

RFID Systems Product Specifications



HF Reader ICs

Part Number	TRF7960	TRF7961
Operating Frequency	13.56MHz	13.56MHz
Supported Protocols	ISO 15693 ISO 18000-3 (Mode 1) ISO 14443A & B Tag-It™ HF	ISO 15693 ISO 18000-3 (Mode 1) Tag-It™ HF
Operating Voltage	2.7 V to 5.5 VDC	2.7 to 5.5 VDC
Current Consumption	Transmit: 200mW @ 110 mA, typ. 100mW @ 70 mA, typ. Active (RX only): 10 mA, typ. Stand-by: 120 µA Power down: <1 µA	Transmit: 200mW @ 130 mA, typ. 100mW @ 70 mA, typ. Active (RX only): 10 mA, typ. Stand-by: 120 µA Power down: <1 µA
Transmitter Power	Adjustable power, 100mW or 200mW at 5 VDC	Adjustable power, 100mW or 200mW at 5 VDC
Transmitter Modulation	ASK, adjustable 8% to 30% OOK	ASK, adjustable 8% to 30% OOK
Communication Interface	Parallel 8-bit or 4-wire SPI	Parallel 8-bit or 4-wire SPI
Operating Temperature	-40°C to +110°C	-40°C to +110°C
Storage Temperature	-55°C to +150°C	-55°C to +150°C
Package	32 Pin QFN, (5 mm X 5 mm)	32 Pin QFN, (5 mm X 5 mm)
Packing / Delivery	Tape-on Reel, 250 or 3000 per reel	Tape-on Reel, 250 or 3000 per reel

LF ReaderTypes

Part Number	RI-RFM-006A	RI-TMS3705A1	DRG4	RI-STU-MRD1	RI-STU-251B
Type	IC (SO 16)	IC (SO 16)	Reader Module		Reader/Writer
Typical Read Range*	up to 20 cm	up to 20 cm	up to 30 cm		up to 200 cm
Interface	I/O	I/O	(RS232, TTL level)		RS232/422/485
Operating Frequency	134.2 kHz	134.2 kHz	134.2 kHz		134.2 kHz
Operating Voltage	3.5Vdc...5.5Vdc	4.5Vdc...5.5Vdc	5Vdc		10Vdc...24Vdc
Part Number	RI-RFM-003B	RI-RFM-007B	RI-RFM-008B	RI-ACC-008B	
Type	Mini RFM Module	High Performance RFM	Remote Antenna RFM	Antenna Tuning Board	
Typical Read Range*	up to 60 cm	up to 200 cm	up to 200 cm	up to 200 cm	
Interface	I/O**	I/O**	I/O**	Antenna Terminals	
Operating Frequency	134.2 kHz	134.2 kHz	134.2 kHz	134.2 kHz	
Operating Voltage	5Vdc	7Vdc...24Vdc	7Vdc...24Vdc		
Part Number	RI-CTL-MB2B	RI-CTL-MB6B			
Type	Digital Contr. Module	Digital Contr. Module			
Typical Read Range*					
Interface	RS232, USB	RS422/485, USB			
Operating Frequency					
Operating Voltage	7Vdc...25Vdc	7Vdc...25Vdc			

LF Transponders

Part Number	RI-TRP-R9BK, RI-TRP-W9WK, RI-TRP-M9WK	RI-TRP-RR3P, RI-TRP-WR3P RI-TRP-REHP, RI-TRP-WEHP	RI-INL-RR2B, RI-TRP-WR2B RI-INL-DR2B, RI-TRP-RE2B/WE2B	RI-INL-R9QM RI-INL-W9QM
Type	12 mm Wedge	23 mm Glass	32 mm Glass	24 mm Disk
Memory types available	R/O (64 bit), R/W (80 bit) Multi (32 bit UID, 208 bit R/W)	R/O (64 bit) RW (80 bit)	R/O (64 bit), R/W (80 bit) MPT (1360 bit)	R/O (64 bit) R/W (80 bit)
Typical Read Range*	up to 20 cm	up to 60 cm	up to 100 cm	up to 50 cm
Operating Frequency	134.2 kHz	134.2 kHz	134.2 kHz	134.2 kHz
Dimensions	12 x 6 x 3 mm	3.85 x 23.1 mm	3.85 x 31.2 mm	24 mm dia.
Protection Class	IP68	Hermetically Sealed	Hermetically Sealed	
Case Material	Plastic Compound	Glass	Glass	

