

## Is Now Part of



## ON Semiconductor®

# To learn more about ON Semiconductor, please visit our website at www.onsemi.com

Please note: As part of the Fairchild Semiconductor integration, some of the Fairchild orderable part numbers will need to change in order to meet ON Semiconductor's system requirements. Since the ON Semiconductor product management systems do not have the ability to manage part nomenclature that utilizes an underscore (\_), the underscore (\_) in the Fairchild part numbers will be changed to a dash (-). This document may contain device numbers with an underscore (\_). Please check the ON Semiconductor website to verify the updated device numbers. The most current and up-to-date ordering information can be found at <a href="www.onsemi.com">www.onsemi.com</a>. Please email any questions regarding the system integration to Fairchild <a href="guestions@onsemi.com">guestions@onsemi.com</a>.

ON Semiconductor and the ON Semiconductor logo are trademarks of Semiconductor Components Industries, LLC dba ON Semiconductor or its subsidiaries in the United States and/or other countries. ON Semiconductor owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of ON Semiconductor's product/patent coverage may be accessed at www.onsemi.com/site/pdf/Patent-Marking.pdf. ON Semiconductor reserves the right to make changes without further notice to any products herein. ON Semiconductor makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does ON Semiconductor assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. Buyer is responsible for its products and applications using ON Semiconductor products, including compliance with all laws, regulations and safety requirements or standards, regardless of any support or applications information provided by ON Semiconductor. "Typical" parameters which may be provided in ON Semiconductor data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. ON Semiconductor does not convey any license under its patent rights nor the rights of others. ON Semiconductor products are not designed, intended, or authorized for use as a critical component in life support systems or any EDA Class 3 medical devices or medical devices with a same or similar classification in a foreign jurisdiction or any devices intended for implantation in the human body. Should Buyer purchase or use ON Semiconductor products for any such unintended or unauthorized application, Buyer shall indemnify and hold ON Semiconductor and its officer



## FDC6325L Integrated Load Switch

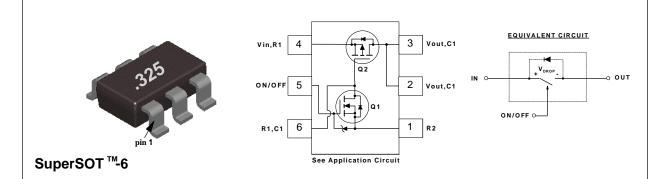
## **General Description**

This device is particularly suited for compact power management in portable electronic equipment where 2.5V to 8V input and 1.8A output current capability are needed. This load switch integrates a small N-Channel power MOSFET (Q1) which drives a large P-Channel power MOSFET (Q2) in one tiny SuperSOT $^{\text{TM}}$ -6 package.

## **Features**

- $V_{DROP}$ =0.2V @  $V_{IN}$ =5V,  $I_{L}$ =1.5A.  $R_{(ON)}$  = 0.13Ω  $V_{DROP}$ =0.2V @  $V_{IN}$ =3.3V,  $I_{L}$ =1.2A.  $R_{(ON)}$  = 0.16Ω  $V_{DROP}$ =0.2V @  $V_{IN}$ =2.5V,  $I_{L}$ =1A.  $R_{(ON)}$  = 0.18Ω.
- SuperSOT<sup>TM</sup>-6 package design using copper lead frame for superior thermal and electrical capabilities.





Absolute Maximum Ratings T = 25°C unless otherwise noted

Symbol	Parameter	FDC6325L	Units	
V <sub>IN</sub>	Input Voltage Range	2.5 - 8	V	
V <sub>ON/OFF</sub>	On/Off Voltage Range	1.5 - 8	V	
IL	Load Current - Continuous (Note 1)	1.8	А	
	- Pulsed (Note 1 & 3)	5		
$P_{D}$	Maximum Power Dissipation (Note 2)	0.7	W	
$T_J, T_{STG}$	Operating and Storage Temperature Range	-55 to 150	℃	
ESD	Electrostatic Discharge Rating MIL-STD-883D Human Body Model (100pf/1500Ohm)	6	kV	
THERMA	L CHARACTERISTICS		•	
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient (Note 2)	180	°C/W	
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case (Note 2)	60	°C/W	

