TEXAS INSTRUMENTS
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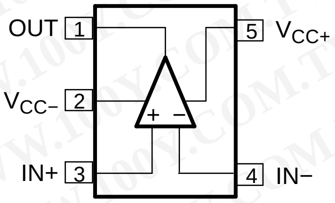
LMV710, LMV711, LMV715
SINGLE LOW-POWER RRIO OPERATIONAL AMPLIFIERS WITH HIGH OUTPUT CURRENT DRIVE AND SHUTDOWN

SLOS463A – APRIL 2005 – REVISED JULY 2005

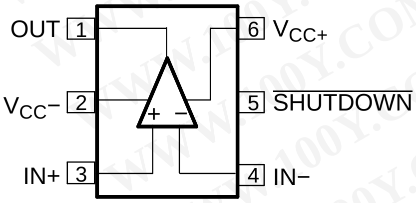
FEATURES

- **2.7-V and 5-V Performance**
- **Low Offset Voltage . . . 0.4 mV Typ, 3 mV Max**
- **Input Common-Mode Range . . . 200 mV Beyond the Rails**
- **Rail-to-Rail Swing Into 600 Ω**
- **Gain Bandwidth . . . 5 MHz Typ**
- **Slew Rate . . . 5 V/μs Typ**
- **Turn-On Time From Shutdown . . . <10 μs**
- **Shutdown Current . . . 0.2 μA Typ**
- **Space-Saving Packages**
  - **– SOT-23-5/6**
  - **– SC-70**

LMV710
DBV (SOT-23-5) OR DCK (SC-70) PACKAGE
(TOP VIEW)



LMV711/LMV715
DBV (SOT-23-6) OR DCK (SC-70) PACKAGE
(TOP VIEW)



APPLICATIONS

- **Wireless Phones, Mobile Phones, PDAs**
- **GSM/TDMA/CDMA Power Amp Control**
- **AGC, RF Power Detectors**
- **Temperature Compensation**
- **Wireless LANs**
- **Bluetooth**
- **HomeRF**

DESCRIPTION/ORDERING INFORMATION

The LMV710, LMV711, and LMV715 are single BiCMOS operational amplifiers designed to meet the demands of low power, low cost, and small size required by battery-powered portable electronics. These devices have an input common-mode voltage range that exceeds the rails, rail-to-rail output, and high output-current drive. The devices offer a bandwidth of 5 MHz and a slew rate of 5 V/μs.

On the LMV711 and LMV715, a separate shutdown pin can be used to disable the device and reduce the supply current to 0.2 μA typical. The device features a turn-on time of less than 10 μs. It is an ideal solution for power-sensitive applications, such as cellular phones, pagers, palm computers, etc.

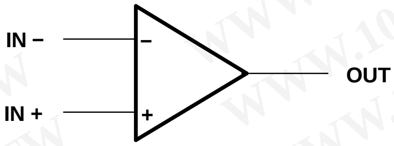
The LMV710I, LMV711I, and LMV715I are characterized for operation from –40°C to 85°C.

ORDERING INFORMATION

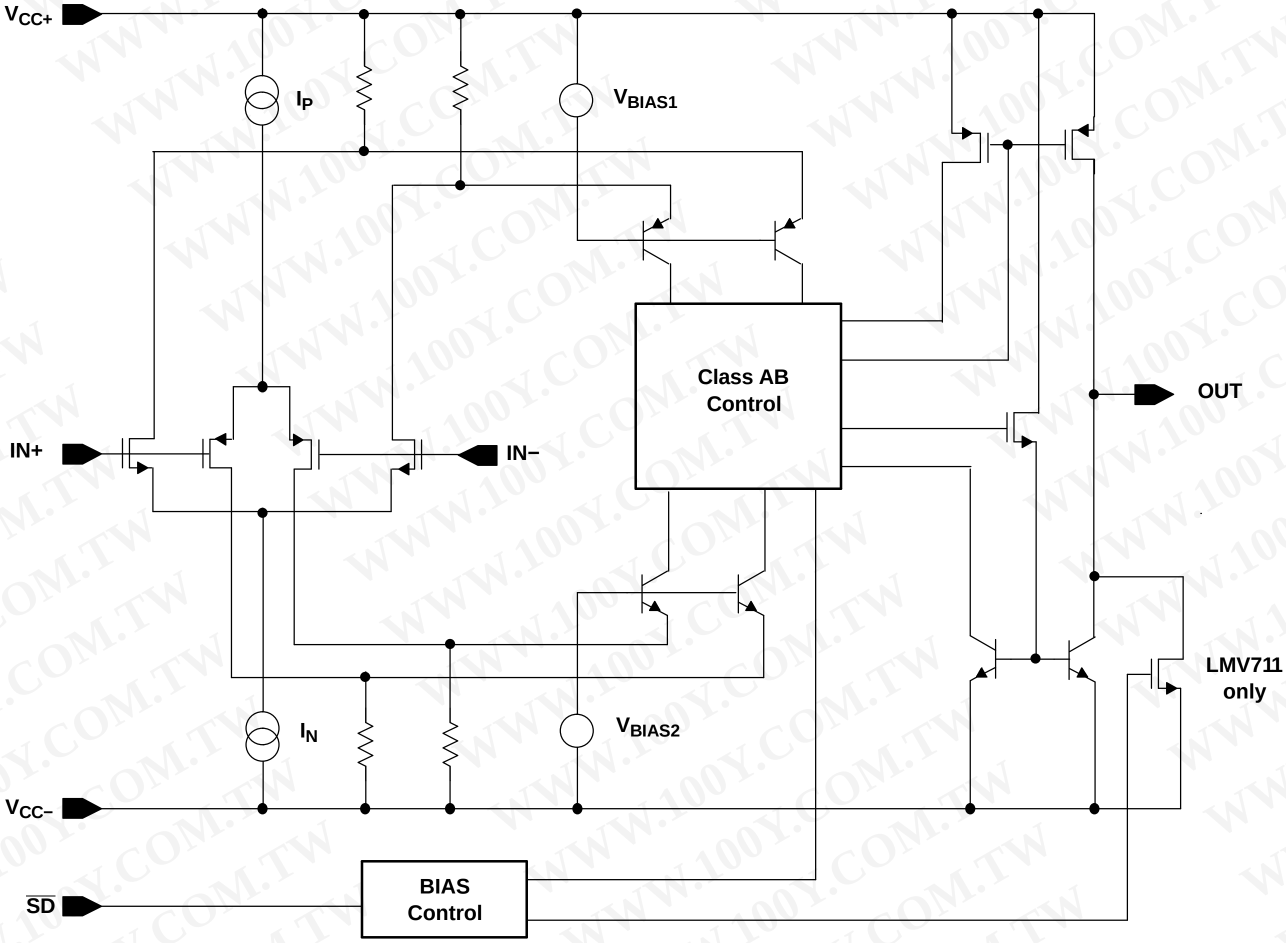
T_A	PACKAGE(1)		ORDERABLE PART NUMBER	TOP-SIDE MARKING(2)
–40°C to 85°C	SOT-23-5 – DBV	Reel of 3000	LMV710IDBVR	RB4_
	SC-70 – DCK	Reel of 3000	LMV710IDCKR	RE_
	SOT-23-6 – DBV	Reel of 3000	LMV711IDBVR	RB5_
	SC-70 – DCK	Reel of 3000	LMV711IDCKR	RF_
	SOT-23-6 – DBV	Reel of 3000	LMV715IDBVR	4B9_
	SC-70 – DCK	Reel of 3000	LMV715IDCKR	RL_

(1) Package drawings, standard packing quantities, thermal data, symbolization, and PCB design guidelines are available at www.ti.com/sc/package.
(2) DBV/DCK: The actual top-side marking has one additional character that designates the assembly/test site.

