Vector Floating-point Processing Unit (VFPU) Instruction List

T a b l e   o f   C o n t e n t s

VFPU Instruction List

Inst.	Description	Category
bvf	Branch on VFPU False	CPU interlock instruction
bvfl	Branch on VFPU False Likely	CPU interlock instruction
bvt	Branch on VFPU True	CPU interlock instruction
bvtl	Branch on VFPU True Likely	CPU interlock instruction
lv.s	Load Single Word to VFPU	Pipeline instruction
lv.q	Load Quad Word to VFPU	Pipeline instruction
mfv	Move Word from VFPU	CPU interlock instruction
mfvc	Move Word from VFPU Control	CPU interlock instruction
mtv	Move Word to VFPU	Pipeline instruction
mtvc	Move Word to VFPU Control	Pipeline instruction
sv.s	Store Single Word from VFPU	CPU interlock instruction
sv.q	Store Quad Word from VFPU	CPU interlock instruction
sv.q	Store Quad Word to Write Buffer	Pipeline instruction
svl.q	Store Quad Word Left from VFPU	CPU interlock instruction
svr.q	Store Quad Word Right from VFPU	CPU interlock instruction
vabs.s	Absolute Value Single Word	Pipeline instruction
vabs.p	Absolute Value Pair Word	Pipeline instruction
vabs.t	Absolute Value Triple Word	Pipeline instruction
vabs.q	Absolute Value Quad Word	Pipeline instruction
vadd.s	Add Single Word	Pipeline instruction
vadd.p	Add Pair Word	Pipeline instruction
vadd.t	Add Triple Word	Pipeline instruction
vadd.q	Add Quad Word	Pipeline instruction
vasin.s	Arc Sine Single Word	Pipeline instruction
vasin.p	Arc Sine Pair Word	Repeat (pipeline) instruction
vasin.t	Arc Sine Triple Word	Repeat (pipeline) instruction
vasin.q	Arc Sine Quad Word	Repeat (pipeline) instruction
vavg.p	Average Pair Word	Pipeline instruction
vavg.t	Average Triple Word	Pipeline instruction
vavg.q	Average Quad Word	Pipeline instruction
vbfy1.p	Butterfly 1 Pair Word	Pipeline instruction
vbfy1.q	Butterfly 1 Quad Word	Pipeline instruction
vbfy2.q	Butterfly 2 Quad Word	Pipeline instruction
vc2i.s	Convert signed 8-bit integer to signed 32-bit integer (4D vector)	Pipeline instruction
vcmovf.s	Conditional Move on False Single Word	Pipeline instruction
vcmovf.p	Conditional Move on False Pair Word	Pipeline instruction
vcmovf.t	Conditional Move on False Triple Word	Pipeline instruction
vcmovf.q	Conditional Move on False Quad Word	Pipeline instruction
vcmovt.s	Conditional Move on True Single Word	Pipeline instruction
vcmovt.p	Conditional Move on True Pair Word	Pipeline instruction
vcmovt.t	Conditional Move on True Triple Word	Pipeline instruction
vcmovt.q	Conditional Move on True Quad Word	Pipeline instruction

