

## PATENT ASSIGNMENT COVER SHEET

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Stylesheet Version v1.2

EPAS ID: PAT5127072

<b>SUBMISSION TYPE:</b>	NEW ASSIGNMENT
<b>NATURE OF CONVEYANCE:</b>	ASSIGNMENT
<b>CONVEYING PARTY DATA</b>	
<b>Name</b>	<b>Execution Date</b>
YEN TING LIU	08/31/2018
MAXIM KLEBANOV	08/29/2018
PAOLO CAMPIGLIO	08/31/2018
SUNDAR CHETLUR	08/29/2018
ALLEGRO MICROSYSTEMS FRANCE SAS	09/03/2018
ALLEGRO MICROSYSTEMS EUROPE LIMITED	09/03/2018
ALLEGRO MICROSYSTEMS BUSINESS DEVELOPMENT INC.	08/29/2018
<b>RECEIVING PARTY DATA</b>	
<b>Name:</b>	ALLEGRO MICROSYSTEMS, LLC
<b>Street Address:</b>	955 PERIMETER ROAD
<b>City:</b>	MANCHESTER
<b>State/Country:</b>	NEW HAMPSHIRE
<b>Postal Code:</b>	03103-3353
<b>PROPERTY NUMBERS Total: 1</b>	
<b>Property Type</b>	<b>Number</b>
<b>Application Number:</b>	16122019
<b>CORRESPONDENCE DATA</b>	
<b>Fax Number:</b>	(781)401-9966
<i>Correspondence will be sent to the e-mail address first; if that is unsuccessful, it will be sent using a fax number, if provided; if that is unsuccessful, it will be sent via US Mail.</i>	
<b>Phone:</b>	7814019988
<b>Email:</b>	jlm@dc-m.com
<b>Correspondent Name:</b>	DALY, CROWLEY, MOFFORD & DURKEE, LLP
<b>Address Line 1:</b>	ONE UNIVERSITY AVENUE
<b>Address Line 2:</b>	SUITE 201B
<b>Address Line 4:</b>	WESTWOOD, MASSACHUSETTS 02090
<b>ATTORNEY DOCKET NUMBER:</b>	ALLEG-739PUS
<b>NAME OF SUBMITTER:</b>	JUDITH C. CROWLEY
<b>SIGNATURE:</b>	/Judith C. Crowley/
<b>DATE SIGNED:</b>	09/06/2018

PATENT

**Total Attachments: 9**

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## ASSIGNMENT

Whereas I/we, Yen Ting Liu, Maxim Klebanov, Paolo Campiglio and Sundar Chetlur, have made certain inventions or discoveries (or both) set forth in an application for Letters Patent of the United States of America entitled: PATTERNING OF A MAGNETORESISTANCE STRUCTURE INCLUDING TWO HARD MASKS, identified as Attorney Docket No. ALLEG-739PUS, and Client Case No. A-2632, which application was executed on 8/31/18; 8/29/18; 8/31/18; 8/29/18, and filed on 9/5/18, and assigned Application No. 16/122,019. In the event that the execution date, filing date, and/or Application No. are not entered above at the time this document is executed, and if such information is deemed necessary, we hereby authorize and request our attorneys at DALY, CROWLEY, MOFFORD & DURKEE, LLP, One University Avenue, Suite 201B, Westwood, MA 02090, to insert above the execution date, filing date, and/or Application No. of said application.

Whereas Allegro MicroSystems France SAS (herein AMF), a company registered in France and having a place of business at Parc Altaïs, 60 Rue Cassiopée, Batiment B1, 74650 Chavanod, France may have certain rights in the above identified inventions or discoveries;

Whereas Allegro MicroSystems Europe Limited (herein AMEL), a company registered in England and having a place of business at Melita House, 124 Bridge Road, Chertsey Surrey KT16 8LH United Kingdom may have certain rights in the above identified inventions or discoveries;

Whereas Allegro MicroSystems Business Development, Inc. (herein AMBDI), a company registered in Delaware and having a place of business at 955 Perimeter Road, Manchester, New Hampshire 03103-3353, may have certain rights in the above identified inventions or discoveries;

Whereas, Allegro MicroSystems, LLC, a Delaware limited liability company having a place of business at 955 Perimeter Road, Manchester, New Hampshire 03103-3353, and which, together with its successors and assigns, is hereinafter called "Assignee," is desirous of acquiring the title, rights, benefits and privileges hereinafter recited;

