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POWER YOUR INNOVATION

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For more detailed information,  
Please refer to our website,  
<http://www.htckorea.co.kr>

# HTC KOREA

 TAEJIN Technology Co., Ltd.  
HTC Korea



## INTRODUCTION

*TAEJIN Technology Co., Ltd was incorporated in 2000 with aim of becoming the world leader in Power Management IC industry. The brand name "HTC Korea" was created by TAEJIN Technology to meet customers' goal by using highly diversified R&D technology.*

*HTC Korea is well-known for its high-quality products in the Asian market and targets three major sectors: Communication, Consumer, and Computer.*

*HTC Korea will keep up with World Semiconductor market trend by developing high efficient and customized IC.*

*HTC Korea has been promoting its products in cooperation with world-wide sales partners in China, Japan, Hong Kong, Singapore, Taiwan, and India. Now we are developing North American and European market with specialized and dedicated local sales partners.*

*HTC Korea operates through quality policy which is authenticated by Korea's ISO 9001, and observes corporate ethics and environmental responsibility. All HTC products are manufactured under the system authenticated by ISO14001, and are complied with RoHS, Halogen-free and REACH directives. .*

*HTC Korea are being propelled towards World Best Leader in Power Management IC industry, and HTC Korea will continue marching ahead in the semiconductor industry.*

**HTC Korea**

*Tony Choi*

*Chairman of TAEJIN Technology Co., Ltd.*



## MILESTONE

- 2000. May. - **Founded TAEJIN Technology and started producing voltage regulator ICs**
- **Registered brand name "HTC Korea"**
- 2001. Mar. - **Established CMOS R&D center in Korea**
- 2002. Aug. - **Set up sales office in Shenzhen, China**
- 2002. Dec. - **ISO 9001 certificated**
- 2003. Sep. - **Designated as "Korea Venture Company"**
- 2006. Jul. - **Acquired "INNO-BIZ certificates" (Grade : Aa)**
- 2006. Sep. - **Set up sales office in Shanghai, China**
- **Designated as "Specialized Components & Materials Company" by Korean Ministry of Commerce, Industry, and Energy**
- 2006. Nov. - **TJ3965 won the award at 7th Semiconductor Engineering Contest**
- 2007. Apr. - **TJ3965 selected as "New Excellent Technology" by Korean Ministry of Science and Technology**
- 2007. Jun. - **Participated Korean Gov.'s "Enterprise for Developing Technology of Component & Materials"**
- **Funded with USD 2 mil. from new investments.**
- 2007. Nov. - **ISO14001 certificated**
- **Set up sales office in Osaka, Japan**
- **Applied for local patent in Japan (2007-301056 and 2007-301057)**
- **Applied for local patent in USA (11/999,882 and 11/962,404)**
- 2008. Mar. - **Set up sales office in Taipei, Taiwan**
- 2008. Jun. - **Applied for local patent in China (2008 10126601.1 and 2008 10111091.0)**
- **Applied for local patent in Taiwan (097121534 and 097121533)**
- 2009. May - **Applied for international PCT patent (PCT/KR2009/2454)**
- 2009. Oct. - **Registered a local patent of ULDO Voltage Regulator IC in USA**
- 2010. Jun. - **Designated as "Technological Innovation Company" by Korean Ministry of Knowledge Economy**
- 2010. Nov. - **Won the award in the "USD 10 millions in export"**



### LOCATION



Head Office/ R&D (Korea)   Sales&Logistics (Korea)   Shenzhen Office (China)   Shanghai Office (China)   Taipei Office (Taiwan)   Osaka Office (Japan)

