
AUTOMOTIVE BIPOLAR/BICMOS

Apr. - Sep.1998

TOSHIBA

AUTOMOTIVE BIPOLAR/BiCMOS

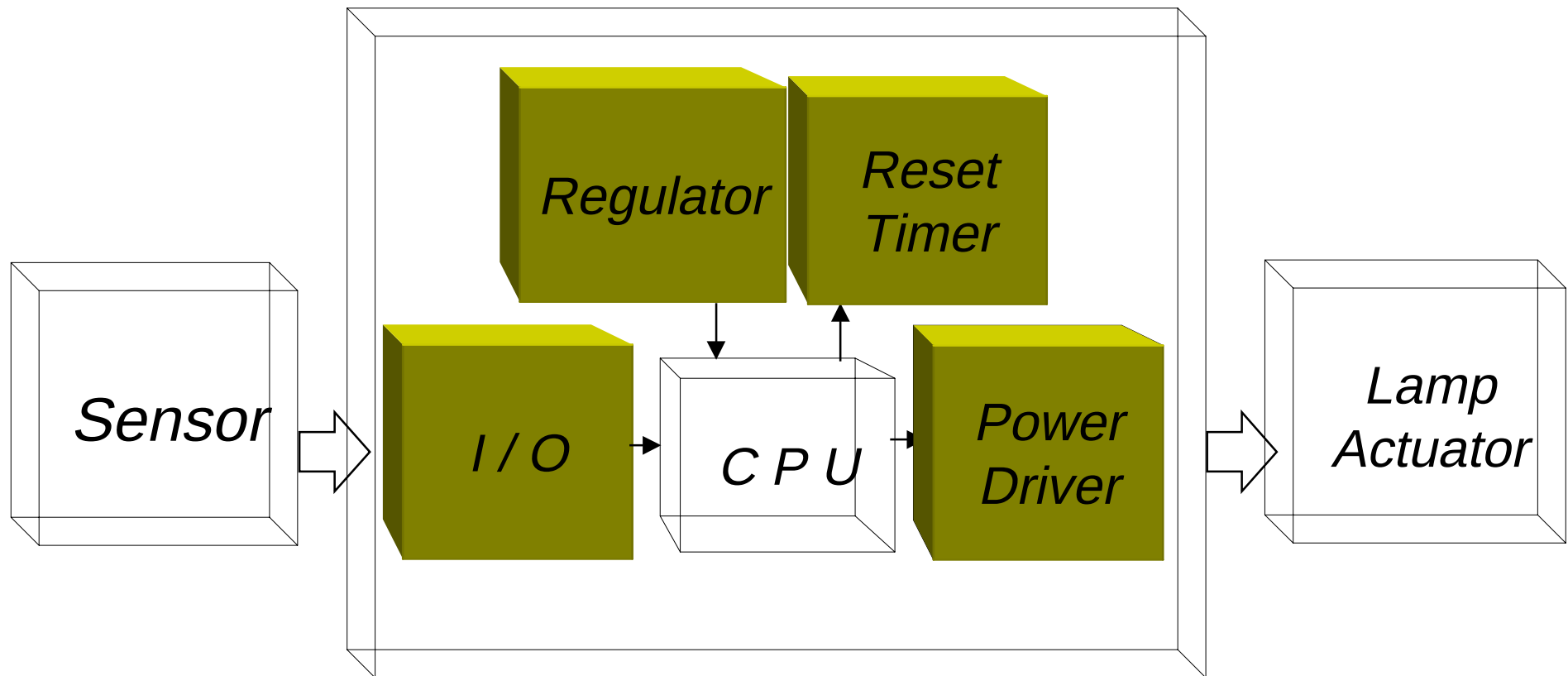
MANUFACTURING HISTORY (AS OF Aug. '97)

Function	MP Starting Year	Accumulated Q'ty
Wiper ASIC	1974	21Mpcs
Meter ASIC	1974	65Mpcs
EFI ASIC	1976	31Mpcs
Lamp Monitor ASIC	1977	33Mpcs
5V Voltage Regulator	1982	178Mpcs
Motor/Relay Driver	1983	160Mpcs
Flasher ASIC	1985	70Mpcs
Door Module ASIC	1986	42Mpcs
Dashboard ASIC (BiCMOS)	1988	102Mpcs
ABS ASIC	1992	20Mpcs
Others	1974	275Mpcs
Total	1974	997Mpcs

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Bipolar ICs in Automotive Systems

 : Bipolar IC



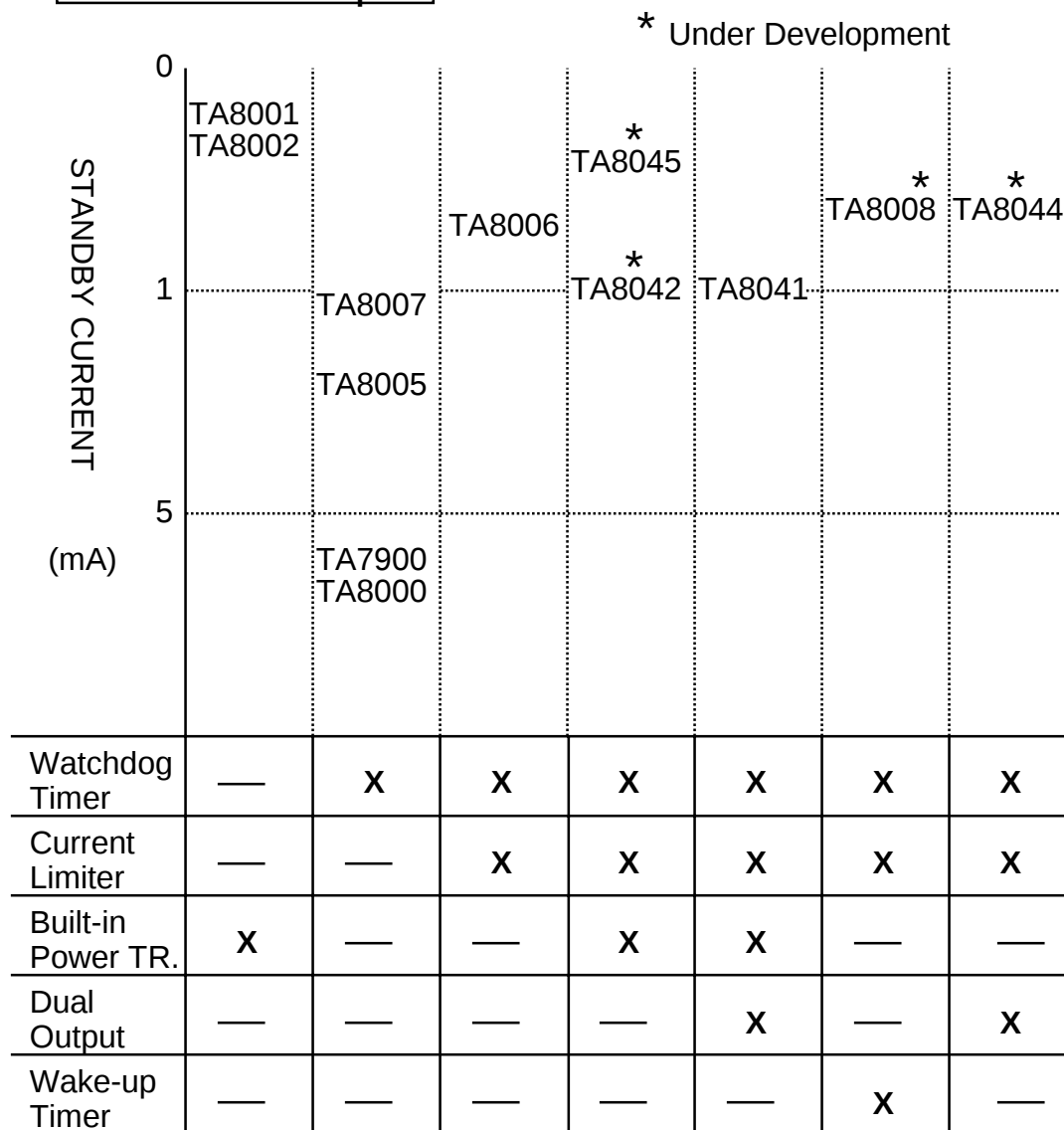
AUTOMOTIVE BIPOLAR ASSP LATEST INFORMATION

1. 5V REGULATOR SERIES
2. MOTOR DRIVER SERIES
3. RELAY/LAMP DRIVER SERIES
4. SPECIAL FUNCTION SERIES

Apr.-Sep.1998

1. 5V REGULATOR SERIES

Function Map



Features

Built-in Watchdog timer and low voltage detector give system high reliability.