* Dependent on the configuration used, the RF regulation in country of use and the environmental condition

** Modules RI-CTL-MB2B/RI-CTL-MB6B have to be combined with RFM modules

LF Transponders (Continued)

Part Number	RI-TRP-R9QL RI-TRP-W9QL	RI-TRP-R9UR RI-TRP-W9UR	RI-TRP-RF0B RI-TRP-WF0B	RI-TRP-R4FF RI-TRP-W4FF	RI-TRP-R9TD RI-TRP-W9TD
Type	30 mm Disk	85 mm Disk	Keyring Tag	Card	120 mm Cylindrical
Memory types available	R/O (64 bit) R/W (80 bit) up to 60 cm	R/O (64 bit) R/W (80 bit) up to 150 cm	R/O (64 bit) R/W (80 bit) up to 60 cm	R/O (64 bit) R/W (80 bit) up to 100 cm	R/O (64 bit) R/W (80 bit) up to 200 cm
Typical Read Range*					
Operating Frequency	134.2 kHz	134.2 kHz	134.2 kHz	134.2 kHz	134.2 kHz
Dimensions	29.4 x 8.4 mm	85.5 x 5.5 mm	10.5 x 37.5 mm	85.5 x 54 x 1.3 mm	21 x 121 mm
Protection Class	IP67	IP53	Hermetically Sealed	ISO 7810	IP67
Case Material	POM	ASA	ABS, Glass	PVC	PEI

HF Packaged Transponders

Part Number	RF-HDT-DVBE-N0	RF-HDT-DVBB-N1	RF-TH1-CB1A
Type	22 mm Coin Overmolded	22 mm Coin Overmolded	Vicinity Card
Available Memory	256 bits organized in 8 x 32-bit blocks	2k bits organized in 64 x 32-bit blocks	
Operating Frequency	13.56 MHz ± 300 kHz	13.56 MHz ± 300 kHz	13.56 MHz
Dimensions	Ø 22 ± 0.2 mm x 3 ± 0.2 mm	Ø 22 ± 0.2 mm x 3 ± 0.2 mm	85.6 mm x 54 mm x 0.76 mm (according ISO 7810)
Case Material	PPS, black	PPS, black	PVC (Polyvinylchloride), white

Tag-it™ HF-I Plus Transponders Inlay

Part Number	RI-I11-112A-03 (square)	RI-I11-112B-03 (square)	RI-I02-112A-03 (rectangle-lg)	RI-I02-112B-03 (rectangle-lg)	RI-I03-112A-03 (rectangle-mini)	RI-I15-112B-03 (rectangle-med)	RI-I16-112A-03 (circular)	RI-I17-112A-03 (CD/DVD)
Supported Standards	ISO 15693, ISO/IEC 18000-3 (Mode 1)							
Available Memory	2k bits organized in 64 x 32-bit blocks							
Factory Programmed	64 bits							
Resource Frequency	13.86 MHz	14.4 MHz	13.86 MHz	14.4 MHz	13.86 MHz	14.1 MHz	13.7 MHz	13.8 MHz
Frequency Offset for Lamination Material	Paper	PVC	Paper	PVC	Paper/PVC	Paper/PVC	Paper/PVC	Paper/PVC
Antenna Size (mm)	45 x 45	45 x 45	45 x 76	45 x 76	22.5 x 38	34 x 65	Ø 24.2	Ø 32.5
Foil Width (mm)	48 mm ±0.5 mm							
Delivery	Single row tape with 48-mm foil width wound on cardboard reel							

Tag-it™ HF-I Pro Transponder Inlays Features - Password Write/Password Kill Functionality

Part Number	RI-I11-114A-S1 (square)	RI-I11-114B-S1 (square)	RI-I02-114A-S1 (rectangle-lg)	RI-I02-114B-S1 (rectangle-lg)	RI-I03-114A-S1 (rectangle-mini)	RI-I16-114A-S1 (circular)	RI-I17-114A-S1 (CD/DVD)
Supported Standards	ISO 15693, ISO/IEC 18000-3 (Mode 1)						
Available Memory	256 bits organized in 8 x 32-bit blocks						
Factory Programmed	64 bits						
Resource Frequency	13.86 MHz	14.4 MHz	13.86 MHz	14.4 MHz	13.86 MHz	13.7 MHz	13.8 MHz
Frequency Offset for Lamination Material	Paper	PVC	Paper	PVC	Paper/PVC	Paper/PVC	Paper/PVC
Antenna Size (mm)	45 x 45	45 x 45	45 x 76	45 x 76	22.5 x 38	Ø 24.2	Ø 32.5
Foil Width (mm)	48 mm ±0.5 mm						
Delivery	Single row tape with 48-mm foil width wound on cardboard reel						

