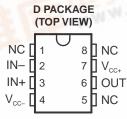
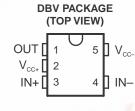
#### **FEATURES**

- Parameters Specified at 2.7-V, 5-V, and 15-V Supplies
- Supply Current 7 μA (Typ) at 5 V
- Response Time 4 μs (Typ) at 5 V
- Push-Pull Output
- Input Common-Mode Range Beyond V<sub>CC</sub> and V<sub>CC+</sub>
- Low Input Current

#### **APPLICATIONS**

- Battery-Powered Products
- Notebooks and PDAs
- Mobile Communications
- Alarm and Security Circuits
- Direct Sensor Interface
- Replaces Amplifiers Used as Comparators
   With Better Performance and Lower Current







NC - No internal connection

#### DESCRIPTION/ORDERING INFORMATION

The TLV7211 and TLV7211A are micropower CMOS comparators available in the space-saving SOT-23-5 package. This makes the comparators ideal for space- and weight-critical designs. The TLV7211A features an input offset voltage of 5 mV, and the TLV7211 features an input offset voltage of 15 mV.

The main benefits of the SOT-23-5 package are most apparent in small portable electronic devices, such as mobile phones, pagers, notebook computers, personal digital assistants, and PCMCIA cards. The rail-to-rail input voltage makes the TLV7211 or TLV7211A a good choice for sensor interfacing, such as light detector circuits, optical and magnetic sensors, and alarm and status circuits.

The SOT-23-5 package's small size allows it to fit into tight spaces on PC boards.

#### ORDERING INFORMATION

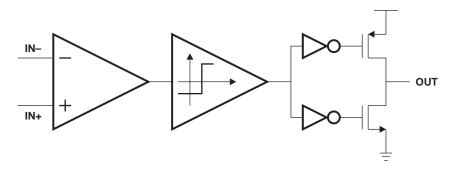
T <sub>A</sub>	V <sub>OS</sub> (MAX)	PACKAGE <sup>(1)</sup>	COM	ORDERABLE PART NUMBER	TOP-SIDE MARKING <sup>(2)</sup>
		SOIC - D	Reel of 2500	TLV7211AIDR	- 7211AI
180-11		301C - D	Tube of 75	TLV7211AID	7211AI
	5 mV	SOT-23-5 – DBV	Reel of 3000	TLV7211AIDBVR	YBN_
100		SOT (SC-70) – DCK	Reel of 3000	TLV7211AIDCKR	- Y8
-40°C to 85°C			Reel of 250	TLV7211AIDCKT	TO_ GOM
-40°C 10 85°C		0010 D	Reel of 2500	TLV7211IDR	- TY7211
		SOIC – D	Tube of 75	TLV7211ID	1 1 7 2 1 1
	15 mV	SOT-23-5 – DBV	Reel of 3000	TLV7211IDBVR	YBK_
		COT (CC 70) DCK	Reel of 3000	TLV7211IDCKR	V7
		SOT (SC-70) - DCK	Reel of 250	TLV7211IDCKT	- Y7_

<sup>(1)</sup> Package drawings, standard packing quantities, thermal data, symbolization, and PCB design guidelines are available at www.ti.com/sc/package.

<sup>(2)</sup> DBV/DCK: The actual top-side marking has one additional character that designates the assembly/test site.



#### **FUNCTIONAL BLOCK DIAGRAM**



### Absolute Maximum Ratings(1)

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

			MIN	MAX	UNIT
$V_{CC+} - V_{CC-}$	Supply voltage <sup>(2)</sup>			16	V
V <sub>ID</sub>	Differential input voltage <sup>(3)</sup>				V
V <sub>I</sub>	Input voltage range (any input)		V <sub>CC</sub> 0.3	$V_{CC+} + 0.3$	V
V <sub>O</sub>	Output voltage range		V <sub>CC</sub> 0.3	$V_{CC+} + 0.3$	V
I <sub>CC</sub>	Supply current			40	mA
I	Input current			±5	mA
Io	Output current			±30	mA
		D package		97	
$\theta_{JA}$	Package thermal impedance (4)(5)	DBV package		206	°C/W
		DCK package		259	
TJ	Operating virtual junction temperature			150	°C
T <sub>stg</sub>	Storage temperature range		-65	150	°C

<sup>(1)</sup> Stresses beyond those listed under "absolute maximum ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated under "recommended operating conditions" is not implied. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability.

(2) All voltage values (except differential voltages and V<sub>CC</sub> specified for the measurement of I<sub>OS</sub>) are with respect to the network GND.