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#### OVERSEAS SALES OFFICE

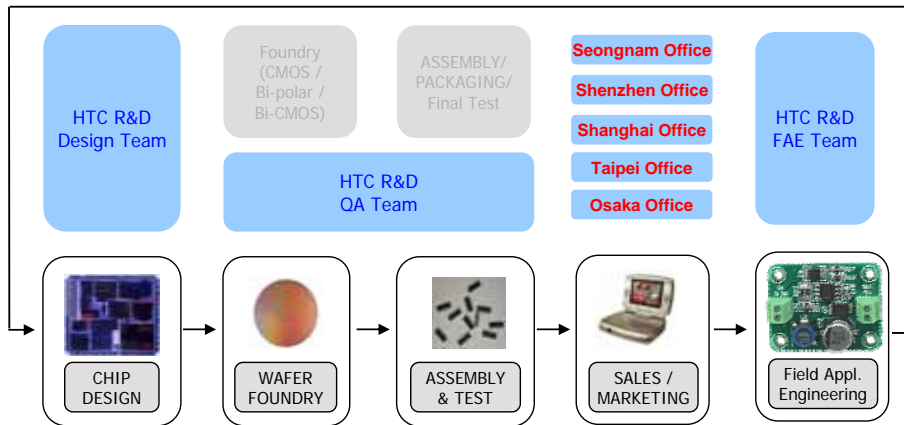
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Headquarters coordinating manufacturing process, and reflecting marketing feedback to design.



### APPLICATION

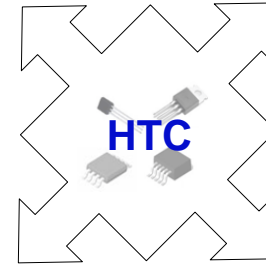
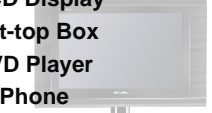
#### Computing

Desktop PC  
Laptop  
Servers  
Workstation  
Peripherals



#### Consumers

LCD Display  
Set-top Box  
DVD Player  
IP Phone  
Audio System



WLAN  
Telecom Server  
GPS System  
Cell Phone/PDA  
Network Equipments

#### Communications

GPS System  
Car Audio  
Car Navigation  
Video Products



#### Automotives

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## PRODUCT INDEX

### Standard Linear Voltage Regulator

LM78L05/A/C	3-Terminal 100mA Positive Fixed Voltage Regulator (5V)	TO-92 / SOT-89 / SOP-8
LM78LXX	3-Terminal 100mA Positive Fixed Voltage Regulator (06 ~ 24)	TO-92 / SOT-89
LM79LXX	3-Terminal 100mA Negative Fixed Voltage Regulator (05 ~ 24)	
LM317L	3-Terminal 100mA Adjustable Voltage Regulator	TO-92 / SOT-89 / SOP-8

### LDO (Low Drop Out) Voltage Regulator

LM2950/1	100mA LDO Voltage Regulator	TO-92 / SOP-8
LM1117	1A LDO Fixed & Adjustable Voltage Regulator	SOT-89 / SOT-223 / TO-252
LM1086	1.5A LDO Fixed & Adjustable Voltage Regulator	TO-252 / TO-263
LM1085	3A LDO Fixed & Adjustable Voltage Regulator	TO-252 / TO-263
LM1084	5A LDO Fixed & Adjustable Voltage Regulator	TO-252 / TO-263

### VLDO (Very Low Drop Out) Voltage Regulator

TJ5205	150mA Low Noise & High PSRR LDO Regulator	SOT-23-5L / SOP-8PP
LM27150/1/2	1.5A High-Voltage Very Low-Dropout Voltage Regulator	TO-252 / TO-263 / TO-220
LM29150/1/2	1.5A High-Voltage Very Low-Dropout Voltage Regulator	TO-252 / TO-263 / TO-220
LM37101/2	1A High-Voltage Very Low-Dropout Voltage Regulator	SOP-8
LM39100/1/2	1A High-Voltage Very Low-Dropout Voltage Regulator	SOT-223 / SOP-8 / TO-252
LM39300/1/2	3A High-Voltage Very Low-Dropout Voltage Regulator	TO-263 / TO-220
LM39500/1/2	5A High-Voltage Very Low-Dropout Voltage Regulator	TO-263 / TO-220

### CMOS ULDO (Ultra Low Drop Out) Voltage Regulator

LM1108	300mA CMOS LDO Regulator	SOT-23 / SOT-89
LM8805	600mA CMOS LDO Regulator	SOT-23-5L / SOT-89
TJ3940	1A Ultra Low Dropout Linear Regulator	SOT-223 / TO-252
TJ3964	1A Ultra Low Dropout Linear Regulator	SOT-23-5L / SOP-8 / SOT-223 / TO-252
TJ3965	1.5A Ultra Low Dropout Linear Regulator	SOP-8 / SOP-8PP / SOT-223
TJ3966	3A Ultra Low Dropout Linear Regulator	SOP-8PP / TO-252 / TO-263