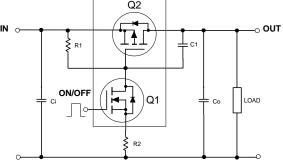
Symbol	Parameter	Conditions	Min	Тур	Max	Units
OFF CHA	RACTERISTICS	·				
I <sub>FL</sub>	Forward Leakage Current	$V_{IN} = 8 \text{ V}, V_{ONOFF} = 0 \text{ V}$			1	μΑ
ON CHAR	ACTERISTICS (Note 3)					
V <sub>DROP</sub>	Conduction Voltage Drop	$V_{IN} = 5 \text{ V}, \ V_{ON/OFF} = 3.3 \text{ V}, \ I_{L} = 1.5 \text{ A}$		0.15	0.2	V
		$V_{IN} = 3.3 \text{ V}, \ V_{ONOFF} = 3.3 \text{ V}, \ I_L = 1.2 \text{ A}$		0.145	0.2	
		$V_{IN} = 2.5 \text{ V}, \ V_{ON/OFF} = 3.3 \text{ V}, \ I_{L} = 1 \text{ A}$		0.13	0.2	
R <sub>(ON)</sub>	Q <sub>2</sub> - Static On-Resistance	$V_{GS} = -5 \text{ V}, I_{D} = -1.8 \text{ A}$		0.115	0.13	Ω
		$V_{GS} = -3.3 \text{ V}, I_D = -1.6 \text{ A}$		0.13	0.16	
		$V_{GS} = -2.5 \text{ V}, I_D = -1.5 \text{ A}$		0.155	0.18	
I <sub>L</sub>	Load Current	$V_{DROP} = 0.13 \text{ V}, V_{IN} = 5 \text{ V}, V_{ON/OFF} = 3.3 \text{ V}$	1			Α
		$V_{DROP} = 0.16 \text{ V}, V_{IN} = 3.3 \text{ V}, V_{ON/OFF} = 3.3 \text{ V}$	1			
		$V_{DROP} = 0.2 \text{ V}, V_{IN} = 2.5 \text{V}, V_{ON/OFF} = 3.3 \text{ V}$	1			

#### Notes:

- 1.  $V_{IN}=8V$ ,  $V_{ON/OFF}=8V$ ,  $T_A=25^{\circ}C$
- R<sub>gus</sub> is the sum of the junction-to-case and case-to-ambient thermal resistance where the case thermal reference is defined as the solder mounting surface
  of the drain pins. R<sub>gus</sub> is guaranteed by design while R<sub>gcs</sub> is determined by the user's board design.
- 3. Pulse Test: Pulse Width  $\leq$  300µs, Duty Cycle  $\leq$  2.0%.

## FDC6325L Load Switch Application

# APPLICATION CIRCUIT Q2



## **External Component Recommendation**

For Co £ 1uF applications:

First select R2, 100 - 1kW, for Slew Rate control. C1 £ 1000pF can be added in addition to R2 for further In-rush current control.

Then select R1 such that R1/R2 ratio maintains between 10 - 100. R1 is required to turn Q2 off. For SPICE simulation, users can download a "FDC6325L.MOD" Spice model from Fairchild Web Site at www.fairchildsemi.com

## Typical Electrical Characteristics ( $T_A = 25$ $^{\circ}C$ unless otherwise noted )

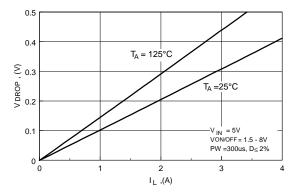


Figure 1. Conduction Voltage Drop Variation with Load Current.

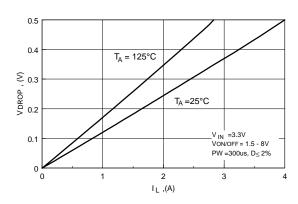


Figure 2. Conduction Voltage Drop Variation with Load Current.

