PIN CONNECTION (Top view)



PIN FUNCTION

N°	Pin	Function
1, 10, 11, 20	GND	Ground
2, 19	N.C.	Not Connected
3	IN1	Input 1
4	IN2	Input 2
5	OUT1	Output 1
6	VBAT	Supply Voltage
7	OUT2	Output 2
8	DO	Serial Data Out
9	CL	Clock
12	SY	Synchronization
13	DI	Serial Data In
14	OUT3	Output 3
15	R	Reset
16	OUT4	Output 4
17	IN3	Input 3
18	IN4	Input 4



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
T _{STG}	Storage Temperature	-55 to 150	°C
TJ	Operating Junction Temperature	-40 to 150	°C
V _{BAT}	DC Supply Voltage	-2 to 30	V
V _{BATtr}	Transient Supply Voltage; t < 400ms	40	V
Vout	Output Voltage	65	V
V _{OUTtr}	Transient Output Voltage; during clamping	78	V
Ecl	Output Clamping energy; repetition rate < 100 Hz	10	mJ
-lout	Output reverse current	2	А
$\begin{matrix} V_{R}, V_{INi}, V_{DI,} \\ V_{CL} V_{SY} \end{matrix}$	Control Input voltage	-0.3 to 6.5	V
V _{DO}	Control Output voltage	-0.3 to 6.5	V

THERMAL DATA

Symbol	Parameter	Value	Unit
R _{th j-case}	Thermal Resistance Junction to Case	2.5	°C/W

ELECTRICAL CHARACTERISTCS ($6.5V < V_{BAT} < 25V$, $-40 < T_J < 150^{\circ}C$)

Symbol	Parameter	Test Condition	Min.	Тур.	Max.	Unit		
Supply Voltage								
VBATU	Turn on threshold voltage		2.0		4.7	V		
I _{BAT}	Supply current	V _{BAT} = 14V V _{OUTi} > 0V	4	10	15	mA		
Output st	age							
R _{DSON}	On resistance	$V_{BAT} = 14V$ T _J = 25°C; I _{out} = 1A			500	mΩ		
		$V_{BAT} = 14V$ T _J = 150°C; I _{out} = 1A			850	mΩ		
V _{CL}	Clamping voltage, inductive load	l _{out} = 0.5 A	63	70	76	V		
I _{OUTi}	Over current shutdown	$T_J = -40^{\circ}C$	3.0		4.3	А		
	with pos. slope at INi)	$T_J = 25^{\circ}C$	2.5		3.7	А		
		$T_J = 150^{\circ}C$	2.2		3.5	А		
Output leakage current see: Open load diagnostic current								

ELECTRICAL CHARACTERISTCS (continued)

Symbol	Parameter	Test Condition	Min.	Тур.	Max.	Unit	
Logic Inputs IN1IN4, SY, CL, DI, R							
Vinilh Vsylh Vcllh Vrlh Vdilh	Input High level		3.5		6.5	V	
V _{INIHL} V _{SYHL} V _{CLHL} V _{RHL} V _{DIHL}	Input Low level		-0.3		1.5	V	
V _{INih} V _{SYh} V _{CLh} V _{Rh} V _{Dlh}	Hysteresis		0.2		1	V	
- I _{INi}	Input current IN1 IN4, SY, CL, R	$V_{INi} = 0V$	10	40	120	μA	
- I _{SY} - I _{C L} - I _R			10		80		
- I _{DI}	Input current DI (Internal pull up current source)	$V_{DI} = 0V$	120	220	250	μA	
Timing			•				
t _{don}	Turn on delay			7.5		μS	
t _{doff}	Turn off delay			7.5		μS	
Son	Switch on slew rate			10		V/µs	
Soff	Switch off slew rate			15		V/µs	
t _{oc}	Over current detection time			0.5		μS	
t _v	Open load filtering time		60	100	200	μS	
t _v	Short to GND filtering time		60	100	200	μS	
fcL	Serial clock frequency		0		500	kHz	
t _{vDV}	DO: Datavalidtime		0.03		1	μS	
t _{vset}	DI: Datasettlingtime		0.5			μS	
t _{vhold}	DI: Dataholdtime		0			μS	
Diagnosti	ic						
VBATDU	Under voltage threshold		4.7		7.5	V	
Serial Dat	Serial Data output (External pull up required)						
V _{DO}	Data output low voltage	I _{DO} < 1.6mA 7.5V < V _{BAT} < 22V	0		0.45	V	
I I _{DO} I	Data output leakage current				10	μA	

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ELECTRICAL CHARACTERISTCS (continued)

Symbol	Parameter	Test Condition	Min.	Тур.	Max.	Unit		
Output vo	Output voltage monitoring Output off							
V _{OL}	Open load threshold voltage (fault detected if $V_{OUTi} < V_{OL}$)	7.5V < V _{BAT} < 22V		2/3V _{BAT}				
V _{SG}	Short to GND threshold voltage (fault detected if $V_{OUTi} < V_{SG}$)	7.5V < V _{BAT} < 22V		1/3V _{BAT}				
Open load	d diagnostic current Output off							
	Open load output voltage	I _{OUT} = 0 A V _{INi} = 5V 7.5V < V _{BAT} < 22V		1/2V _{BAT}				
- I _{OUTi}	Output current	$V_{OUT} = 1V$ $V_{INi} = 5V$	50	100	150	μA		
Ιουτι	Output current	V _{OUT} = V _{BAT} V _{INi} = 5V 7.5V < V _{BAT} < 22V	200	320	500	μA		
Overload	Diagnostic	·						
	Over temperature diagnostic	TJ		175		°C		
Ιουτι	Over current	$T_J = -40^{\circ}C$	3.0		4.3	А		
		$T_J = 25^{\circ}C$	2.5		3.7	А		
		$T_J = 150^{\circ}C$	2.2		3.5	А		

Figure 1. Typical Timing Diagram for Serial Diagnostic



Figure 2. Serial Interface Error Coding



Figure 3. Output voltage TIMING for inductive load



Figure 4. Application Circuit





ым	mm			inch			
DIN.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	
А			3.6			0.142	
a1	0.1		0.3	0.004		0.012	
a2			3.3			0.130	
a3	0		0.1	0.000		0.004	
b	0.4		0.53	0.016		0.021	
С	0.23		0.32	0.009		0.013	
D (1)	15.8		16	0.622		0.630	
D1 (2)	9.4		9.8	0.370		0.386	
E	13.9		14.5	0.547		0.570	
е		1.27			0.050		
e3		11.43			0.450		
E1 (1)	10.9		11.1	0.429		0.437	
E2			2.9			0.114	
E3	5.8		6.2	0.228		0.244	
G	0		0.1	0.000		0.004	
Н	15.5		15.9	0.610		0.626	
h			1.1			0.043	
L	0.8		1.1	0.031		0.043	
Ν	8°(typ.)						
S	8°(max.)						
Т		10			0.394		

(1) "D and E1" do not include mold flash or protusions. And fash or protusions shall not exceed 0.15mm (0.006")
Critical dimensions: "E", "G" and "a3".
(2) For subcontractors, the limit is the one quoted in jedec MO-166

OUTLINE AND MECHANICAL DATA







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