SYMBOL (EACH AMPLIFIER)



SIMPLIFIED SCHEMATIC



Absolute Maximum Ratings[1]

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

				MIN	MAX	UNIT
$V_{CC+} - V_{CC-}$	Supply voltage[2]				6	V
V_{ID}	Differential input voltage[3]				±Supply voltage	V
V_I	Input voltage (either input)			$V_{CC-} - 0.4$	$V_{CC+} + 0.4$	V
V_O	Output voltage			$V_{CC-} - 0.4$	$V_{CC+} + 0.4$	V
I_I	Input current[4]				±10	mA
θ_{JA}	Package thermal impedance[5][6]	DBV package	5 pin		206	°C/W
			6 pin		165	
		DCK package	5 pin		252	
			6 pin		259	
T_J	Operating virtual junction temperature				150	°C
T_{stg}	Storage temperature range			–65	150	°C

[1] 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_{CC} specified for the measurement of I_{OS}) are with respect to the network GND.

[3] Differential voltages are at IN+ with respect to IN–.

[4] Excessive input current will flow if a differential input voltage in excess of approximately 0.6 V is applied between the inputs unless some limiting resistance is used.

[5] Maximum power dissipation is a function of T_J(max), θ_{JA}, and T_A. The maximum allowable power dissipation at any allowable ambient temperature is $P_D = (T_J(max) - T_A)/\theta_{JA}$. Operating at the absolute maximum T_J of 150°C can affect reliability.

[6] The package thermal impedance is calculated in accordance with JESD 51-7.

Recommended Operating Conditions

		MIN	MAX	UNIT
$V_{CC+} - V_{CC-}$	Supply voltage	2.7	5	V
T_A	Operating free-air temperature	–40	85	°C

ESD Protection

	TYP	UNIT
Human-Body Model	TBD	V
Machine Model	TBD	V

Electrical Characteristics

V_{CC+} = 2.7 V, V_{CC-} = GND, V_{IC} = 1.35 V, and R_L > 1 MΩ (unless otherwise noted)

PARAMETER		TEST CONDITIONS		T_A	MIN	TYP	MAX	UNIT
V_{IO}	Input offset voltage	V_{IC} = 0.85 V and 1.85 V		25°C		0.4	3	mV
				–40°C to 85°C			3.2	
I_{IB}	Input bias current			25°C		4		pA
CMRR	Common-mode rejection ratio	0 ≤ V_{IC} ≤ 2.7 V		25°C	50	75		dB
				–40°C to 85°C	45			
k_{SVR}	Supply-voltage rejection ratio	2.7 V ≤ V_{CC+} ≤ 5 V, V_{IC} = 0.85 V		25°C	70	110		dB
				–40°C to 85°C	68			
		2.7 V ≤ V_{CC+} ≤ 5 V, V_{IC} = 1.85 V		25°C	70	95		
				–40°C to 85°C	68			
V_{ICR}	Common-mode input voltage range	CMRR ≥ 50 dB		25°C	–0.2 to 2.9	–0.3 to 3		V
I_{OS}	Output short circuit current[1]	Sourcing V_O = 0		25°C	15	28		mA
				–40°C to 85°C	12			
		Sinking V_O = 5 V		25°C	25	40		
				–40°C to 85°C	22			
V_O	Output voltage	R_L = 10 kΩ to 1.35 V	V_{OH}	25°C	2.62	2.68		V
				–40°C to 85°C	2.6			
			V_{OL}	25°C		0.01	0.12	
				–40°C to 85°C			0.15	
		R_L = 600 Ω to 1.35 V	V_{OH}	25°C	2.52	2.55		
				–40°C to 85°C	2.5			
			V_{OL}	25°C		0.05	0.23	
				–40°C to 85°C			0.3	
$V_{O(SD)}$	Output voltage level in shutdown mode	LMV711 only		25°C		50	200	mV
$I_{O(SD)}$	Output leakage current in shutdown mode	LMV715 only		25°C		1		pA
$C_{O(SD)}$	Output capacitance in shutdown mode	LMV715 only		25°C		32		pF
I_{CC}	Supply current	ON mode		25°C		1.22	1.7	mA
				–40°C to 85°C			1.9	
		Shutdown mode, $\overline{SHDN}$ = 0		25°C		0.002	10	µA
A_V	Large-signal voltage gain	Sourcing R_L = 10 kΩ, V_O = 1.35 V to 2.3 V		25°C	80	115		dB
				–40°C to 85°C	76			
		Sinking R_L = 10 kΩ, V_O = 0.4 V to 1.35 V		25°C	80	113		
				–40°C to 85°C	76			
		Sourcing R_L = 600 Ω, V_O = 1.35 V to 2.2 V		25°C	80	110		
				–40°C to 85°C	76			
		Sinking R_L = 600 Ω, V_O = 0.5 V to 1.35 V		25°C	80	100		
				–40°C to 85°C	76			
SR[2]	Slew rate			25°C		5		V/µs
GBWP	Gain bandwidth product			25°C		5		MHz
Φ_m	Phase margin			25°C		60		deg
$T_{(on)}$	Amplifier turn-on time			25°C		<10		µs

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(1) Shorting the output to either supply rails will adversely affect reliability.
(2) Number specified is the slower of the positive and negative slew rates.

Electrical Characteristics (continued)

V_{CC+} = 2.7 V, V_{CC-} = GND, V_{IC} = 1.35 V, and R_L > 1 MΩ (unless otherwise noted)

PARAMETER		TEST CONDITIONS	T_A	MIN	TYP	MAX	UNIT
$\overline{SHDN}$	Shutdown pin voltage range	$V_{(ON)}$	25°C	2.4 to 2.7	1.5 to 2.7		V
		$V_{(OFF)}$			0 to 1	0 to 0.8	
V_n	Input referred voltage noise	f = 1 kHz	25°C		20		nV/√Hz

Electrical Characteristics

V_{CC+} = 3.2 V, V_{CC-} = GND, and V_{IC} = 1.6 V (unless otherwise noted)

PARAMETER		TEST CONDITIONS		T_A	MIN	TYP	MAX	UNIT
V_O	Output voltage	I_O = 6.5 mA	V_{OH}	25°C	2.95	3		V
				–40°C to 85°C	2.92			
			V_{OL}	25°C		0.01	0.18	
				–40°C to 85°C			0.25	

Electrical Characteristics

V_{CC+} = 5 V, V_{CC-} = GND, V_{IC} = 2.5 V, and R_L > 1 MΩ (unless otherwise noted)