### CMOS ULDO (Ultra Low Drop Out) Voltage Regulator (Compatible with Low ESR Capacitor)

TJ4203	300mA ULDO Voltage Regulator	SOT23-5L / SOP-8 / SOT-223
TJ4206	600mA ULDO Voltage Regulator	SOT23-5L / SOP-8 / SOT-223
TJ4210	1.0A ULDO Voltage Regulator	SOP-8PP / SOT-223 / TO-252
TJ4215	1.5A ULDO Voltage Regulator	SOP-8PP / SOT-223 / TO-252
TJ4220	2.0A ULDO Voltage Regulator	SOP-8PP / SOT-223 / TO-252
TJ4230	3.0A ULDO Voltage Regulator	SOP-8PP / TO-252 / TO-263
TJ49150	Sub-1V Output 1.5A ULDO Voltage Regulator	SOP-8PP / TO-252
TJ49300	Sub-1V Output 3A ULDO Voltage Regulator	SOP-8PP / TO-252 / TO-263

### Sink / Source Linear Regulator

TJ2995	DDR Termination Voltage Regulator (for DDR I, II)	SOP-8 / SOP-8PP
TJ2996	DDR Termination Voltage Regulator (for DDR I, II)	SOP-8 / SOP-8PP
TJ2997	DDR Termination Voltage Regulator (for DDR I, II,III)	SOP-8 / SOP-8PP



### Step-down Switching Voltage Regulator

LM2575	1A Step-down Voltage Regulator (52kHz)	TO-263 / TO-220
LM2576	3A Step-down Voltage Regulator (52kHz)	
LM2596	3A Step-down Voltage Regulator (150kHz)	
LM1501A	5A Step-down Voltage Regulator (150kHz)	
LM1501B	5A Step-down Voltage Regulator (300kHz)	
TJ1509A	2A Step-down Voltage Regulator (150kHz)	SOP-8
TJ4519	3A Step-down Voltage Regulator (600kHz)	SOP-8PP

### Synchronous Step-down Switching Regulator

TJ6062	2A Synchronous Step-down Voltage Regulator (650kHz)	SOP-8 / SOP-8PP
TJ6063	3A Synchronous Step-down Voltage Regulator (650kHz)	SOP-8 / SOP-8PP
TJ6092	2A Synchronous Step-down Voltage Regulator (900kHz)	SOP-8 / SOP-8PP
TJ6093	3A Synchronous Step-down Voltage Regulator (900kHz)	SOP-8 / SOP-8PP
TJ6711	1A Synchronous Step-down Voltage Regulator (1MHz)	SOP-8 / SOT-23-6L
TJ6712	2A Synchronous Step-down Voltage Regulator (1MHz)	SOP-8PP / SOT-23-6L
TJ6713	3A Synchronous Step-down Voltage Regulator (1MHz)	SOP-8PP / SOT-23-6L
TJ6721	1A Synchronous Step-down Voltage Regulator (2MHz)	SOP-8 / SOT-23-6L
TJ6722	2A Synchronous Step-down Voltage Regulator (2MHz)	SOP-8PP / SOT-23-6L
TJ6723	3A Synchronous Step-down Voltage Regulator (2MHz)	SOP-8PP / SOT-23-6L

### Step-up Switching Voltage Regulator

LM1937	0.3A Step-up Switching Voltage Regulator (1.2MHz)	SOT-23-5L
LM5171	1.5A Step-up Switching Voltage Regulator (280kHz)	SOP-8

### Converter & Controller

MC34063A	1.5A Step-Up/Down (Inverting) Converter Controller (33kHz)	SOP-8 / DIP-8
MC34063C	0.8A Step-Up/Down (Inverting) Converter Controller (180kHz)	SOP-8 / DIP-8
TL494	Pulse-Width-Modulation Controller	SOP-16 / DIP-16
TJ7660	Charge Pump Voltage Converter	SOP-8 / DIP-8

### Power Switch

TJ2105 / 2110	Single USB Power Switch	SOT-23-5L / MSOP-8 / SOP-8
TJ2205 / 2210	Dual USB Power Switch	SOP-8

