



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



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60 Watts

- Ultra Compact Size
- Single Outputs from 3.3 to 48 V
- Encapsulated
- PCB & Chassis Mount Versions
- <0.3 W No Load Input Power
- -40 to +70 °C Operation
- Peak Load Capability
- 3 Year Warranty



The ECE60 series of compact encapsulated AC-DC power modules are available in both PCB & chassis mount versions offering exceptional power density of >10W/in³. Output voltages are available from 3.3 – 48 VDC and these “green power” modules offer high active mode efficiency and low no load power consumption. They also provide a peak load capability up to 130% of nominal power for up to 30s and a wide operating temperature range from -40 to +70°C.

Dimensions:

ECE60:

3.60 x 1.50 x 1.10" (91.4 x 38.1 x 28.0 mm)

ECE60-S:

4.45 x 1.57 x 1.12" (113.0 x 40.0 x 28.5 mm)

Models & Ratings

Output Power	Output Voltage	Output Current		Efficiency ⁽⁴⁾	Model Number ^(2,3)
		Nominal	Peak ⁽¹⁾		
33 W	3.3 V	10.00 A	13.00 A	79%	ECE60US03
50 W	5.0 V	10.00 A	13.00 A	83%	ECE60US05
60 W	9.0 V	6.67 A	8.67 A	87%	ECE60US09
60 W	12.0 V	5.00 A	6.50 A	87%	ECE60US12
60 W	15.0 V	4.00 A	5.20 A	88%	ECE60US15
60 W	24.0 V	2.50 A	3.25 A	89%	ECE60US24
60 W	36.0 V	1.67 A	2.17 A	88%	ECE60US36
60 W	48.0 V	1.25 A	1.63 A	86%	ECE60US48

Notes

1. Peak load lasting <30 s with a maximum duty cycle of 10%, average output power not to exceed nominal power.
2. Add suffix -S to model number to denote chassis mount with screw terminal type, e.g. ECE60US12-S.
3. A screw terminal version (-S) is available with DIN Clip attached. Add suffix 'D', e.g. ECE60US24-SD. DIN Rail mounting clip is available as a separate item, order code ECE60 DIN CLIP.
4. Average of efficiencies measured at 25%, 50%, 75% & 100% load with 230 VAC input.

Summary

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Input Range	85		264	VAC	Derate load from 100% at 90 VAC to 90% at 85 VAC
	120		370	VDC	
No Load Input Power		<0.3		W	12-36 V versions
		<0.5		W	3.3-9 V & 48 V versions
Efficiency	79	87	89	%	See note 4 above
Operating Temperature	-40		+70	°C	Some specification parameters may not met below -25 °C. Derate linearly from 100% load at +50 °C to 50% load at 70 °C.
EMC	EN55022 Level B Conducted & Radiated, EN61000-4, EN61000-3				
Safety Approvals	EN60950-1, UL60950-1, CSA22.2 No. 234 per cUL				

Input

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Input Voltage - Operating	85		264	VAC	Derate load from 100% at 90 VAC to 90% at 85 VAC
	120		370	VDC	
Input Frequency	47		63	Hz	
Power Factor					EN61000-3-2 class A compliant
Input Current		0.6		A rms	At 230 VAC
No Load Input Power			0.3	W	12-36 V versions
			0.5	W	3.3-9 V & 48 V versions
Inrush Current		25/50		A	115/230 VAC cold start at 25 °C
Earth Leakage Current					Class II construction no earth
Input Protection	Internal T1 A/250 VAC fuse				

Output

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Output Voltage	3.3		48	VDC	See Models and Ratings table
Initial Set Accuracy			±1	%	
Minimum Load	0			A	
Start Up Delay			2	s	
Start Up Rise Time			30	ms	
Hold Up Time	16			ms	At full load and 115 VAC
Line Regulation			±0.5	%	
Load Regulation			±2	%	ECE60US03/05-S
			±1	%	All other models
Transient Response			4	%	Recovery within 1% in less than 500 µs for a 25% load change
Ripple & Noise			60	mV pk-pk	3.3-5 V versions, 20 MHz bandwidth
			75	mV pk-pk	3.3-5 V '-S' versions, 20 MHz bandwidth, 0.1 µF capacitor at output terminals
			1	% pk-pk	20 MHz bandwidth all other models
Overvoltage Protection	195		216	% Vnom	ECE60US03 models
	115		140	% Vnom	All other models
Overload Protection	110		180	%	
Short Circuit Protection					Trip & restart (hiccup mode)
Temperature Coefficient			0.05	%/°C	

General

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Efficiency	79	87	89	%	See Models & Ratings table
Isolation	3000			VAC	Input to Output
Switching Frequency		100		kHz	
Power Density			10.1	W/in ³	
Mean Time Between Failure		>300		kHrs	MIL-HDBK-217F, +25 °C GB
Weight		0.42 (191)		lb (g)	ECE60
		0.44 (200)			ECE60-S

Environmental

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Operating Temperature	-40		+70	°C	Some specification parameters may not met below -25 °C. Derate linearly from 100% load at +50 °C to 50% load at 70 °C.
Storage Temperature	-40		+85	°C	
Cooling					Convection-cooled
Humidity			95	%RH	Non-condensing
Operating Altitude			3048	m	
Vibration	2 g, 10 Hz to 500 Hz, 10 mins/cycle, 60 mins each cycle				

