Ordering number :ENN5238

Monolithic Linear IC

LA5614M

Charging IC for Nickel – Cadmium and Nickel Metal Hydride Batteries

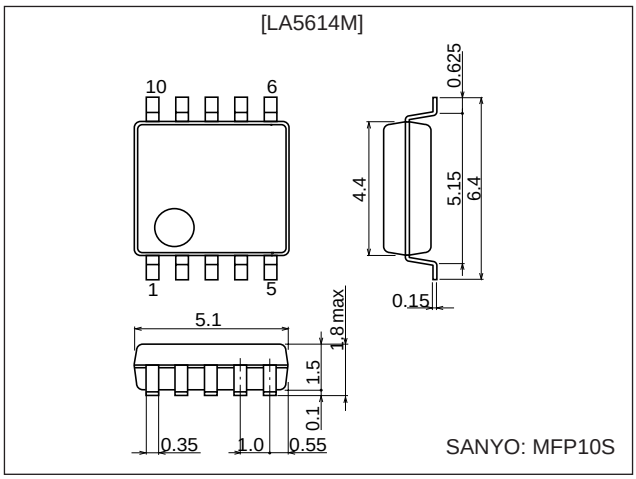
Functions and Features

- Ideally suited for charging systems that use a microcontroller due to charge voltage detection.
- Cycle charge/trickle charge switching.
- Change current can be set with external resistor.

Package Dimensions

unit: mm

3086A-MFP10S



Specifications

Maximum Rating at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply voltage	V_{CC} max		9	V
V_{CONT} input voltage	V_{CONT} max		9	V
BIN pin voltage	V_{BIN} max		9	V
ON/OFF pin voltage	$V_{ON/OFF}$ max		5	V
Allowable power dissipation	Pd max	Independent IC	250	mW
Operating temperature	Topr		–20 to +80	°C
Storage temperature	Tstg		–30 to +125	°C

Operating Conditions at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Supply voltage	V_{CC}		6 ±0.3	V
V_{CONT} voltage	V_{CONT}		6 ±0.3	V
Base output current	I_{BASE}		0 to 14	mA
Trickle sink current	I_{SINK}		0 to 50	mA

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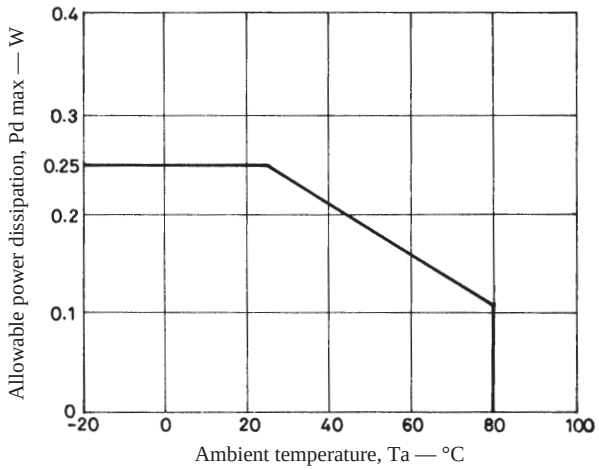
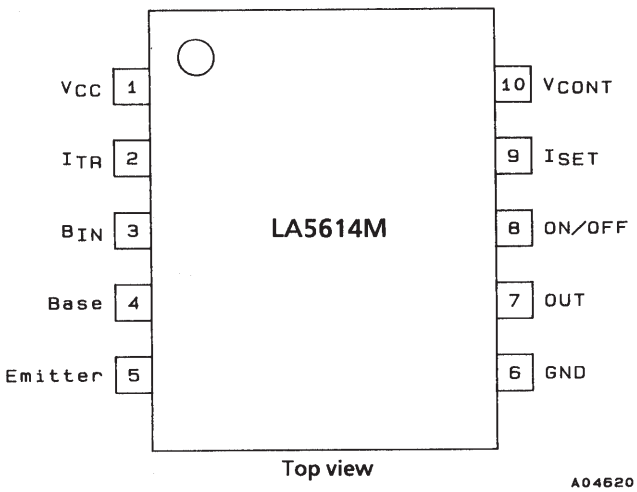
Electrical Characteristics at Ta = 25°C, V_{CC} = V_{CONT} = 6 V in specified test circuit

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Quiescent current	I_{CC}	V_{CONT} = 0 [V]			10	μA
Base output current	I_B		10	14	18	mA
V_{CONT} ON voltage	V_C		0.6	1.2	3.4	V
ON/OFF control OFF voltage	V_{OFF}			1.0	1.5	V
Trickle sink current	I_{SINK}	V_{ON} = 0 [V], 27 Ω resistor between I_{TR} and GND V_{BAT} = 4.2 [V]		50	60	mA
[OUT pin block]						
Rise offset voltage	V_{OOS}		3.4	3.6	3.8	V
Output "L" level voltage	V_{OL}	0 V ≤ V_{BAT} < 3.6 V	0	0.05	0.1V_{CC}	V
Output "H" level voltage	V_{OH}	V_{BAT} = V_{CC}	0.8V_{CC}		V_{CC}	V
Output gain	V_{OG}		8.0	9.5	11.0	dB