Now, therefore, for valuable consideration furnished by Assignee to us, receipt and sufficiency of which I/we, Yen Ting Liu, Maxim Klebanov, Paolo Campiglio and Sundar Chetlur, and

AMF, Allegro MicroSystems France SAS, by signature of Robert C. Hunt,  
AMEL, Allegro MicroSystems Europe Limited, by signature of Robert C. Hunt,  
AMBDI, Allegro MicroSystems Business Development, Inc., by signature of Daniel P. Demingware,

hereby acknowledge, I/we each hereby, without reservation:

1. Assign, transfer and convey to Assignee the entire right, title and interest in and to said inventions and discoveries, said application for Letters Patent of the United States of America, any and all other applications for Letters Patent on said inventions and discoveries in whatsoever countries, including all divisional, renewal, substitute, continuation, reissue, PCT, re-examination and Convention applications based in whole or in part upon said inventions or discoveries, or upon said applications, and any and all Letters Patent, reissues, reexaminations, and extensions of Letters Patent granted for said inventions and discoveries or upon said applications, and every priority right that is or may be predicated upon or arise from said inventions, said discoveries, said applications and said Letters Patent and any provisional applications from which priority is claimed in said Letters Patent;

2. Authorize Assignee to file patent applications in any or all countries on any or all of said inventions and discoveries in my name or in the name of Assignee or otherwise as Assignee may deem advisable, under the International Convention or otherwise;

3. Authorize and request the Commissioner of Patents and Trademarks of the United States of America and the empowered officials of all other governments to issue or transfer all said Letters Patent to Assignee, as assignee of the entire right, title and interest therein or otherwise as Assignee may direct;

4. Warrant that I have not knowingly conveyed to others any right in said inventions, discoveries, applications or patents or any license to use the same or to make, use or sell anything embodying or utilizing any of said inventions or discoveries; and that I have good right to assign the same to Assignee without encumbrance;

5. Bind my heirs, legal representatives, assigns, and successors, as well as myself, to do, upon Assignee's request and at Assignee's expense, but without additional consideration to me or them, all acts reasonably serving to assure that the said inventions and discoveries, the said patent applications and the said Letters Patent shall be held and enjoyed by Assignee as fully and entirely as the same could have been held and enjoyed by me, my heirs, legal representatives, assigns, and successors if this assignment had not been made; and particularly to execute and deliver to Assignee all lawful application documents including petitions, specifications, and oaths, and all assignments, disclaimers, and lawful affidavits in form and substance as may be requested by Assignee; to communicate to Assignee all facts known to me relating to said inventions and discoveries or the history thereof; and to furnish Assignee with any and all documents, photographs, models, samples and other physical exhibits in my control or in the control of my heirs, legal representatives, assigns, or successors which may be useful for establishing the facts of my conceptions, disclosures, and reduction to practice of said inventions and discoveries;

6. Warrant that:

For AMF, Robert C. Hunt, Legal Representative of Allegro MicroSystems France SAS, is authorized to act on behalf of, and to bind Allegro MicroSystems France SAS.

For AMEL, Robert C. Hunt, General Manager of Allegro MicroSystems Europe Limited, is authorized to act on behalf of, and to bind Allegro MicroSystems Europe Limited.

For AMBDI, Daniel P. Demingware, President of Allegro MicroSystems Business Development, Inc., is authorized to act on behalf of, and to bind Allegro MicroSystems Business Development, Inc.

In testimony of which I/we have each executed this Assignment on the date indicated next to our name(s).

Dated 8/31/2018

Yen Ting Liu  
Yen Ting Liu

On this 31 day of 8, 2018, before me appeared Yen Ting Liu,  
to me known and known to me to be the person described in and who executed the foregoing  
instrument, and he or she acknowledged the same to be his or her free act and deed.

Yu-Shiang-Cheng  
First Witness Signature  
Yu-Shiang-Cheng  
First Witness Printed Name

On this 5 day of 9, 2018, before me appeared Yen Ting Liu,  
to me known and known to me to be the person described in and who executed the foregoing  
instrument, and he or she acknowledged the same to be his or her free act and deed.

Ming-Yang Tsai  
Second Witness Signature  
Ming-Yang Tsai  
Second Witness Printed Name

Dated: August 29, 2018

Maxim Klebanov  
Maxim Klebanov

On this 29 day of 08, 2018, before me appeared Maxim Klebanov,  
to me known and known to me to be the person described in and who executed the foregoing  
instrument, and he or she acknowledged the same to be his or her free act and deed.