#### **ESD Protection**

	TYP	UNIT
Human-Body Model	2000	V

#### **Recommended Operating Conditions**

		MIN	MAX	UNIT
$V_{CC+} - V_{CC-}$	Supply voltage	2.7	15	<b>V</b>
$T_J$	Operating virtual junction temperature	-40	85	°C

<sup>(3)</sup> Differential voltages are at IN+ with respect to IN-.

<sup>(4)</sup> Maximum power dissipation is a function of T<sub>J</sub>(max), θ<sub>JA</sub>, and T<sub>A</sub>. The maximum allowable power dissipation at any allowable ambient temperature is P<sub>D</sub> = (T<sub>J</sub>(max) – T<sub>A</sub>)/θ<sub>JA</sub>. Operating at the absolute maximum T<sub>J</sub> of 150°C can affect reliability.

<sup>(5)</sup> The package thermal impedance is calculated in accordance with JESD 51-7.



### TLV7211, TLV7211A CMOS COMPARATORS WITH RAIL-TO-RAIL INPUT AND PUSH-PULL OUTPUT

SLCS149B-AUGUST 2006-REVISED JANUARY 2007

#### 2.7-V Electrical Characteristics

 $V_{CC+}$  = 2.7 V,  $V_{CC-}$  = GND,  $V_{CM}$  =  $V_{O}$  =  $V_{CC+}$ /2, and  $R_L$  > 1 M $\Omega$  (unless otherwise noted)

	DADAMETED	TECT CONDITIONS	-	TL	_V7211 <i>A</i>	١	Т	LV7211		LINUT	
	PARAMETER	TEST CONDITIONS	TJ	MIN	TYP	MAX	MIN	TYP	MAX	UNIT	
	land offert veltage		25°C		3	5		3	15	\/	
Vos	Input offset voltage		-40°C to 85°C			8			18	mV	
TCV <sub>OS</sub>	Input offset voltage temperature drift		25°C		1			1		μV/°C	
	Input offset voltage average drift <sup>(1)</sup>		25°C		3.3			3.3		μV/month	
I <sub>B</sub>	Input current		25°C		0.04			0.04		pА	
Ios	Input offset current		25°C		0.02			0.02		pА	
CMRR	Common-mode rejection ratio	$0 \le V_{CM} \le 2.7 \text{ V}$	25°C		75			75		dB	
PSRR	Power-supply rejection ratio	2.7 V ≤ V <sub>CC+</sub> ≤ 15 V	25°C		80			80		dB	
A <sub>V</sub>	Voltage gain		25°C		100			100		dB	
		CMRR > 55 dB	25°C	2.9	3		2.9	3		V	
CMVR	Input common-mode	CIVIRK > 55 GB	–40°C to 85°C	2.7			2.7				
CIVIVK	voltage range	CMRR > 55 dB	25°C		-0.3	-0.2		-0.3	-0.2		
		CIVIRR > 55 UB	–40°C to 85°C		·	0			0		
V	High-level output	I <sub>load</sub> = 2.5 mA	25°C	2.4	2.5		2.4	2.5		V	
V <sub>OH</sub>	voltage	I <sub>load</sub> = 2.3 IIIA	–40°C to 85°C	2.3			2.3			V	
V	Low-level output	I <sub>load</sub> = 2.5 mA	25°C		0.2	0.3		0.2	0.3	V	
$V_{OL}$	voltage	I <sub>load</sub> = 2.5 IIIA	–40°C to 85°C			0.4			0.4	V	
		- L OW	25°C		7	12		7	12		
	Supply current	V <sub>OUT</sub> = Low	–40°C to 85°C			14			14		
I <sub>CC</sub>	Зирріу сипені	V <sub>OUT</sub> = High-Idle	25°C		5	10		5	10	μΑ	
		V <sub>OUT</sub> = I light-lule	–40°C to 85°C			12			12		

<sup>(1)</sup> Input offset voltage average drift is calculated by dividing the accelerated operating life V<sub>OS</sub> drift by the equivalent operational time. This represents worst-case input conditions and includes the first 30 days of drift.

