

Contactless Credit Cards Consumer Report 2006

By Jimmy Atkinson
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Introduction to contactless payments

In 2003, electronic payments (debit and credit cards) finally overtook paper-based payments (cash and checks) as the most common way to pay for purchases.¹ Two years later, a new electronic payment revolution quietly began. American Express, Visa, and MasterCard started to roll out contactless payment systems in select retailers around the world. The number of locations that initially accepted contactless payments was small, but is now steadily growing.



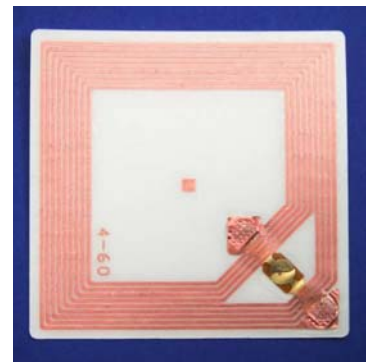
A typical credit card featuring a magnetic stripe.

By the end of 2006, it is estimated that between 35 and 50 million credit and debit cards will be contactless and available for use in 25,000–50,000 merchant locations in the United States alone.² Many experts are anticipating that this new technology could eventually obsolete the magnetic stripe, at which point all of the world's electronic payments would be contactless.

The technology behind contactless credit cards

While modern credit cards have been around since the 1950s, it was only during the 1970s that the magnetic stripe made them widely popular. For decades now, credit cards have relied on these magnetic stripes located on the reverse side of the card to store and transmit data with relative ease and speed. Swiping this type of card requires physical contact between the magnetic stripe and the reading mechanism.

Conversely, a contactless card stores its data on a microchip that is embedded in the card's plastic. Consequentially, the data on these cards is transmitted via a high frequency radio signal when the card comes in close proximity of a special reader at the checkout stand. This works through a technology known as radio frequency identification, or RFID. When the card comes within four inches of the reader, the antenna on the RFID chip is jolted to life by the electromagnetic field created by the reader, and transaction data is sent from the contactless credit card's chip to the RFID reader at the checkout stand. You may already be familiar with the EZ Pass toll collection system or ExxonMobil's Speedpass at the gas pump, both of which use RFID technology.



An RFID chip

Contactless credit card issuers

American Express is issuing the ExpressPay feature on all of its new Blue, Blue Cash, Blue Sky, and Clear cards. American Express also offers an ExpressPay key fob that can be linked to any American Express credit card account or prepaid with any existing American Express, Discover, MasterCard, or Visa card.

MasterCard's PayPass, marketed as Tap N Go, is presently available on select credit cards issued by Chase and MBNA. It is also available on select debit cards issued by Charter One, Citizens Bank, HSBC, and Key Bank. A prepaid PayPass card is also available from Peoples Bank. Visa Contactless is currently available only on Chase blink cards.

Where to use contactless cards

Contactless payments are particularly handy in environments that have traditionally been thought of as cash-intensive, such as gas stations, movie theaters, convenience stores, fast food restaurants, parking garages, vending machines, stadium concession stands, and transit services. The common characteristic that all of these types of merchants share is the customer's desire to get in and out quickly. Having contactless payment systems in place at sports stadiums, for instance, would shorten lines and speed transaction times, allowing the customer to get back in his seat quickly and miss less of the game.

Locations capable of accepting contactless payments have a special contactless indicator symbol³ on their checkout stand's card reader. But paying with a contactless card is not limited to just the new contactless readers at select locations. For the time being, the new cards are still being manufactured with magnetic stripes on their backs and they look just like regular credit cards with their numbers embossed on the front. Therefore, they are accepted anywhere a regular credit card is accepted. With the number on the front, you can still make online and telephone purchases with it. With its magnetic stripe, you can still use it to pay for dinner at your favorite restaurant. The contactless chip is just another added convenience on top of what you're used to.

Contactless Card Issuers*

American Express

- Blue from American Express
- Blue Cash from American Express
- Blue Sky from American Express
- Clear from American Express

Chase blink

- Chase MasterCard with blink
- Chase Flexible Rewards MasterCard with blink
- Chase Regal MasterCard with blink
- Chase Sheetz MasterCard with blink
- Universal Entertainment MasterCard with blink
- Chase Visa with blink
- Chase Flexible Rewards Visa with blink
- Chase Platinum Visa Business Card with blink
- Southwest Airlines Rapid Rewards Visa Signature Card with blink
- Southwest Airlines Rapid Rewards Visa Business Card with blink
- Wawa Visa Card with blink

MBNA PayPass

- MBNA WorldPoints MasterCard PayPass
- NFL Extra Points MasterCard with PayPass for Baltimore Ravens, Detroit Lions, Kansas City Chiefs, New York Giants, New York Jets, Philadelphia Eagles, Seattle Seahawks, and Washington Redskins cards

Debit Cards

- Charter One Debit Card with PayPass
- Charter One Gold Debit Card with PayPass
- Citizens Bank Debit Card with PayPass
- Citizens Bank Gold Debit Card with PayPass
- HSBC Debit MasterCard with PayPass
- Key Bank Debit PayPass

