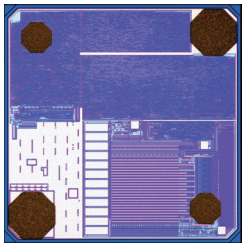
Higgs™ 3

EPC Class 1 Gen 2 RFID Tag IC

Higgs-3 is a highly integrated, 800-bit memory, single chip UHF RFID Tag IC. The chip conforms to the EPC global Class 1 Gen 2 specifications and provides state-of-the-art performance for a broad range of applications.



Applications

- Supply Chain Management
- Distribution Logistics
- Product Authentication
- Asset Inventory and Tracking
- Baggage Handling and Tracking
- Item Level Tagging

FEATURE	DESCRIPTION	BENEFIT
Industry Leading Sensitivity	Industry leading tags performance in challenging RF environments.	Saves money: Reduces the number of read points and/or minimizes tag size.
800-Bits of NVRAM	Larger memory RFID IC including 96-480 bits of EPC or up to 512-bits of user memory.	Provides flexibility for local storage or for large bit-count EPC needs.
Read sensitivty	Up to -18.0 dBm*	
Write sensitivty	Up to -13.5 dBm*	
Dynamic Authentication™	Enhanced IC security using a non-digital, unique and non-cloneable "finger-print".	Practically eliminates copied tags being applied to counterfeit or goods of higher value.

*on a 2.15 dBi gain dipole antenna

Features:

- Meets EPCglobal Gen2 (V 1.2.0) as well as ISO/IEC 18000-6C:2004 / Amd 1:2006 (Type C)
- Worldwide operation in the RFID UHF bands (860-960 MHz)
- 800-Bits of Nonvolatile Memory
  - 96-EPC Bits, extensible to 480 Bits
  - 512 User Bits
  - 64 Bit Unique TID
  - 32 Bit Access and 32 bit Kill Passwords
- Pre-Programmed with a unique, unalterable 64-bit serial number
- User Memory can be Block Perma-Locked as well as read password protected in 64 Bit Blocks
- Supports all Mandatory and Optional Commands including Item Level Commands
- Custom Commands for high speed programming; 30 tags per second for the 96-bit EPC number
- Low power operation for both read and program
- Exceptional operating range, up to 10m with appropriate antenna

Product Overview:

Higgs-3 operates at extremely low power levels, yet still provides sufficient backscatter signal to read tags at an extended range. It can also be programmed at low RF power and, in conjunction with a custom command - LoadImage - can be programmed at high speed. Higgs-3 is implemented in a low cost CMOS process and uses proven and cost effective EEPROM technology.

Higgs-3 offers a flexible memory architecture that provides for the optimum allocation of EPC and User memory for different use cases such as legacy part numbering systems and service history. User memory can also be read and or write locked on 64-bit boundaries, supporting a variety of of public/private usage models.

The IC also features a factory programmed 64-bit serial number that cannot be altered. In conjunction with the EPC code, this provides a unique "fingerprint" for the tagged item.

Operating Conditions & Electrical Characteristics

Symbol	Parameter	Conditions / Capability	Min	Typ	Max	Units
Operating Conditions						
T_A	Operating Temperature		-50		+85	℃
f_{in}	Operating Frequency		860		960	MHz
Electrical Characteristics						
S_R	Sensitivity during Read	Bare die measurement, 50 Ohm impedance, Calibrated Voyantic™ measurement system		-15.8		dBm
S_W	Senstivity during Write			-11.3		dBm
I_S	Interference Signal Suppression			-4		dB
R_P	Equivalent input parallel resistance	At -14 dBm input power		1500		Ohms
C_P	Equivalent input parallel Capacitance	At -14 dBm input power		0.85		pF
D_{ret}	Data Retention		50			Years
P_{cycl}	Programming Cycles at 25°C			100,000		Cycles

