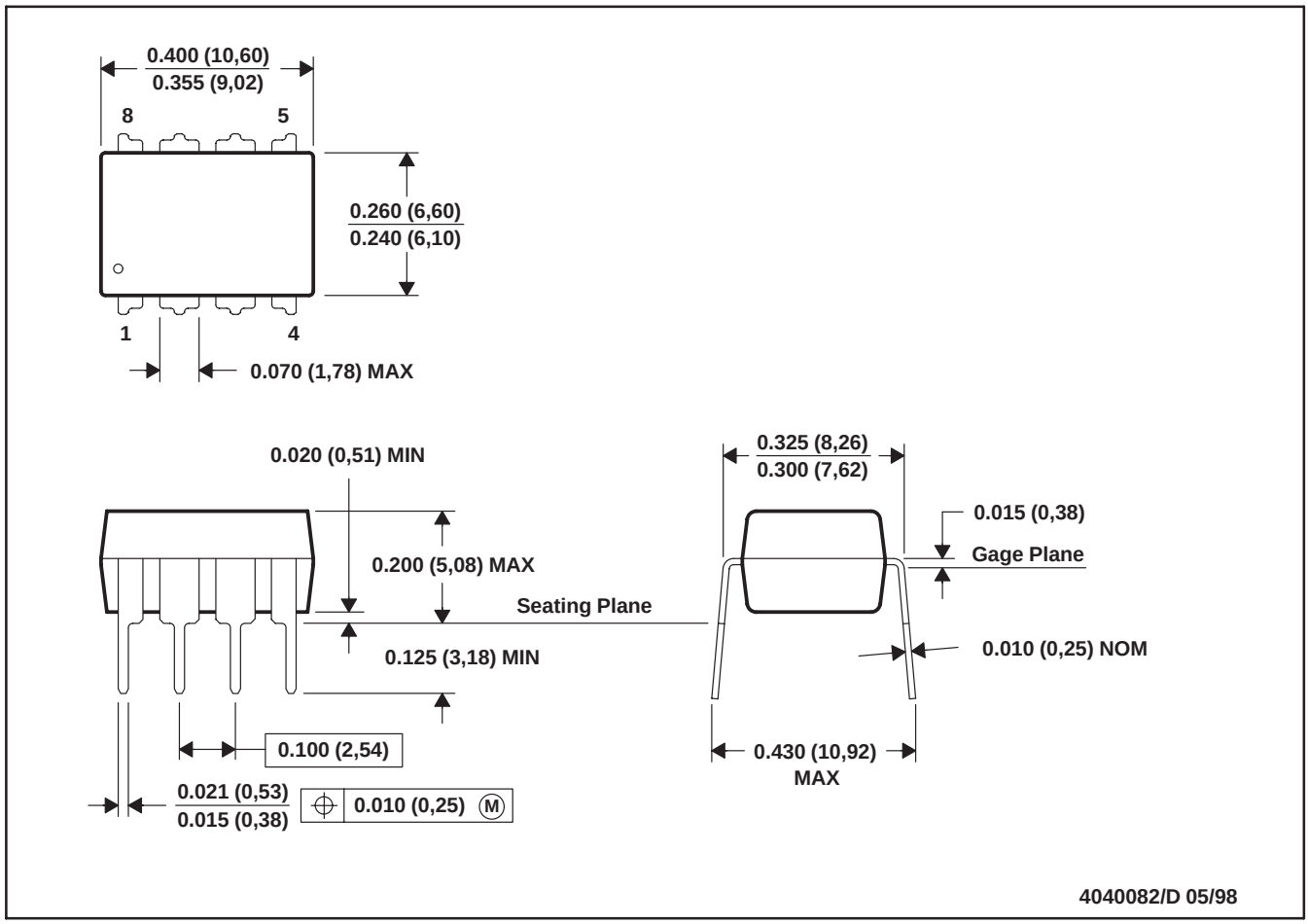


4040140/D 10/96

NOTES: A. All linear dimensions are in inches (millimeters).
B. This drawing is subject to change without notice.
C. This package can be hermetically sealed with a metal lid.
D. The terminals are gold plated.
E. Falls within JEDEC MS-004