High accuracy $5V \pm 0.1V$ ($\pm 2\%$)

Built-in load dump protection
80V Max (1Sec.)

Stable regulation characteristics

Line regulation 0.1% ($V_{IN}=7$ to 40V)

Load regulation 0.1% ($I_{LOAD}=1$ to 50mA)

Temperature coefficient 0.01% / degree

Low standby current

Dual output (keep alive/switched)

Wide operating temperature

-40 to 105 degree

1. 5V REGULATOR SERIES

PRODUCT LIST

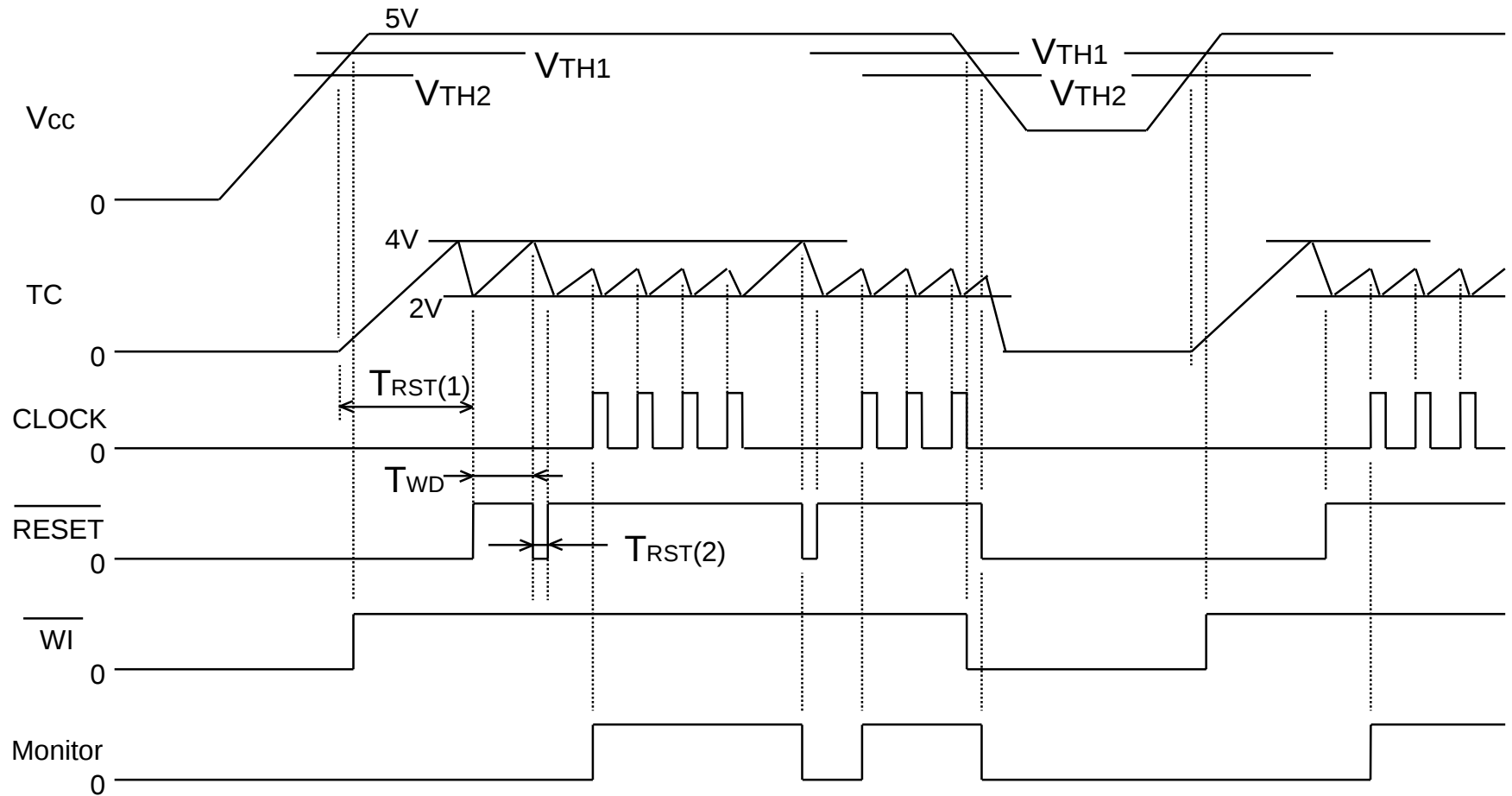
Sep.1997

Part NO.	Function	V-Input Max.(V)	V-Output (V)	I-Standby Max.(mA)	Package	Note
TA7900S TA7900F	5V Regulator with Watchdog timer	40	5 ± 0.25 (5 ± 0.1)	6.5	SIP9 SOP14	Reset detection 92%
TA8000S TA8000F		80	5 ± 0.25 (5 ± 0.1)	6.5	SIP9 SOP14	Reset detection 85%
TA8001S TA8002S/AS	5V Regulator with Reset timer	30 40	5 ± 0.5 (5 ± 0.25)	0.3	SIP7	Internal power TR. External power TR.
TA8005S TA8005F	5V Regulator with Watchdog timer	60	5 ± 0.25	1.4	SIP9 SOP14	Reset detection 85% Low standby current
TA8006SN TA8006ASN		60	5 ± 0.15	0.7	SSIP12	Built-in current limiter
TA8007S/F TA8007AS		60	5 ± 0.25	1.0	SIP9 SSOP16	CPU monitor output
TA8008F *1		60	5 ± 0.15	0.6	SSOP16	Wake-up timer
TA8041HA	Dual 5V Regulator with Watchdog timer	60	5 ± 0.15	1.0	HZIP12	Internal power TR. 250/100mA
TA8042F *2	5V Regulator with Watchdog timer	60	5 ± 0.15	1.0	HSOP20	Internal power TR. 100mA
TA8044F *3	3.3V/5V Dual Regulator with Watchdog timer	60	3.3 ± 0.15 5 ± 0.18	0.8	SSOP16	For 3.3V CPU
TA8045BF *1	5V Regulator with Watchdog timer	60	5 ± 0.15	0.3	SSOP16	Internal power TR. 100mA
TA8030S TA8030F	Watchdog timer	7	—	4.5	SIP7 SOP8	