PARAMETER		TEST CONDITIONS		T_A	MIN	TYP	MAX	UNIT
V_{IO}	Input offset voltage	V_{IC} = 0.85 V and 1.85 V		25°C		0.4	3	mV
				–40°C to 85°C			3.2	
I_{IB}	Input bias current			25°C		4		pA
CMRR	Common-mode rejection ratio	$0 \le V_{IC} \le 2.7$ V		25°C	50	75		dB
				–40°C to 85°C	48			
k_{SVR}	Supply-voltage rejection ratio	$2.7\text{ V} \le V_{CC+} \le 5\text{ V}$, V_{IC} = 0.85 V		25°C	70	110		dB
				–40°C to 85°C	68			
		$2.7\text{ V} \le V_{CC+} \le 5\text{ V}$, V_{IC} = 1.85 V		25°C	70	95		
				–40°C to 85°C	68			
V_{ICR}	Common-mode input voltage range	CMRR ≥ 50 dB		25°C	–0.2 to 5.2	–0.3 to 5.3		V
I_{OS}	Output short circuit current[1]	Sourcing V_O = 0		25°C	25	35		mA
				–40°C to 85°C	21			
		Sinking V_O = 5 V		25°C	25	40		
				–40°C to 85°C	21			
V_O	Output voltage	R_L = 10 kΩ to 1.35 V	V_{OH}	25°C	4.92	4.98		V
				–40°C to 85°C	4.9			
			V_{OL}	25°C		0.01	0.12	
				–40°C to 85°C			0.15	
		R_L = 600 Ω to 1.35 V	V_{OH}	25°C	4.82	4.85		
				–40°C to 85°C	4.8			
			V_{OL}	25°C		0.05	0.23	
				–40°C to 85°C			0.3	
$V_{O(SD)}$	Output voltage level in shutdown mode	LMV711 only		25°C		50	200	mV
$I_{O(SD)}$	Output leakage current in shutdown mode	LMV715 only		25°C		1		pA
$C_{O(SD)}$	Output capacitance in shutdown mode	LMV715 only		25°C		32		pF
I_{CC}	Supply current	ON mode		25°C		1.17	1.7	mA
				–40°C to 85°C			1.9	
		Shutdown mode, $\overline{SHDN}$ = 0		25°C		0.2	10	µA
A_V	Large-signal voltage gain	Sourcing R_L = 10 kΩ, V_O = 1.35 V to 2.3 V		25°C	80	123		dB
				–40°C to 85°C	76			
		Sinking R_L = 10 kΩ, V_O = 0.4 V to 1.35 V		25°C	80	120		
				–40°C to 85°C	76			
		Sourcing R_L = 600 Ω, V_O = 1.35 V to 2.2 V		25°C	80	110		
				–40°C to 85°C	76			
		Sinking R_L = 600 Ω, V_O = 0.5 V to 1.35 V		25°C	80	118		
				–40°C to 85°C	76			
SR[2]	Slew rate			25°C		5		V/µs
GBWP	Gain bandwidth product			25°C		5		MHz
Φ_m	Phase margin			25°C		60		deg
$T_{(on)}$	Amplifier turn-on time			25°C		<10		µs

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(1) Shorting the output to either supply rails will adversely affect reliability.
(2) Number specified is the slower of the positive and negative slew rates.

Electrical Characteristics (continued)

V_{CC+} = 5 V, V_{CC-} = GND, V_{IC} = 2.5 V, and R_L > 1 MΩ (unless otherwise noted)

PARAMETER		TEST CONDITIONS	T_A	MIN	TYP	MAX	UNIT
$\overline{SHDN}$	Shutdown pin voltage range	$V_{(ON)}$	25°C	2.4 to 5	2 to 5		V
		$V_{(OFF)}$			0 to 1.5	0 to 0.8	
V_n	Input referred voltage noise	f = 1 kHz	25°C		20		nV/√Hz

TYPICAL PERFORMANCE CHARACTERISTICS

GRAPH PREVIEWS

PACKAGING INFORMATION

Orderable Device	Status [1]	Package Type	Package Drawing	Pins	Package Qty	Eco Plan [2]	Lead/Ball Finish	MSL Peak Temp [3]
LMV710IDBVR	ACTIVE	SOT-23	DBV	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
LMV710IDBVRE4	ACTIVE	SOT-23	DBV	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
LMV710IDBVRG4	ACTIVE	SOT-23	DBV	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
LMV710IDCKR	ACTIVE	SC70	DCK	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
LMV710IDCKRE4	ACTIVE	SC70	DCK	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
LMV710IDCKRG4	ACTIVE	SC70	DCK	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
LMV711IDBVR	ACTIVE	SOT-23	DBV	6	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
LMV711IDBVRE4	ACTIVE	SOT-23	DBV	6	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
LMV711IDBVRG4	ACTIVE	SOT-23	DBV	6	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
LMV711IDCKR	ACTIVE	SC70	DCK	6	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
LMV711IDCKRE4	ACTIVE	SC70	DCK	6	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
LMV711IDCKRG4	ACTIVE	SC70	DCK	6	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
LMV715IDBVR	ACTIVE	SOT-23	DBV	6	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
LMV715IDBVRE4	ACTIVE	SOT-23	DBV	6	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
LMV715IDBVRG4	ACTIVE	SOT-23	DBV	6	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
LMV715IDCKR	ACTIVE	SC70	DCK	6	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
LMV715IDCKRE4	ACTIVE	SC70	DCK	6	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
LMV715IDCKRG4	ACTIVE	SC70	DCK	6	3000	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 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.

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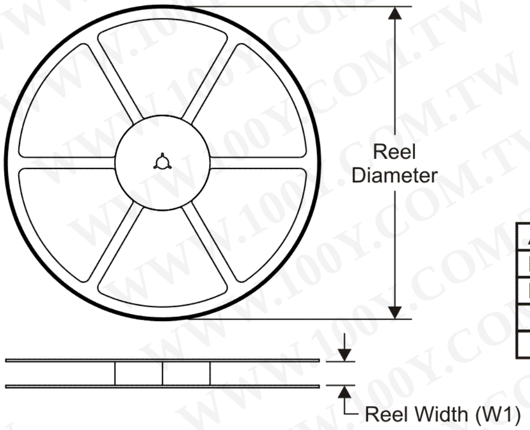
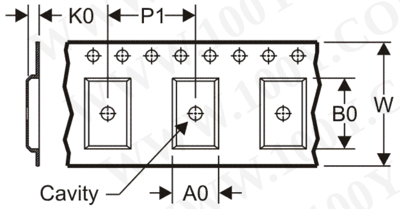
TAPE AND REEL INFORMATION

