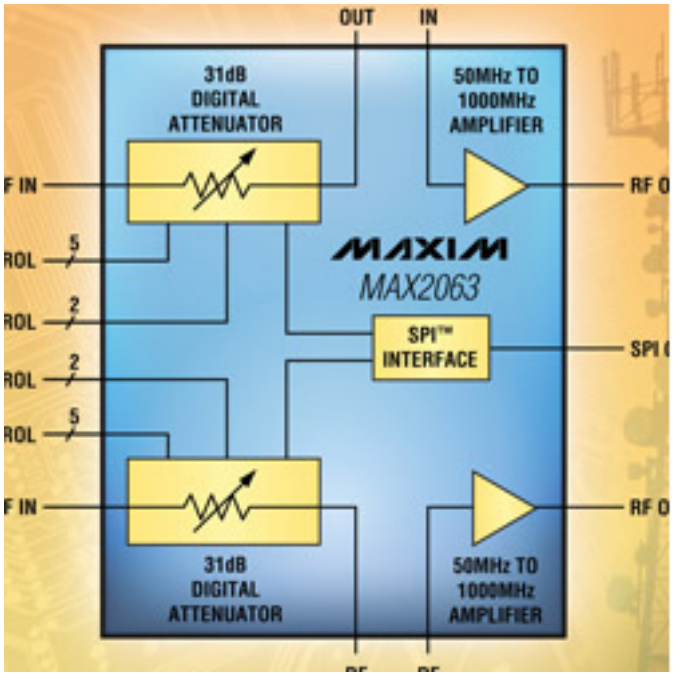
Dual digital VGA reduces solution footprint by 32%



Maxim Integrated Products introduces the MAX2063, the industry's only fully programmable, multistate, dual-channel, digital IF/RF variable-gain amplifier (VGA). This easy-to-control device delivers an unparalleled combination of VGA performance, programmability, and component integration. The MAX2063 provides unique "rapid-fire" gain selection for four customized attenuation states per path, fast 25ns digital switching, and very low digital VGA amplitude overshoot/undershoot. It is an ideal choice for the "fast-attack" automatic gain control (AGC) circuits found in all 2.5G, 3G, 4G wireless infrastructure transceivers, including GSM/EDGE, CDMA, WCDMA, LTE, and WiMAX(TM) applications.

The MAX2063 can serve as either an IF or RF all-purpose VGA, interfacing directly with 50ohm systems operating over the 50MHz to 1000MHz frequency range. Since the stages within each path have their own RF input and RF output, the MAX2063 can be configured to optimize either noise figure (i.e., amplifier configured first within the cascade) or linearity (i.e., amplifier configured last). In the latter configuration, the cascade yields a total gain range of 31dB, a maximum gain of 21.3dB, and a noise figure of only 5.6dB. The cascaded linearity is equally impressive with +41dBm of OIP3, +56dBm of OIP2, and +19dBm of OP1dB performance. In a receiver application, this excellent linearity directly enhances the receiver's immunity to strong blocker signals. Second- and third-order harmonic distortion (HD2 and HD3) is also limited to -54.8dBc and -72.9dBc, respectively. This performance eases the filtering requirements of close-in harmonics and leads to simpler and more cost-effective filter designs.

The device's unique rapid-fire gain-selection feature lets the user quickly access any

of four customized digital attenuation states without incurring the delays associated with reprogramming the device through the SPI(TM) bus. The digital attenuator I/O is further reduced by a factor of either 5x or 2.5x (5 control bits vs. 1 or 2, respectively) depending on the number of states desired.

The MAX2063 incorporates five unique circuit functions into a single, compact monolithic device. When compared to an equivalent circuit using two MAX2066 VGAs, this new dual VGA reduces the circuit's overall footprint by 32%. These cost and space savings enable the next generation of wireless infrastructure designs in which transceiver price and density issues are paramount.

The MAX2063 is available in a lead-free 48-pin TQFN package. Prices start at $6.90 (1000-up, FOB USA). Pin-for-pin compatible analog and digital (MAX2062*) and analog-only (MAX2064*) versions will also be available. For more information, please visit http://www.maxim-ic.com/IFVGA [1]

Links:
[1] http://www.maxim-ic.com/IFVGA