Under development : *1.ES:NOW *2.ES:98-08 *3.ES:98-10

1. 5V REGULATOR SERIES

RESET TIMER TIMING CHART



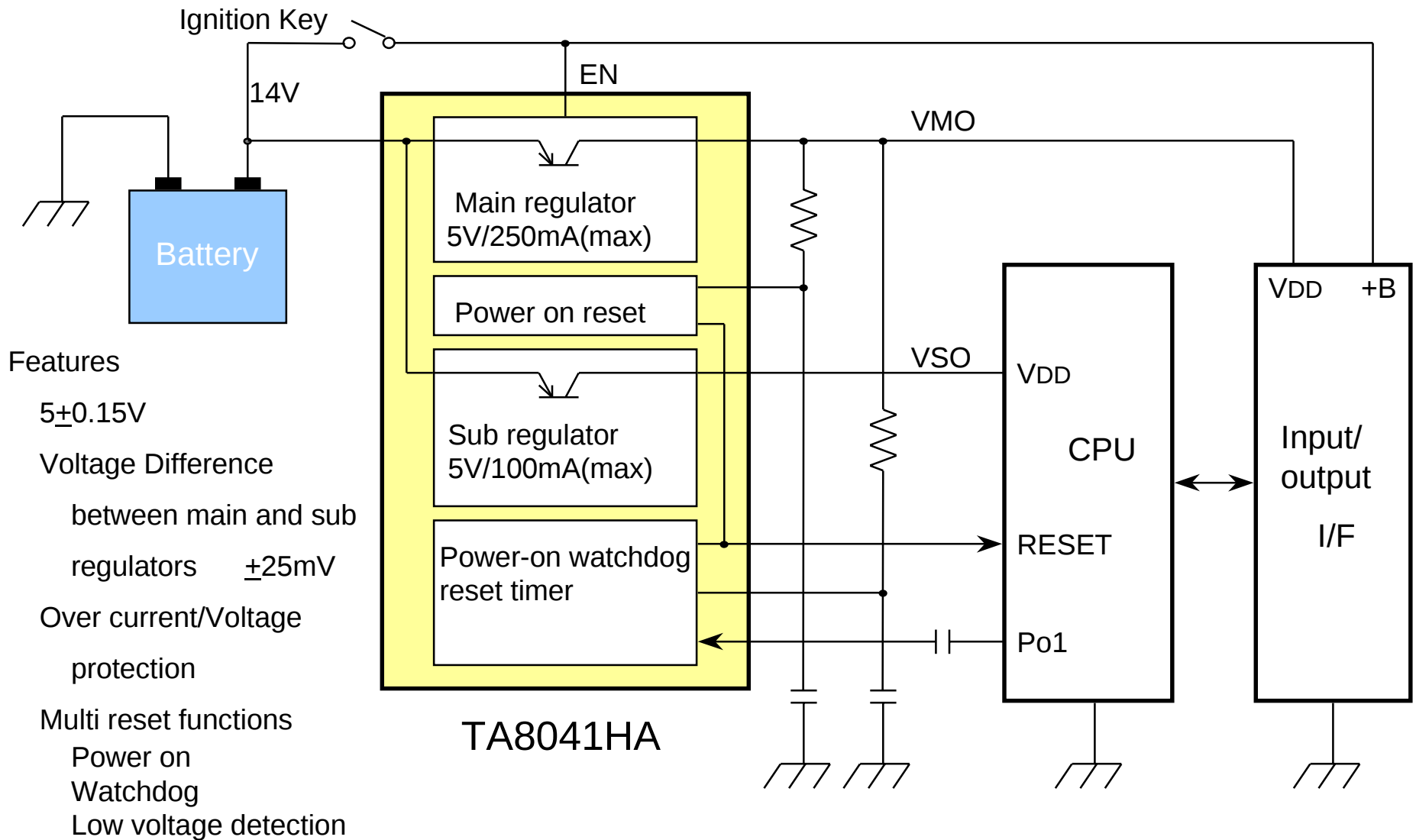
$T_{RST(1)}$ = Power on reset time = $1.6 \times CT \times RT$

$T_{RST(2)}$ = Reset time = $700 \times CT$

T_{WD} = Watchdog time = $1.1 \times CT \times RT$

1. 5V REGULATOR SERIES

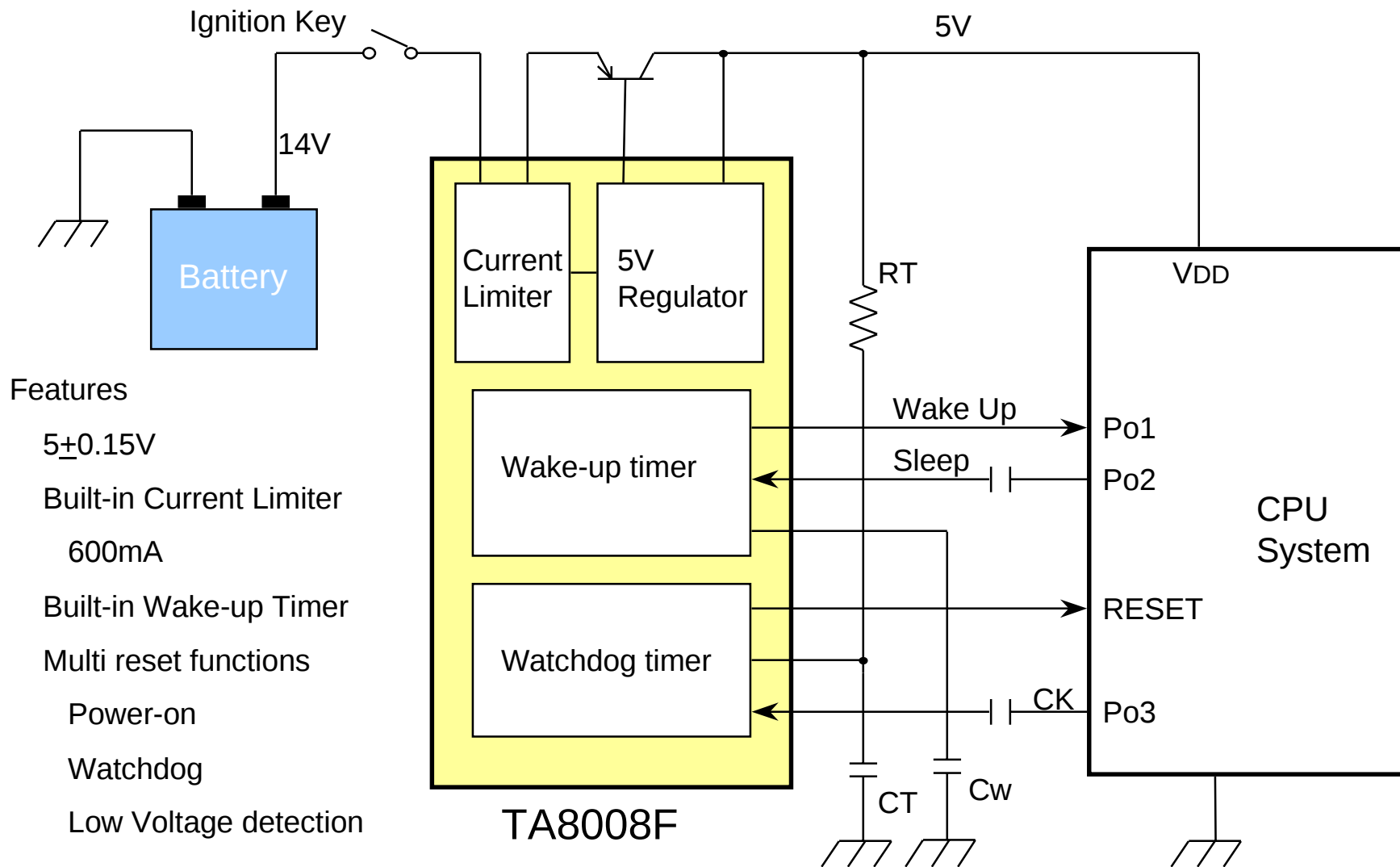
DUAL 5V REGULATOR [TA8041HA] APPLICATION EXAMPLE