Inst.	Description	Category
vcmp.s	Compare Single Word	Pipeline instruction
vcmp.p	Compare Pair Word	Pipeline instruction
vcmp.t	Compare Triple Word	Pipeline instruction
vcmp.q	Compare Quad Word	Pipeline instruction
vcos.s	Cosine Single Word	Pipeline instruction
vcos.p	Cosine Pair Word	Repeat (pipeline) instruction
vcos.t	Cosine Triple Word	Repeat (pipeline) instruction
vcos.q	Cosine Quad Word	Repeat (pipeline) instruction
vcrs.t	Cross Triple Word	Pipeline instruction
vcrsp.t	Cross Product Triple Word	Repeat (pipeline) instruction
vcst.s	Set Constant Single Word	Pipeline instruction
vcst.p	Set Constant Pair Word	Pipeline instruction
vcst.t	Set Constant Triple Word	Pipeline instruction
vcst.q	Set Constant Quad Word	Pipeline instruction
vdet.p	2X2 Matrix Determinant	Pipeline instruction
vdiv.s	Divide Single Word	Multi-cycle instruction
vdot.p	Dot Product Pair Word	Pipeline instruction
vdot.t	Dot Product Triple Word	Pipeline instruction
vdot.q	Dot Product Quad Word	Pipeline instruction
vexp2.s	Exponential base 2 Single Word	Pipeline instruction
vexp2.p	Exponential base 2 Pair Word	Repeat (pipeline) instruction
vexp2.t	Exponential base 2 Triple Word	Repeat (pipeline) instruction
vexp2.q	Exponential base 2 Quad Word	Repeat (pipeline) instruction
vf2h.p	Convert float to float16 Pair Word	Pipeline instruction
vf2h.q	Convert float to float16 Quad Word	Pipeline instruction
vf2id.s	Round to smallest integer from float with Scaling Single Word	Pipeline instruction
vf2id.p	Round to smallest integer from float with Scaling Pair Word	Pipeline instruction
vf2id.t	Round to smallest integer from float with Scaling Triple Word	Pipeline instruction
vf2id.q	Round to smallest integer from float with Scaling Quad Word	Pipeline instruction
vf2in.s	Round to nearest integer from float with Scaling Single Word	Pipeline instruction
vf2in.p	Round to nearest integer from float with Scaling Pair Word	Pipeline instruction
vf2in.t	Round to nearest integer from float with Scaling Triple Word	Pipeline instruction
vf2in.q	Round to nearest integer from float with Scaling Quad Word	Pipeline instruction
vf2iu.s	Round to largest integer from float with Scaling Single Word	Pipeline instruction
vf2iu.p	Round to largest integer from float with Scaling Pair Word	Pipeline instruction

Inst.	Description	Category
vf2iu.t	Round to largest integer from float with Scaling Triple Word	Pipeline instruction
vf2iu.q	Round to largest integer from float with Scaling Quad Word	Pipeline instruction
vf2iz.s	Round to zero integer from float with Scaling Single Word	Pipeline instruction
vf2iz.p	Round to zero integer from float with Scaling Pair Word	Pipeline instruction
vf2iz.t	Round to zero integer from float with Scaling Triple Word	Pipeline instruction
vf2iz.q	Round to zero integer from float with Scaling Quad Word	Pipeline instruction
vfad.p	Funnel Add Pair Word	Pipeline instruction
vfad.t	Funnel Add Triple Word	Pipeline instruction
vfad.q	Funnel Add Quad Word	Pipeline instruction
vfim.s	Convert float16 immediate to float Single Word	Pipeline instruction
vflush	Flush Write Buffer	Synchronization instruction
vh2f.s	Convert float16 to float Single Word	Pipeline instruction
vh2f.p	Convert float16 to float Pair Word	Pipeline instruction
vhdp.p	Homogeneous Dot Product Pair Word	Pipeline instruction
vhdp.t	Homogeneous Dot Product Triple Word	Pipeline instruction
vhdp.q	Homogeneous Dot Product Quad Word	Pipeline instruction
vhtfm2.p	Homogeneous Transform 2 Pair Word	Repeat (pipeline) instruction
vhtfm3.t	Homogeneous Transform 3 Triple Word	Repeat (pipeline) instruction
vhtfm4.q	Homogeneous Transform 4 Quad Word	Repeat (pipeline) instruction
vi2c.q	Convert integer to signed char Quad Word	Pipeline instruction
vi2f.s	Convert integer to float with Scaling Single Word	Pipeline instruction
vi2f.p	Convert integer to float with Scaling Pair Word	Pipeline instruction
vi2f.t	Convert integer to float with Scaling Triple Word	Pipeline instruction
vi2f.q	Convert integer to float with Scaling Quad Word	Pipeline instruction
vi2s.p	Convert integer to signed short Pair Word	Pipeline instruction
vi2s.q	Convert integer to signed short Quad Word	Pipeline instruction
vi2uc.q	Convert integer to unsigned char Quad Word	Pipeline instruction
vi2us.p	Convert integer to unsigned short Pair Word	Pipeline instruction
vi2us.q	Convert integer to unsigned short Quad Word	Pipeline instruction
vidt.p	Identity Pair Word	Pipeline instruction
vidt.q	Identity Quad Word	Pipeline instruction
viim.s	Convert integer immediate to float Single Word	Pipeline instruction
vlgb.s	LogB Single Word	Pipeline instruction
vlog2.s	Logarithm base 2 Single Word	Pipeline instruction
vlog2.p	Logarithm base 2 Pair Word	Repeat (pipeline) instruction
vlog2.t	Logarithm base 2 Triple Word	Repeat (pipeline) instruction
vlog2.q	Logarithm base 2 Quad Word	Repeat (pipeline) instruction
vmax.s	Maximum Single Word	Pipeline instruction
vmax.p	Maximum Pair Word	Pipeline instruction