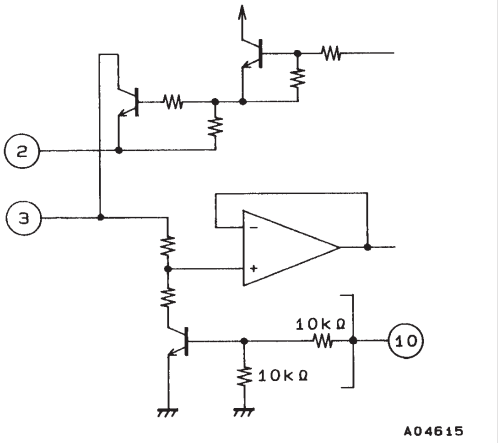
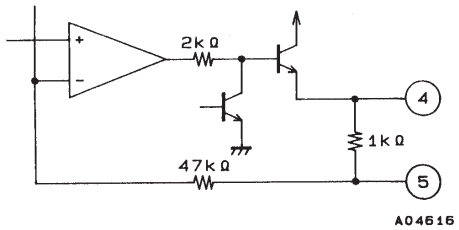
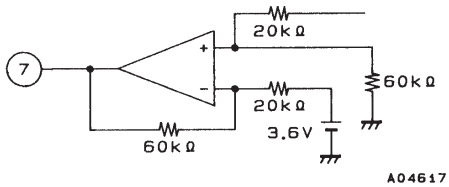
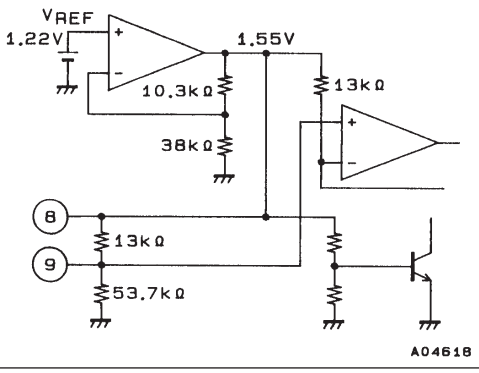
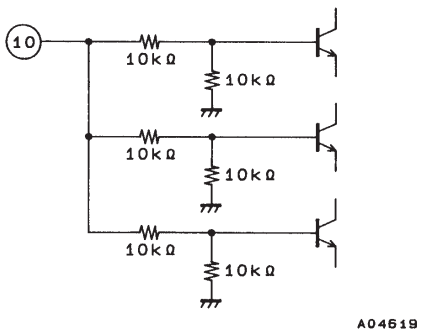
Pd max — Ta