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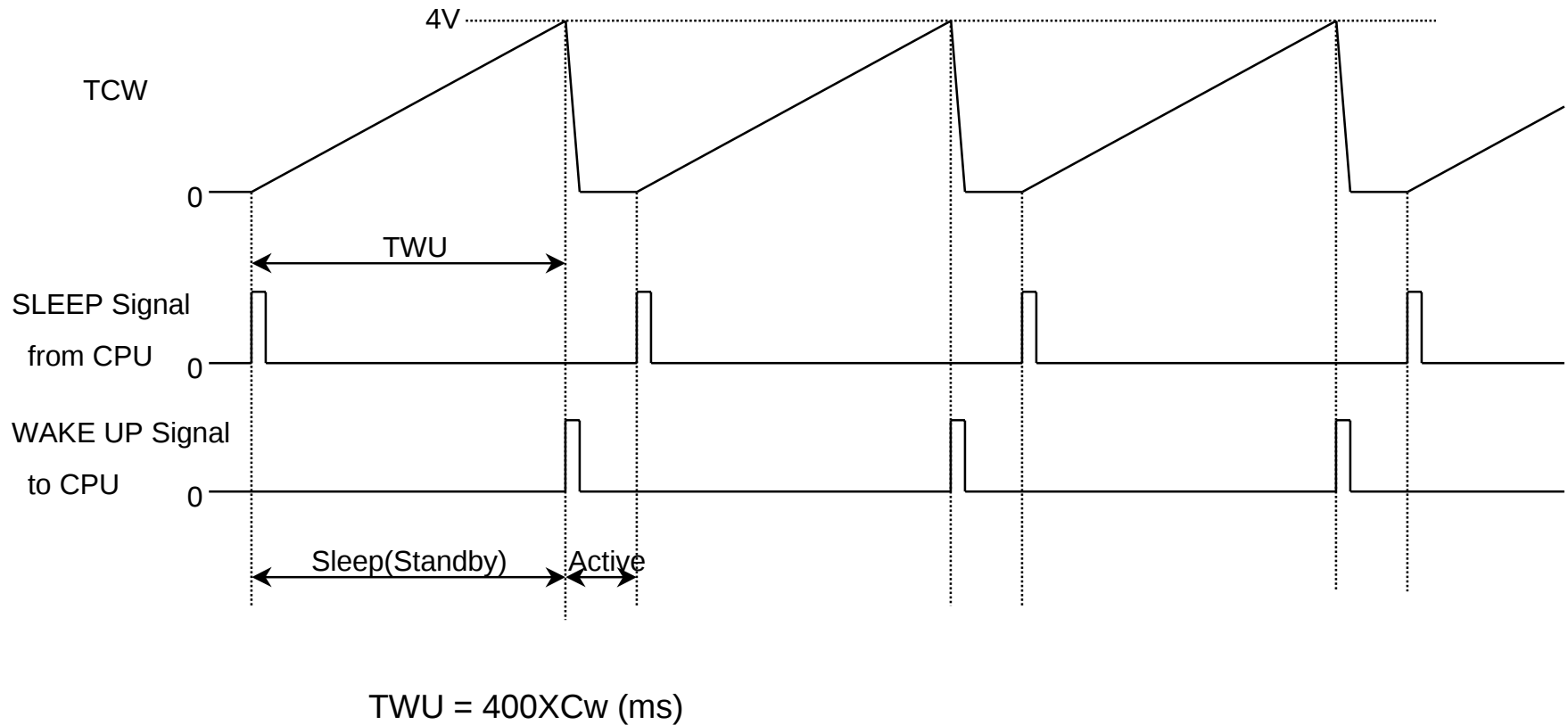
1. 5V Regulator Series

