

# RealToon

V4.1.2



## User Guide

(V4)

***(RealToon Shader)***

***It's an AAA Anime - Toon Shader/Cel Shading Shader for Unity3D.***

***The goal/aim of this shader is to make your characters, objects or environment shading to look as close to anime or cartoon as possible in real-time and fast.***

***Use RealToon Shader for games, animations & illustrations/art.***

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# [Shaders]

## A. Types:

### a. Outline

*\*Shaders with outline.*

### b. No Outline

*\*Shaders without outline.*

### c. Tessellation

*\*RealToon Tessellation version shader.*

## B. Shaders:

### a. Default – Default/Normal RealToon Shader

### b. Cutout – RealToon Shader with cutout.

### c. Fade Transparency (No outline only) - RealToon Shader with fade or smooth transparency.

### d. Refraction (No outline only) - RealToon Refraction Shader.

## C. Effects:

### a. Sobel Outline – An edge detection or outline image effects.

# [How to use RealToon]

## A. Use RealToon:

- a. Create a material
- b. Select the material you've created and change the shader to RealToon shaders you want to use.
- c. Drag the material to your object.
- d. Adjust the **Self Shadow Size** if needed to hide Receive Shadow weird edge.
- e. Adjust **Intensity Multiplier** or **Source Color** at the **Lighting Panel** to reveal the color or texture on the shadow side.
- f. Adjust your **Light Source** to balance the light.

## B. Use RealToon Effects:

- a. Select a camera.
- b. Add component "RealToon > Effects"
- c. Select the effect/s you want to use.

**[Important Notes/Tips]**

\* If you want high performance for game use, Change **Shadow Type** to Soft Shadow or **Hard Shadow**, change the **Shadow Resolution** to **Low** for softer Received Shadows or just change **Shadow Type** to **No Shadow** and use **Self Shadow** instead,  
 - Or do your own high performance settings/preference.

\*For Best Anime/Toon Look (For Animations & Illustrations/Arts), Adjust Light **Bias** to 0.01, Change **Shadow Type** to **Hard Shadows** and change the **Shadow Resolution** to **High** or **Very High Resolution**.

Change also **Shadow Projection** to **Close Fit**, **Shadow Cascade** to **Four Cascades** and adjust **Cascade Splits** until you get the highest quality shadow. (Edit-> Project Settings -> Quality).

\* Don't adjust **Self Shadow Size** beyond 0.56 if **Received Shadows** is on in your object because **Received Shadows** weird edge will be visible.

\*You can use **Directional Light** as ambient light by checking **Directional Light Affect Shadow**.

\*If you want your low poly objects or character to high poly and smooth, Use **RealToon Tessellation Version**.

- Note that tessellation only work on **DX11/12** to up, **OpenGL Core**, **OpenGL ES 3.1 mobile** & **PS4/XBoxOne** and **Shader Model 4.6** to up.

\*You can use **Self Lit** for object emission/self illumination, can also use it with post processing/image effects **Bloom**.

- You can also use **Self Lit** as Unlit.

\*RealToon V4 can now receive GI & Sky light/Environment Lighting.

- If you want your object/character to receive GI Lighting, Use Light Probe.
- If you want your object to have real-time reflection, Use Reflection Probe.

# [Controls & Functions]

["D:" means Default Values/Settings]

**A. Double Sided (D: Off)** – Can see the other side of a plane or face.

**B. Texture Color** – Texture and Color of the object.

- a. **Texture/Main texture (D: No Texture)** – Texture of your object.
- b. **Texture Intensity (Refraction shader only) (D: 0)** - Intensity of the texture.
- c. **Main Color (D: Gray)** – Color of your object.

*\*Adjust the color to something gray if you want to blend the object to other objects with Unity Standard shader or if it's too bright/over-expose, just like other toon shader.*

*\*Use pure white color if you only use one light and the light intensity is between 1 – 0.*

- d. **Transparent (D: Unchecked)** – Enable texture transparent. (If your texture has transparent/alpha).