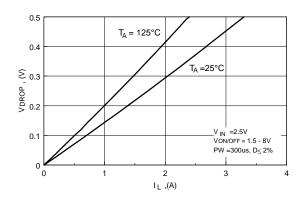


Figure 3. Conduction Voltage Drop Variation with Load Current.

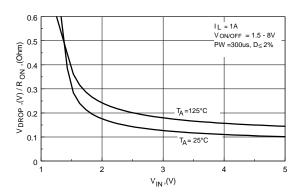


Figure 4. On-Resistance Variation with Input Voltage.

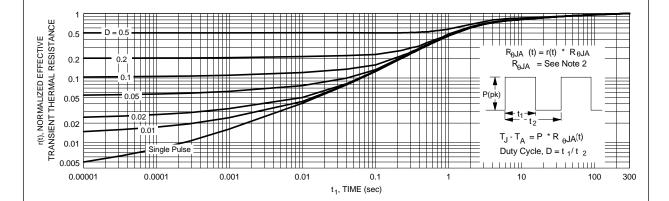


Figure 5. Transient Thermal Response Curve.

Thermal characterization performed on the conditions described in Note 2. Transient thermal response will change depends on the circuit board design.

## **TRADEMARKS**

The following are registered and unregistered trademarks Fairchild Semiconductor owns or is authorized to use and is not intended to be an exhaustive list of all such trademarks.

 $E^2CMOS^{TM}$  PowerTrench<sup>TM</sup>

FACT™ QFET™ FACT Quiet Series™ QS™

 $\begin{array}{lll} \mathsf{FAST}^{\circledast} & \mathsf{Quiet}\,\mathsf{Series}^{\mathsf{TM}} \\ \mathsf{FASTr}^{\mathsf{TM}} & \mathsf{SuperSOT}^{\mathsf{TM}}\text{-}3 \\ \mathsf{GTO}^{\mathsf{TM}} & \mathsf{SuperSOT}^{\mathsf{TM}}\text{-}6 \\ \mathsf{HiSeC}^{\mathsf{TM}} & \mathsf{SuperSOT}^{\mathsf{TM}}\text{-}8 \\ \end{array}$ 

#### **DISCLAIMER**

FAIRCHILD SEMICONDUCTOR RESERVES THE RIGHT TO MAKE CHANGES WITHOUT FURTHER NOTICE TO ANY PRODUCTS HEREIN TO IMPROVE RELIABILITY, FUNCTION OR DESIGN. FAIRCHILD DOES NOT ASSUME ANY LIABILITY ARISING OUT OF THE APPLICATION OR USE OF ANY PRODUCT OR CIRCUIT DESCRIBED HEREIN; NEITHER DOES IT CONVEY ANY LICENSE UNDER ITS PATENT RIGHTS, NOR THE RIGHTS OF OTHERS.

#### LIFE SUPPORT POLICY

FAIRCHILD'S PRODUCTS ARE NOT AUTHORIZED FOR USE AS CRITICAL COMPONENTS IN LIFE SUPPORT DEVICES OR SYSTEMS WITHOUT THE EXPRESS WRITTEN APPROVAL OF FAIRCHILD SEMICONDUCTOR CORPORATION. As used herein:

- 1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body, or (b) support or sustain life, or (c) whose failure to perform when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in significant injury to the user.
- A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.

## PRODUCT STATUS DEFINITIONS

#### **Definition of Terms**

Datasheet Identification	Product Status	Definition
Advance Information	Formative or In Design	This datasheet contains the design specifications for product development. Specifications may change in any manner without notice.
Preliminary	First Production	This datasheet contains preliminary data, and supplementary data will be published at a later date. Fairchild Semiconductor reserves the right to make changes at any time without notice in order to improve design.
No Identification Needed	Full Production	This datasheet contains final specifications. Fairchild Semiconductor reserves the right to make changes at any time without notice in order to improve design.
Obsolete	Not In Production	This datasheet contains specifications on a product that has been discontinued by Fairchild semiconductor. The datasheet is printed for reference information only.