5V Regulator with Wake-Up Timer [TA8008F] Application Example



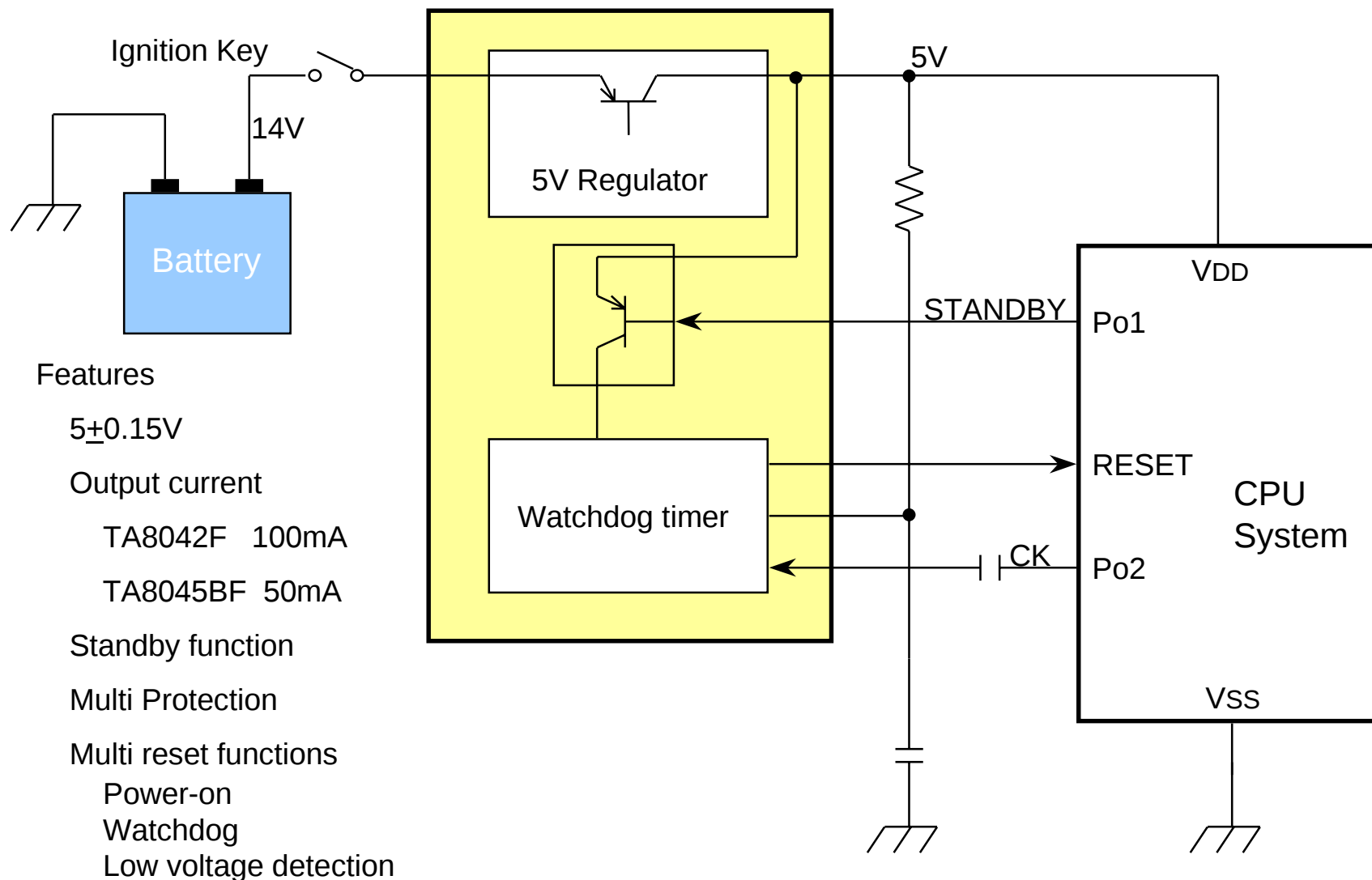
1. 5V Regulator Series

[TA8008F] Wake-Up Timer Timing Chart



1. 5 V Regulator Series

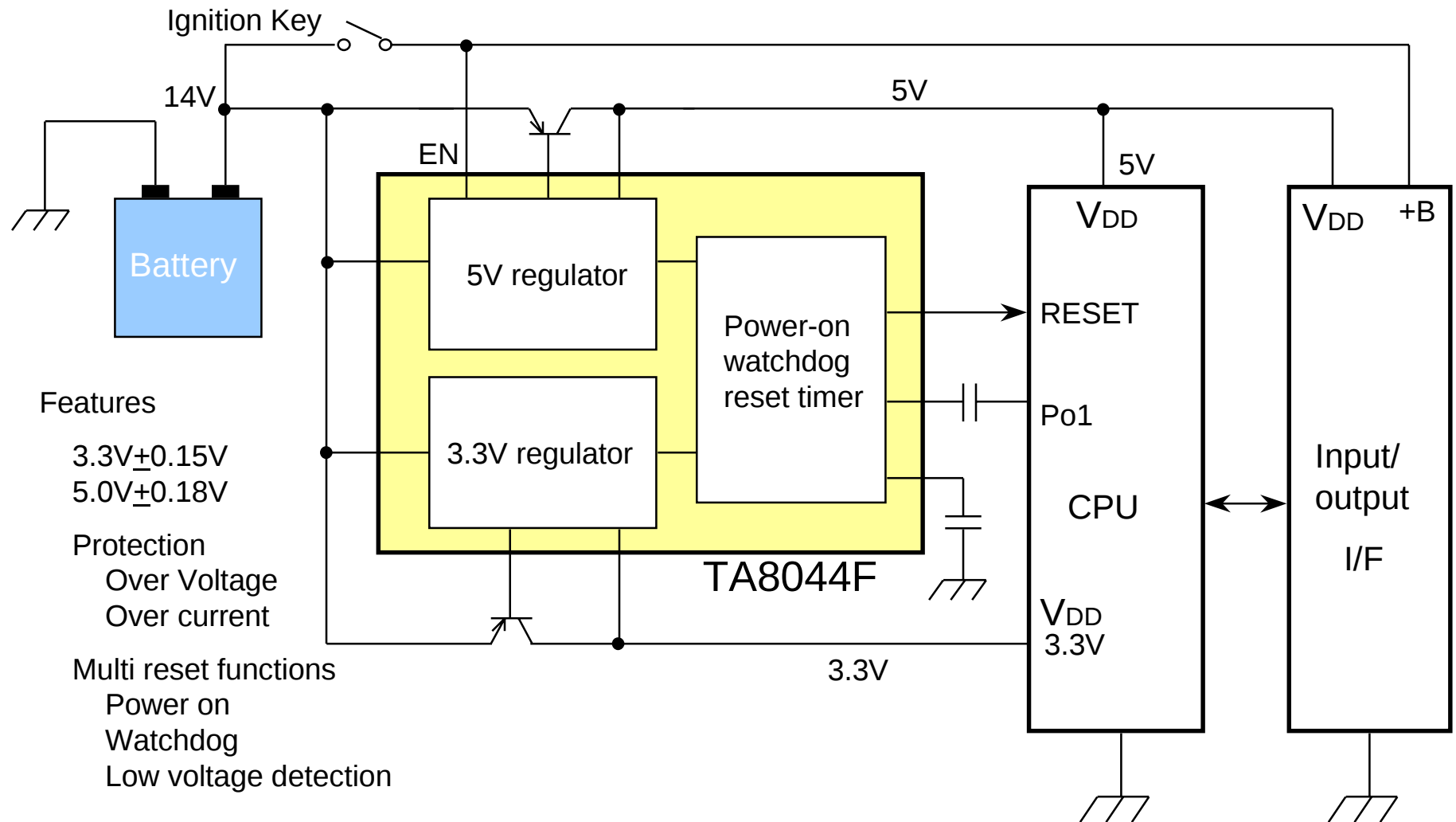
5V REGULATOR [TA8042F/45BF] APPLICATION EXAMPLE



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1. 5V REGULATOR SERIES

3.3V / 5V DUAL REGULATOR [TA8044F] APPLICATION EXAMPLE



2. Motor Driver Series

Function Map

Features

* Under development
*

OUTPUT CAPABILITY (A)	3	TA8051P	TA8053H	TA8082H (1.5AX2)	
	2				
	1	TA8050P	TA8050AK		
	0	TA8080K		TA8083P (0.5AX2)	
		TA8052S	TA8052AS	TA8081P	
Low Standby		—	X	X	X
Diagnostic Output		—	—	X	X
Dual Circuits		—	—	—	X

4 Modes

Forward/Reverse/Stop/Brake

Multi protective functions

Short-circuit(Out-Out/Out-Gnd/Out-Vbat.)

Thermal shutdown

Over-voltage shutdown

Load dump protection

60V Max(1sec.)

