

Delphi Serial Input Driver Module

▶ Description

The Delphi Serial Input Driver Module (SIDM) contains 7 DMOS power FETs. All outputs are fixed as low-side drivers. Four outputs have PWM (pulse width modulated) capability for driving loads at various programmed frequencies from 16 Hz to 32 kHz and various programmed duty cycles from 0% to 100% (DC at 100%). Three outputs only drive loads in a DC manner. Complete load diagnostic capability is provided covering shorts, opens, loss of PWM clock and over-temperature conditions. The SIDM is commanded ON/OFF, programmed for PWM modes and interrogated for faults via SPI bus.

▶ Features

- Two PWM-capable 1.0 ohm internal DMOS drivers
- One PWM-capable 0.5 ohm internal DMOS driver
- One PWM-capable 1.7 ohm internal DMOS driver
- Three DC-capable 1.7 ohm internal FET drivers
- Control of DMOS drivers via SPI command inputs
- SPI bus programming and fault interrogation
- Current Limit protection of internal DMOS drivers
- Open and shorted load fault detection
- Independent driver over temperature protection

▶ Packaging

- 15-pin JEDEC SIP
- Wire Type: Gold
- Wire Size: 2.0 mil

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Recommended Operating Conditions		
Characteristic	Value	Unit
VBAT Voltage Tied to Output 1-7 Loads	9 to 16	V
VDD Supply Voltage	4.75 to 5.25	V
Tab Temperature Range	-40 to 125	°C

Absolute Maximum Ratings			
Characteristic	Symbol	Value	Unit
Supply Voltage (CS, DI, DO, SCLK, & PWMCLK)	VDD	0.3 to 7.0	V
VBAT Voltage Tied to Output 1-7 Loads		-13 to 40	V
Current Limits of Outputs 1-4		1.6	A
Current Limits of Outputs 5-6		2.6	A
Current Limit of Output 7		5	A
Maximum Junction Temperature	Tj	150	°C
Operating Temperature Range	Tc	-40 to 125	°C
Storage Temperature Range		-65 to 150	°C

Electrical Performance Characteristics				
Characteristics	Condition	Min	Max	Unit
VDD Supply Current			5.0	mA
Outputs 1-7 Leakage Current	VDD=0V, OUT=16V		5.0	mA
Outputs 1-7 Sense Current	VDD=5V, EN=0V	40	100	mA
RDSon Outputs 1-4	Tj=135°C		2.1	Ohms
RDSon Outputs 5-6	Tj=135°C		1.2	Ohms
RDSon Output 7	Tj=135°C		0.6	Ohms
Current Limit Outputs 1-4		0.8	1.6	A
Current Limit Outputs 5 and 6		1.3	2.6	A
Current Limit Output 7		2.5	5.0	A
Outputs 1-7 Snub Voltage		50	65	V
Low Input Voltage	CS, DI, DO, SCLK, PWMCLK	0	0.8	V
High Input Voltage	CS, DI, DO, SCLK, PWMCLK	2.0	VDD	V
Outputs 1-7 Turn ON Slew Time		3.5	15	mS
Outputs 1-7 Turn OFF Slew Time		3.5	15	mS