

## DOCUMENTS OF RELATED ART

## Patent Literature

[0017] [Patent Literature 1] Japanese Unexamined Patent Application, First Publication No. 2009-114381

[0018] [Patent Document 2] Japanese Unexamined Patent Application, First Publication No. 2012-220800

[0019] [Patent Document 3] Japanese Unexamined Patent Application, First Publication No. 2015-169843

## SUMMARY OF THE INVENTION

[0020] Due to further improvement in the performance and downsize of electronic devices, in the pattern formation in the production of semiconductor devices, further improvement in the lithography properties and the resist pattern shape are demanded. However, there was still room for improvement in the shape of a resist pattern formed using a conventional resist composition. Moreover, there was further demands for improvement in sensitivity and lithography properties.

[0021] As the lithography technique further progresses and the miniaturization of the resist pattern progresses more and more, for example, a target of the lithography performed by extreme ultraviolet (EUV) or electron beam (EB) is to form fine resist patterns of several tens of nanometers. As miniaturization of resist pattern progress, resist composition is demanded to exhibit improved sensitivity to the exposure source and good lithography properties (resolution, reduced roughness, and the like).

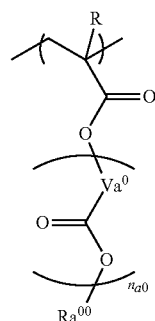
[0022] However, in a conventional resist composition, when it is attempted to improve sensitivity to an exposure source such as EUV, it becomes difficult to obtain a resist pattern having a desired shape. Therefore, it was difficult to satisfy both the sensitivity and the pattern shape.

[0023] The present invention takes the above circumstances into consideration, with an object of providing a novel resin component useful as a base component of a resist composition, a resist composition containing the resin component, and a method of forming a resist pattern using the resist composition.

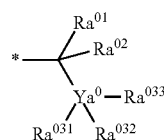
[0024] For solving the above-mentioned problems, the present invention employs the following aspects.

[0025] Specifically, a first aspect of the present invention is a resist composition which generates acid upon exposure and exhibits changed solubility in a developing solution under action of acid, and which includes a resin component (A1) which exhibits changed solubility in a developing solution under action of acid, the resin component (A1) including a polymeric compound (A1) having a structural unit (a0) represented by general formula (a0-1) shown below.

[Chemical Formula 1]



(a0-1)



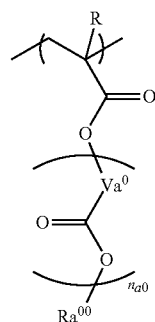
(a0-r1-1)

In the formula, R represents a hydrogen atom, an alkyl group of 1 to 5 carbon atoms or a halogenated alkyl group of 1 to 5 carbon atoms;  $Va^0$  represents a divalent hydrocarbon group which may have an ether bond;  $n_{a0}$  represents an integer of 0 to 2;  $Ra^{00}$  represents an acid dissociable group represented by general formula (a0-r1-1);  $Ra^{01}$  represents a hydrocarbon group which may have a substituent;  $Ra^{02}$  represents a hydrocarbon group which may have a substituent;  $Ra^{01}$  and  $Ra^{02}$  may be mutually bonded to form a ring;  $Va^0$  represents a quaternary carbon atom;  $Ra^{031}$ ,  $Ra^{032}$  and  $Ra^{033}$  each independently represents a hydrocarbon group which may have a substituent; provided that at least one of  $Ra^{031}$ ,  $Ra^{032}$  and  $Ra^{033}$  is a hydrocarbon group having a polar group; \* represents a valence bond.

[0026] A second aspect of the present invention is a method of forming a resist pattern, including: using a resist composition according to the first aspect to form a resist film, exposing the resist film, and developing the exposed resist film to form a resist pattern.

[0027] A third aspect of the present invention is a polymeric compound having a structural unit (a0) represented by general formula (a0-1) shown below.

[Chemical Formula 2]



(a0-1)