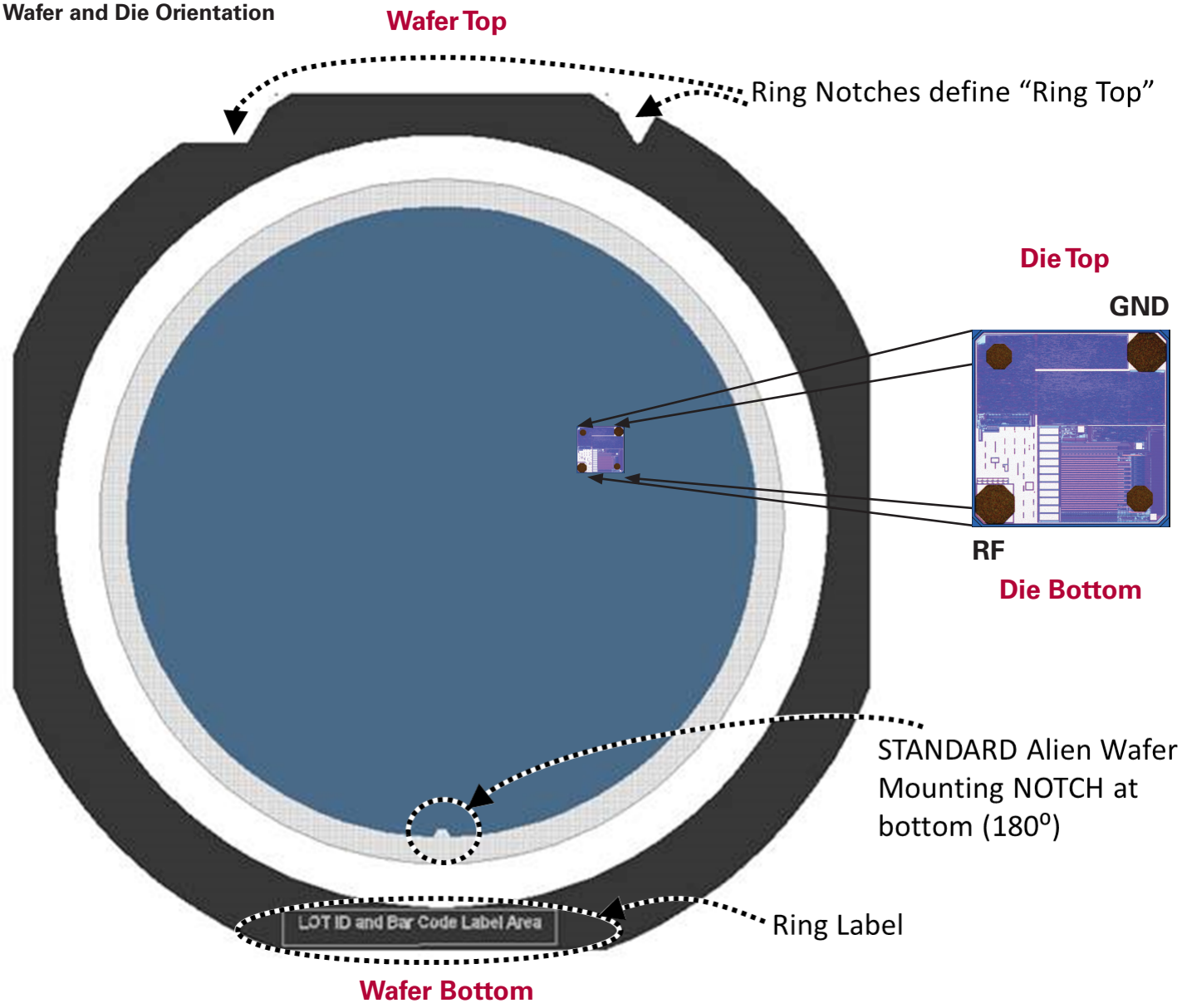
Memory Map

Bank	Address	Description	Memory	Bits
User	00h – 1FFh	User	NVM	512
TID	60h – BFh	Device Configuration	ROM-NVM	96
	20h – 5Fh	Unique Tag ID Unalterable	NVM	64
	00h – 1Fh	TID EPC/TMD/TMDID/TMN	ROM	32
EPC	20h – 7Fh	EPC #	NVM	96
	10h – 1Fh	EPC-PC	NVM	16
	00h – 0Fh	EPC-CRC	RAM	16
Reserved	20h – 3Fh	RES-Access Pwd, EPC optional	NVM	32
	00h – 1Fh	RES-Kill Pwd	NVM	32

Ordering Information

Part	Model Number	Description
Higgs-3 IC	ALC-360-FW	Fully Finished Wafer: Bumped, Tested, Ground & Sawn 8-inch Wafer on UV Tape Mounted on Disco Metal Film Frame
	ALC-360-SOT	SMD Package: SOT-323

Wafer and Die Orientation



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