MPDI001A – JANUARY 1995 – REVISED JUNE 1999

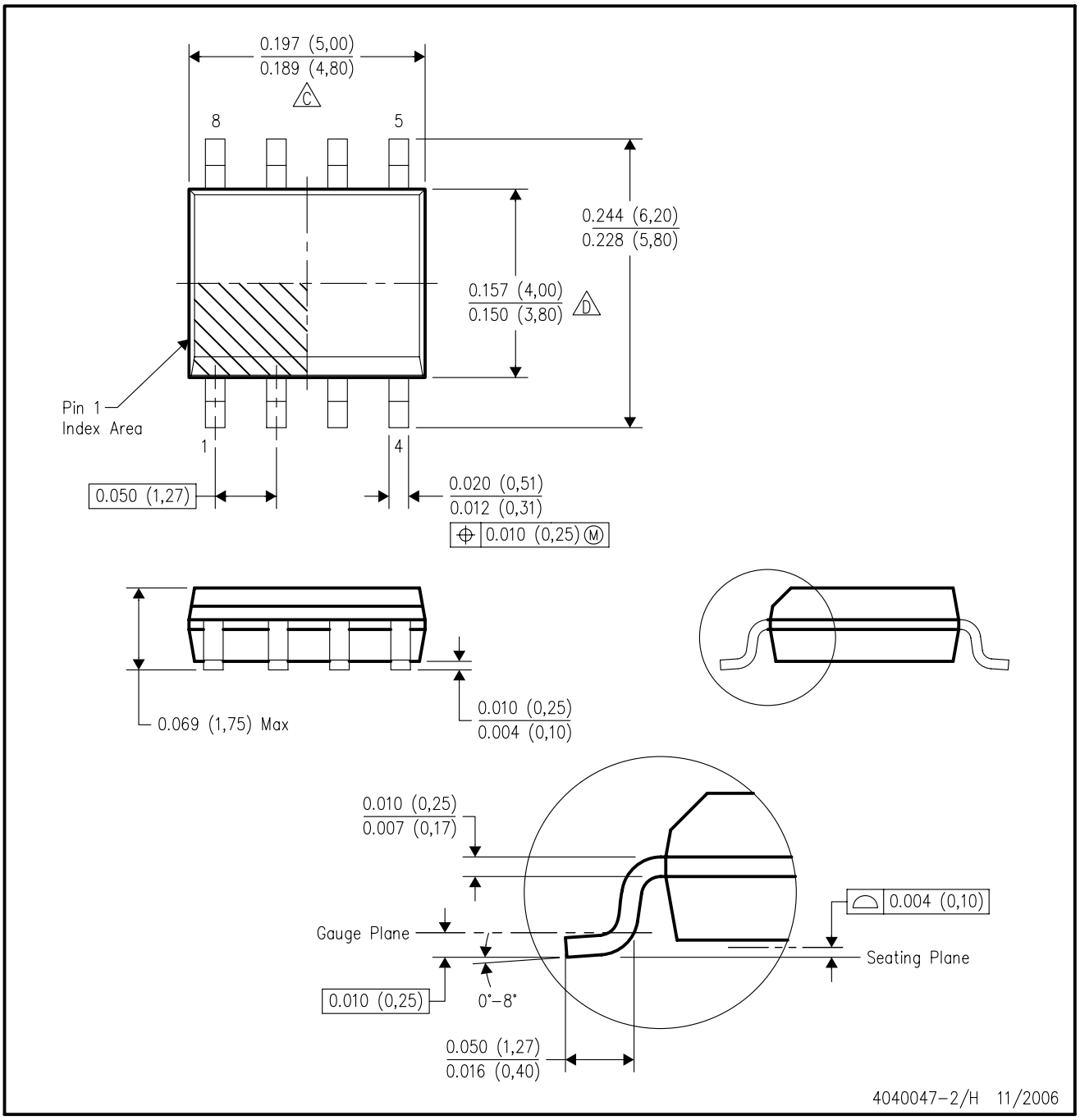
P (R-PDIP-T8) **PLASTIC DUAL-IN-LINE**



NOTES: A. All linear dimensions are in inches (millimeters).
B. This drawing is subject to change without notice.
C. Falls within JEDEC MS-001