### Microprocessor Supervision Reset IC

TJ809	Active Low Reset IC	SOT-23
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### Voltage Reference & Op-Amps

TL431/A/C	Programmable Precision Shunt Regulator (2.495V)	TO-92 / SOT-23 / SOT-89
LM431/A/C	Programmable Precision Shunt Regulator (2.495V)	SOT-23 (Reverse Type)
TL432/A/C	Programmable Precision Shunt Regulator (1.24V)	TO-92 / SOT-23
LM358	Dual Operational Amplifier	SOP-8 / DIP-8
LM4558	Low Noise Dual Operational Amplifier	
LM393	Dual Voltage Comparator	
TJ1051/2	Constant Voltage & Current Controller (Op-amp + Vref)	



## PRODUCTS

### Standard Linear Voltage Regulator

Device Name	Tolerance	Typ Vout[V]	Max. Vin [V]	Min. Vin [V]	Max Iout [A]	V drop [V]	PKG
LM78L05	1%/2%/4%	5	20	7	0.1	1.7	TO-92 / SOT-89 / SOP-8
LM78LXX	4%	6/ 8/ 9/ 10/ 12/ 15/ 18/ 24	20 ~ 39	8 ~ 26.5	0.1	1.7	TO-92 SOT-89
LM79LXX	4%	5 / 6/ 8/ 9/ 12/ 15/ 18/ 24	-20 ~ -38	-7 ~ -27	0.1	1.7	TO-92 SOT-89
LM317L	4%	Adjustable (1.25 ~ 37V)	40 (Absolute)	3	0.1	1.7	TO-92 SOT-89 / SOP-8

### LDO (Low Drop Out) Voltage Regulator

Device Name	Vout [V]	Vref(adj) [V]	Max. Vin [V]	Max Iout [A]	V drop [V]	PKG
LM2950/1	3.0/ 3.3/ 5.0	Fixed Only	30 (Absolute)	0.1	0.38 (@Io=0.1A)	TO-92 SOP-8
LM1117	ADJ/ 1.2/ 1.5/ 1.8/ 2.5/ 2.85/ 3.3/ 5.0	1.25	15 (Absolute)	1	1.2 (@Io=1.0A)	SOT-89 / SOT-223 TO-252
LM1086	ADJ/ 1.5/ 1.8 / 2.5/ 3.3/ 5.0	1.25	12 (Absolute)	1.5	1.3 ~ 1.5 (@Io=1.5A)	TO-252 TO-263
LM1085	ADJ/ 1.5/ 1.8/ 2.5/ 3.3/ 5.0	1.25	12 (Absolute)	3	1.3 ~ 1.5 (@Io=3.0A)	TO-252 TO-263
LM1084	ADJ/ 1.5/ 1.8/ 2.5/ 3.3/ 5.0	1.25	12 (Absolute)	5	1.3 (@Io=5.0A)	TO-252 TO-263

### VLDO (Very Low Drop Out) Voltage Regulator

Device Name	Vout [V]	Vref(adj) [V]	Max. Vin [V]	Max Iout [A]	V drop [V]	PKG
TJ5205 (EN / Bypass)	2.0 ~ 8.5	1.242	16	0.15	0.16 (@Io=0.15A)	SOT-23-5L SOP-8PP
LM27150/1/2 (EN / Flag)	ADJ/ 1.5/ 1.8 / 2.5/ 3.0/ 3.3/ 5.0/ 12	1.24	26 (peak 60V)	1.5	0.35 (@Io=1.5A)	TO-252 TO-263 TO-220
LM29150/1/2 (EN / Flag)	ADJ/ 1.5/ 1.8 / 2.5/ 3.0/ 3.3/ 5.0/ 12	1.24	26 (peak 60V)	1.5	0.35 (@Io=1.5A)	TO-252 TO-263 TO-220
LM37101/2 (EN / Flag)	ADJ/1.5/ 1.8/ 2.5/ 3.3/ 5.0	1.24	16	1	0.47 (@Io=1.0A)	SOP-8
LM39100/1/2 (EN / Flag)	ADJ/ 1.5/ 1.8/ 2.5/ 3.3/ 5.0	1.24	16	1	0.41 (@Io=1.0A)	SOP-8 SOT-223 TO-252
LM39300/1/2 (EN / Flag)	ADJ/ 1.5/ 1.8/ 2.5/ 3.3/ 5.0	1.25	16	3	0.40 (@Io=3.0A)	TO-263
LM39500/1/2 (EN / Flag)	ADJ/ 1.5/ 1.8/ 2.5/ 3.3/ 5.0	1.25	16	5	0.40 (@Io=5.0A)	TO-263 TO-220