Inst.	Description	Category
vmax.t	Maximum Triple Word	Pipeline instruction
vmax.q	Maximum Quad Word	Pipeline instruction
vmfvc	VFPU Move Word from VFPU Control	Pipeline instruction
vmidt.p	Identity Pair x Pair Matrix	Repeat (pipeline) instruction
vmidt.t	Identity Triple x Triple Matrix	Repeat (pipeline) instruction
vmidt.q	Identity Quad x Quad Matrix	Repeat (pipeline) instruction
vmin.s	Minimum Single Word	Pipeline instruction
vmin.p	Minimum Pair Word	Pipeline instruction
vmin.t	Minimum Triple Word	Pipeline instruction
vmin.q	Minimum Quad Word	Pipeline instruction
vmmov.p	Move Pair x Pair Matrix	Repeat (pipeline) instruction
vmmov.t	Move Triple x Triple Matrix	Repeat (pipeline) instruction
vmmov.q	Move Quad x Quad Matrix	Repeat (pipeline) instruction
vmmul.p	Multiply Pair x Pair Matrix	Repeat (pipeline) instruction
vmmul.t	Multiply Triple x Triple Matrix	Repeat (pipeline) instruction
vmmul.q	Multiply Quad x Quad Matrix	Repeat (pipeline) instruction
vmone.p	One Pair x Pair Matrix	Repeat (pipeline) instruction
vmone.t	One Triple x Triple Matrix	Repeat (pipeline) instruction
vmone.q	One Quad x Quad Matrix	Repeat (pipeline) instruction
vmov.s	Move Single Word	Pipeline instruction
vmov.p	Move Pair Word	Pipeline instruction
vmov.t	Move Triple Word	Pipeline instruction
vmov.q	Move Quad Word	Pipeline instruction
vmscl.p	Scale Pair x Pair Matrix	Repeat (pipeline) instruction
vmscl.t	Scale Triple x Triple Matrix	Repeat (pipeline) instruction
vmscl.q	Scale Quad x Quad Matrix	Repeat (pipeline) instruction
vmtvc	VFPU Move Word to VFPU Control	Pipeline instruction
vmul.s	Multiply Single Word	Pipeline instruction
vmul.p	Multiply Pair Word	Pipeline instruction
vmul.t	Multiply Triple Word	Pipeline instruction
vmul.q	Multiply Quad Word	Pipeline instruction
vmzero.p	Zero Pair x Pair Matrix	Repeat (pipeline) instruction
vmzero.t	Zero Triple x Triple Matrix	Repeat (pipeline) instruction
vmzero.q	Zero Quad x Quad Matrix	Repeat (pipeline) instruction

