Hybrid-Float6 multiply-accumulate

IEEE 754 single-precision floating-point

Float6

Sign Exponent Mantissa

4-bit 1-bit

8-bit 23-bit

S_H E_H M_H S_F E_F M_F

1.M_H

a) Multiply

Mantissa multiplication

$\gg 1$ 0

$E_H - 127$ $E_F - 7$

BarrelShift (exponent, mantissa)

Accumulator$_t$

$S_H \oplus S_F$

b) Accumulate

Accumulator$_{t+1}$