**C. Cutout (Cutout shader only)** – Cutout transparent.

- a. **Cutout (D: 0)** - The amount of cutouts on your texture.
- b. **Alpha Base Cutout (D: Checked)** – If checked, it will use transparent/alpha of the texture/main texture but if unchecked it will use the color/s of the texture/main texture.
- c. **Secondary Cutout (D: No Texture)** – A secondary Cutout.

*\*Unchecked **Alpha Base Cutout** if you want Secondary Cutout to do the cutout.*

*Be sure your texture/main texture don't have alpha.*

**D. Transparency (Fade Transparency shader only)** – Transparency/Opacity of the object.

- a. **Opacity (D: 1)** – The amount of transparency.
- b. **Mask Transparency (D: No Texture)** – Mask the part of the object you want Transparency to take effect.

*\*Use pure-strong black & white or texture with alpha/transparent.*

*\*Black means affected, White means not affected.*

**E. Refraction (Refraction shader only)**

- a. **Intensity (D: 1)** – Strength of refraction.

## F. Color Adjustment

- a. **Saturation** (*D: 1*) – Color intensity/vibrancy.

## G. Outline (Outline Shader only)

- a. **Width** (*D: 0.003*) – Thickness of the outline.
- b. **Noise Intensity** (*D: 0*) – Noisiness/Distortion of the outline.
- c. **Color** (*D: Black*) - Outline Color.
- d. **Dynamic Noise Outline** (*D: Unchecked*) – Enable moving distorted/noisy outline.

*\*If checked, noisy outline will move like animated sketch drawing.*

- e. **Outline Mode** (*D: VNormal*)

**\*VNormal/Vertex Normal**

- Good for smoothed objects, bad for hard edges like cube.

**\*Origin**

- Good for convex objects with a centered pivot, bad for concave shapes.

## H. Self Lit/Self Illumination – Objects own light/light of its own.

- a. **Intensity** (*D: 0*) – The amount of its own light.
- b. **Power** (*D: 1*) – How strong it's light.
- c. **Color** (*D: White*) – Color of the light.
- d. **High Contrast** (*D: Unchecked*) – High Contrast Color.
- e. **Mask Self Lit** (*D: No Texture*) – Mask self lit.

*\*Use pure-strong black & white or texture with alpha/transparent.*

## I. Gloss - Glossy effect.

- a. **Intensity** (*D: 0*) – How strong the gloss.

*\*The reason why you can make the value to high is to maintain the gloss on low light just like anime or cartoon.*

- b. **Glossiness** (*D: 0.5*) – How gloss the object is.
- c. **Color** (*D: White*) – Gloss color.



- d. **Main Texture Color Gloss** (D: *Unchecked*) - Use Texture/Main Texture to color gloss.

*\*If checked, it will use the main texture to color instead the color you choose but if uncheck it will use the picked color.*

- e. **Soft Gloss** (D: *Unchecked*) – Soft type gloss.

*\*if checked, It will turn the gloss to soft but if uncheck it will turn back to default hard gloss.*

- f. **Gloss Mask** (D: *No Texture*) - Mask gloss.

*\*Use pure-strong black & white or texture with alpha/transparent.*

#### J. **Gloss Texture** – Gloss in texture form/custom gloss.

- a. **Intensity** (D: *0*) – Gloss Texture Intensity/strength.

*\*You can blend the Gloss Texture to Normal Gloss by adjusting this.*

- b. **Gloss Texture** (D: *No Texture*) – Texture to use as gloss.

**(Recommend):** Use pure-strong black & white texture or texture with alpha/transparent and square size.

*\* You can also use colored texture but it will automatically turn it to black & white but not strong & pure which is not good.*

- c. **Rotate** (D: *0*) – Rotate Gloss Texture.

*\*Adjust Gloss Texture Offset while adjusting it.*

- d. **Follow Object Rotation** (D: *Unchecked*) – Gloss Texture follow object rotation.