### CMOS ULDO (Ultra Low Drop Out) Voltage Regulator

Device Name	Vout [V]	Vref(adj) [V]	Max. Vin [V]	Max Iout. [A]	Ignd [uA]	V drop [V]	PKG
LM1108	1.5 ~ 5.0	Fixed Only	6.5 (Absolute)	0.3	15	0.3 ~ 0.6 (@Io=0.3A)	SOT-23 SOT-89
LM8805 (EN / Bypass)	1.5 ~ 6.0	1.27	8 (Absolute)	0.6	50	0.6 ~ 1.3 (@0.6A)	SOT-23 5L SOT-89
TJ3940	1.2/ 1.5/1.8/ 2.5/ 3.3	Fixed Only	5.5	1.0	30	0.45 (@Io=1.0A)	SOT-223 TO-252
TJ3964 (EN / Sense)	ADJ/ 1.2/ 1.5/ 1.8/ 2.5/ 3.3	1.145	5.5	1.0	50	0.35 (@Io=1.0A)	SOT-23-5L SOP-8 / SOT-223 TO-252
TJ3965 (EN / Sense)	ADJ/ 1.2/ 1.8/ 2.5/ 3.3	1.145	5.5	1.5	30	0.38 (@Io=1.5A)	MSOP-8 / SOP-8 SOP-8PP / SOT-223 TO-252 / TO-263 QFN-8
TJ3966 (EN / Sense)	ADJ/ 1.2/ 1.8/ 2.5/ 3.3	1.145	5.5	3.0	40	0.48 (@Io=3.0A)	SOP-8PP TO-252 / TO-263

### CMOS ULDO Voltage Regulator (Compatible with Low ESR Capacitor)

Device Name	Vout [V]	Vref(adj) [V]	Max Vin [V]	Min Vin [V]	Max Iout [A]	V drop [V]	PKG
TJ4203	ADJ/ 1.0/ 1.2/ 1.5/ 1.8/ 2.5/ 3.3	0.8	5.5	2.4	0.3	0.40 (@Io=0.3A)	SOT23-5L SOP-8 SOT-223
TJ4206	ADJ/ 1.0/ 1.2/ 1.5/ 1.8/ 2.5/ 3.3	0.8	5.5	2.4	0.6	0.40 (@Io=0.6A)	SOT23-5L SOP-8 SOT-223
TJ4210	ADJ/ 1.0/ 1.2/ 1.5/ 1.8/ 2.5/ 3.3	0.8	5.5	2.4	1.0	0.35 (@Io=1.0A)	SOP-8 SOT-223 TO-252
TJ4215	ADJ/ 1.0/ 1.2/ 1.5/ 1.8/ 2.5/ 3.3	0.8	5.5	2.4	1.5	0.35 (@Io=1.5A)	SOP-8PP SOT-223 TO-252
TJ4220	ADJ/ 1.0/ 1.2/ 1.5/ 1.8/ 2.5/ 3.3	0.8	5.5	2.4	2.0	0.40 (@Io=2.0A)	SOP-8PP SOT-223 TO-252
TJ4230	ADJ/ 1.0/ 1.2/ 1.5/ 1.8/ 2.5/ 3.3	0.8	5.5	2.4	3.0	0.45 (@Io=3.0A)	SOP-8PP TO-252 TO-263
TJ49150	ADJ/ 0.8/ 0.9/ 1.0/ 1.2/ 1.5/ 1.8	0.8	5.5	1.4	1.5	0.30 (@Io=1.5A)	SOP-8PP TO-252
TJ49300	ADJ/ 0.8/ 0.9/ 1.0/ 1.2/ 1.5/ 1.8	0.8	5.5	1.4	3.0	0.30 (@Io=3.0A)	SOP-8PP TO-252 TO-263



