

Function	Thumb-2	microMIPS32 DSP
Add/Subtract	4B, 2H	4B, 2Q15
Add/Subtract with saturation	4B, 2H	4B, 2Q15, Q31
Add/Subtract with Exchange (exchanges halfwords in rt, then adds first halfword and subtracts second) with optional saturation	2H	
Reduce by add (sum the values)		4B
Absolute value		2Q15, Q31
Precision reduce/increase (reduces or increases the precision of a value)		2B, Q15, 2Q15, Q31
Shifts: left, right, logical & arithmetic, with optional saturation		4B, 2H
Multiply	2H	2B, 2H, 2Q15
Multiply add/subtract (to GPR or accumulator register in MIPS)	2H	2Q15
Complex multiplication step (2 multiplies and addition/subtraction)	2H	2Q15
Multiply and accumulate (by addition or subtraction)	2H	Q15, Q31
Replicate bits		B, H
Compare: =, <, <=, sets condition field		4B, 2H
Pick (use condition bits to choose bytes or halfwords from two operands)		4B, 2H
Pack choosing a halfword from each operand		H
Extract		Q63
Move from/to accumulator		DW

FIGURE E.28 Summary of two embedded RISC DSP operations, showing the data types for each operation. A blank indicates that the operation is not supported as a single instruction. Byte quantities are usually unsigned. Complex multiplication step implements multiplication of complex numbers where each component is a Q15 value. ARM uses its standard condition register, while MIPS adds a set of condition bits as part of the state in the DSP extension.