# TLV7211, TLV7211A CMOS COMPARATORS WITH RAIL-TO-RAIL INPUT AND PUSH-PULL OUTPUT



SLCS149B-AUGUST 2006-REVISED JANUARY 2007

#### **5-V Electrical Characteristics**

 $\rm V_{CC+}$  = 5 V,  $\rm V_{CC-}$  = GND,  $\rm V_{CM}$  =  $\rm V_{O}$  =  $\rm V_{CC+}/2,$  and  $\rm R_{L}$  > 1  $\rm M\Omega$  (unless otherwise noted)

	DADAMETED	TEST CONDITIONS	-	Τl	_V7211 <i>A</i>	1	Т	LV7211		UNIT
	PARAMETER	TEST CONDITIONS	TJ	MIN	TYP	MAX	MIN	TYP	MAX	UNII
V	Input offset voltage		25°C		3	5		3	15	mV
Vos	input onset voltage		–40°C to 85°C			8			18	IIIV
TCV <sub>OS</sub>	Input offset voltage temperature drift		25°C		1			1		μV/°C
	Input offset voltage average drift <sup>(1)</sup>		25°C		3.3			3.3		μV/month
$I_{B}$	Input current		25°C		0.04			0.04		рА
Ios	Input offset current		25°C		0.02			0.02		рА
CMRR	Common-mode rejection ratio		25°C		75			75		dB
PSRR	Power-supply rejection ratio	5 V ≤ V <sub>CC+</sub> ≤ 10 V	25°C		80			80		dB
$A_V$	Voltage gain		25°C		100			100		dB
		CMRR > 55 dB	25°C	5.2	5.3		5.2	5.3		
CMVR	Input common-mode		–40°C to 85°C	5			5			V
CIVIVIC	voltage range	CMRR > 55 dB	25°C		-0.3	-0.2		-0.3	-0.2	
		CIVIRR > 55 UB	–40°C to 85°C			0			0	
V <sub>OH</sub>	High-level output	I <sub>load</sub> = 5 mA	25°C	4.6	4.8		4.6	4.8		V
∨он	voltage	Iload = 5 IIIA	-40°C to 85°C	4.45			4.45			V
V <sub>OL</sub>	Low-level output	I <sub>load</sub> = 5 mA	25°C		0.2	0.4		0.2	0.4	V
VOL.	voltage	Iload = 3 IIIA	–40°C to 85°C			0.55			0.55	V
		V <sub>OUT</sub> = Low	25°C		7	14		7	14	
	Supply current	VOUT = LOW	-40°C to 85°C			18			18	μΑ
I <sub>CC</sub>	Supply current	V <sub>OUT</sub> = High-Idle	25°C		5	10		5	10	μΑ
		V <sub>OUT</sub> = 1 light-late	–40°C to 85°C			13			13	
I <sub>OH</sub>	Short-circuit output current	I <sub>source</sub>	25°C	30			30			mA
I <sub>OL</sub>	Short-circuit output current	I <sub>sink</sub> , V <sub>O</sub> < 12 V <sup>(2)</sup>	25°C	45			45			mA

 <sup>(1)</sup> Input offset voltage average drift is calculated by dividing the accelerated operating life V<sub>OS</sub> drift by the equivalent operational time. This represents worst-case input conditions and includes the first 30 days of drift.
 (2) Do not short circuit the output to V+ if V+ is >12 V.



### TLV7211, TLV7211A CMOS COMPARATORS WITH RAIL-TO-RAIL INPUT AND PUSH-PULL OUTPUT

SLCS149B-AUGUST 2006-REVISED JANUARY 2007

#### 15-V Electrical Characteristics

 $V_{CC+}$  = 15 V,  $V_{CC-}$  = GND,  $V_{CM}$  =  $V_{O}$  =  $V_{CC+}/2$ , and  $R_L$  > 1 M $\Omega$  (unless otherwise noted)

	DADAMETED	TEST	-	TI	_V7211 <i>A</i>	١	Т	LV7211		LINUT	
	PARAMETER	CONDITIONS	TJ	MIN	TYP	MAX	MIN	TYP	MAX	UNIT	
	Input offeet veltere		25°C		3	5		3	15	mV	
Vos	Input offset voltage		–40°C to 85°C			8			18	IIIV	
TCV <sub>OS</sub>	Input offset voltage temperature drift		25°C		4			4		μV/°C	
	Input offset voltage average drift <sup>(1)</sup>		25°C		4			4		μV/month	
I <sub>B</sub>	Input current		25°C		0.04			0.04		рА	
Ios	Input offset current		25°C		0.02			0.02		рА	
CMRR	Common-mode rejection ratio		25°C		82			82		dB	
PSRR	Power-supply rejection ratio	5 V ≤ V <sub>CC+</sub> ≤ 10 V	25°C		80			80		dB	
A <sub>V</sub>	Voltage gain		25°C		100			100		dB	
		CMRR > 55 dB	25°C	15.2	15.3		15.2	15.3			
CMVR	Input common-mode voltage	CIVIRK > 55 UB	–40°C to 85°C	15			15			V	
CIVIVR	range	CMRR > 55 dB	25°C		-0.3	-0.2		-0.3	-0.2	V	
			-40°C to 85°C			0			0		
\/	High-level output voltage	l - 5 mΛ	25°C	14.6	14.8		14.6	14.8		V	
V <sub>OH</sub>	nigh-level output voltage	I <sub>load</sub> = 5 mA	–40°C to 85°C	14.45			14.45			V	
\/	Low-level output voltage		25°C		0.2	0.4		0.2	0.4	V	
V <sub>OL</sub>	Low-level output voltage	$I_{load} = 5 \text{ mA}$	–40°C to 85°C			0.55			0.55	V	
		V - Low	25°C		7	14		7	14		
	Supply current	V <sub>OUT</sub> = Low	–40°C to 85°C			18			18	^	
I <sub>CC</sub>	Supply current	V - High Idlo	25°C		5	12		5	12	μΑ	
		V <sub>OUT</sub> = High-Idle	–40°C to 85°C		<u>'</u>	14		<u>'</u>	14		
I <sub>OH</sub>	Short-circuit output current	I <sub>source</sub>	25°C	30			30			mA	
I <sub>OL</sub>	Short-circuit output current	I <sub>sink</sub> , V <sub>O</sub> < 12 V <sup>(2)</sup>	25°C	45			45			mA	

