

Excellent Integrated System Limited

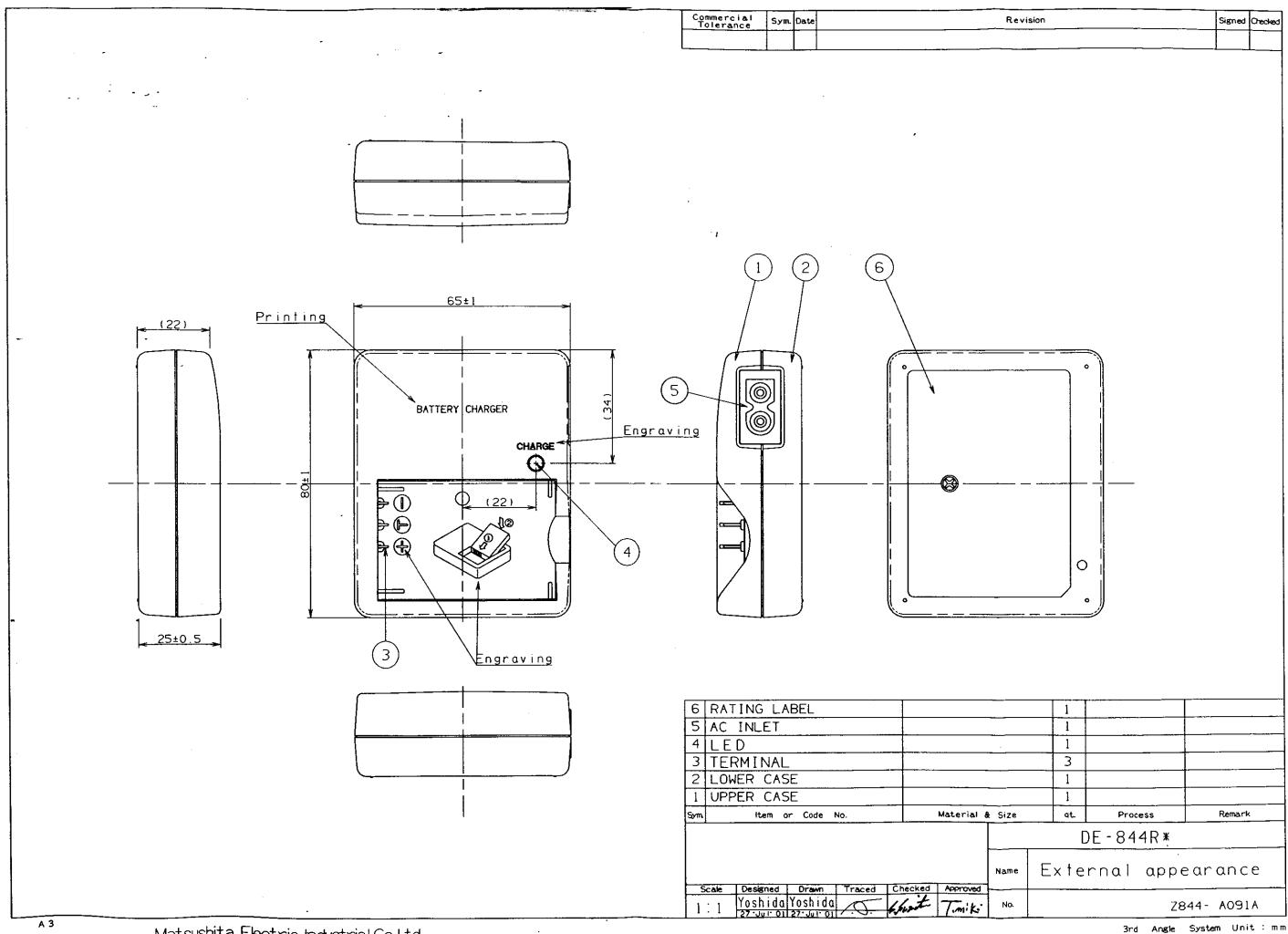
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sales@integrated-circuit.com



07, Sep. 2001 1/6

Lithium Ion Battery Charger Specifications		Approved	Checked	Drawn												
		T. mi. K.	S. Suzuki	Y. Yoshida												
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 : EN60065 (CB certification) EN55014-1 EN50014-2 Japan DENTORI															
4. Appearance, mass, etc.																
5-1 Appearance	Refer an attached drawing "External Appearance".															
5-2 Mass	Approximately 75g															
5-3 Indications	Refer an attached drawing															
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)															