For the latest package information, go to http://www.ti.com/sc/docs/package/pkg_info.htm

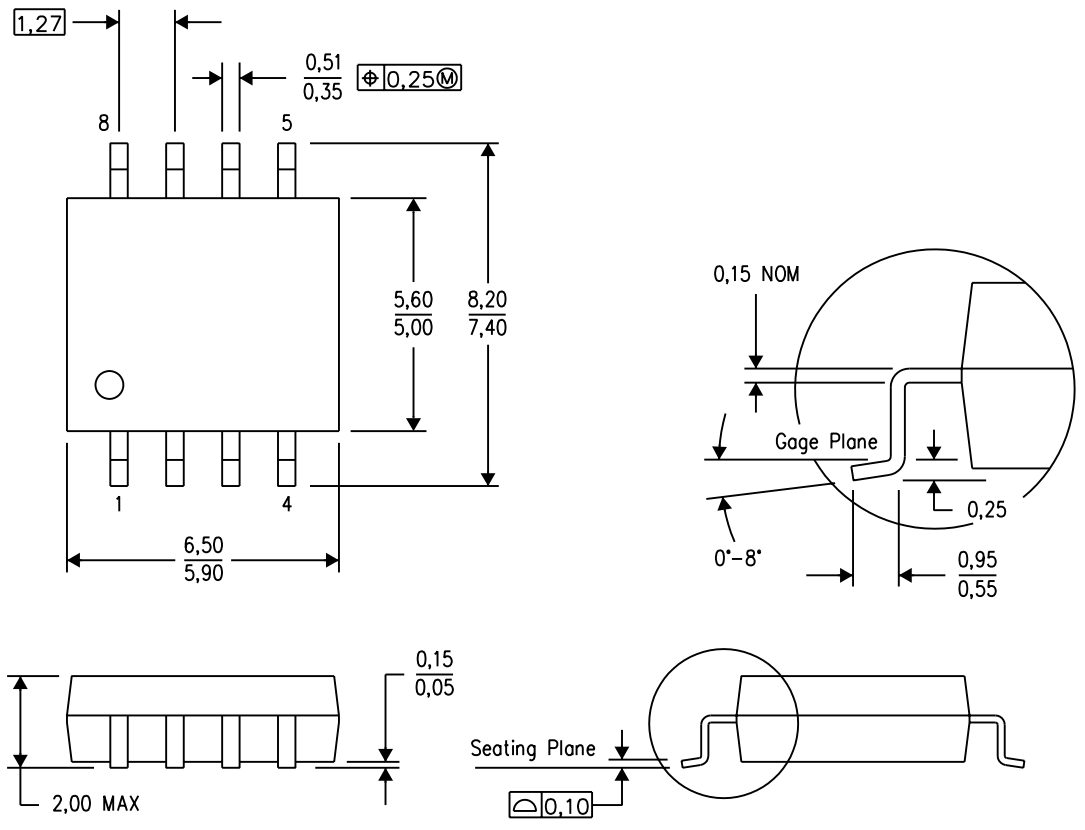
D (R–PDSO–G8) PLASTIC SMALL–OUTLINE PACKAGE



NOTES:
A. All linear dimensions are in inches (millimeters).
B. This drawing is subject to change without notice.
C. Body length does not include mold flash, protrusions, or gate burrs. Mold flash, protrusions, or gate burrs shall not exceed .006 (0,15) per end.
D. Body width does not include interlead flash. Interlead flash shall not exceed .017 (0,43) per side.
E. Reference JEDEC MS–012 variation AA.

MECHANICAL DATA

PS (R-PDSO-G8) **PLASTIC SMALL-OUTLINE PACKAGE**



4040063/C 03/03

NOTES:
A. All linear dimensions are in millimeters.
B. This drawing is subject to change without notice.
C. Body dimensions do not include mold flash or protrusion, not to exceed 0,15.