<sup>(1)</sup> Input offset voltage average drift is calculated by dividing the accelerated operating life V<sub>OS</sub> drift by the equivalent operational time. This represents worst-case input conditions and includes the first 30 days of drift.

<sup>(2)</sup> Do not short circuit the output to V+ if V+ is >12 V.

### TLV7211, TLV7211A **CMOS CÓMPARATORS** WITH RAIL-TO-RAIL INPUT AND PUSH-PULL OUTPUT



SLCS149B-AUGUST 2006-REVISED JANUARY 2007

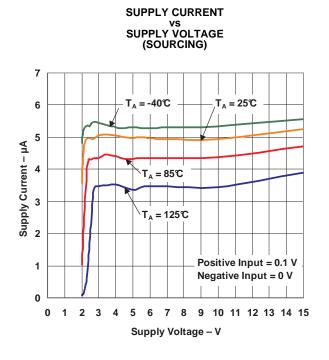
#### **Switching Characteristics**

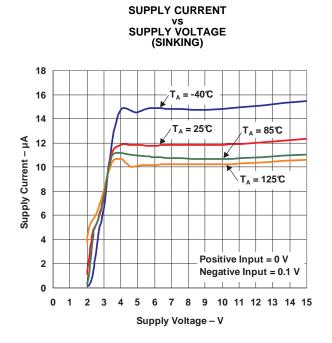
 $T_{J}=25^{\circ}C,~V_{CC+}=5~V,~V_{CC-}=GND,~V_{CM}=V_{O}=V_{CC+}/2,~and~R_{L}>1~M\Omega~(unless~otherwise~noted)$ 

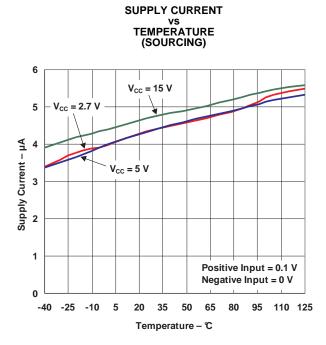
	PARAMETER	TEST CONDITIONS		TYP	UNIT
t <sub>rise</sub>	Rise time	$f = 10 \text{ kHz}, C_L = 50 \text{ pF}^{(1)}, \text{ Overdrive} = 10 \text{ mV}$		0.3	μs
t <sub>fall</sub>	Fall time	$f = 10 \text{ kHz}, C_L = 50 \text{ pF}^{(1)}, \text{ Overdrive} = 10 \text{ mV}$		0.3	μs
		f 40 H = 0 = 50 = 5(1)	10 mV	10	
	Decreasion delevitime high to leve(2)	$f = 10 \text{ kHz}, C_L = 50 \text{ pF}^{(1)}$	100 mV	4	
t <sub>PHL</sub>	Propagation delay time, high to low <sup>(2)</sup>	V 27V f 40 kHz C 50 pF(1)	10 mV	10	μs
		$V_{CC+} = 2.7 \text{ V, f} = 10 \text{ kHz, C}_{L} = 50 \text{ pF}^{(1)}$	100 mV	4	
		f 40 H = 0 = 50 = 5(1)	10 mV	6	
	Decreasion delevitima levita high (2)	$f = 10 \text{ kHz}, C_L = 50 \text{ pF}^{(1)}$	100 mV	4	
t <sub>PLH</sub>	Propagation delay time, low to high (2)	V 27 V f 40 kHz C 50 pF(1)	10 mV	7	μs
		$V_{CC+} = 2.7 \text{ V, f} = 10 \text{ kHz, } C_L = 50 \text{ pF}^{(1)}$	100 mV	4	