**Sink / Source Linear Regulator**

Device Name	Standards	AVIN [V]	PVIN [V]	VDDQ [V]	Vout	Sink & Source Current [A]	PKG
TJ2995	DDR-I	2.3 ~ 5.5	0 ~ AVIN	2.5	Vtt / Vref	1.5 (Cont.) 3.0 (Peak)	SOP-8 SOP-8PP
TJ2996	DDR-I/II	2.3 ~ 5.5	0 ~ AVIN	1.5 ~ 2.5	Vtt / Vref	1.5 (Cont.) 3.0 (Peak)	
TJ2997	DDR-I/II/III	2.3 ~ 5.5	0 ~ AVIN	1.5 ~ 2.5	Vtt / Vref	1.5 (Cont.) 3.0 (Peak)	

**Step-down Switching Voltage Regulator**

Device Name	Vout[V]	Vref(adj) [V]	Max.Vin [V]	Output Current [A]	Switching Frequency [kHz]	PKG
LM2575	ADJ/ 3.3/ 5.0/ 12/	1.23	40	1.0	52	TO-263 TO-220
LM2576	ADJ/ 3.3/ 5.0/ 12	1.23	40	3.0	52	
LM2596	ADJ/ 3.3/ 5.0/ 12	1.23	40	3.0	150	
LM1501A	ADJ/ 3.3/ 5.0/ 12	1.215	40	5.0	150	TO-263 TO-220
LM1501B	ADJ/ 3.3/ 5.0/ 12	1.215	40	5.0	300	
TJ1509A	ADJ/ 3.3/ 5.0/ 12	1.23	30 (Absolute)	2.0	150	SOP-8
TJ4519	ADJ	0.8	28 (Absolute)	3.0	600	SOP-8PP

**Synchronous Switching Regulator**

Device Name	Vout[V]	Vref(adj) [V]	Max.Vin [V]	Output Current [A]	Switching Frequency [kHz]	PKG
TJ6062 (Synchronous)	ADJ	0.8	23	2.0	650	SOP-8 SOP-8PP
TJ6063 (Synchronous)	ADJ	0.8	23	3.0	650	SOP-8 SOP-8PP
TJ6092 (Synchronous)	ADJ	0.8	23	2.0	900	SOP-8 SOP-8PP
TJ6093 (Synchronous)	ADJ	0.8	23	3.0	900	SOP-8 SOP-8PP



**Synchronous Step-down Switching Regulator**

Device Name	Vout[V]	Vref(adj) [V]	Max.Vin [V]	Output Current [A]	Switching Frequency [kHz]	PKG
TJ6711 (Synchronous)	ADJ	0.8	5.5	1.0	1,000	SOT-23-6L SOP-8
TJ6712 (Synchronous)	ADJ	0.8	5.5	2.0	1,000	SOT-23-6L SOP-8PP
TJ6713 (Synchronous)	ADJ	0.8	5.5	3.0	1,000	SOT-23-6L SOP-8PP
TJ6721 (Synchronous)	ADJ	0.8	5.5	1.0	2,000	SOT-23-6L SOP-8
TJ6722 (Synchronous)	ADJ	0.8	5.5	2.0	2,000	SOT-23-6L SOP-8PP
TJ6723 (Synchronous)	ADJ	0.8	5.5	3.0	2,000	SOT-23-6L SOP-8PP

**Step-up Switching Voltage Regulator**

Device Name	Vin [V]	Switch Current Limit [A]	Max Vsw [V]	Supply Current	Frequency [kHz]	PKG
LM1937	2.5 ~ 10 (Absolute)	0.30	36 (Absolute)	0.1uA (Shut-off) 1.9mA (Shut-on)	1,200	SOT-23-5L
LM5171	2.5 ~ 30 (Absolute)	1.50	40 (Absolute)	12uA (Shut-off) 5.5mA (Shut-on)	280	SOP-8

**Converter & Controller – Step-Up/Down Converter Controller**

Device Name	Supply Voltage Vcc[V]	Switch Current [A]	Reference Accuracy	Quiescent Current [mA]	Comparator input voltage Vir [V]	PKG
MC34063A	50 (Absolute)	1.5	2%	2.5	-0.3 ~ 40	SOP-8 DIP-8
MC34063C	40 (Absolute)	0.8	2%	2.5	-0.3 ~ 40	SOP-8 DIP-8