REEL DIMENSIONS

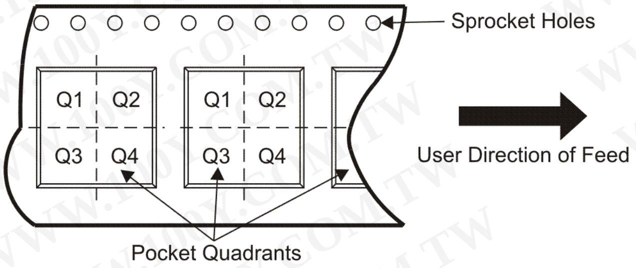


TAPE DIMENSIONS



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

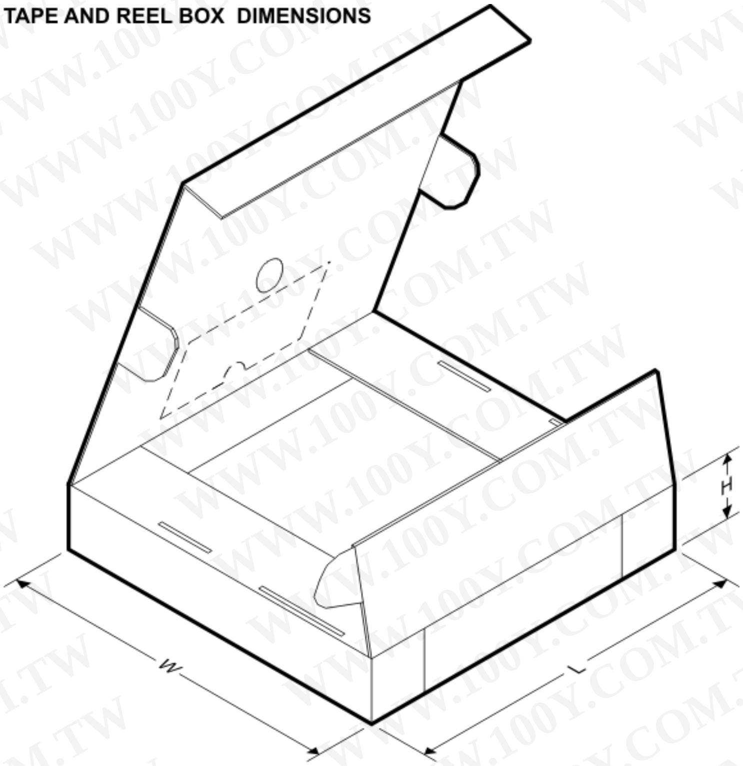
QUADRANT ASSIGNMENTS FOR PIN 1 ORIENTATION IN TAPE



*All dimensions are nominal

Device	Package Type	Package Drawing	Pins	SPQ	Reel Diameter (mm)	Reel Width W1 (mm)	A0 (mm)	B0 (mm)	K0 (mm)	P1 (mm)	W (mm)	Pin1 Quadrant
LMV710IDBVR	SOT-23	DBV	5	3000	179.0	8.4	3.2	3.2	1.4	4.0	8.0	Q3
LMV710IDCKR	SC70	DCK	5	3000	179.0	8.4	2.2	2.5	1.2	4.0	8.0	Q3
LMV711IDBVR	SOT-23	DBV	6	3000	179.0	8.4	3.2	3.2	1.4	4.0	8.0	Q3
LMV711IDCKR	SC70	DCK	6	3000	179.0	8.4	2.2	2.5	1.2	4.0	8.0	Q3
LMV715IDBVR	SOT-23	DBV	6	3000	179.0	8.4	3.2	3.2	1.4	4.0	8.0	Q3
LMV715IDCKR	SC70	DCK	6	3000	179.0	8.4	2.2	2.5	1.2	4.0	8.0	Q3

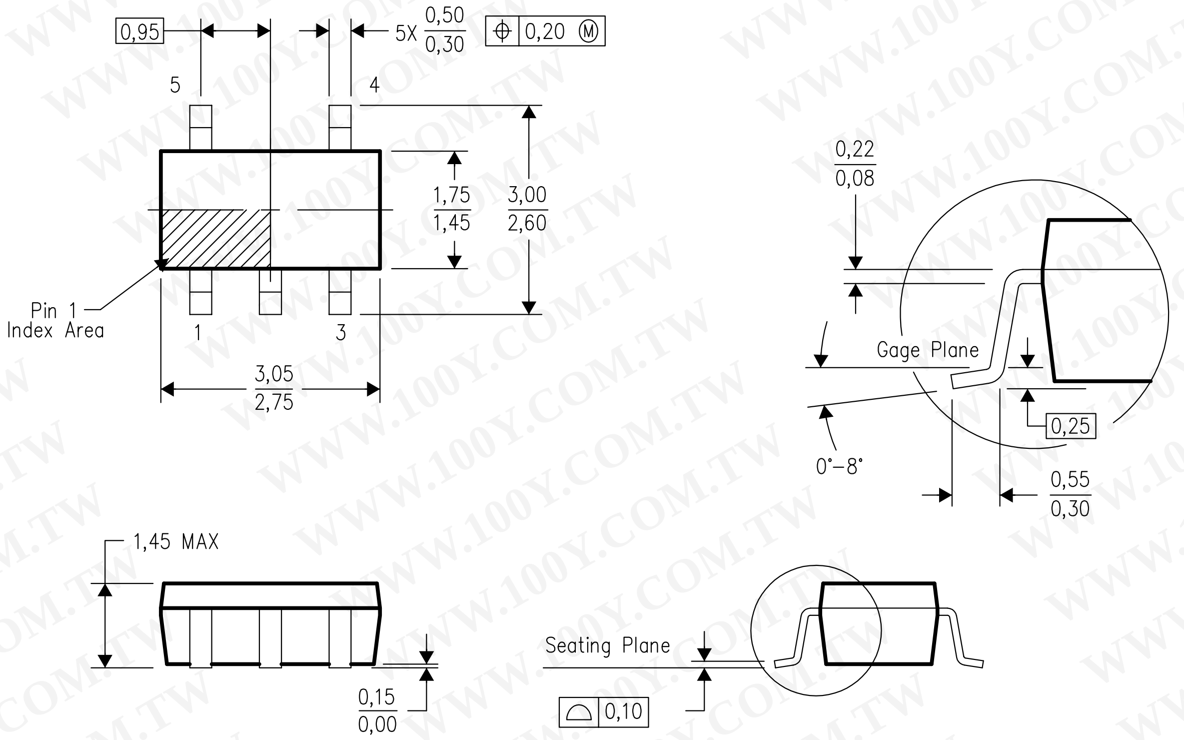
TAPE AND REEL BOX DIMENSIONS



*All dimensions are nominal

Device	Package Type	Package Drawing	Pins	SPQ	Length (mm)	Width (mm)	Height (mm)
LMV710IDBVR	SOT-23	DBV	5	3000	203.0	203.0	35.0
LMV710IDCKR	SC70	DCK	5	3000	203.0	203.0	35.0
LMV711IDBVR	SOT-23	DBV	6	3000	203.0	203.0	35.0
LMV711IDCKR	SC70	DCK	6	3000	203.0	203.0	35.0
LMV715IDBVR	SOT-23	DBV	6	3000	203.0	203.0	35.0
LMV715IDCKR	SC70	DCK	6	3000	203.0	203.0	35.0