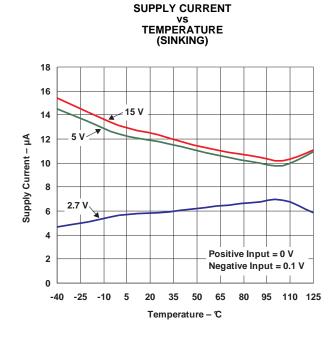
<sup>(1)</sup> C<sub>L</sub> includes probe and jig capacitance.
(2) Input step voltage for propagation delay measurement is 2 V.

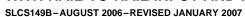
#### TYPICAL CHARACTERISTICS







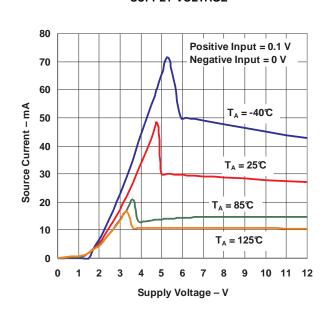




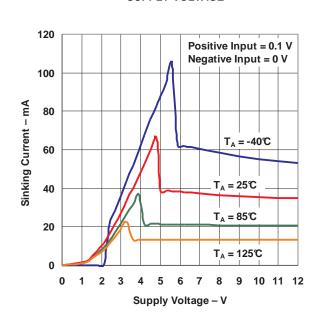


#### TYPICAL CHARACTERISTICS (continued)

OUTPUT SOURCING CURRENT
VS
SUPPLY VOLTAGE

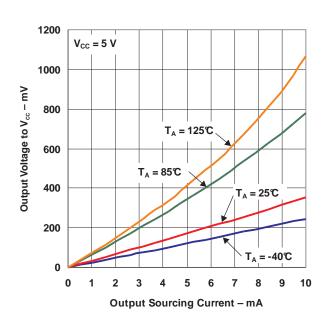


OUTPUT SINKING CURRENT VS SUPPLY VOLTAGE

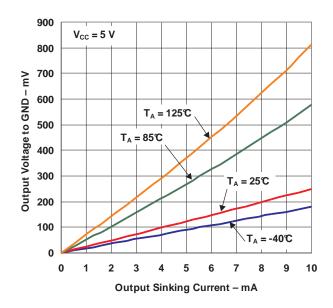


OUTPUT VOLTAGE

VS
OUTPUT SOURCING CURRENT

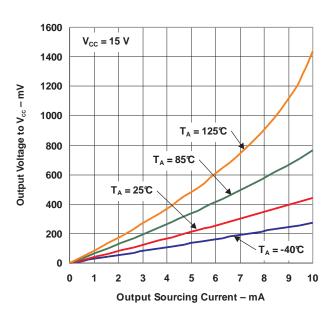


# OUTPUT VOLTAGE vs OUTPUT SINKING CURRENT

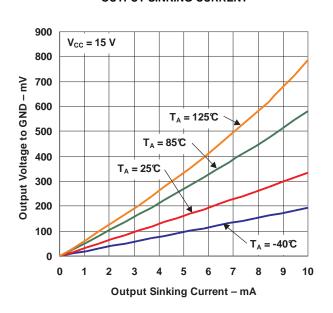


#### **TYPICAL CHARACTERISTICS (continued)**

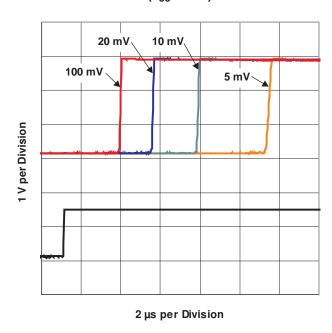
OUTPUT VOLTAGE
vs
OUTPUT SOURCING CURRENT



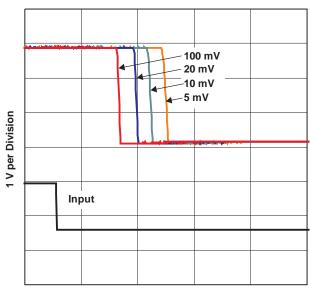
OUTPUT VOLTAGE
vs
OUTPUT SINKING CURRENT



Response Time  $(t_{PLH})$  for Various Input Overdrives  $(V_{CC} = 2.7 \text{ V})$ 