Tag-it™ HF-I Standard Transponder Inlays

Part Number	RI-I11-114A-01 (square)	RI-I11-114B-01 (square)	RI-I02-114A-01 (rectangle-lg)	RI-I02-114B-01 (rectangle-lg)	RI-I03-114-01 (rectangle-mini)	RI-I16-114A-01 (circular)	RI-I17-114A-01 (CD/DVD)
Supported Standards	ISO 15693, ISO 18000-3						
Available Memory	256 bits organized in 8 x 32-bit blocks						
Factory Programmed	64 bits						
Resource Frequency	13.86 MHz	14.2 MHz	13.86 MHz	14.4 MHz	13.86 MHz	13.7 MHz	13.8 MHz
Frequency Offset for Lamination Material	Paper	PVC	Paper	PVC	Paper/PVC	Paper/PVC	Paper/PVC
Antenna Size (mm)	45 x 45	45 x 45	45 x 76	45 x 76	22.5 x 38	Ø 24.2	Ø 32.5
Foil Width (mm)	48 mm ±0.5 mm						
Delivery	Single row tape with 48-mm foil width wound on cardboard reel						

Tag-it™ HF-I Family Die

Part number	RF-HDT-AJLC-G0 RF-HDT-SJLC-G0	RF-HDT-AJLE-G1 RF-HDT-SJLE-G1	RF-HDT-AJLS-G1 RF-HDT-SJLS-G1
HF-I Family	Plus	Standard	Pro
Die Supported Standards	ISO/IEC 15693; ISO/IEC 18000-3 (Mode 1)	ISO/IEC 15693; ISO/IEC 18000-3 (Mode 1)	ISO/IEC 15693; ISO/IEC 18000-3 (Mode 1)
Available Memory	2k bits organized in 64 x 32-bit blocks	256 bits organized in 8 x 32-bit blocks	256 bits organized in 8 x 32-bit blocks
Die Thickness	150µm / 265µm	150µm / 150µm	150µm / 265µm
Wafer Processing	Bumped, Sawn, Grinded, Inked	Bumped, Sawn, Grinded, Inked	Bumped, Sawn, Grinded, Inked
Bump Material	Gold (AU)/Nickel-Gold (AU-NI)	Gold (AU)/Nickel-Gold (AU-NI)	Gold (AU)/Nickel-Gold (AU-NI)
Part number	RF-HDT-WNMC-M0	RF-HDT-SNLE-G1	RF-HDT-WNME-M0
HF-I Family	Plus	Standard	Standard
Die Supported Standards	ISO/IEC 15693; ISO/IEC 18000-3 (Mode 1)	ISO/IEC 15693; ISO/IEC 18000-3 (Mode 1)	ISO/IEC 15693; ISO/IEC 18000-3 (Mode 1)
Available Memory	2k bits organized in 64 x 32-bit blocks	256 bits organized in 8 x 32-bit blocks	256 bits organized in 8 x 32-bit blocks
Die Thickness	710-740µm	150µm	710-740µm
Wafer Processing	Unprocessed	Sawn, Grinded, Inked	Unprocessed
Bump Material	-	-	-

UHF Family

Part Number	RI-UHF-00001-01	RI-UHF-11111-01	RI-UHF-STRAP-08
Type	IC - Unprocessed Wafer	IC - Bumped, Sawn, Framed	Strap
IC Supported Standard	EPC C1G2 and ISO/IEC 18000-6c		
IC Operating Frequency	860-960Mhz		
EPC Memory	96 bits EPC user programmable		
TID Memory	32 bits factory pre-programmed		
Data Retention	10 years at +25°C		
Write/Erase Cycles	100000 +25°C preliminary		
Operating Temperature	-40°C to 65°C (Read), -25°C to +65°C (Write)		
Strap Pitch			4.0mm (+0.1mm, -0.4 mm)
Width of Strap			9.0mm (+/- 0.25 mm)
Material/Thickness	710-740um	150um	50um PET substrate
Quantity	>40,000 IC/wafer	>40,000 IC/wafer	40,000 per Reel

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