III. Company Overview

C. ASIC Development Process

III. Development Results

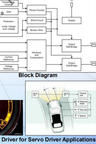
IV. ASIC Success Result

A. ASIC Design Status for Automotive

- **Alternator Regulator (IK8001)**
  - Bare Chip
  - Competitor : Bosch, STM
  - MP : 4Q. 2014 ~
  - AEC-Q100 Qualified

Features

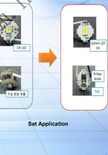
- Fully monolithic design
- High side field driver
- Field driver short circuit protection
- Overvoltage protection & Under voltage warning
- Regulated Voltage driven by Engine Control Unit (protocol driven)
- Regulated Voltage thermally compensated
- Self Start function without L-terminal signal
- Load Response Control (LRC) and Soft Start
- Thermal protection



Block Diagram

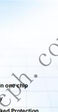
IV. ASIC Success Result

- **Power Folding (IK8509)**
  - Chip Package
  - Competitor : Own
  - MP : 1Q. 2015 ~
  - AEC-Q100 Qualified



Block Diagram

16-QFN



DC Motor Driver IC for Power Folding Application

IV. ASIC Success Result

- **Motor Driver for Light Leveling (IK8508)**
  - Chip Package
  - Competitor : NXP, Infineon
  - AEC-Q100 Qualified

Block Diagram

Features

- Low positional error
- Low noise sensitivity due to hysteresis
- Low supply current
- Wide input voltage range (0.05Vp ~ 0.95Vp)
- Over temperature protection
- Over- and under voltage lockout
- Broken wire and short-circuit indication on SET input
- Stall function via temperature
- Stall function with external high current control
- Full output protection
- No crossover current
- Hysteresis level set externally
- Short circuit protection
- Enhanced power packages
- 8-pin ESOP and 16-pin PDSOP power packages

DC Motor Driver for Servo Driver Applications

IV. ASIC Success Result

- **IK SoC LED Module**
  - Automotive Room Lamp Driver
  - Competitor : Own

Features

- System LED
- High Current Accuracy at Supply voltage Variation
- No EMI
- Protection of Reverse Voltage
- Package Size(WxLxH) : 5.4mm x 5.0mm x 1.1T
- Constant Current operating 40mA
- SMD (Top View) type
- Beam View Angle(-0.8) : +20°

Set Application

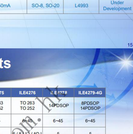
V. ASIC Development

- **HID Lamp Driver (IK8010)**
  - 48LQFP Package
  - Competitor : Own
  - MP : 2015 4Q

Block Diagram

Features

- PWM controller and H bridge driver in one chip
- PWM driving of power FET directly
- Internal LDO 4V with ±1.5% accuracy
- Additional OP AMP (Inside)
- Under voltage Lock Out / Voltage Locked Protection
- Over temperature protection
- Temperature Range is -40°C to +125°C
- AEC-Q100 Qualified



Set Application

V. ASIC Development

- **Multi-functional Alternator Regulator**
  - Bare Chip
  - Competitor : BOSCH, Freescale
  - MP : 2017 2Q

Block Diagram

Features

- Fixed frequency regulation with pulse width modulation
- High side output stage with defined ramp steepness and freewheeling diode
- Detection of "ignition ON" via L-terminal
- Emergency start and default mode
- Duty cycle of output stage transmitted via DFM-terminal
- Error indication via L-terminal
- Phase voltage regulation
- Relay function

V. ASIC Development

- **Active MOSFET Rectifier of Alternator**
  - Subject of national policy
  - Bare Chip
  - Competitor : ASIC of Valeo Alternator
  - MP : 2017 3Q

Status

- Under define of development target
  - Higher efficiency up to : 73 ~ 95%
    - FET loss is 10~20% of diode (Rds on dependent)
  - Analog device type control solution
  - Dedicated control IC & Gate driver type

Application Diagram

VI. Automotive Products

Application	Product	Function	Package	Compatibility	Remark
Motor Driver	IL33091A	High-side TMOS Driver	SOP / DIP - 8	MC33091A	Mass Production
	IK8508	Head Lamp Leveling Drive	PDSOP - 14	TDA3629	Mass Production
	IK8509	Power Folding for Side Mirror	QFN - 16	Own	Mass Production
Communication	IL33290	ISO K Line Serial Link Interface	SOP - 8	MC33290	Mass Production
	ILA82C251	CAN Transceiver for 12V Systems	SOP - 8	PCA82C251	Mass Production
	IK8301	CAN Transceiver for 12V Systems	SOP - 14	TJA1-XX	Under Development
	IK8302	CAN Transceiver for 12V Systems	SOP - 8	TJA1DXX	Under Development
Digital Clock	INT100	CMOS Automotive Digital Clock Circuit	DIP - 40 MQFP - 44	SSG1278	Mass Production

VI. Automotive Products

Application	Product	Function	Package	Compatibility	Remark
LDO	ILE4260G	Low-Drop voltage regulator 5V, 100mA	SOT - 14	TLE4263G	Mass Production
	ILE4264-2G	Low-Drop voltage regulator 5V, 100mA	SOT - 223	TLE4264-2G	Mass Production
	ILE4275	Low-Drop voltage regulator 5V, 400mA	TO-263-5 TO-252-5	TLE4275	Mass Production
	ILE4276	Low-Drop voltage regulator 5V, 8.5V,12V, ADJ,400mA	TO-263-5 TO-252-5	TLE4276	Mass Production
	ILE4278	Low-Drop voltage regulator 5V, 100mA	PDSOP - 14	TLE4278	Mass Production
	ILE4279-4G	Low-Drop voltage regulator 5V, 100mA	PDSOP - 14	TLE42794	Mass Production
	IK4993	Low-Drop voltage regulator 5V, 150mA	SO-8, SO-20	L4993	Under Development

VI. Automotive Products

	ILE4262G	ILE4264-2G	ILE4275	ILE4276	ILE7274	ILE4279-4G
PKG Type	14PDSOP	SOT 223	TO 263 TO 252	TO 263 TO 252	14PDSOP	8PDSOP 14PDSOP
Input Voltage (V)	6~45	6~45	6~45	6~45	6~45	6~45
Output Voltage (V)	5	5	5	5 (1.5 / ADJ)	5	5
Drop Voltage (V)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Tolerance (%)	2	3	2.5	4	2 or 4	2
Output Current (mA)	200	100	400	400	200	150
Over temp protection	yes	yes	yes	yes	yes	yes
Short circuit protection	yes	o yes	yes	yes	yes	yes
AEC Q100	yes	yes	-	-	yes	-
PKG Outline						