- e. **Follow Light** (D: *Unchecked*) – Gloss Texture follow light.

- f. **Shadow Mask Gloss Texture** (D: *Checked*) – Shadow mask Gloss Texture.

### K. Shadow – Shadows on the object.

#### a. Override Color (D: White) – Override shadow color.

*\* Choose color between white & the color you want if you use Point & Spotlight.*

*\*Light side of the object will always be affected (Only applies to Point & Spotlight).*

*\*Increase **Adjust Light (Point & Spotlight)** to maintain object main color & main texture color if you use Point & Spotlight.*

*\* It will work 100% in Directional Light, but in point & spotlight 20% to 50% working for some reasons.*

#### b. Add light (D: 1) – Add light to shadow.

*\*Light side of the object will always be affected (Only applies to Point & Spotlight).*

*\*Decrease **Adjust Light (Point & Spotlight)** to maintain object main color & main texture color if you use Point & Spotlight.*

#### **Note:**

**Add Light** will only take effect if **Environment Lighting** -> **Intensity Multiplier** is not equal to 1 or **Source Color** is not black or 0,0,0 .

#### c. Adjust Light (Point & Spotlight) (D: 1) – Adjust point & spotlight light intensity.

#### d. Saturation (Point & Spotlight) (D: 1) - Point & Spotlight color intensity/vibrancy.

#### e. Adjust Light (Directional Light) (D: 1) – Adjust directional light intensity.

### L. Shadow Color Texture – Shadow color in texture.

#### a. Intensity (D: 0) – Shadow color texture intensity.

*\*Should be the same as the main texture but dark color/darker version*

*Just like the anime/cartoons.*

#### b. Shadow Color Texture (D: No texture) – Shadow color in texture or shadow/darker version of the main texture.

- c. **Power** (*D: 0*) – Color strength/contrast of the texture.

*\*If Increase, texture color will become strong and darker.*

**(Note)**

**Adjust Light (Point & Spotlight)** needs to be increase/balance when using **Shadow Color Texture**. (Only applies to Point & Spotlight).

**M. Self Shadow** – Object's own shadow.

- a. **Intensity** (*D: 1*) - Self Shadow intensity/strength.
- b. **Color** – Self Shadow Color.

*\*Useful if **Received Shadows** turned off.*

- c. **Size** (*D: 0.56*) – The amount of self shadow on the object.

*\*Don't adjust this beyond 0.56 if **Received Shadows** is on in your object because **Received Shadows** weird edge, visible.*

- d. **Hardness** (*D: 1*) – Self shadow hard edge or soft.

- e. **Self Shadow at View Direction** (*D: Unchecked*) – Self shadow use your view direction.

*\*If checked, self shadow use your view direction, if uncheck it will use the default light direction.*

**N. ShadowT** – Texture based shadow. (**Uses Texture/2D Texture**)

- a. **Intensity** (*D: 0*) – ShadowT intensity/strength.
- b. **Texture** (*D: No Texture*) – Flat or Gradient Dark Gray & White Texture to be use as shadow.

**(Recommend):** Use dark gray & white texture or texture with alpha/transparent. Don't use deep black & white texture.

- c. **Light Size** – The amount of light.

*\*High values lighter, Low values less light.*

- d. **ShadowT Shadow Size** – The amount shadow.

*\*Low values less shadow, high values more shadow.*

- e. **On Light** (*D: Checked*) – ShadowT visible on light/light source.
- f. **On Self Shadow** (*D: Unchecked*) – ShadowT visible on shadow.

**(Note):**

*\* On Self Shadow takes effect only if Self Shadow Intensity is less than 1 and Received Shadows is off.*

- g. **Light Falloff Affect ShadowT** (*D: Unchecked*) – Light Falloff Affect ShadowT.

