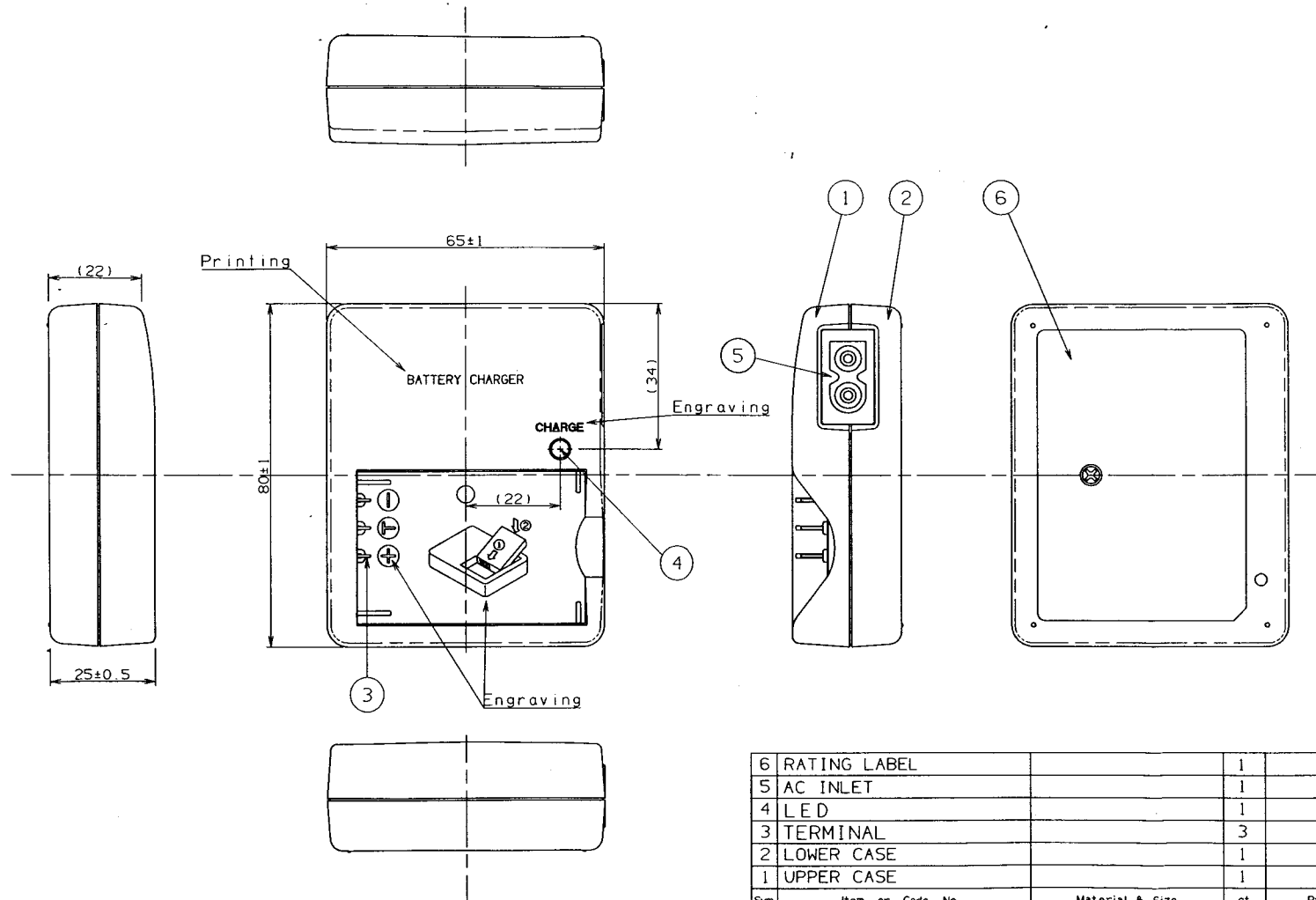




6	RATING LABEL			1		
5	AC INLET			1		
4	LED			1		
3	TERMINAL			3		
2	LOWER CASE			1		
1	UPPER CASE			1		
Sym.	Item or Code No.	Material & Size		qt.	Process	Remark
				DE-844R*		
				Name	External appearance	
Scale	Designed	Drawn	Traced	Checked	Approved	No.
1:1	Yoshida	Yoshida			Timik	Z844- A091A
	27-Jul-01	27-Jul-01				