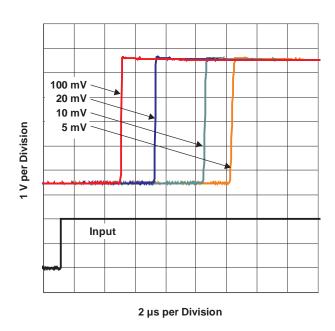
Response Time  $(t_{PHL})$  for Various Input Overdrives  $(V_{CC} = 2.7 \text{ V})$ 



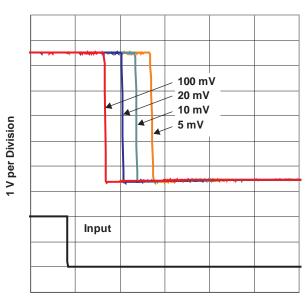


#### **TYPICAL CHARACTERISTICS (continued)**

# Response Time ( $t_{PLH}$ ) for Various Input Overdrives ( $V_{CC} = 5 \text{ V}$ )

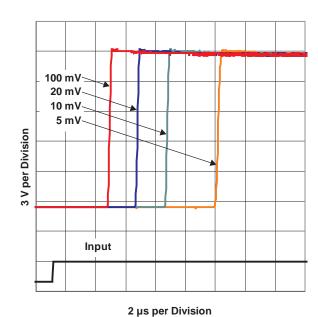


# Response Time ( $t_{PHL}$ ) for Various Input Overdrives ( $V_{CC} = 5 \text{ V}$ )

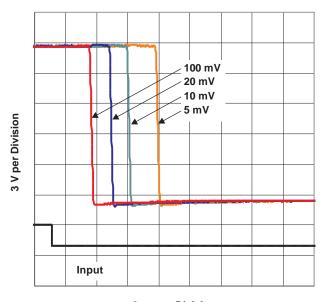


2 µs per Division

# Response Time ( $t_{PLH}$ ) for Various Input Overdrives ( $V_{CC} = 15 \text{ V}$ )



# Response Time ( $t_{PHL}$ ) for Various Input Overdrives ( $V_{CC} = 15 \text{ V}$ )



2 µs per Division





25-Jan-2007

#### **PACKAGING INFORMATION**

Orderable Device	Status <sup>(1)</sup>	Package Type	Package Drawing	Pins	Package Qty	e Eco Plan <sup>(2)</sup>	Lead/Ball Finish	MSL Peak Temp <sup>(3)</sup>
TLV7211AID	ACTIVE	SOIC	D	8	75	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
TLV7211AIDBVR	ACTIVE	SOT-23	DBV	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
TLV7211AIDBVRG4	ACTIVE	SOT-23	DBV	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
TLV7211AIDCKR	ACTIVE	SC70	DCK	6	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
TLV7211AIDCKRG4	ACTIVE	SC70	DCK	6	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
TLV7211AIDCKT	ACTIVE	SC70	DCK	6	250	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
TLV7211AIDCKTG4	ACTIVE	SC70	DCK	6	250	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
TLV7211AIDG4	ACTIVE	SOIC	D	8	75	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
TLV7211AIDR	ACTIVE	SOIC	D	8	2500	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
TLV7211AIDRG4	ACTIVE	SOIC	D	8	2500	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
TLV7211ID	ACTIVE	SOIC	D	8	75	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
TLV7211IDBVR	ACTIVE	SOT-23	DBV	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
TLV7211IDBVRG4	ACTIVE	SOT-23	DBV	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
TLV7211IDCKR	ACTIVE	SC70	DCK	6	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
TLV7211IDCKRG4	ACTIVE	SC70	DCK	6	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
TLV7211IDCKT	ACTIVE	SC70	DCK	6	250	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
TLV7211IDCKTG4	ACTIVE	SC70	DCK	6	250	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
TLV7211IDG4	ACTIVE	SOIC	D	8	75	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
TLV7211IDR	ACTIVE	SOIC	D	8	2500	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
TLV7211IDRG4	ACTIVE	SOIC	D	8	2500	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM

(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

**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.

<sup>(2)</sup> Eco Plan - The planned eco-friendly classification: Pb-Free (RoHS), Pb-Free (RoHS Exempt), or Green (RoHS & no Sb/Br) - please check <a href="http://www.ti.com/productcontent">http://www.ti.com/productcontent</a> for the latest availability information and additional product content details.



#### PACKAGE OPTION ADDENDUM

25-Jan-2007

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.

