DELPHI

MICROELECTRONICS

Delphi Low Quiescent Current Power Supply Module

Description

The Delphi Low Quiescent Current Power Supply Module IC (LPSM) and its associated external components provide three precision voltage supplies (Vkam, Vcc, and Vref) which track each other, initiate system resets, and provide reset delays, as well as a software programmable turn-off delay. The LPSM reset activates on detection of Vcc or Vkam out-of-regulation, or when Vcc is in thermal shut-down. The quiescent current is reduced to a low value when the circuitry that is not utilized is in the standby mode. Short detect and thermal shutdown are considered non-essential in standby.

Features

- Three (3) regulated voltage supplies
- On-chip protection circuitry

Packaging

- Available in 15-pin power SIP TO-220 package

Typical Applications

- Automotive electronics

Delphi Corporation
World Headquarters
5725 Delphi Drive
Troy, Michigan 48098-2815 USA

Delphi Low Quiescent Current Power Supply Module

Recommended Operating Conditions			
Characteristic	**Symbol**	**Value**	**Unit**
Supply Voltage	Vbu	3.5 to 16	V
VIGN		3.5 to Vbu	V
Load Current (Icc,Tc=40°C)		-750	mA
Load Current (Icc,Tc=25°C)		-700	mA
Load Current (Icc,Tc=125°C)		-600	mA
IREF		-75	mA
IKAM		-7.5	mA
Operating Temperature Range, Ambient	Ta	-40 to 125	°C

Absolute Maximum Ratings			
Characteristic	**Symbol**	**Value**	**Unit**
Supply Voltage	Vbu	-13 to 40	V
Input Voltage (VIGN)		-13 to Vbu	V
Input Voltage (VREF)		-1.2 to 16	V
Input Voltage (TOD)		-0.3 to 7	V
Input Voltage (RST*)		-0.3 to 7	V
Storage Temperature Range	Tstg	-65 to 150	°C
Maximum Junction Temperature		150	°C

Electrical Performance Characteristics					
Characteristics	**Symbol**	**Condition**	**Min**	**Max**	**Unit**
VBU Input: Supply Current	IBU	No Loads, T0D=0V VBU=12.5V VBU=40V, VIGN=40V		 0.6 50	 mA mA
		VBU=12.5, VIGN=TOD=0V IKAM=-7.5mA, ICC=mA, IREF=0mA		9	mA
		VBU=VIGN=16Vdc,RST*=1 IKAM=-7.5mA, IREF=-50mA ICC=-750mA @Tc=-40°C ICC=-700mA@Tc=25°C ICC=-600mA@Tc=125°C		 1100 960 860	 mA mA mA
Vign Input: Current	Iign	No Loads VBU12.5V, VIGN=0V VBU=12.5V, VIGN=12.5V VBU=24V, VIGN=24V	 -30 -30	 10 10 50	 µA µA µA
Vign Input: Input High Voltage	Vih		0.4VBU	0.5VBU	Vdc
Vign Input: Input Low Voltage	Vil		0.2VBU	0.25VBU	Vdc
Thermal Shutdown			150	170	°C
Icc Current Limit	Icclt	Vcc short to 0V		2	A
IREF Current Limit	Irefllt	VREF shorted to -1.2V		300	mA

Delphi Corporation
World Headquarters
5725 Delphi Drive
Troy, Michigan 48098-2815 USA

Delphi Low Quiescent Current Power Supply Module

Electrical Performance Characteristics					
Characteristics	**Symbol**	**Condition**	**Min**	**Max**	**Unit**
Output Voltages:		VIGN=VBU, IKAM=-7.5mA IREF=-75mA Icc=-750mA@Tc=-40°C Icc=-700mA@Tc=25°C Icc=-600mA@Tc=125°C			
High Linear Range	VCC VREF VKAM	VBU=16V to 40Vdc	4.75 4.75 4.75	5.25 5.25 5.25	Vdc Vdc Vdc
Normal Linear	VCC VREF VKAM	VBU=5.9V to 16Vdc	4.9 4.9 4.9	5.1 5.1 5.1	Vdc Vdc Vdc
Low Linear Range	VCC VREF VKAM	VBU=5.25V to 5.9Vdc	4.75 4.75 4.75		Vdc Vdc Vdc
Out of Regulation	VCC VREF VKAM	VBU=VIGN=3.5Vdc IKAM=-7.5mA,IREF=-40mA Icc=-560mA@Tc=-40°C Icc=-490mA@Tc=25°C Icc=-340mA@Tc=125°C	3 3 3	3.5 3.5 3.5	Vdc Vdc Vdc
Output Tracking	VKAM-VCC VCC-VREF	VBU=VIGN=5.9V - 16V	-40 -20	40 20	mV mV
Standby Voltage Ouput	VKAM	Vbu=5.9 to 40Vdc, VIGN=0V, IKAM=-7.5mA	4.75	5.25	Vdc
Vcc Turn-On-Delay	Ton	VBU=12.5V, VIGN>Vih, to Vcc>4.75V	0	2	mS
Low Voltage Reset	Trd	VIGN=VBU, RC time constant=14µS at LVCP	10	25	µS

Delphi Corporation
World Headquarters
5725 Delphi Drive
Troy, Michigan 48098-2815 USA