**Converter & Controller – PWM Controller**

Device Name	Supply Voltage Vcc[V]	Reference Output [V]	Oscillator Frequency [kHz]	Collector Output Current [A]	C-E Saturation Voltage [V]	PKG
TL494	40	5	300	0.2	1.1 (@ CE) 1.5 (@ CC)	SOP-16 DIP-16

**Converter & Controller – Charge Pump Voltage Converter**

Device Name	Supply Voltage [V]	Output Voltage [V]	Supply Current [uA]	Power Efficiency (%)	Frequency [kHz]	PKG
TJ7660	10.5 (Absolute)	-nV <sub>IN</sub>	100	98	10	SOP-8 DIP-8

**USB Power Switch**

Device Name	Channel	Enable Control	Vin [V]	Icc [uA]	Min. I limit [A]	Rds,on [V]	PKG
TJ2105	Single	H – High L – Low	2.7 ~ 5.5	110	1.0	100	SOT-23-5L MSOP-8 SOP-8
TJ2110	Single	H – High L – Low	2.7 ~ 5.5	110	1.5	100	
TJ2205	Dual	H – High L – Low	2.7 ~ 5.5	110	1.0	160	SOP-8
TJ2210	Dual	H – High L – Low	2.7 ~ 5.5	110	1.5	100	

**Microprocessor Supervision Reset IC**

Device Name	Vin [V]	Reset Threshold Vol. [V]	Output Level	Reset Output	Isupply [uA]	Operating Temp. Range	PKG
TJ809	1.0 ~ 5.5	R - 2.63 S - 2.93 T - 3.00 M - 4.38 L - 4.63	Active Low	Open-Drain	15	-40 ~ 85°C	SOT-23

**Voltage Reference**

Device Name	Part#	Tolerance	Type Vref[V]	Cathode Voltage VKA[V]	Max.Ik [mA]	PKG
TL431	TL431	2%	2.495	40	100	TO-92 SOT-23 SOT-89
	TL431A	1%				
	TL431C	0.5%				
LM431	LM431A	1%	2.495	40	100	SOT-23 (Reverse Pin)
	LM431C	0.5%				
TL432	TL432A	1%	1.240	18	100	TO-92 SOT-23
	TL432C	0.5%				

- Also Available in TL431G series which complies Halogen-free regulation.

**Operational Amplifier**

Device Name	Supply Voltage Vcc[V]	CMRR	Differential input Voltage VI(DIFF)[V]	Input voltage VI[V]	PKG
LM358	±16 or 32 (Absolute)	80	±32	-0.3 ~ +32	SOP-8 DIP-8
LM4558 (Low Noise)	5 ~ 15	80	±30	±15	SOP-8 DIP-8

**Comparator**

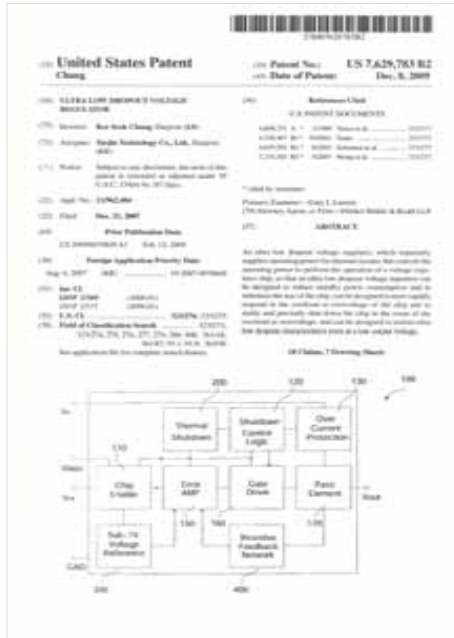
Device Name	Supply Voltage Vcc[V]	Differential Input Voltage VI(DIFF)	Input Voltage VI[V]	Input Offset Voltage VIO[V]	Input Offset Current IIO[nA]	Input Bias Current IIO[nA]	PKG
LM393	±18 or 32 (Absolute)	32	-0.3 ~ +32	2	5	-25	DIP-8