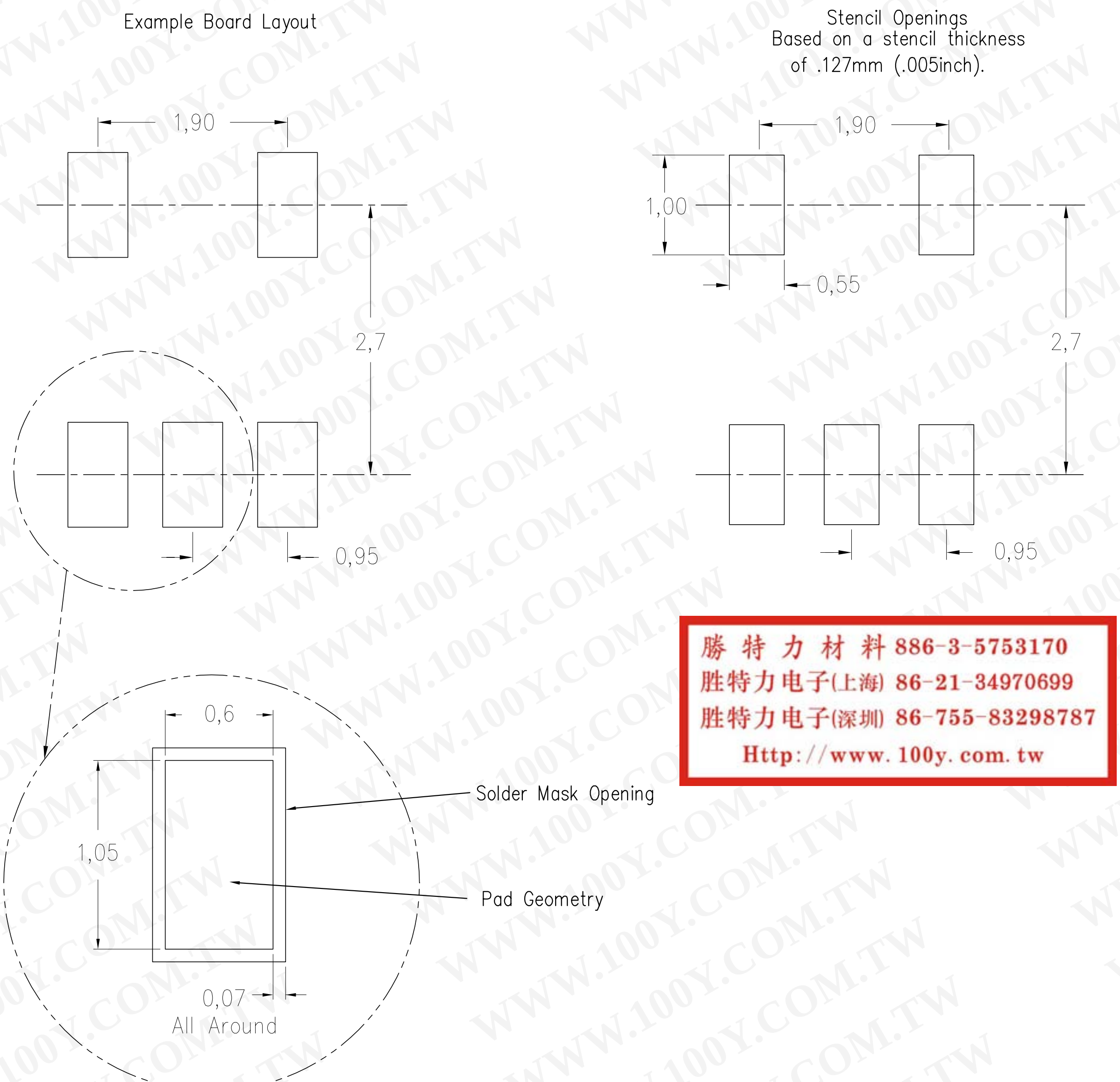
DBV (R-PDSO-G5) PLASTIC SMALL-OUTLINE PACKAGE



4073253-4/K 03/2006

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-178 Variation AA.

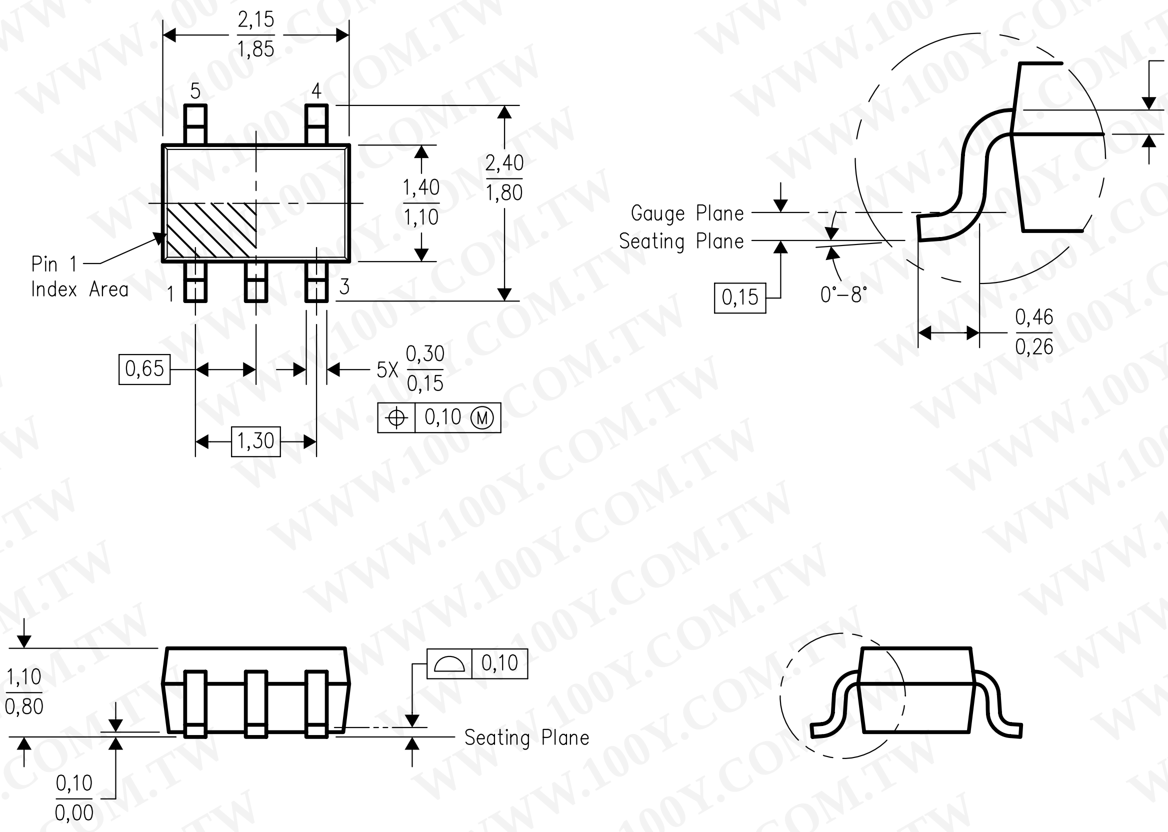
DBV (R–PDSO–G5) PLASTIC SMALL OUTLINE



4209593–3/C 08/11

NOTES:
- A. All linear dimensions are in millimeters.
- B. This drawing is subject to change without notice.
- C. Customers should place a note on the circuit board fabrication drawing not to alter the center solder mask defined pad.
- D. Publication IPC–7351 is recommended for alternate designs.
- E. Laser cutting apertures with trapezoidal walls and also rounding corners will offer better paste release. Customers should contact their board assembly site for stencil design recommendations. Example stencil design based on a 50% volumetric metal load solder paste. Refer to IPC–7525 for other stencil recommendations.