Lithium Ion Battery Charger Specifications					Approved	Checked	Drawn												
					<i>Tomiki</i>	<i>S. Saito</i>	<i>Y. Yoshida</i>												
1. Product Name and Model Number																			
1-1 Product Name		Lithium Ion Battery Charger																	
1-2 Model Number		DE-844RA																	
2. Scope		This product is a battery charger for Lithium-Ion battery pack.																	
3. Destinations and safety standards		USA/Canada : UL1310 (C - UL application) CSA C22.2 No.223 Europe : ENG0065 (CB certification) EN55014-1 EN50014-2 Japan : DENTORI																	
4. Appearance, mass, etc.		Refer an attached drawing "External Appearance".																	
5-1 Appearance		Approximately 75g																	
5-2 Mass		Refer an attached drawing																	
5-3 Indications																			
5. Applicable batteries		<table border="1"> <thead> <tr> <th>Type</th> <th>Model No.</th> <th>Cell</th> <th>Voltage</th> <th>Capacity</th> <th>Manufacturer</th> </tr> </thead> <tbody> <tr> <td>Li-ion</td> <td>CGA-7/102*</td> <td>1 cell</td> <td>3.7V</td> <td>900mAh</td> <td>Matsushita</td> </tr> </tbody> </table>						Type	Model No.	Cell	Voltage	Capacity	Manufacturer	Li-ion	CGA-7/102*	1 cell	3.7V	900mAh	Matsushita
Type	Model No.	Cell	Voltage	Capacity	Manufacturer														
Li-ion	CGA-7/102*	1 cell	3.7V	900mAh	Matsushita														
		Battery has following terminals. 1. Positive Terminal 2. Negative Terminal 3. T Terminal (Thermistor TH05-3H103F is connected between T terminal and Negative terminal)																	
Mark	Date	Revision	Drawn	Aprvd	Mark	Date	Revision	Drawn	Aprvd										
△					△														
△					△														

6. Electrical Characteristics

(Unspecified characteristics are at 100V AC input and $T_a=25\pm5^{\circ}\text{C}$)

6-1 Input voltage

Input : 90 – 264V (100V–10% ~ 240V+10%)

Frequency : 50 –60Hz

6-2 Input Wattage

Input wattage shall be as follows at 3.9V battery with 100V AC input.

Input Wattage	4.5 ± 2 W
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6-3 Battery Detection

Battery connection is detected by connection of thermistor between T terminal and Negative terminal. If positive terminal is open circuit, LED turns off at around 5 seconds after starting.

	Resistance	Detecting
Thermistor resistance	$200 \pm 100 \text{ k}\Omega \sim \infty$	No Battery
	$0 \sim 200 \pm 100 \text{ k}\Omega$	Battery is connected

6-4 Charging current

Charging current at battery voltage 3.7V shall be as follows.

Charging current	630 ± 70 mA
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6-5 Battery temperature protection

According to thermistor resistance, following temperature protections are done.

Low temperature protection (No charging current)

Thermistor	$R_{th} \geq 30.1 \pm 4 \text{ k}\Omega$	About -3°C
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High temperature protection at starting (No charging current)

Thermistor	$R_{th} \leq 4.97 \pm 0.6 \text{ k}\Omega$	About 45°C
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High temperature protection during rapid charging (No charging current)

Thermistor	$R_{th} \leq 3.57 \pm 0.4 \text{ k}\Omega$	About 55°C
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Returned condition after high temperature protection

Thermistor	$R_{th} \geq 4.97 \pm 0.6 \text{ k}\Omega$	About 45°C
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Low temperature protection 2 (Low charging current)

Thermistor	$30.1 \pm 4 \text{ k}\Omega \geq R_{th} \geq 21.2 \pm 3 \text{ k}\Omega$	About 6°C
Charging current	160 ± 50 mA	

At temperature protection, following charging current flow for low voltage battery (over discharged battery)

Over discharge current	80 ± 40 mA
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Mark	Date	Revision	Drawn	Aprvd	Mark	Date	Revision	Drawn	Aprvd
△									
△									

6-6 Charging control method

Constant voltage and constant current control method.

Constant voltage

 $4.2 \text{ V} \pm 30 \text{ mV}$

Fully charging detection is at following charging current.

Fully charged Current

 $80 \pm 40 \text{ mA}$

6-7 Charging timer

Charging timer ... $240 \text{ min} \pm 30\%$

6-8 Recharge voltage

After fully charging, rapid charging re-starts when battery voltage comes down to following voltage.

Recharge voltage

 $4.0 \pm 0.15 \text{ V}$

6-9 Charge Indication

Red and green dual color LED shows following charging status.

Rapid charging	Red
Fully charging	Green
No battery	Off
NG battery	Off

6-10 Over discharged battery protection (Output short-circuit protection)

When battery voltage is lower than following voltage, charging current shall be as follows. And there shall be no abnormalities when output is short-circuited.

Battery voltage

 $V_{\text{out}} \leq 3.0 \pm 0.3 \text{ V}$

Battery charge current

 $80 \pm 40 \text{ mA}$

6-11 Charging Time (for reference)

About 120 minutes

7. Temperature range

Temperature range of operation : $0^\circ\text{C} \sim 40^\circ\text{C}$
 Temperature range of storage : $-25^\circ\text{C} \sim 65^\circ\text{C}$

Mark	Date	Revision	Drawn	Aprvd	Mark	Date	Revision	Drawn	Aprvd
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△									