**Constant Voltage & Current Controller**

Device Name	Supply Voltage Vcc [V]	Voltage Control Loop Reference	Transconductance Gain(Vctrl), Gmv [mA/mV]	Current Control Loop Reference	Transconductance Gain(Ictrl), Gmi [mA/mV]	PKG
TJ1051	12	1.21 V	3.5	0.2 V	7	SOT-23-6L SOP-8
TJ1052	18	1.21 V	3.5	0.2 V	7	



### INTERNATIONAL PATENT STATUS



Country	Patent No.
USA	(Registered) - US 7,629,783 B2 * (2) (Applied) - 11/999,882 * (1)
Japan	(Applied) - 2007-301056 * (1) - 2007-301057 * (2)
China	(Applied) - 2008 10111091.0 * (1) - 2008 10126601.1 * (2)
Taiwan	(Applied) - 097121533 * (1) - 097121534 * (2)
PCT (international)	(Applied) - PCT/KR2009/2454 * (3)

- (1) Voltage regulator and method of manufacturing the same
- (2) Ultra low dropout voltage regulator
- (3) Semiconductor Pulse Wave Generator

### ENVIRONMENTAL DECLARATIONS



RoHS Compliance

Non-use of PFOS, PFOA, DMF

REACH Compliance

Halogen-free (only for Green Items)



### CROSS REFERENCE GUIDE

HTC	Micrel	National	ST	FairChild	On-Semi	TI	Etc.
TL431			TL431	KA431 / LM431	TL431/ MC431	TL431	AME431 / AP431
TL432		LMV321	TS432	RC431A	TLV431A/B	TLV431/TL432	AP432
LM431		LM431					
LM78Lxx		LM78Lxx	LM78LxxACZ	KA78Lxx	MC/AS78Lxx	UL78Lxx	AME78Lxx
LM79Lxx		LM79Lxx	LM79LxxACZ	KA79Lxx	LM79Lxx	UL78Lxx	
LM317L		LM317	LM317LZ	KA317L	LM317LB	TL317	
LM2950		LM2950ACZ			LM2950ACZ		
LM1084		LM1084	KD1084Axx	FAN1084	CS5204/5		AME1084 / AP1084
LM1085		LM1085	LD1085xx		CS5203		AME1085
LM1086		LM1086		FAN1086	CS52015		RT9176 / AME1086
LM1117		LM1117	LD1117xx	FAN1117A	NCP1117	REG1117	RT9164 / AME1117
TJ5205	MIC5247 / 5205	LP2985		ILC7080		TPS721xx	RT9178/9/ XC6209
LM1108							AP130
LM8805							RT9166 / YB1230
LM29150/1/2/3	MIC29150/1/2/3		LD29150xx				SPX29150
LM39100/1/2	MIC39100/1/2	LM3940					BAXXBC0FP/ PQ070XNA1ZPH
LM39300/1/2	MIC39300/1/2	LP3966				TPS757xx	SPX29300
LM39500/1/2	MIC39500/1/2					TPS755xx	SPX29500
TJ4220GDP							SC4215
TJ3965	MIC37139	LP3965		FAN1581		TPS78630	RT9183 AME8815/6
TJ3966	MIC37300/1/2	LP3966		FAN1582			SC1566
TJ49150	MIC49150	LP38842	LD49150				
TJ49300	MIC49300	LP38843	LD49300				
TJ2995		LP2995					G2995
TJ2996		LP2996					NE57814 / SC2596
LM2576	MIC2576	LM2576			LM2576		SI-80xxS/SD
LM2596		LM2596					AP1501
TJ1509A							AP1509
TJ4519							SC4519
TJ809	MIC809	LM809	STM809			TLV809	MAX809
TJ2205	MIC2026	LM3526					G526 / GM2526 / US2026 / SP2026
LM1937	MIC2287						LT1937
LM5171					CS5171		LT1373 / AMC3202
TL494				TL494 / KA7500		TL494	
MC34063A/C				KA34063	MC34063	MC34063A	
TJ1051/2			TSM1051/2				
TJ7660							ICL7660 / HT7660
LM358 / LM4558		LM358	LM358	KA358 / MC4558		LM358	AP358 / NJM4580
LM393		LM393	LM393	KA393	LM/MC393	LM393	AP393