Inst.	Description	Category
vneg.s	Negate Single Word	Pipeline instruction
vneg.p	Negate Pair Word	Pipeline instruction
vneg.t	Negate Triple Word	Pipeline instruction
vneg.q	Negate Quad Word	Pipeline instruction
vnop	Nop	Synchronization instruction
vnrcp.s	Negative Reciprocal Single Word	Pipeline instruction
vnrcp.p	Negative Reciprocal Pair Word	Repeat (pipeline) instruction
vnrcp.t	Negative Reciprocal Triple Word	Repeat (pipeline) instruction
vnrcp.q	Negative Reciprocal Quad Word	Repeat (pipeline) instruction
vnsin.s	Negative Sine Single Word	Pipeline instruction
vnsin.p	Negative Sine Pair Word	Repeat (pipeline) instruction
vnsin.t	Negative Sine Triple Word	Repeat (pipeline) instruction
vnsin.q	Negative Sine Quad Word	Repeat (pipeline) instruction
vocp.s	One's Complement Single Word	Pipeline instruction
vocp.p	One's Complement Pair Word	Pipeline instruction
vocp.t	One's Complement Triple Word	Pipeline instruction
vocp.q	One's Complement Quad Word	Pipeline instruction
vone.s	Set One Single Word	Pipeline instruction
vone.p	Set One Pair Word	Pipeline instruction
vone.t	Set One Triple Word	Pipeline instruction
vone.q	Set One Quad Word	Pipeline instruction
vpfxd	Destination Prefix	Prefix instruction
vpfxs	Source Prefix	Prefix instruction
vpfxt	Target Prefix	Prefix instruction
vqmul.q	Quaternion Multiply Quad Word	Repeat (pipeline) instruction
vrcp.s	Reciprocal Single Word	Pipeline instruction
vrcp.p	Reciprocal Pair Word	Repeat (pipeline) instruction
vrcp.t	Reciprocal Triple Word	Repeat (pipeline) instruction
vrcp.q	Reciprocal Quad Word	Repeat (pipeline) instruction
vrexp2.s	Reciprocal Exponential base 2 Single Word	Pipeline instruction
vrexp2.p	Reciprocal Exponential base 2 Pair Word	Repeat (pipeline) instruction
vrexp2.t	Reciprocal Exponential base 2 Triple Word	Repeat (pipeline) instruction
vrexp2.q	Reciprocal Exponential base 2 Quad Word	Repeat (pipeline) instruction
vrndf1.s	Random Floating Single Word	Multi-cycle instruction
vrndf1.p	Random Floating Pair Word	Repeat (multi-cycle) instruction
vrndf1.t	Random Floating Triple Word	Repeat (multi-cycle) instruction

Inst.	Description	Category
vrndf1.q	Random Floating Quad Word	Repeat (multi-cycle) instruction
vrndf2.s	Random Floating Single Word	Multi-cycle instruction
vrndf2.p	Random Floating Pair Word	Repeat (multi-cycle) instruction
vrndf2.t	Random Floating Triple Word	Repeat (multi-cycle) instruction
vrndf2.q	Random Floating Quad Word	Repeat (multi-cycle) instruction
vrndi.s	Random Integer Single Word	Multi-cycle instruction
vrndi.p	Random Integer Pair Word	Repeat (multi-cycle) instruction
vrndi.t	Random Integer Triple Word	Repeat (multi-cycle) instruction
vrndi.q	Random Integer Quad Word	Repeat (multi-cycle) instruction
vrnds.s	Random Seed Single Word	Pipeline instruction
vrot.p	Rotator Pair Word	Repeat (pipeline) instruction
vrot.t	Rotator Triple Word	Repeat (pipeline) instruction
vrot.q	Rotator Quad Word	Repeat (pipeline) instruction
vrsq.s	Reciprocal Square Root Single Word	Pipeline instruction
vrsq.p	Reciprocal Square Root Pair Word	Repeat (pipeline) instruction
vrsq.t	Reciprocal Square Root Triple Word	Repeat (pipeline) instruction
vrsq.q	Reciprocal Square Root Quad Word	Repeat (pipeline) instruction
vs2i.s	Convert signed short to integer Single Word	Pipeline instruction
vs2i.p	Convert signed short to integer Pair Word	Pipeline instruction
vsat0.s	Saturate to [0.0:1.0] Single Word	Pipeline instruction
vsat0.p	Saturate to [0.0:1.0] Pair Word	Pipeline instruction
vsat0.t	Saturate to [0.0:1.0] Triple Word	Pipeline instruction
vsat0.q	Saturate to [0.0:1.0] Quad Word	Pipeline instruction
vsat1.s	Saturate to [-1.0:1.0] Single Word	Pipeline instruction
vsat1.p	Saturate to [-1.0:1.0] Pair Word	Pipeline instruction
vsat1.t	Saturate to [-1.0:1.0] Triple Word	Pipeline instruction
vsat1.q	Saturate to [-1.0:1.0] Quad Word	Pipeline instruction
vsbn.s	ScaleBN Single Word	Pipeline instruction
vsbz.s	ScaleBZ Single Word	Pipeline instruction
vscl.p	Scale Pair Word	Pipeline instruction
vscl.t	Scale Triple Word	Pipeline instruction
vscl.q	Scale Quad Word	Pipeline instruction
vscmp.s	Set Compare Single Word	Pipeline instruction
vscmp.p	Set Compare Pair Word	Pipeline instruction
vscmp.t	Set Compare Triple Word	Pipeline instruction
vscmp.q	Set Compare Quad Word	Pipeline instruction
vsge.s	Greater Equal Single Word to Value	Pipeline instruction
vsge.p	Greater Equal Pair Word to Value	Pipeline instruction
vsge.t	Greater Equal Triple Word to Value	Pipeline instruction