**O. Shadow PTexture** (*D: No Texture*) – Texture to use as shadow.

- a. **Intensity** (*D: 0*) – Shadow PTexture Intensity/strength.
- b. **Shadow PTexture** (*D: No Texture*) – Texture to use as patterned shadow.

*\*PTextures/Pattern Texture - use for turning shadow to pattern style shadow like manga "Half Tone" or any texture with/without alpha/transparent.*

**P. Lighting** - GI Lighting, Light-Falloff & Other lightings.

- a. **Use GI Lighting** (*D: Checked*)

*\*If unchecked, will use legacy/old unity's ambient light color.*

- b. **GI Flat Shade** (*D: Unchecked*) – Use hard edge or flat shade GI.
- c. **GI Shade Size** (*D: 0*) – Amount of shade.

*\*Similar to Self Shadow Size.*

- d. **Directional Light Affect Shadow** (*D: Unchecked*) - Directional Light affect Shadow.

*\*Use this if you want directional light to act as ambient light.*

- e. **Enable Light Falloff** (*D: Checked*) - Enable Point/Spot light falloff.

**Q. Reflection**

- a. **Intensity** (*D: 0*) – Reflection intensity/strength.
- b. **Default Reflection Roughness** (*D: 0*)
- c. **Reflection Blend To Main Texture** - Reflection Blends to Main Texture, Gloss, AO, Self Lit & Fresnel.
- d. **Mask Reflection** (*D: No Texture*) – Mask Reflection.

*\*Use pure-strong black & white or texture with alpha/transparent.*

**R. FReflection – Fake Reflection (Not Real-time, Not Cube map, Uses Texture/2D Texture).**

- a. **Use FReflection** (*D: Unchecked*)
- b. **FReflection/FReflection Texture** (*D: No Texture*) – Texture to use as reflection.  
*\*Use square/equal sides size texture or panorama image/picture.*  
*Be sure to use the Tiling & Offset to adjust its position and size.*

*\*FReflection is only visible when there is light/light source.*

**S. Fresnel – Fresnel Effect.**

- a. **Intensity** (*D: 0*) - Fresnel intensity/strength.
- b. **Color** (*D: White*) - Fresnel Color.
- c. **Fill** (*D: 1*) – The amount of Fresnel on the object.
- d. **Hard Edge** (*D: Unchecked*) – Turn Fresnel into hard edge Fresnel.
- e. **On Light** (*D: Checked*) - Fresnel visible on light.
- f. **On Shadow/Dark** (*D: Unchecked*) – Fresnel visible on shadow/dark.

**T. Tessellation (RealToon Tessellation Version Shader only)**

- a. **Smoothness** (*D: 0.5*)
- b. **Transition** (*D: 0.8*) – The amount of transition between **Near** & **Far**.
- c. **Near** (*D: 1*) – The amount of tessellation in near view.
- d. **Far** (*D: 1*) – The amount of tessellation in far view.

## U. See Through

- a. **ID (D: 0)** – ID or Reference value.
- b. **Set 1 & Set 2 (D: None)**

**[Note]**

*\*"A" the see through object.*

*\*"B" the object to be seen through "A".*

*\*If Set 1 is set to A, Set 2 is also set to A. (See through object)*

*\*If Set 1 is set to B, Set 2 is also set to B. (Object to be seen through "A")*

*\*If the ID of the see through object "A" is set to 1, the ID of the object to be seen through "A" is also set to 1.*

**[Important]**

**[See through object "A"]** Render Queue set to AlphaTest (2450).

**["B" object to be seen through "A"]** Render Queue set to AlphaTest (2450) and minus 1.

**(See/open scene "See Through Example" for more info)**

## [Notes & Tips]

- A. You can control the properties of the shaders in your code.  
To see/access the shader properties, just go to **RealToon Shaders** folder and select the shader you want to access.  
  
