



**THE DATASHEET OF
RI-TMS3705ADR**



LF BASE STATION IC

FEATURES

- Low Current Consumption in Sleep Mode
- Automatic Transponder Frequency Measurement and Adaptation
- Diagnosis Function
- Full Bridge Antenna Driver
- Built in Band-Pass Filter and Limiter
- Digital FSK Demodulator
- High Speed Data Transmission in Synchronous Mode
- Power on Reset
- PLL
- Short Circuit Protection
- Support of All TI-RFid™ LF Transponder Functions



DESCRIPTION

The LF base station IC TMS3705ADR allows efficient development and production of RFID readers for low power hand scanners, stationary readers and vehicle immobilizers. This base station IC drives the antenna of a TI-RFid™ transponder system to send data modulated on the antenna signal, and to detect and demodulate the response from the transponder. It allows also minimizing the external component count.

ORDERING INFORMATION

PACKAGE ⁽¹⁾	
Package/Pin count	SO 16 (10 mm × 6 mm)
Packing/Delivery	Tape on Reel, 2500 units per reel

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



Please be aware that an important notice concerning availability, standard warranty, and use in critical applications of Texas Instruments semiconductor products and disclaimers thereto appears at the end of this data sheet.

TI-RFid is a trademark of Texas Instruments.

ABSOLUTE MAXIMUM RATINGS⁽¹⁾

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

	RI-TMS3705ADR	UNIT
Operating Voltage	4.5 to 5.5 DC	V
Current Consumption	Charge Phase (without antenna load) typical 8 mA; max. 20 mA	
	Sleep Mode (without I/O currents) typical 15 μA; max. 0.2 mA	
ESD Protection (MILSTD 883, HBM)	–2000 to +2000	V
Operating Temperature	–40 to +85	°C
Storage Temperature	–40 to +100 (125 up to 1000hrs over lifetime)	°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.

OPERATING CHARACTERISTICS

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

PARAMETER	PART NUMBER	UNIT
	RI-TMS3705ADR	
Operating Frequency	Typical 134.2, FSK	kHz
Interface to Micro Controller	Two wire multifunctional serial interface, 15625 baud	
Antenna Inductivity	400–700 recommended	μH

PACKAGING INFORMATION

Orderable Device	Status ⁽¹⁾	Package Type	Package Drawing	Pins	Package Qty	Eco Plan ⁽²⁾	Lead/Ball Finish	MSL Peak Temp ⁽³⁾
TMS3705A1DRG4	ACTIVE	SOIC	D	16	2500	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-3-260C-168 HR

⁽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)

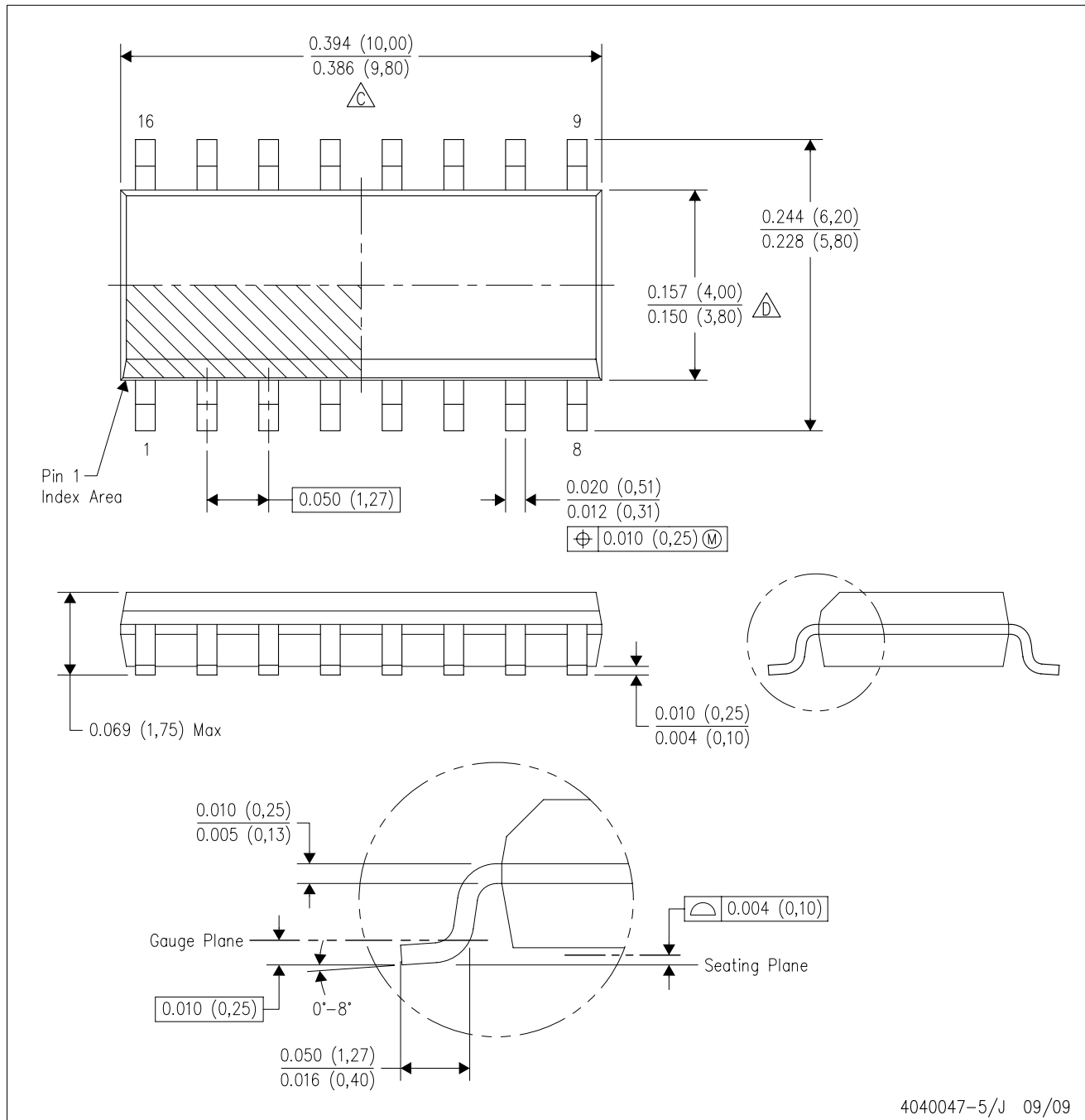
⁽³⁾ MSL, Peak Temp. -- The Moisture Sensitivity Level rating according to the JEDEC industry standard classifications, and peak solder temperature.