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6. Electrical Characteristics	(Unspecified characteristics are at 100V AC input and $T_a=25\pm5^\circ C$)										
	Input	: 90 – 264V (100V-10% ~ 240V+10%)									
	Frequency	: 50 – 60Hz									
	Input wattage	Input wattage shall be as follows at 3.9V battery with 100V AC input.									
	Input Wattage	4.5 ± 2 W									
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.										
	<table border="1"> <thead> <tr> <th></th><th>Resistance</th><th>Detecting</th></tr> </thead> <tbody> <tr> <td>Thermistor resistance</td><td>$200 \pm 100 k\Omega \sim \infty$</td><td>No Battery</td></tr> <tr> <td></td><td>$0 \sim 200 \pm 100 k\Omega$</td><td>Battery is connected</td></tr> </tbody> </table>			Resistance	Detecting	Thermistor resistance	$200 \pm 100 k\Omega \sim \infty$	No Battery		$0 \sim 200 \pm 100 k\Omega$	Battery is connected
	Resistance	Detecting									
Thermistor resistance	$200 \pm 100 k\Omega \sim \infty$	No Battery									
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6-4 Charging current	Charging current at battery voltage 3.7V shall be as follows.										
	<table border="1"> <tr> <td>Charging current</td><td>630 ± 70 mA</td></tr> </table>		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)										
	<table border="1"> <tr> <td>Thermistor</td><td>$R_{th} \geq 30.1 \pm 4 k\Omega$</td><td>About -3°C</td></tr> </table>		Thermistor	$R_{th} \geq 30.1 \pm 4 k\Omega$	About -3°C						
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	High temperature protection at starting (No charging current)										
	<table border="1"> <tr> <td>Thermistor</td><td>$R_{th} \leq 4.97 \pm 0.6 k\Omega$</td><td>About 45°C</td></tr> </table>		Thermistor	$R_{th} \leq 4.97 \pm 0.6 k\Omega$	About 45°C						
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	High temperature protection during rapid charging (No charging current)										
	<table border="1"> <tr> <td>Thermistor</td><td>$R_{th} \leq 3.57 \pm 0.4 k\Omega$</td><td>About 55°C</td></tr> </table>		Thermistor	$R_{th} \leq 3.57 \pm 0.4 k\Omega$	About 55°C						
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	Returned condition after high temperature protection										
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Thermistor	$R_{th} \geq 4.97 \pm 0.6 k\Omega$	About 45°C									
	Low temperature protection 2 (Low charging current)										
	<table border="1"> <tr> <td>Thermistor</td><td>$30.1 \pm 4 k\Omega \geq R_{th} \geq 21.2 \pm 3 k\Omega$</td><td>About 6°C</td></tr> <tr> <td>Charging current</td><td>$160 \pm 50 \text{ mA}$</td><td></td></tr> </table>		Thermistor	$30.1 \pm 4 k\Omega \geq R_{th} \geq 21.2 \pm 3 k\Omega$	About 6°C	Charging current	$160 \pm 50 \text{ mA}$				
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Charging current	$160 \pm 50 \text{ mA}$										
	At temperature protection, following charging current flow for low voltage battery (over discharged battery)										
	<table border="1"> <tr> <td>Over discharge current</td><td>$80 \pm 40 \text{ mA}$</td></tr> </table>		Over discharge current	$80 \pm 40 \text{ mA}$							
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6-6 Charging control method 6-7 Charging timer 6-8 Recharge voltage 6-9 Charge Indication 6-10 Over discharged battery protection (Output short-circuit protection) 6-11 Charging Time (for reference) 7. Temperature range	Constant voltage and constant current control method.				
	Constant voltage	4. 2 V \pm 3 0 m V			
	Fully charging detection is at following charging current.				
	Fully charged Current	8 0 \pm 4 0 m A			
	Charging timer 2 4 0 min \pm 3 0 %				
	After fully charging, rapid charging re-starts when battery voltage comes down to following voltage.				
	Recharge voltage	4. 0 \pm 0. 1 5 V			
	Red and green dual color LED shows following charging status.				
	Rapid charging	Red			
	Fully charging	Green			
	No battery	Off			
	NG battery	Off			
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.					
<table border="1"> <tr> <td>Battery voltage</td> <td>V_{out} \leq 3. 0 \pm 0. 3 V</td> </tr> <tr> <td>Battery charge current</td> <td>8 0 \pm 4 0 m A</td> </tr> </table>		Battery voltage	V _{out} \leq 3. 0 \pm 0. 3 V	Battery charge current	8 0 \pm 4 0 m A
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