If you want to know how to access shader properties by code, just go to unity3d manual script.
- B. Use **No Outline - RealToon** shaders if your object/s don't need outline or if you don't want to use outline and want less draw calls or want to use a 3<sup>rd</sup> party image effects outline.
- C. Note that tessellation only work on **DX11/12** to up, **OpenGL Core**, **OpenGL ES 3.1 mobile** & **PS4/XBoxOne** and **Shader Model 4.6** to up.
- D. You can now use RealToon together with Unity3D Standard Shader.
- E. RealToon can now receive GI, skylight/environment light & can do baked/real-time reflection.
- F. Note that "Shadow Color Texture" should be the same as the main texture but dark color/darker version just like anime/cartoons.
- G. In Point & Spotlight, **Adjust Light (Point & Spotlight)** needs to be adjust/balance when using **Override Color**, **Add Light**, **Shadow Color Texture** and **Shadow PTexture**.
- H. You can use ShadowT as 2<sup>nd</sup> self shadow/shade or as self shadow/shade.
- I. Be sure your Point & Spotlight is bright when using **Shadow Color Texture**, **Shadow PTexture** and **Override Color**.
- J. You can use both Directional Light & Point - Spotlight at the same time.
- K. Colors in Point & Spotlight/ForwardAdd is abit saturated when using **Shadow Color Texture + Add Light** but you can tweak this or adjust by adjusting **Saturation (Point & Spotlight)**.  
There are reasons and explanation why.
- L. You can use **Fresnel** as rim light for anime or toon looks.  
Just enable **Hard Edge** and adjust **Fill**.

- M.** If you want a manga/comics looks, just set the color saturation to 0 or make your texture black and white and use **Shadow PTexture**.
- N.** **Fade Transparency & Refraction** doesn't receive shadows and don't have outline for some reason.
- O.** If you want to just change the color of the shadow and don't want to use **Shadow Color Texture**, Use **Override Color**, it will work 100% in Directional Light, but in point & spotlight 20% to 50% working for some reasons.
- P.** You can try to use this in your **Xbox One** and **PS 4** game project.
- Q.** Make your normal map smooth for better shading details.
- R.** Use **ShadowT** for more detailed shadows like the shadows on a cloth or hair.
- S.** For better anime/toon shadow/shading, edit the Vertex Normal of your model by editing it to your 3d modeling software.
- T.** Contact me if you want to translate this User Guide in your local language, see page 15 for contact details.
- U.** Image Gallery:  
<http://mjq3690.deviantart.com/gallery/61884975/RealToon-Shader-Gallery>
- V.** Video Tutorials:  
<https://www.youtube.com/playlist?list=PL0M1m9smMVPJ4qEkJnZO bqJE5mU9uz6SY>
- W.** Video Demo:  
[https://www.youtube.com/playlist?list=PL0M1m9smMVPI1XRV\\_1UL\\_Vz3IAHkPtQYT](https://www.youtube.com/playlist?list=PL0M1m9smMVPI1XRV_1UL_Vz3IAHkPtQYT)
- X.** Other Videos  
[https://www.youtube.com/playlist?list=PL0M1m9smMVPK\\_vLCBnJ8qlc3w5WsHrCM5](https://www.youtube.com/playlist?list=PL0M1m9smMVPK_vLCBnJ8qlc3w5WsHrCM5)
- Y.** RealToon Tutorials|Tips (Image Version) \*You can also download these images\*:  
<https://app.box.com/s/un0rga6boorbo90dkvadygsolzhuorgk>



# [Contact/Support/Social Network]

Facebook Page:

<https://www.facebook.com/mjqstudioworks/>

Twitter:

<https://twitter.com/mjqstudioworks>

Youtube:

[https://www.youtube.com/channel/UC5sHbeOQdyMPV\\_Ck0kRgJgQ](https://www.youtube.com/channel/UC5sHbeOQdyMPV_Ck0kRgJgQ)

MJQ Studio Works Unity Publisher Profile (Support Links & Email):

<http://u3d.as/vDv>

Unity 3D Forum:

<https://forum.unity3d.com/threads/realtoon-pc-mobile.414237/>