High output capability

3A Max

Self-diagnostic output

Short-circuit / Open-load

Low standby current

0.1mA Max

Wide operating temperature

-40 to 110 ° C

2. MOTOR DRIVER SERIES

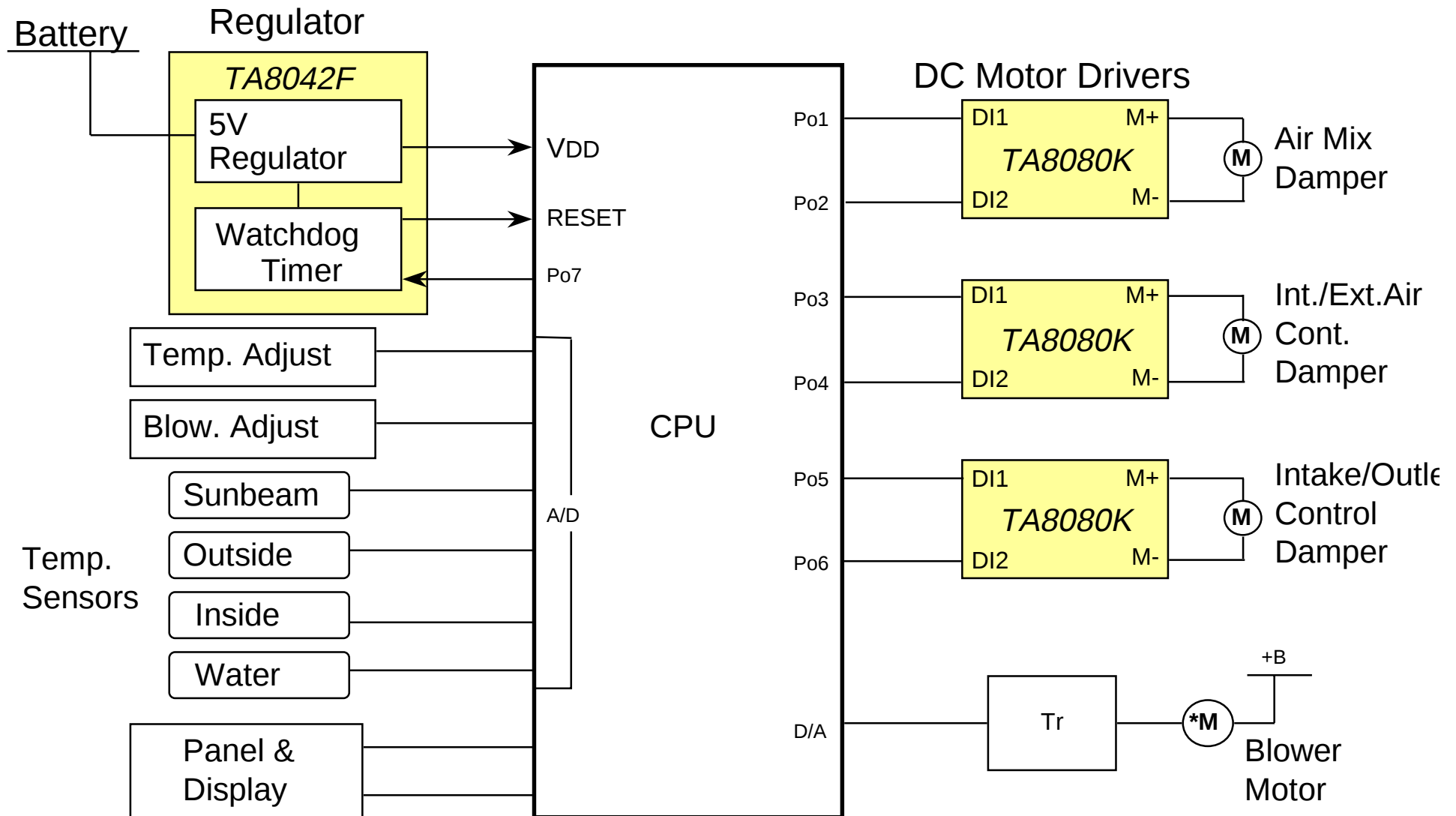
PRODUCT LIST

Jun.1997

Part NO.	V-Input Max.(V)	I-Output (A)	Detection Current (A)	I-Standby Max.(mA)	Package	Note
TA8050P	60	1.5	3.0	15.0	HSIP7	
TA8050AK	60	1.5	3.3	0.1	HSIP7(BS)	Low standby current
TA8051P	60	3.0	5.0	0.1	HZIP12	Low standby current
TA8052S	50	0.3	0.55	5.0	SIP7	
TA8052AS	50	0.3	0.55	0.1	SIP7	Low standby current
TA8053H	60	3.0	6.0	0.1	HZIP12	Self-diagnostic output
TA8080K	60	1.0	2.0	15.0	HSIP7(BS)	
TA8081P	60	0.7	1.5	0.1	DIP16	Self-diagnostic output
TA8082H *1	60	1.5 / ch	3.0	0.1	HZIP15	Dual circuits Self-diagnostic output
TA8083P	60	0.5 / ch	1.0	0.1	DIP16	Dual circuits Self-diagnostic output
TA8083F	60	0.5 / ch	1.0	0.1	HSOP20	Dual circuits Self-diagnostic output