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D (R-PDSO-G16)

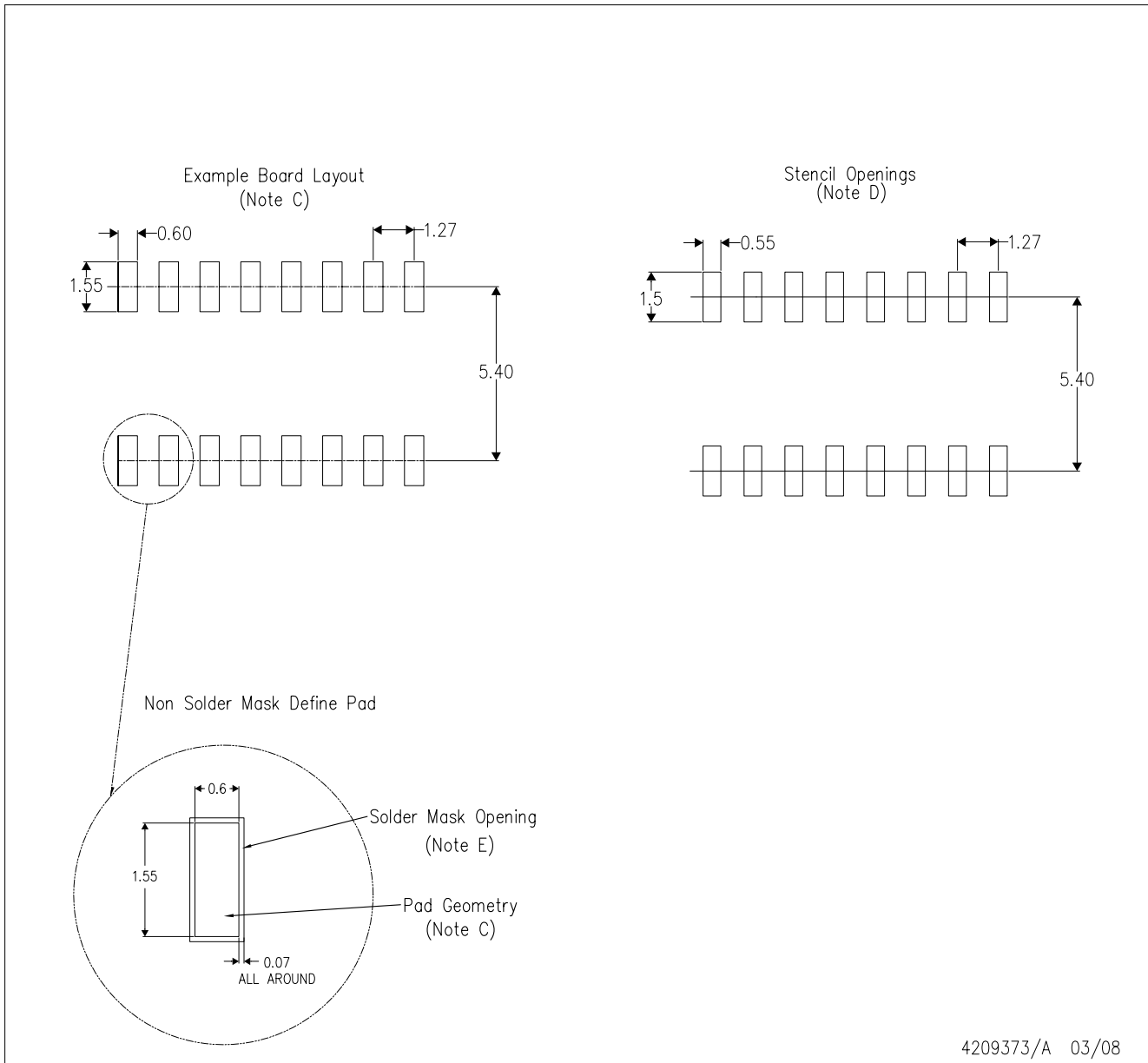
PLASTIC SMALL-OUTLINE PACKAGE



4040047-5/J 09/09

- 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 AC.

D(R-PDSO-G16)



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- NOTES:
- A. All linear dimensions are in millimeters.
 - B. This drawing is subject to change without notice.
 - C. Refer to IPC7351 for alternate board design.
 - D. 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. Refer to IPC-7525
 - E. Customers should contact their board fabrication site for solder mask tolerances between and around signal pads.

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