* As of 3 Apr. 2006

Merchants Accepting Contactless Payments*

Merchant	EP	PP
7-Eleven	✓	✓
AMC Theatres	✓	✓
Arby's	✓	✓
Boater's World	✓	
Burritoville		✓
Carl's Jr.	✓	
Central Parking		✓
Cinemark		✓
Cold Stone Creamery	✓	
Cosi	✓	✓
CVS Pharmacy	✓	✓
DFW Airport		✓
Duane Reade	✓	✓
KFC	✓	✓
Loews Cineplex	✓	
McDonald's	✓	✓
Meijer	✓	✓
QuickChek	✓	✓
Regal Entertainment	✓	✓
Ritz Camera & Image	✓	
Sheetz	✓	✓
Sony Style		✓
Subway		✓
Walgreens	✓	✓
Wawa	✓	✓

* = Participating locations only
 EP = American Express ExpressPay
 PP = MasterCard PayPass

Advantages of contactless credit cards

What gives contactless credit cards their edge is that they are faster and more secure than traditional magnetic stripe cards. In terms of speed, contactless credit cards have both cash and magnetic stripe cards beat. According to Visa, the average cash transaction takes 34 seconds and magnetic stripe credit card transactions take 24 seconds. Conversely, contactless credit card transactions take a mere 15 seconds.⁴ A cardholder making a purchase simply waves his card over the reader, waits for the acceptance signal, and is on his way. In an effort to further speed up the pace, Visa, MasterCard, and American Express do not require signatures on contactless transactions under \$25.

Credit card issuers are not only touting speed and convenience, but also security as a benefit of having an RFID credit card. According to Chase, the contactless payment cards feature 128-bit and triple DES encryption⁵ that would make any stolen data useless to a potential thief.⁶ The cards also have built-in sensors that would disable the chip should anyone attempt to retrieve any personal data from a stolen card. Furthermore, just like regular credit and debit cards, holders of contactless cards are not liable for any fraudulent charges.

Disadvantages of contactless credit cards

Some privacy rights advocates and personal security experts have shown opposition to contactless payment cards. They contend that RFID technology is by no means bulletproof and may be vulnerable to security breaches. For instance, the radio transmission that occurs during checkout could potentially get intercepted by a criminal's reader. It has also been hypothesized that with a strong enough antenna, a criminal could simply walk up behind you, position his reader near your wallet, and steal your credit card data without you ever knowing it.

While the above two examples are frightening for most to consider, rest assured that measures have been taken against transmission interception and theft via a criminal's reader. First, the actual credit card number itself is never transmitted via radio wave. Instead, a unique encrypted code good only for each particular contactless payment transaction is transmitted. This authorization code is good only once, as it changes with each new transaction. Therefore, any data that is maliciously stolen would not be of much use to the criminal. Further, a criminal's reader would have to either get very close to the card that he is attempting to steal or his reader's antenna would have to be very large.

A more realistic adverse side effect of using contactless cards is that the technology makes it psychologically easier to spend. Holders of such cards may end up unknowingly spending more—and more often. According to a 2004 Smart Card Alliance study, the average number of transactions that occurred each hour in retail locations with the new contactless payment readers rose from 60 to 62. The average spend among contactless cardholders rose from \$5 to \$5.75.⁷ Consumers are advised that ease and speed of purchases do *not* give you more spending power.

The future of contactless payments

While Discover does not currently offer RFID cards, they are testing contactless payment technology with cell phones. Many experts think that it is inevitable that contactless technology will converge on the cell phone. In the not too distant future, it is quite conceivable that we will be able to pay for just about everything with our cell phones, using the keypad to select our method of payment and then waving the phone's RFID tag over the reader at the checkout stand.

Another vision of the more distant future sees consumers being able to pay for their groceries by simply walking out of the store with a cart full of items. Strategically placed RFID readers at the exits will add up the prices of all of the items and then deduct that amount from the user's RFID payment card automatically. For now, however, it looks as though contactless credit cards are the *wave* of the immediate future. And that future looks bright for consumers, merchants, and credit card companies alike. With more contactless cards being issued and more merchants accepting contactless payments every day, it is estimated that \$11.6 billion will be transacted via contactless payment systems by 2009.⁸

¹ K. Chu. "Will that be cash, credit—or finger?" *USA Today* 1 Dec. 2005
<http://www.usatoday.com/tech/news/techinnovations/2005-12-01-cash-credit-finger_x.htm>.

² M. Fetterman. "Wave-and-pay credit cards may make buying too easy." *USA Today* 23 May 2005
<http://www.usatoday.com/money/perfi/credit/2005-05-23-constactless-usat_x.htm>.

³ The contactless indicator symbol: http://usa.visa.com/img/branding/personal/contactless_indicator2.gif.

⁴ C. Said. "If you really hate to wait." *San Francisco Chronicle* 17 Feb. 2006. <<http://sfgate.com/cgi-bin/article.cgi?file=/c/a/2006/02/17/CONTACTLESS.TMP&nl=top>>.

⁵ For more information on Triple DES security, please see http://en.wikipedia.org/wiki/Triple_DES.

⁶ E. Schuman. "How Safe Are the New Contactless Payment Systems?" *CIO Insight* 20 Jun. 2005
<http://www.ciainsight.com/print_article2/0,2533,a=154404,00.asp>.

⁷ Fetterman.

⁸ L.M. Xideris. "Contactless Payments." *WSTA Ticker* Jun. 2005
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