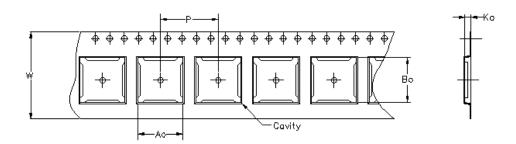
Green (RoHS & no Sb/Br): TI defines "Green" to mean Pb-Free (RoHS compatible), and free of Bromine (Br) and Antimony (Sb) based flame retardants (Br or Sb do not exceed 0.1% by weight in homogeneous material)

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

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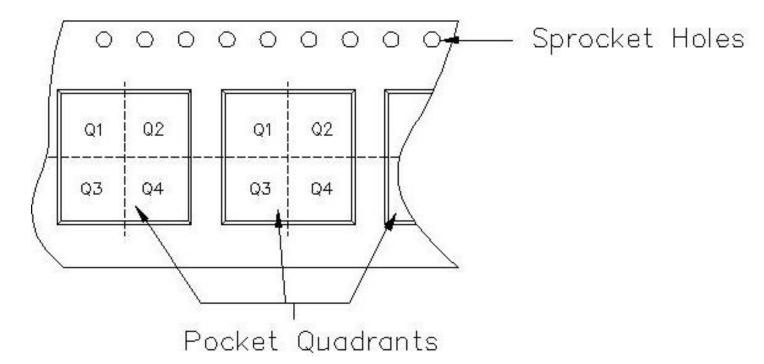
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Carrier tape design is defined largely by the component lentgh, width, and thickness.

				accommodate			
Bo =	Dimension	designed	to	accommodate	the	component	length.
Ko =	Dimension	designed	to	accommodate	the	component	thickness.
W = 1	Overall widt	h of the	car	rier tape.		•	
P = F	Pitch betwe	en succes	ssiv	e cavity center	ვ,		



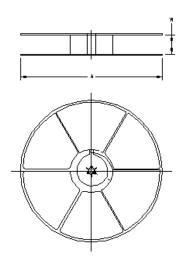
#### TAPE AND REEL INFORMATION



### **PACKAGE MATERIALS INFORMATION**

19-May-2007

Device	Package	Pins	Site	Reel Diameter (mm)	Reel Width (mm)	A0 (mm)	B0 (mm)	K0 (mm)	P1 (mm)	W (mm)	Pin1 Quadrant
TLV7211AIDBVR	DBV	5	NFME	0	0	3.23	3.17	1.37	4	8	Q3
TLV7211AIDCKR	DCK	6	HNT	180	9	2.24	2.34	1.22	4	8	Q3
TLV7211AIDCKT	DCK	6	HNT	180	9	2.24	2.34	1.22	4	8	Q3
TLV7211AIDR	D	8	FMX	330	12	6.4	5.2	2.1	8	12	Q1
TLV7211IDBVR	DBV	5	NFME	0	0	3.23	3.17	1.37	4	8	Q3
TLV7211IDCKR	DCK	6	HNT	180	9	2.24	2.34	1.22	4	8	Q3
TLV7211IDCKT	DCK	6	HNT	180	9	2.24	2.34	1.22	4	8	Q3
TLV7211IDR	D	8	FMX	330	12	6.4	5.2	2.1	8	12	Q1



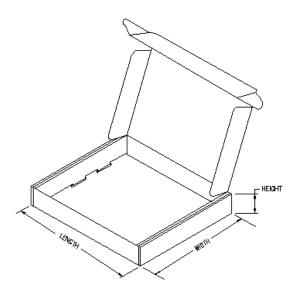
#### TAPE AND REEL BOX INFORMATION

Device	Package	Pins	Site	Length (mm)	Width (mm)	Height (mm)
TLV7211AIDBVR	DBV	5	NFME	185.0	185.0	220.0
TLV7211AIDCKR	DCK	6	HNT	202.0	201.0	28.0
TLV7211AIDCKT	DCK	6	HNT	202.0	201.0	28.0
TLV7211AIDR	D	8	FMX	338.1	340.5	20.64
TLV7211IDBVR	DBV	5	NFME	185.0	185.0	220.0
TLV7211IDCKR	DCK	6	HNT	202.0	201.0	28.0
TLV7211IDCKT	DCK	6	HNT	202.0	201.0	28.0
TLV7211IDR	D	8	FMX	338.1	340.5	20.64