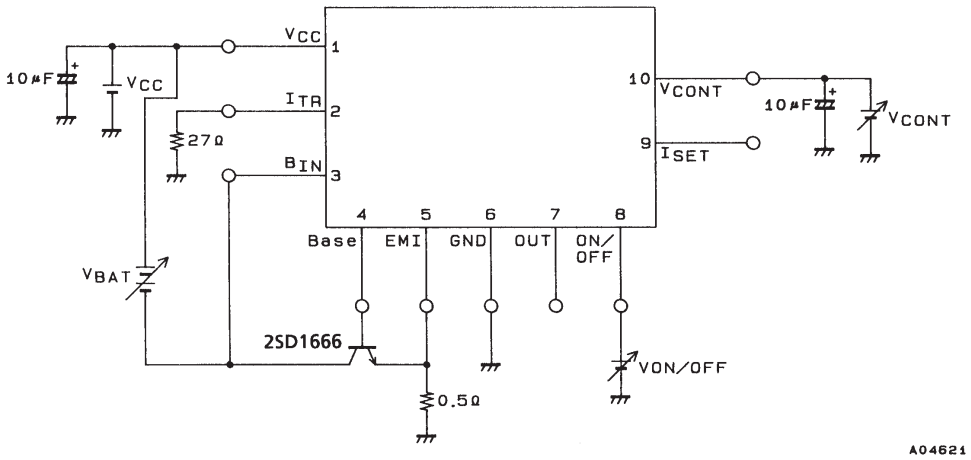
Pin Assignment



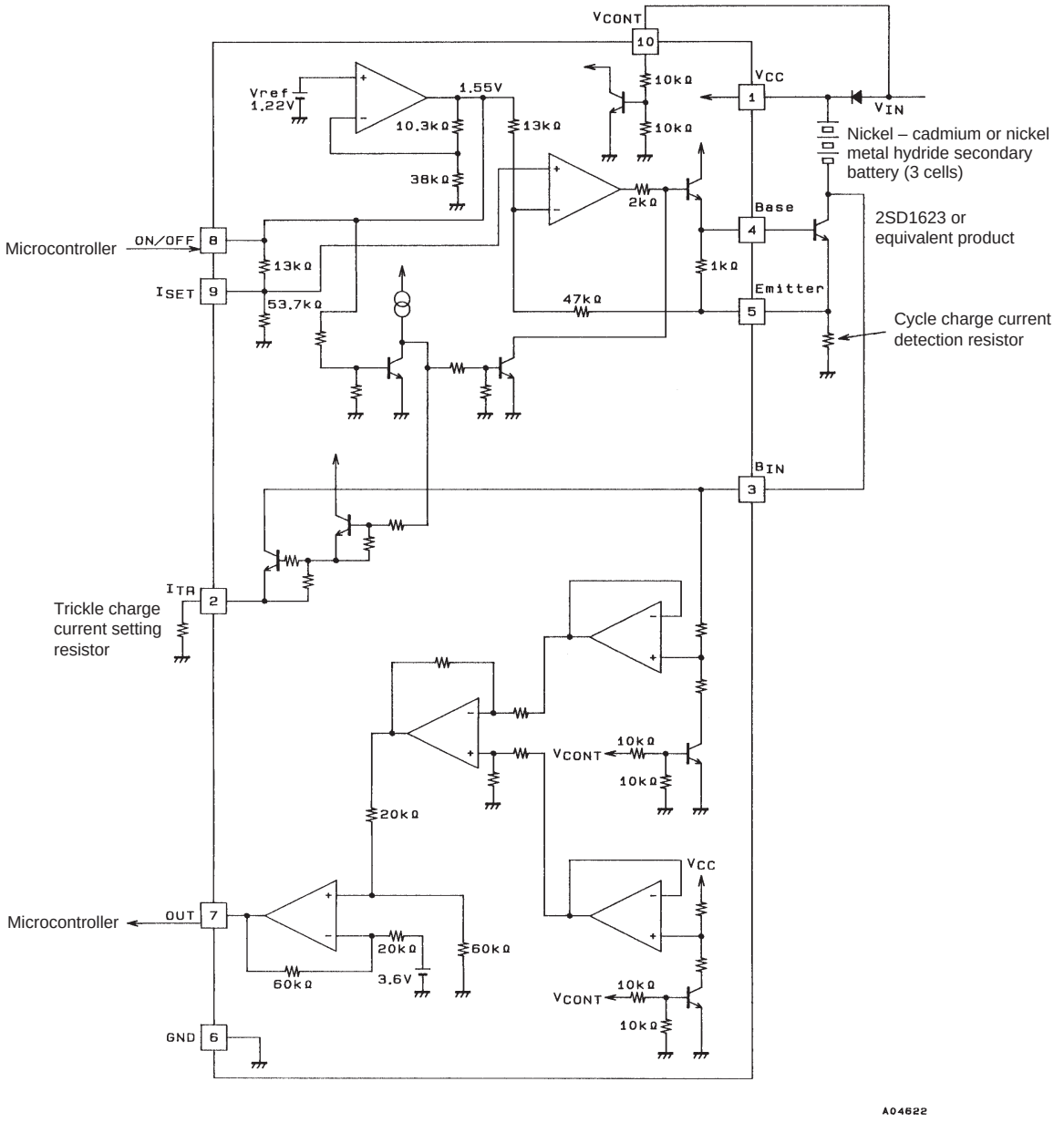
Pin Functions

Pin No.	Pin name	Function	Equivalent circuit
1	V_{CC}	External power supply pin	
2	I_{TR}	Trickle sink current setting pin Connect a resistor between GND and this pin	
3	B_{IN}	Secondary battery negative electrode and external NPN transistor collector connection pin	
4	Base	External NPN transistor base connection pin	
5	Emitter	External NPN transistor emitter and cycle charge current detection resistor connection pin	
6	GND	MIN. potential of this IC	
7	OUT	Charge voltage detection output pin Offset voltage: 3.6 V Output gain × 3 (when 3.6 V < VBAT < V_{CC}, 3 Δ V_{BAT} is output)	
8	ON/OFF	Pin that switches between cycle charge and trickle charge Open: Cycle "L": Trickle	
9	I_{SET}	Pin for setting cycle charge current Connection of resistor between (9) and GND: Small charge current Connection of resistor between (9) and (8): Large charge current	
10	V_{CONT}	Pin that controls ON/OFF operation of this pin. "H": ON	

Test Circuit



Equivalent Circuit Block Diagram and Peripheral Circuit Example (Values are reference values)



Application Cautions

The charging conditions of the secondary battery to be used must be set according to the battery specifications.