ON Semiconductor and in are trademarks of Semiconductor Components Industries, LLC dba ON Semiconductor or its subsidiaries in the United States and/or other countries. ON Semiconductor owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of ON Semiconductor's product/patent coverage may be accessed at <a href="www.onsemi.com/site/pdt/Patent-Marking.pdf">www.onsemi.com/site/pdt/Patent-Marking.pdf</a>. ON Semiconductor reserves the right to make changes without further notice to any products herein. ON Semiconductor assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. Buyer is responsible for its products and applications using ON Semiconductor products, including compliance with all laws, regulations and safety requirements or standards, regardless of any support or applications information provided by ON Semiconductor. "Typical" parameters which may be provided in ON Semiconductor data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. ON Semiconductor does not convey any license under its patent rights nor the rights of others. ON Semiconductor products are not designed, intended, or authorized for use as a critical component in life support systems or any FDA Class 3 medical devices or medical devices with a same or similar classification in a foreign jurisdiction or any devices intended for implantation in the human body. Should Buyer purchase or use ON Semiconductor products for any such unintended or unauthorized application, Buyer shall indemnify and hold ON Semiconductor and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and exp

## **PUBLICATION ORDERING INFORMATION**

#### LITERATURE FULFILLMENT:

Literature Distribution Center for ON Semiconductor 19521 E. 32nd Pkwy, Aurora, Colorado 80011 USA Phone: 303-675-2175 or 800-344-3860 Toll Free USA/Canada Fax: 303-675-2176 or 800-344-3867 Toll Free USA/Canada Email: orderlit@onsemi.com N. American Technical Support: 800–282–9855 Toll Free USA/Canada
Europe, Middle East and Africa Technical Support: Phone: 421 33 790 2910
Japan Customer Focus Center
Phone: 81–3–5817–1050

ON Semiconductor Website: www.onsemi.com

Order Literature: http://www.onsemi.com/orderlit

For additional information, please contact your local Sales Representative

## **Mouser Electronics**

**Authorized Distributor** 

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

ON Semiconductor:

FDC6325L



Компания «Океан Электроники» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

## Наши преимущества:

- Поставка оригинальных импортных электронных компонентов напрямую с производств Америки, Европы и Азии, а так же с крупнейших складов мира;
- Широкая линейка поставок активных и пассивных импортных электронных компонентов (более 30 млн. наименований);
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Помощь Конструкторского Отдела и консультации квалифицированных инженеров;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Поставка электронных компонентов под контролем ВП;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- При необходимости вся продукция военного и аэрокосмического назначения проходит испытания и сертификацию в лаборатории (по согласованию с заказчиком);
- Поставка специализированных компонентов военного и аэрокосмического уровня качества (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Actel, Aeroflex, Peregrine, VPT, Syfer, Eurofarad, Texas Instruments, MS Kennedy, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Компания «Океан Электроники» является официальным дистрибьютором и эксклюзивным представителем в России одного из крупнейших производителей разъемов военного и аэрокосмического назначения «JONHON», а так же официальным дистрибьютором и эксклюзивным представителем в России производителя высокотехнологичных и надежных решений для передачи СВЧ сигналов «FORSTAR».



**«JONHON»** (основан в 1970 г.)

Разъемы специального, военного и аэрокосмического назначения:

(Применяются в военной, авиационной, аэрокосмической, морской, железнодорожной, горно- и нефтедобывающей отраслях промышленности)

«**FORSTAR**» (основан в 1998 г.)

ВЧ соединители, коаксиальные кабели, кабельные сборки и микроволновые компоненты:

(Применяются в телекоммуникациях гражданского и специального назначения, в средствах связи, РЛС, а так же военной, авиационной и аэрокосмической отраслях промышленности).



Телефон: 8 (812) 309-75-97 (многоканальный)

Факс: 8 (812) 320-03-32

Электронная почта: ocean@oceanchips.ru

Web: http://oceanchips.ru/

Адрес: 198099, г. Санкт-Петербург, ул. Калинина, д. 2, корп. 4, лит. А