IMPORTANT NOTICE

Texas Instruments Incorporated and its subsidiaries (TI) reserve the right to make corrections, modifications, enhancements, improvements, and other changes to its products and services at any time and to discontinue any product or service without notice. Customers should obtain the latest relevant information before placing orders and should verify that such information is current and complete. All products are sold subject to TI's terms and conditions of sale supplied at the time of order acknowledgment.

TI warrants performance of its hardware products to the specifications applicable at the time of sale in accordance with TI's standard warranty. Testing and other quality control techniques are used to the extent TI deems necessary to support this warranty. Except where mandated by government requirements, testing of all parameters of each product is not necessarily performed.

TI assumes no liability for applications assistance or customer product design. Customers are responsible for their products and applications using TI components. To minimize the risks associated with customer products and applications, customers should provide adequate design and operating safeguards.

TI does not warrant or represent that any license, either express or implied, is granted under any TI patent right, copyright, mask work right, or other TI intellectual property right relating to any combination, machine, or process in which TI products or services are used. Information published by TI regarding third-party products or services does not constitute a license from TI to use such products or services or a warranty or endorsement thereof. Use of such information may require a license from a third party under the patents or other intellectual property of the third party, or a license from TI under the patents or other intellectual property of TI.

Reproduction of TI information in TI data books or data sheets is permissible only if reproduction is without alteration and is accompanied by all associated warranties, conditions, limitations, and notices. Reproduction of this information with alteration is an unfair and deceptive business practice. TI is not responsible or liable for such altered documentation. Information of third parties may be subject to additional restrictions.

Resale of TI products or services with statements different from or beyond the parameters stated by TI for that product or service voids all express and any implied warranties for the associated TI product or service and is an unfair and deceptive business practice. TI is not responsible or liable for any such statements.

TI products are not authorized for use in safety-critical applications (such as life support) where a failure of the TI product would reasonably be expected to cause severe personal injury or death, unless officers of the parties have executed an agreement specifically governing such use. Buyers represent that they have all necessary expertise in the safety and regulatory ramifications of their applications, and acknowledge and agree that they are solely responsible for all legal, regulatory and safety-related requirements concerning their products and any use of TI products in such safety-critical applications, notwithstanding any applications-related information or support that may be provided by TI. Further, Buyers must fully indemnify TI and its representatives against any damages arising out of the use of TI products in such safety-critical applications.

TI products are neither designed nor intended for use in military/aerospace applications or environments unless the TI products are specifically designated by TI as military-grade or "enhanced plastic." Only products designated by TI as military-grade meet military specifications. Buyers acknowledge and agree that any such use of TI products which TI has not designated as military-grade is solely at the Buyer's risk, and that they are solely responsible for compliance with all legal and regulatory requirements in connection with such use.

TI products are neither designed nor intended for use in automotive applications or environments unless the specific TI products are designated by TI as compliant with ISO/TS 16949 requirements. Buyers acknowledge and agree that, if they use any non-designated products in automotive applications, TI will not be responsible for any failure to meet such requirements.

Following are URLs where you can obtain information on other Texas Instruments products and application solutions:

Products		**Applications**	
Amplifiers	amplifier.ti.com	Audio	www.ti.com/audio
Data Converters	dataconverter.ti.com	Automotive	www.ti.com/automotive
DSP	dsp.ti.com	Broadband	www.ti.com/broadband
Interface	interface.ti.com	Digital Control	www.ti.com/digitalcontrol
Logic	logic.ti.com	Military	www.ti.com/military
Power Mgmt	power.ti.com	Optical Networking	www.ti.com/opticalnetwork
Microcontrollers	microcontroller.ti.com	Security	www.ti.com/security
RFID	www.ti-rfid.com	Telephony	www.ti.com/telephony
Low Power Wireless	www.ti.com/lpw	Video & Imaging	www.ti.com/video
		Wireless	www.ti.com/wireless

Mailing Address: Texas Instruments, Post Office Box 655303, Dallas, Texas 75265
Copyright © 2007, Texas Instruments Incorporated