**Shape Start Data Register**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 31 | 30 | 29 | 28 | 27 | 26 | 25 | 24 | 23 | 22 | 21 | 20 | 19 | 18 | 17 | 16 |
| GCI2 | | | | | | GCI1 | | | | | | GD | | | GT |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
| ST | | | GID | | | VID | | | | | SID | | | | |

|  |  |  |  |
| --- | --- | --- | --- |
| Bit/Field | Name | Description | |
| 31:26 | GCI2 | Gradient Color Index 2  Second color for the shapes’ gradient fill. Value indexes to preset color palette | |
| Value | Description |
| 0 - 63 | Color palette index |
| 25:20 | GCI1 | Gradient Color Index 1  First color for the shapes’ gradient fill. Value indexes to preset color palette | |
| Value | Description |
| 0 - 63 | Color palette index |
| 19:17 | GD | Gradient Direction  Sets direction of gradient, starting from GCI1 fading to GCI2, described by angles | |
| Value | Description |
| 0x0 | 0° |
| 0x1 | 45° |
| 0x2 | 90° |
| 0x3 | 135° |
| 0x4 | 180° |
| 0x5 | 225° |
| 0x6 | 270° |
| 0x7 | 315° |
| 16 | GT | Gradient Toggle  Toggles whether a shape has a gradient or is a solid color | |
| Value | Description |
| 0x0 | Toggle Solid |
| 0x1 | Toggle Gradient |
| 13:10 | GID | Group ID  ID to get what group the shape is in, potentially useful for large groups of shapes | |
| Value | Description |
| 0 - 31 | ID of group the shape belongs to |
| 15:12 | ST | Shape Type  Determines the algorithm used to generate the shape from vertices | |
| Value | Description |
| 0x0 | Line |
| 0x1 | Circle |
| 0x2 | Triangle |
| 0x3 | Complex Shape |
| 9:5 | VID | Vertex ID  The total number of vertices the shape has, limited to 32 | |
| Value | Description |
| 0 - 31 | Total vertex count |
| 4:0 | SID | Shape ID  Used in vertices to link to a shape, eliminates needing to keep vertex and shape data all in one place | |
| Value | Description |
| 0 - 31 | ID for shape data origin |

**Shape Vertex Register**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| 31 | 30 | 29 | 28 | 27 | 26 | 25 | 24 | 23 | 22 | 21 | 20 | 19 | 18 | 17 | 16 |
| XP | | | | | | | | YP | | | | | | | |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
| VCI | | | | | | VID | | | | | SID | | | | |

|  |  |  |  |
| --- | --- | --- | --- |
| Bit / Field | Name | Description | |
| 31 : 24 | XP | X Position  Vertex location along X axis | |
| Value | Description |
| 0 - 255 | Position from left edge of screen |
| 23 : 16 | YP | Y Position  Vertex location along Y axis | |
| Value | Description |
| 0 - 255 | Position from top edge of screen |
| 15 : 10 | VCI | Vertex Color Index  Color to shade vertex. Value indexes to preset color palette | |
| Value | Description |
| 0 - 63 | Color Palette Index |
| 9 : 5 | VID | Vertex ID  Value indicates position in list of vertices associated with shape | |
| Value | Description |
| 0 - 31 | Vertex list order location |
| 4 : 0 | SID | Shape ID  Correlates with Shape Start ID to link vertex to shape | |
| Value | Description |
| 0 - 31 | Shape ID |