T. Karthick  
First Witness Signature  
KARTHICK THIAGARAJAN  
First Witness Printed Name

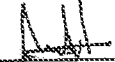
On this 29 day of 08, 2018, before me appeared Maxim Klebanov,  
to me known and known to me to be the person described in and who executed the foregoing  
instrument, and he or she acknowledged the same to be his or her free act and deed.

Rajath Hugar  
Second Witness Signature  
RAJATH HUGAR  
Second Witness Printed Name

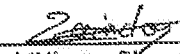
Dated: 31.08.2018

  
Paolo Campiglio


On this 31<sup>st</sup> day of August, 2018, before me appeared Paolo Campiglio,  
to me known and known to me to be the person described in and who executed the foregoing  
instrument, and he or she acknowledged the same to be his or her free act and deed.

  
First Witness Signature  
Flavime RIOULT  
First Witness Printed Name

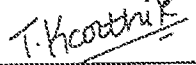
On this 31<sup>st</sup> day of August, 2018, before me appeared Paolo Campiglio,  
to me known and known to me to be the person described in and who executed the foregoing  
instrument, and he or she acknowledged the same to be his or her free act and deed.

  
Second Witness Signature  
Suzeloy Anthony  
Second Witness Printed Name

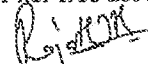
Dated: 8/29/18.

  
Sundar Chetlur

On this 29 day of 08, 2018, before me appeared Sundar Chetlur,  
to me known and known to me to be the person described in and who executed the foregoing  
instrument, and he or she acknowledged the same to be his or her free act and deed.

  
First Witness Signature  
ARTHICK THIAGARAJAN.  
First Witness Printed Name

On this 29 day of 08, 2018, before me appeared Sundar Chetlur,  
to me known and known to me to be the person described in and who executed the foregoing  
instrument, and he or she acknowledged the same to be his or her free act and deed.

  
Second Witness Signature  
RAJATH HUGAR  
Second Witness Printed Name



AMF

Dated: 3 September 2018

Robert C. Hunt  
Allegro MicroSystems France SAS  
By: Robert C. Hunt  
In his capacity as Legal Representative of  
Allegro MicroSystems France SAS

On this 3<sup>rd</sup> day of September, 2018, before me appeared Robert C. Hunt,  
to me known and known to me to be the person described in and who executed the foregoing  
instrument, and he acknowledged the same to be his free act and deed.

[Signature]  
First Witness Signature  
D. O. PROKALIC  
First Witness Printed Name

On this 3<sup>rd</sup> day of September, 2018, before me appeared Robert C. Hunt,  
to me known and known to me to be the person described in and who executed the foregoing  
instrument, and he acknowledged the same to be his free act and deed.

[Signature]  
Second Witness Signature  
S. RANKIN  
Second Witness Printed Name

AMEL

Dated: 3 Sept 2010

Robert C. Hunt  
Allegro MicroSystems Europe Limited  
By: Robert C. Hunt  
In his capacity as General Manager of Allegro  
MicroSystems Europe Limited

On this 3rd day of September, 2010, before me appeared Robert C. Hunt,  
to me known and known to me to be the person described in and who executed the foregoing  
instrument, and he acknowledged the same to be his free act and deed.

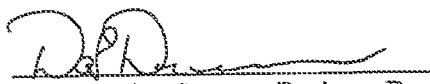
[Signature]  
First Witness Signature  
W. O. AKROKIANE  
First Witness Printed Name

On this 3rd day of September, 2010, before me appeared Robert C. Hunt,  
to me known and known to me to be the person described in and who executed the foregoing  
instrument, and he acknowledged the same to be his free act and deed.

[Signature]  
Second Witness Signature  
S. RANGLIN  
Second Witness Printed Name

AMBDI

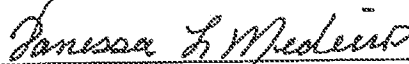
Dated: August 29, 2018



Allegro MicroSystems Business Development  
Inc.

By: Daniel P. Demingware  
In his capacity as President of Allegro  
MicroSystems Business Development Inc.

On this 29 day of August, 2018, before me appeared Daniel P. Demingware,  
to me known and known to me to be the person described in and who executed the foregoing  
instrument, and he acknowledged the same to be his free act and deed.



First Witness Signature

Vanessa L. Medeiros  
First Witness Printed Name

On this 29 day of August, 2018, before me appeared Daniel P. Demingware,  
to me known and known to me to be the person described in and who executed the foregoing  
instrument, and he acknowledged the same to be his free act and deed.



Second Witness Signature

Amy Peterson  
Second Witness Printed Name

683522