Inst.	Description	Category
vsge.q	Greater Equal Quad Word to Value	Pipeline instruction
vsgn.s	Sign Single Word	Pipeline instruction
vsgn.p	Sign Pair Word	Pipeline instruction
vsgn.t	Sign Triple Word	Pipeline instruction
vsgn.q	Sign Quad Word	Pipeline instruction
vsin.s	Sine Single Word	Pipeline instruction
vsin.p	Sine Pair Word	Repeat (pipeline) instruction
vsin.t	Sine Triple Word	Repeat (pipeline) instruction
vsin.q	Sine Quad Word	Repeat (pipeline) instruction
vslt.s	Less Than Single Word to Value	Pipeline instruction
vslt.p	Less Than Pair Word to Value	Pipeline instruction
vslt.t	Less Than Triple Word to Value	Pipeline instruction
vslt.q	Less Than Quad Word to Value	Pipeline instruction
vsocp.s	Saturate and One's Complement Single Word	Pipeline instruction
vsocp.p	Saturate and One's Complement Pair Word	Pipeline instruction
vsqrt.s	Square Root Single Word	Pipeline instruction
vsqrt.p	Square Root Pair Word	Repeat (pipeline) instruction
vsqrt.t	Square Root Triple Word	Repeat (pipeline) instruction
vsqrt.q	Square Root Quad Word	Repeat (pipeline) instruction
vsrt1.q	Sort 1 Quad Word	Pipeline instruction
vsrt2.q	Sort 2 Quad Word	Pipeline instruction
vsrt3.q	Sort 3 Quad Word	Pipeline instruction
vsrt4.q	Sort 4 Quad Word	Pipeline instruction
vsub.s	Subtract Single Word	Pipeline instruction
vsub.p	Subtract Pair Word	Pipeline instruction
vsub.t	Subtract Triple Word	Pipeline instruction
vsub.q	Subtract Quad Word	Pipeline instruction
vsync	Synchronize VFPU Pipeline	Synchronization instruction
vsync2	Synchronize VFPU Pipeline (for workaround)	Synchronization instruction
vt4444.q	Convert to RGBA4444 from packed unsigned chars Quad Word	Pipeline instruction
vt5551.q	Convert to RGBA5551 from packed unsigned chars Quad Word	Pipeline instruction
vt5650.q	Convert to RGBA565 from packed unsigned chars Quad Word	Pipeline instruction
vtfm2.p	Transform 2 Pair Word	Repeat (pipeline) instruction
vtfm3.t	Transform 3 Triple Word	Repeat (pipeline) instruction
vtfm4.q	Transform 4 Quad Word	Repeat (pipeline) instruction
vuc2ifs.s	Convert unsigned 8-bit integer (RGBA8888 format) to pseudo-full-scale 32-bit integer	Pipeline instruction

Inst.	Description	Category
vus2i.s	Convert unsigned short to integer Single Word	Pipeline instruction
vus2i.p	Convert unsigned short to integer Pair Word	Pipeline instruction
vwbn.s	WrapBN Single Word	Pipeline instruction
vzero.s	Set Zero Single Word	Pipeline instruction
vzero.p	Set Zero Pair Word	Pipeline instruction
vzero.t	Set Zero Triple Word	Pipeline instruction
vzero.q	Set Zero Quad Word	Pipeline instruction