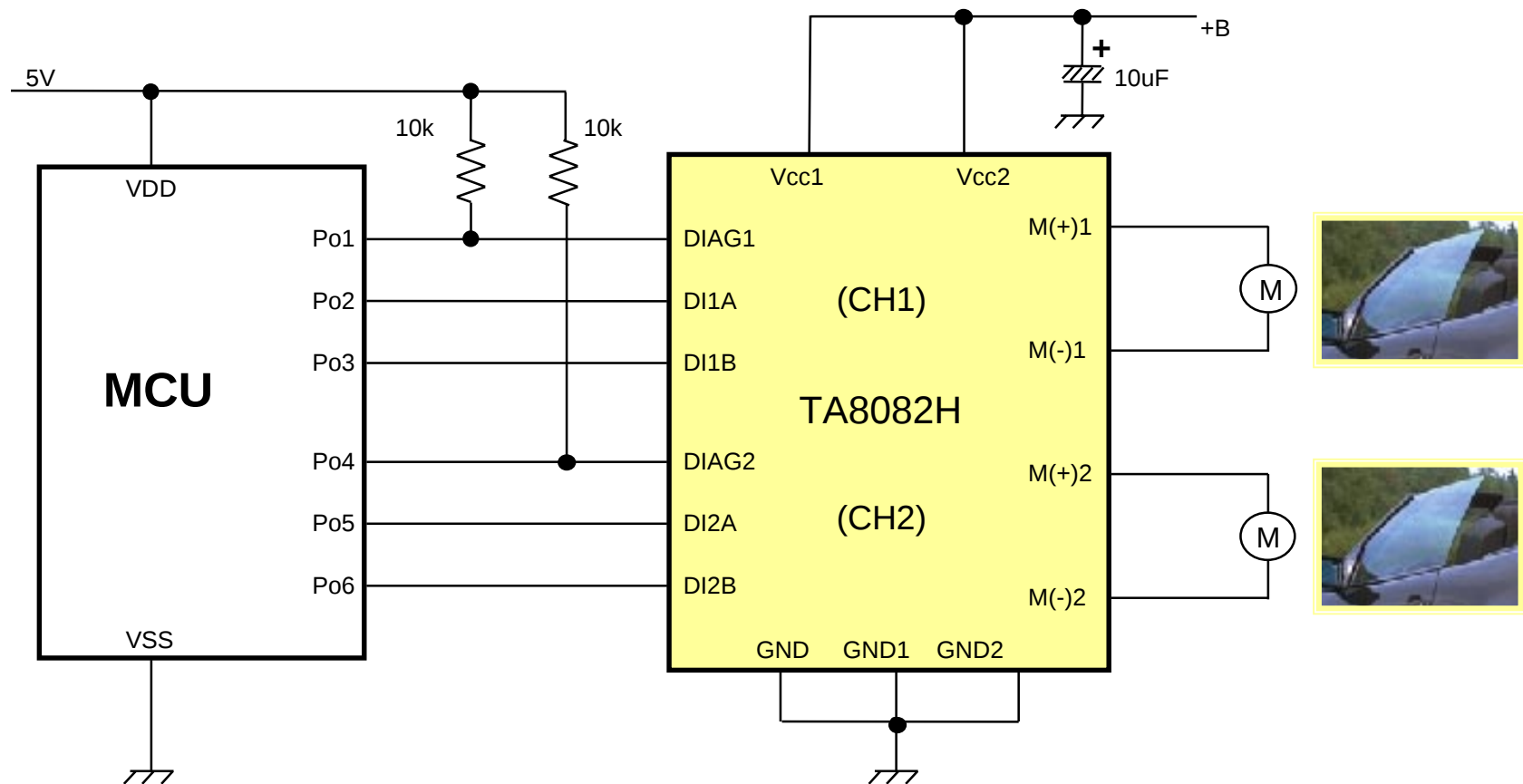
Under development : *1.ES:NOW

APPLICATION EXAMPLE for CLIMATE SYSTEM



2. Motor Driver Series

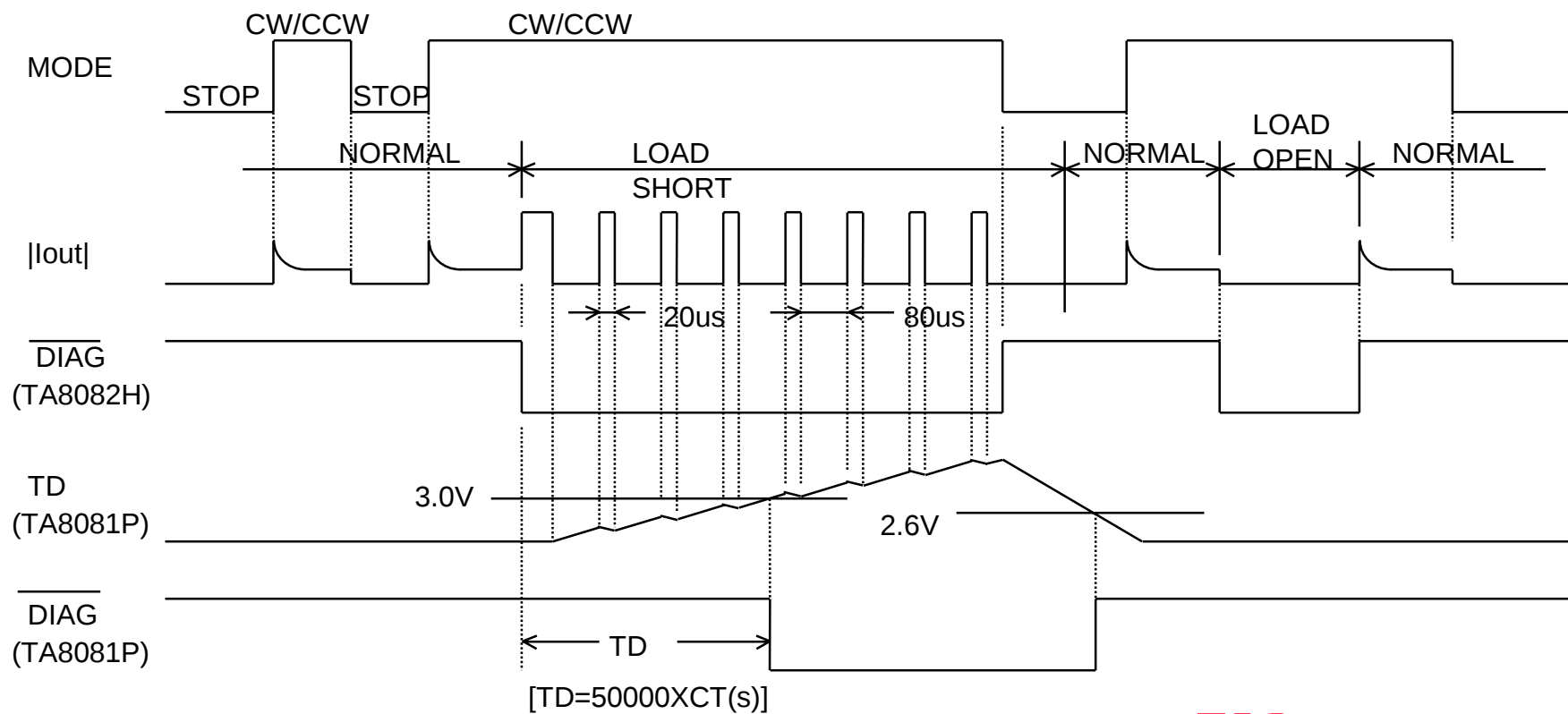
2 x 1,5 A H-Bridges [TA8082H] APPLICATION EXAMPLE



2. Motor Driver Series

Truth Table & Timing Chart

INPUT		OUTPUT		MODE
DI1	DI2	M(+)	M(-)	
H	H	L	L	BRAKE
L	H	L	H	REVERSE(CCW)
H	L	H	L	FORWARD(CW)
L	L	High Impedance		STOP



3. RELAY/LAMP DRIVER SERIES

PRODUCT LIST

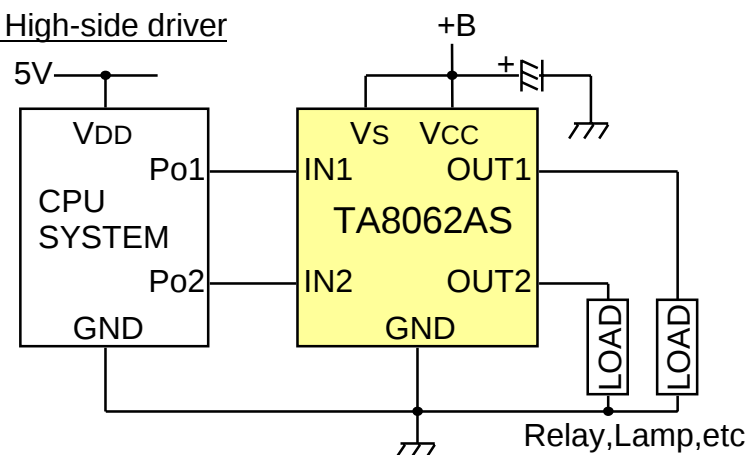
Jun.1997

Part NO.	Function	V-Input Max.(V)	I-Output (A)	Detection Current (A)	I-Standby Max.(mA)	Package	Note
TA8062S	Dual circuit High-side DR.	50	0.3 / ch	0.55	5.0	SIP7	
TA8062AS	Dual circuit High-side DR.	50	0.3 / ch	0.55	0.1	SIP7	Low standby current
TA8063F *1	Quad circuit High-side DR.	60	0.5 / ch	1.0	0.1	HSOP20	Self-diagnostic output
TA8066AS	Dual circuit Low-side DR.	50	0.3 / ch	0.55	0.1	SIP7	Low standby current
TA8069F	Quad circuit Low-side DR.	60	0.5 / ch	1.0	0.1	HSOP20	Self-diagnostic output