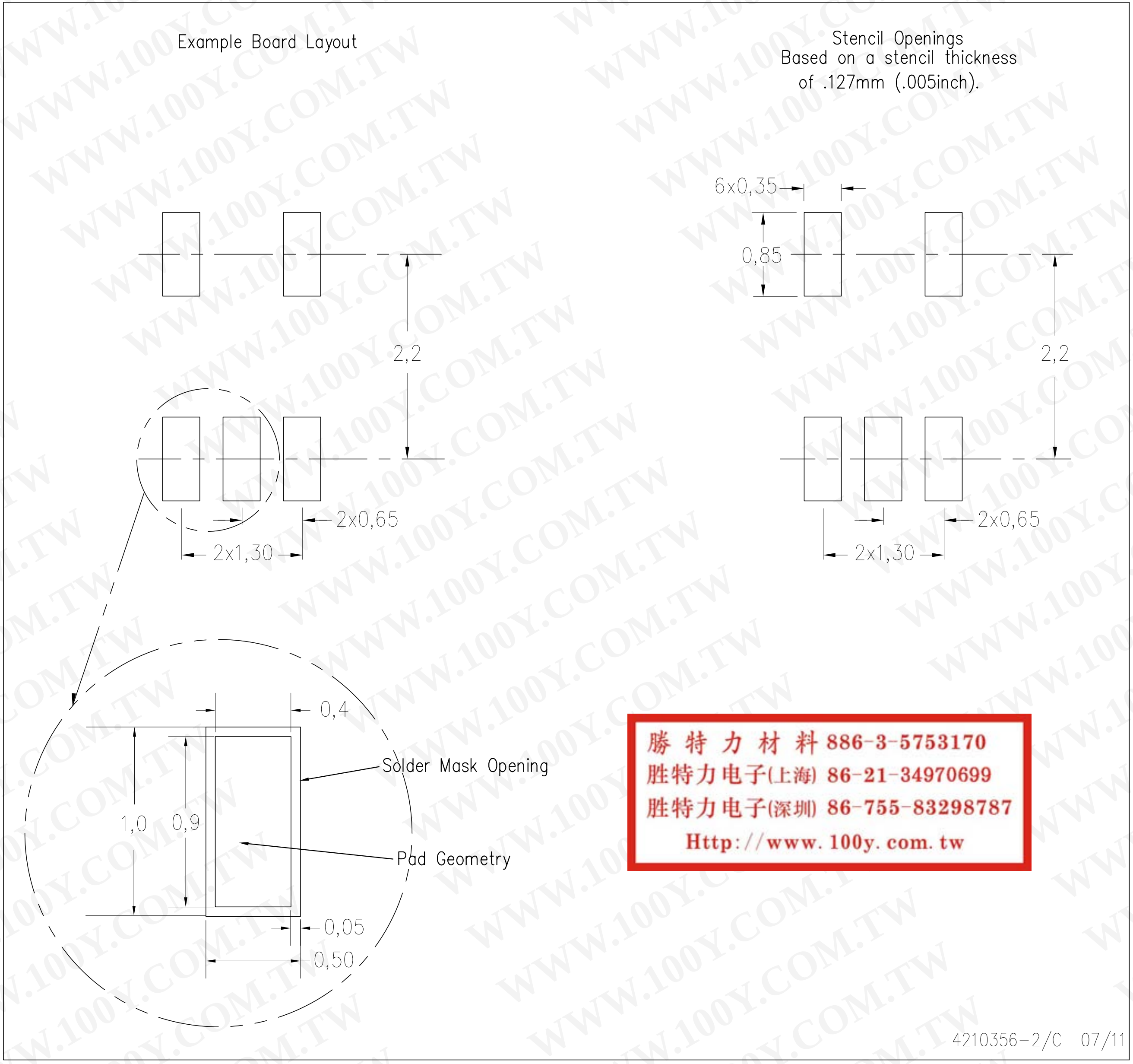
DCK (R–PDSO–G5) PLASTIC SMALL–OUTLINE PACKAGE



4093553-3/G 01/2007

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 AA.

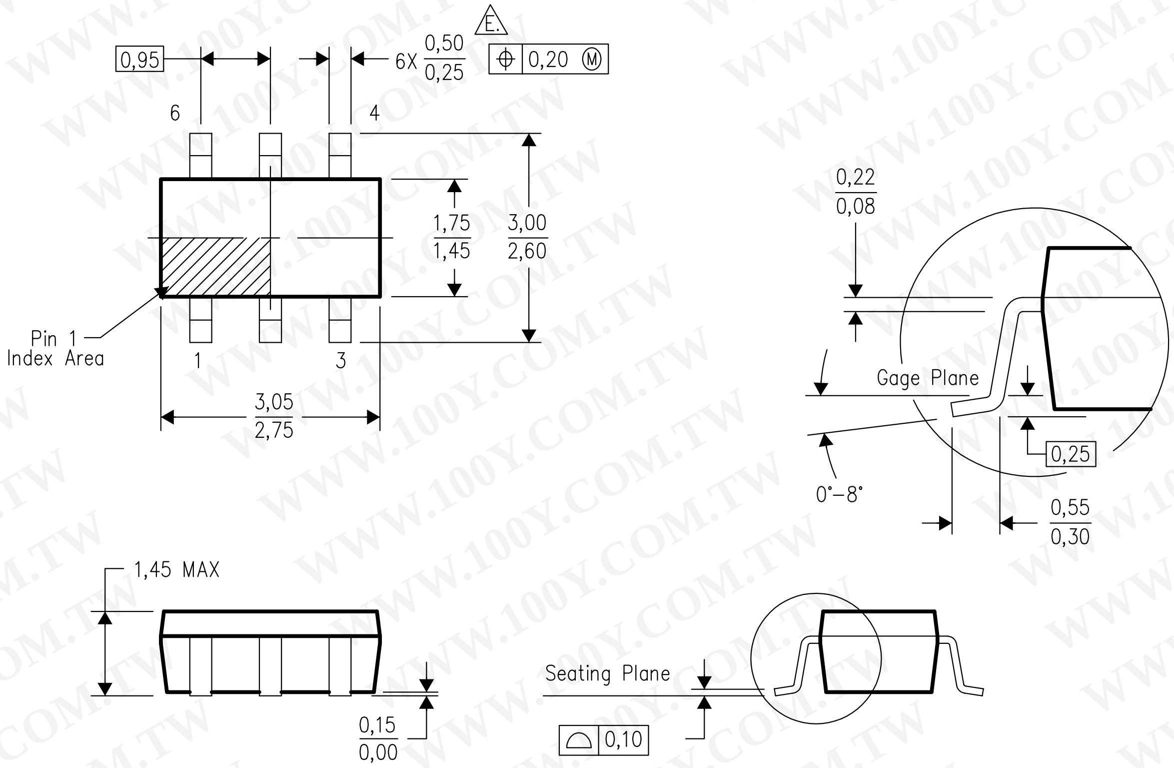
DCK (R–PDSO–G5) PLASTIC SMALL OUTLINE



4210356-2/C 07/11

NOTES:
- A. All linear dimensions are in millimeters.
- B. This drawing is subject to change without notice.
- C. Customers should place a note on the circuit board fabrication drawing not to alter the center solder mask defined pad.
- D. Publication IPC–7351 is recommended for alternate designs.
- E. Laser cutting apertures with trapezoidal walls and also rounding corners will offer better paste release. Customers should contact their board assembly site for stencil design recommendations. Example stencil design based on a 50% volumetric metal load solder paste. Refer to IPC–7525 for other stencil recommendations.