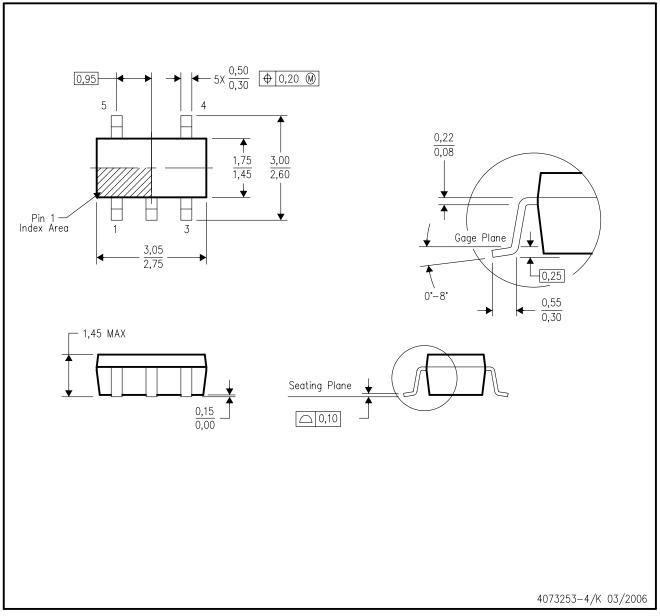
# PACKAGE MATERIALS INFORMATION

19-May-2007



# DBV (R-PDSO-G5)

### PLASTIC SMALL-OUTLINE PACKAGE



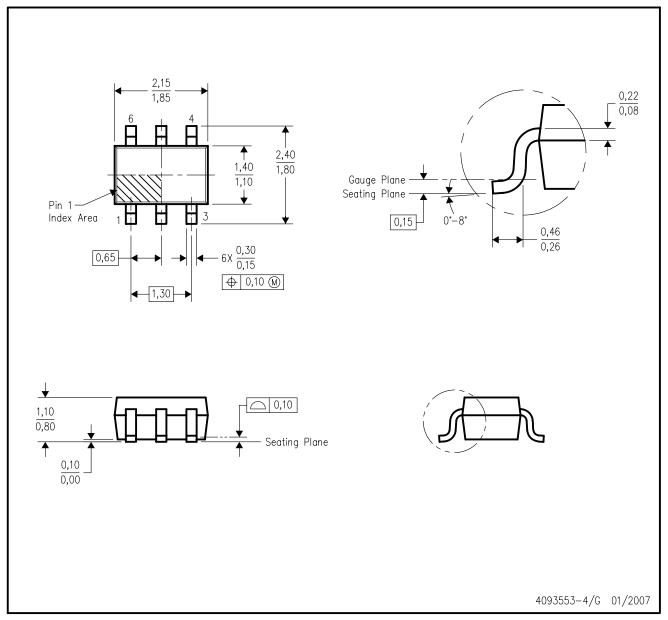
NOTES:

- A. All linear dimensions are in millimeters.
- 3. This drawing is subject to change without notice.
- C. Body dimensions do not include mold flash or protrusion. Mold flash and protrusion shall not exceed 0.15 per side.
- D. Falls within JEDEC MO-178 Variation AA.



# DCK (R-PDSO-G6)

### PLASTIC SMALL-OUTLINE PACKAGE



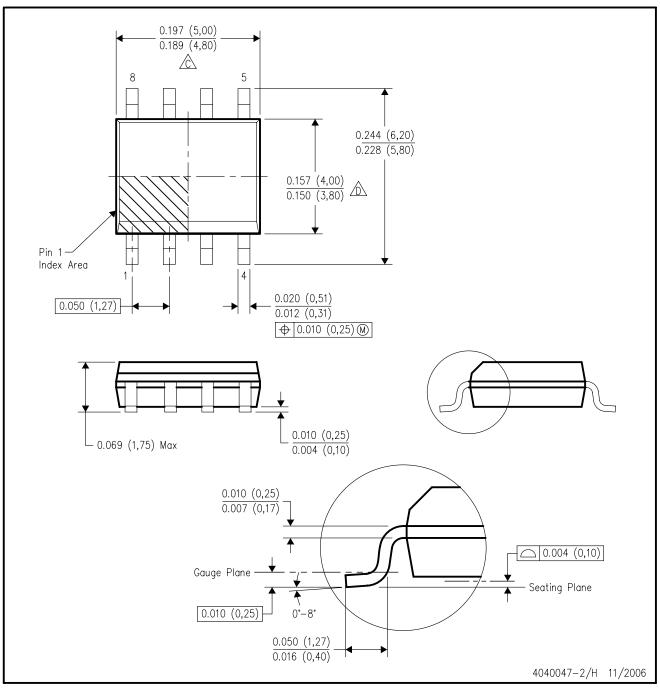
NOTES:

- 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. Mold flash and protrusion shall not exceed 0.15 per side.
- D. Falls within JEDEC MO-203 variation AB.



### 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.
- 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.
- Body width does not include interlead flash. Interlead flash shall not exceed .017 (0,43) per side.
- E. Reference JEDEC MS-012 variation AA.



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