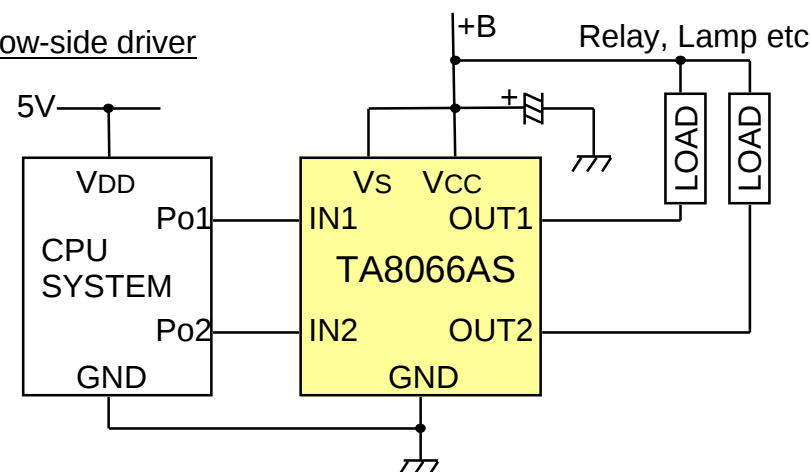
Under development : *1. ES: Now

APPLICATION EXAMPLE

1. High-side driver

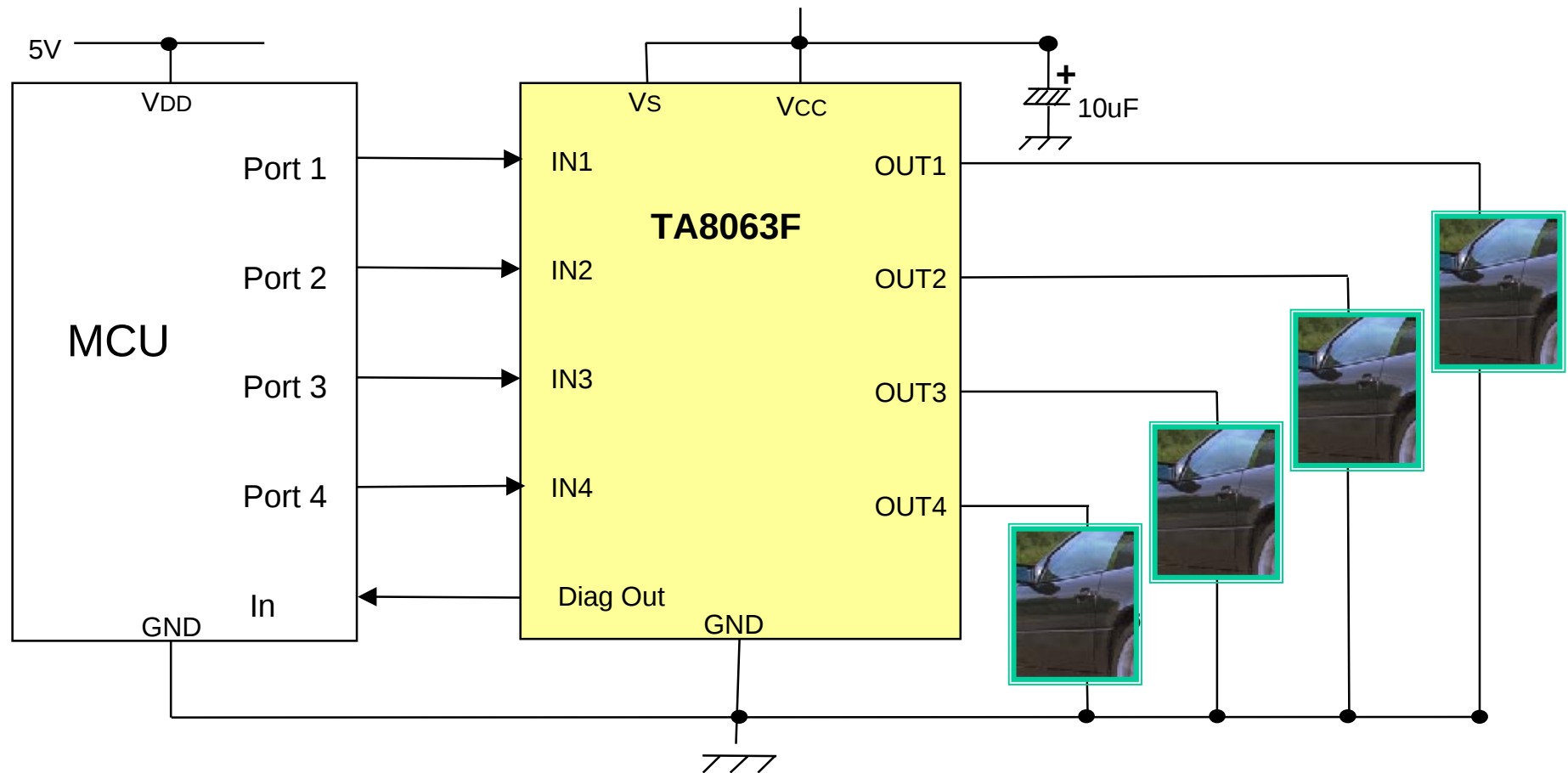


2. Low-side driver



3. Relais/Lamp Driver Series

4 x 0,5 A High Side Switch [TA8063F] APPLICATION EXAMPLE



4. SPECIAL FUNCTION SERIES

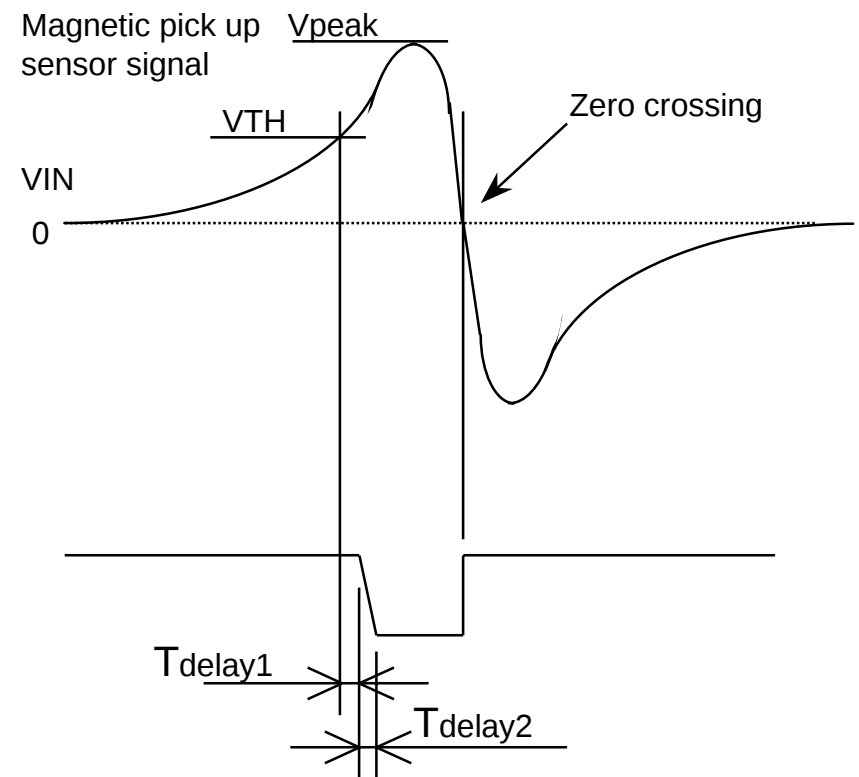
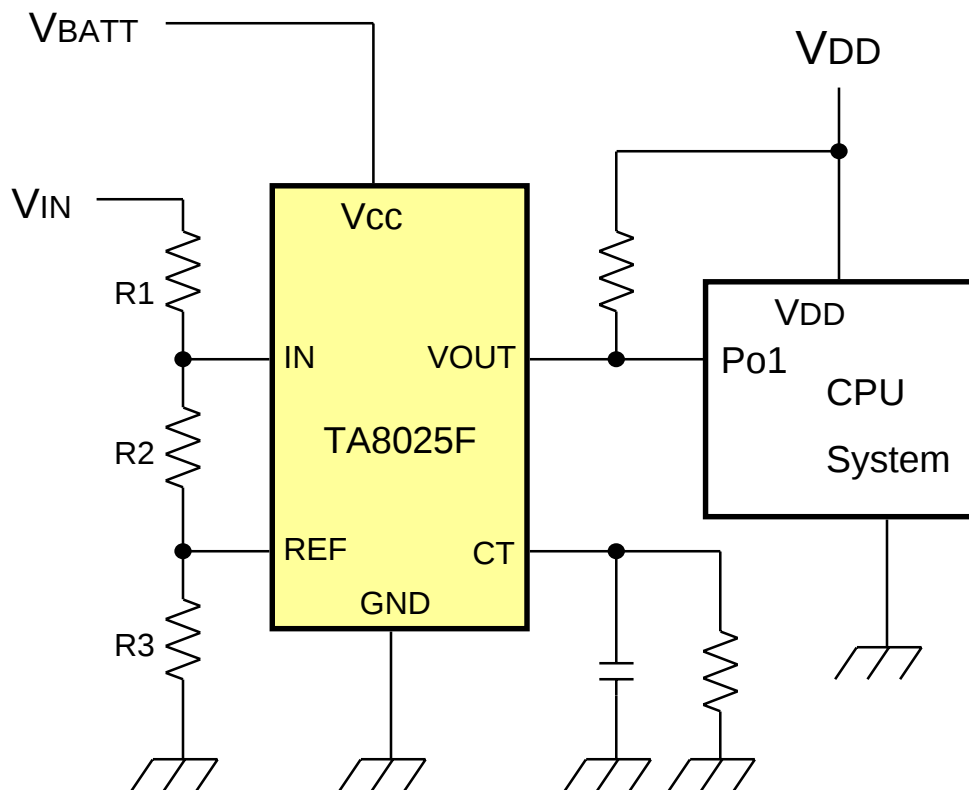
PRODUCT LIST

Dec.1997

Application	Part NO.	Package	Function
Voltage comparator	TA7522S / F	SIP9 / SOP8	Dual circuit voltage comparator
Odometer Driver	TD6330BP	DIP16	4 Phase stepping motor driver
Lamp failure detector	TA8020S / AS	SIP9	Dual circuit voltage sensor
	TA8021S	SIP9	Triple circuit voltage sensor
Magnetic pick up I/F	TA8025F / P	SOP8 / DIP8	Input waveform shaper
Flasher controller	TA8026P / AP	DIP8	Dual speed flashing controller
	TA8027P	DIP8	
Illumination controller	TA8028S	SIP7	Output duty controller
Speed detector	TA8029S	SIP9	F/V converter
Defroster	TD6347S / F	SIP9 / SSOP10	Long-time timer
VFD Driver	TD6337P	DIP18	10 Bit serial-in/parallel-out driver
	TD6338P	DIP18	

4. SPECIAL FUNCTION SERIES

MAGNETIC PICK UP I/F [TA8025F] APPLICATION EXAMPLE



Features

Input frequency DC to 50kHz

Input V_{TH} 30mV to $V_{peak} \times K$ [$K = (R2 + R3) / R3$]

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