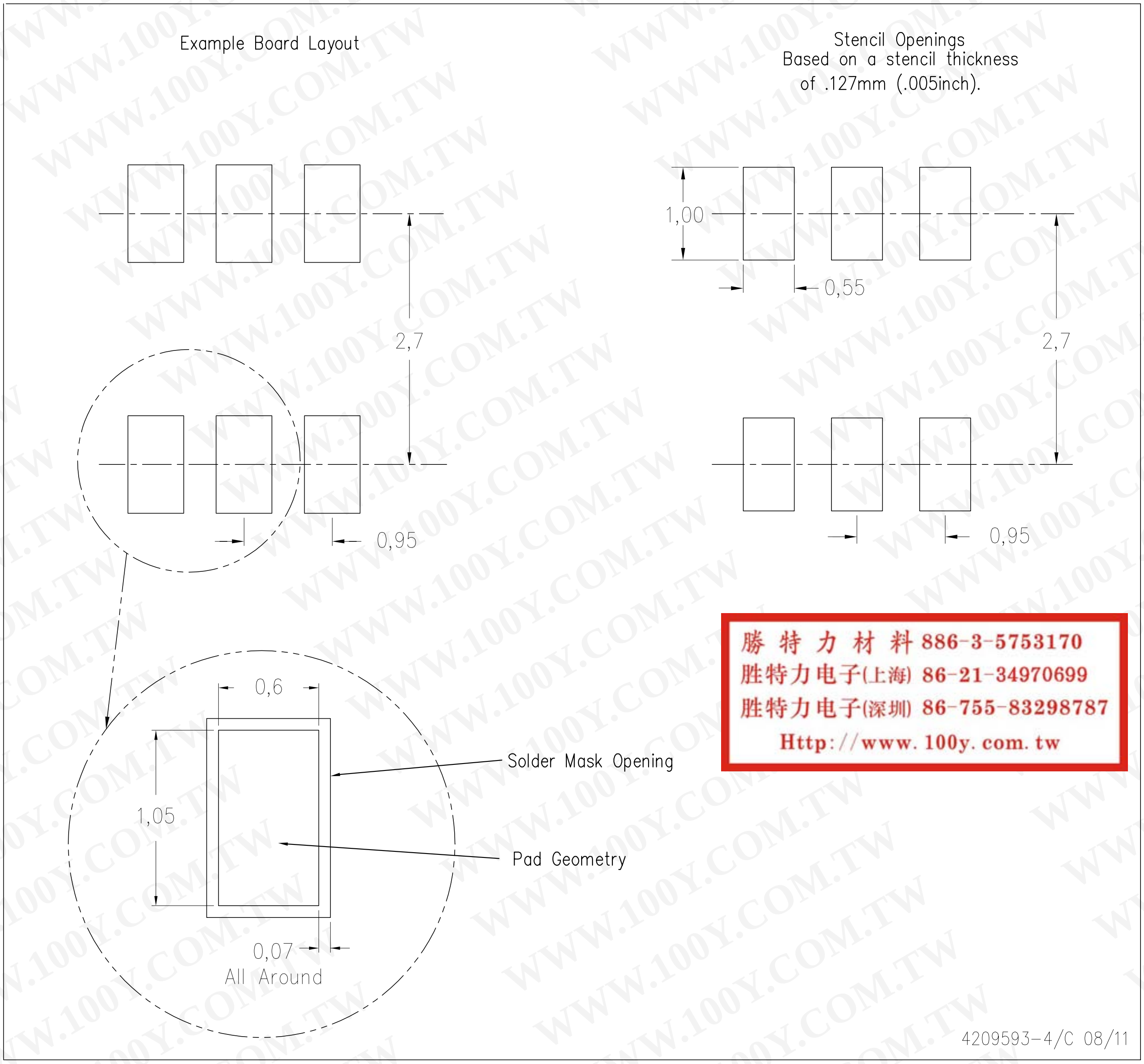
DBV (R-PDSO-G6) PLASTIC SMALL-OUTLINE PACKAGE



4073253-5/K 03/2006

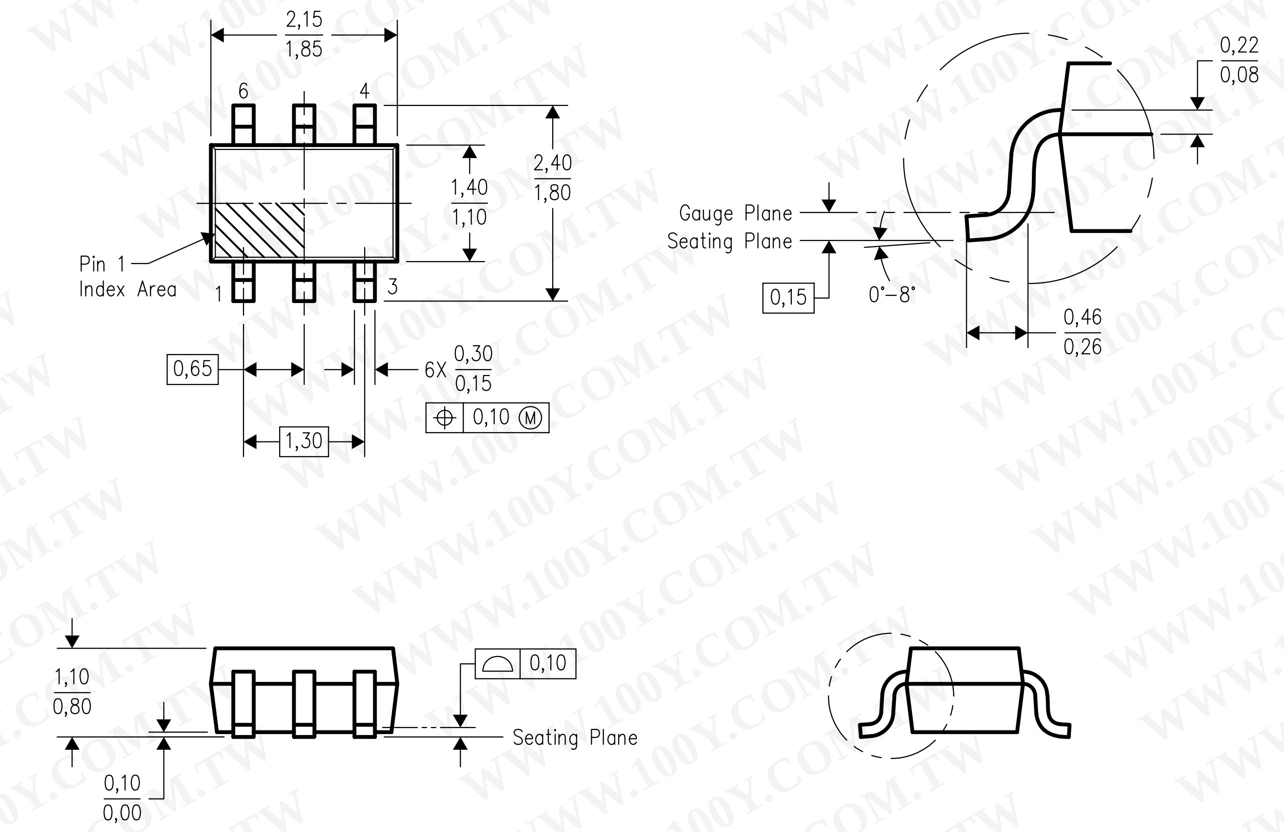
NOTES:
- A. All linear dimensions are in millimeters.
- B. This drawing is subject to change without notice.
- C. Body dimensions do not include mold flash or protrusion. Mold flash and protrusion shall not exceed 0.15 per side.
- D. Leads 1,2,3 may be wider than leads 4,5,6 for package orientation.
- E. Falls within JEDEC MO-178 Variation AB, except minimum lead width.

