A nonvolatile ferroelectric SRAM based 8-context dynamically programmable gate array enables low-cost field programmable systems by the elimination of off-chip nonvolatile memories. Read and program procedures of the associated configuration memory are securely protected, so that unauthorized users cannot access to configuration data. The ferroelectric SRAM configuration memory features 2nsec nondestructive read operations along with stable data recall. The logic block circuit is optimized to improve available logic gates for the multi-context scheme.