DBV (R-PDSO-G6) PLASTIC SMALL OUTLINE



NOTES:
- A. All linear dimensions are in millimeters.
- B. This drawing is subject to change without notice.
- C. Customers should place a note on the circuit board fabrication drawing not to alter the center solder mask defined pad.
- D. Publication IPC-7351 is recommended for alternate designs.
- E. Laser cutting apertures with trapezoidal walls and also rounding corners will offer better paste release. Customers should contact their board assembly site for stencil design recommendations. Example stencil design based on a 50% volumetric metal load solder paste. Refer to IPC-7525 for other stencil recommendations.

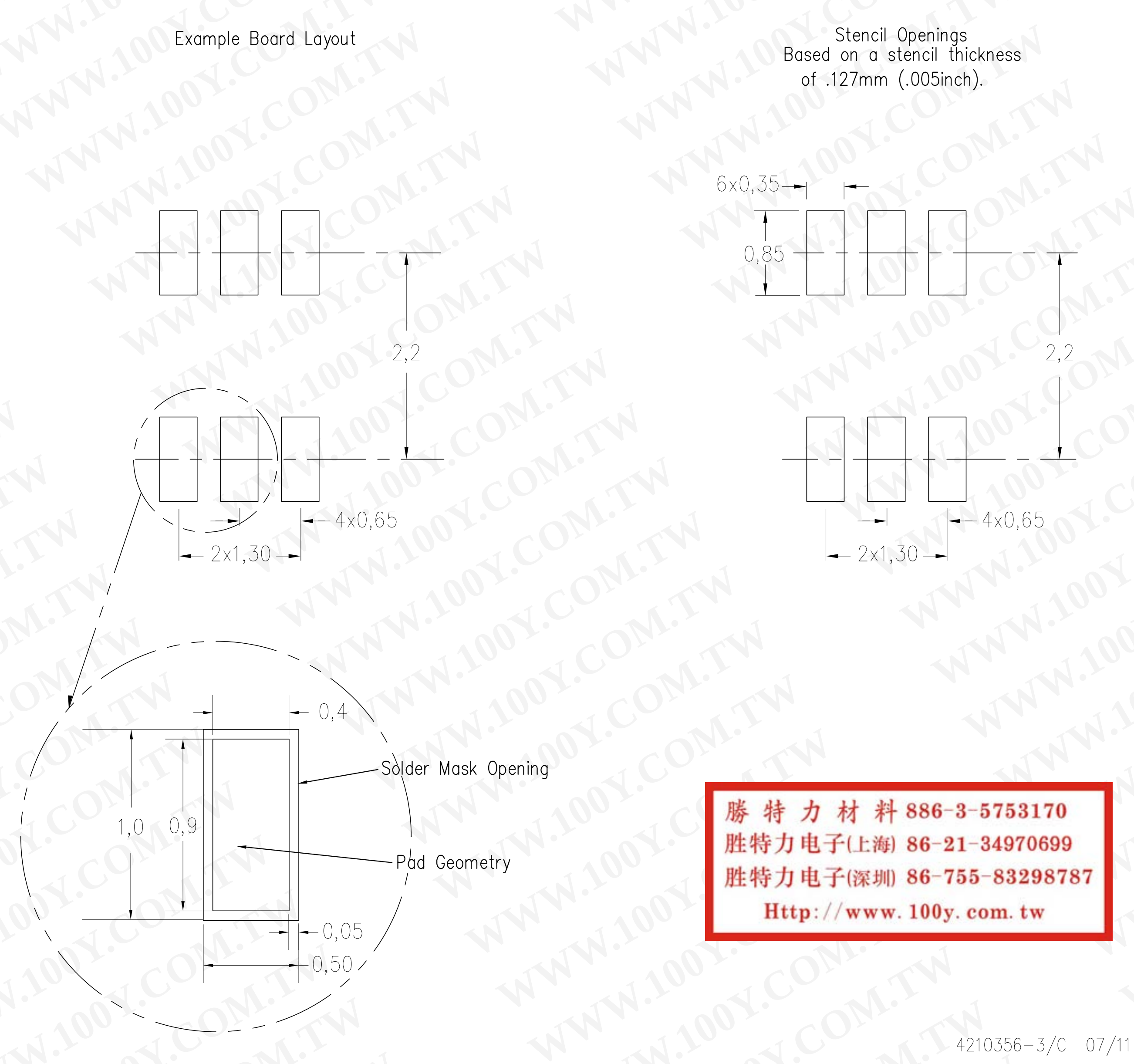
DCK (R-PDSO-G6) PLASTIC SMALL-OUTLINE PACKAGE



4093553-4/G 01/2007

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.

DCK (R–PDSO–G6) PLASTIC SMALL OUTLINE


Example Board Layout

Stencil Openings
Based on a stencil thickness
of .127mm (.005inch).

4210356-3/C 07/11

NOTES:
- A. All linear dimensions are in millimeters.
- B. This drawing is subject to change without notice.
- C. Customers should place a note on the circuit board fabrication drawing not to alter the center solder mask defined pad.
- D. Publication IPC–7351 is recommended for alternate designs.
- E. Laser cutting apertures with trapezoidal walls and also rounding corners will offer better paste release. Customers should contact their board assembly site for stencil design recommendations. Example stencil design based on a 50% volumetric metal load solder paste. Refer to IPC–7525 for other stencil recommendations.

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