

FDY6342L

Integrated Load Switch

General Description

This device is particularly suited for compact power management in portable electronic equipment where 2.5 V to 8 V input and 0.83 A output current capability are needed. This load switch integrates a small N–Channel power MOSFET (Q1) that drives a large P–Channel power MOSFET (Q2) in one tiny SC89–6 package.

Features

- Max $r_{DS(on)}$ = 0.5 Ω at V_{GS} = 4.5 V, I_D = -0.83 A
- Max $r_{DS(on)}$ = 0.7 Ω at V_{GS} = 2.5 V, I_D = -0.70 A
- Max $r_{DS(on)}$ = 1.2 Ω at V_{GS} = 1.8 V, I_D = -0.43 A
- Max $r_{DS(on)}$ = 1.8 Ω at V_{GS} = 1.5 V, I_D = -0.36 A
- Control MOSFET (Q1) Includes Zener Protection for ESD Ruggedness (>4 kV Human Body Model)
- High Performance Trench Technology for Extremely Low $r_{DS(on)}$
- Compact Industry Standard SC89–6 Surface Mount Package
- This Device is Pb–Free and is RoHS Compliant

Applications

- Power Management
- Load Switch

MOSFET MAXIMUM RATINGS T_A = 25°C Unless Otherwise Noted

Symbol	Parameter	Rating	Units
V_{IN}	Gate to Source Voltage (Q2)	± 8	V
$V_{ON/OFF}$	Gate to Source Voltage (Q1)	-0.5 to 8	V
I_{Load}	Load Current –Continuous (Note 2)	0.83	A
	–Pulsed (Note 2)	1.0	
P_D	Power Dissipation (Note 1a)	0.625	W
	Power Dissipation (Note 1b)	0.446	
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to +150	°C

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

THERMAL CHARACTERISTICS

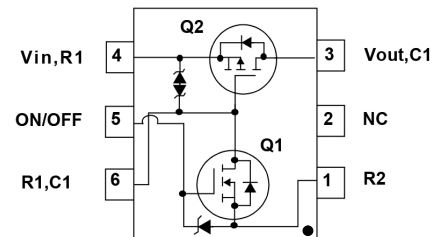
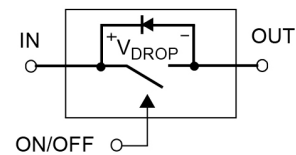
Symbol	Parameter	Rating	Units
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient (Note 1a)	200	°C/W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient (Note 1b)	280	



ON Semiconductor®

www.onsemi.com

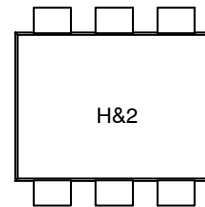
Equivalent Circuit



See Application Circuit



MARKING DIAGRAM



H = Device Code (FDY6342L)
&2 = Date Code (Year & Week)

ORDERING INFORMATION

See detailed ordering and shipping information on page 2 of this data sheet.

FDY6342L

PACKAGE MARKING AND ORDERING INFORMATION

Device Marking	Device	Package	Reel Size	Tape Width	Quantity
H	FDY6342L	SC89-6	7"	8 mm	3000 units

ELECTRICAL CHARACTERISTICS $T_J = 25^\circ\text{C}$, Unless Otherwise Noted

Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
OFF CHARACTERISTICS						
BV_{IN}	V_{IN} Breakdown Voltage	$I_D = -250\ \mu\text{A}$, $V_{ON/OFF} = 0\ \text{V}$	8			V
I_{Load}	Zero Gate Voltage Drain Current	$V_{IN} = -6.4\ \text{V}$, $V_{ON/OFF} = 0\ \text{V}$			-1	μA
I_{FL}	Leakage Current, Forward	$V_{IN} = 8\ \text{V}$, $V_{ON/OFF} = 0\ \text{V}$			10	μA
I_{RL}	Leakage Current, Reverse	$V_{IN} = -8\ \text{V}$, $V_{ON/OFF} = 0\ \text{V}$			-10	μA

ON CHARACTERISTICS

$V_{ON/OFF(th)}$	Gate Threshold Voltage	$V_{IN} = V_{ON/OFF}$, $I_D = -250\ \mu\text{A}$	0.65	0.85	1.5	V
$r_{DS(on)}$	Static Drain to Source On Resistance (Q2)	$V_{IN} = 4.5\ \text{V}$, $I_D = -0.83\ \text{A}$		0.28	0.5	Ω
		$V_{IN} = 2.5\ \text{V}$, $I_D = -0.70\ \text{A}$		0.35	0.7	
		$V_{IN} = 1.8\ \text{V}$, $I_D = -0.43\ \text{A}$		0.45	1.2	
		$V_{IN} = 1.5\ \text{V}$, $I_D = -0.36\ \text{A}$		0.57	1.8	
	Static Drain to Source On Resistance (Q1)	$V_{IN} = 4.5\ \text{V}$, $I_D = 0.4\ \text{A}$		2.9	4.0	
$V_{IN} = 2.7\ \text{V}$, $I_D = 0.2\ \text{A}$			3.5	5.0		

DRAIN-SOURCE DIODE CHARACTERISTICS

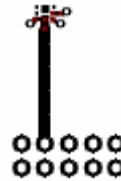
I_S	Maximum Continuous Drain to Source Diode Forward Current				-0.25	A
V_{SD}	Source to Drain Diode Forward Voltage	$V_{ON/OFF} = 0\ \text{V}$, $I_S = -0.25\ \text{A}$ (Note 2)		-0.8	-1.2	V

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

- $R_{\theta JA}$ is determined with the device mounted on a 1 in² pad 2 oz copper pad on a 1.5 x 1.5 in. board of FR-4 material. $R_{\theta JC}$ is guaranteed by design while $R_{\theta JA}$ is determined by the user's board design.



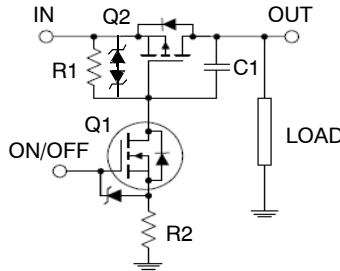
a) $200^\circ\text{C}/\text{W}$ when mounted on a 1 in² pad of 2 oz copper.



b) $280^\circ\text{C}/\text{W}$ when mounted on a minimum pad of 2 oz copper.

- Pulse Test: Pulse Width $< 300\ \mu\text{s}$, Duty cycle $< 2.0\%$.

FDY6342L Load Switch Application Circuit



External Component Recommendation:

For additional in-rush current control, R2 and C1 can be added. For more information, see application note AN1030.

FDY6342L

TYPICAL CHARACTERISTICS $T_J = 25^\circ\text{C}$, Unless Otherwise Noted

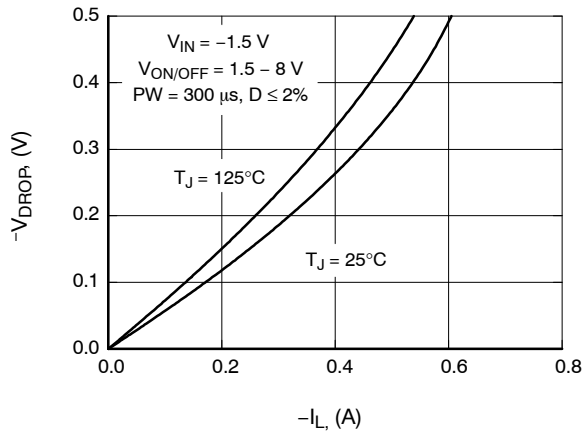


Figure 1. Conduction Voltage Drop Variation with Load Current

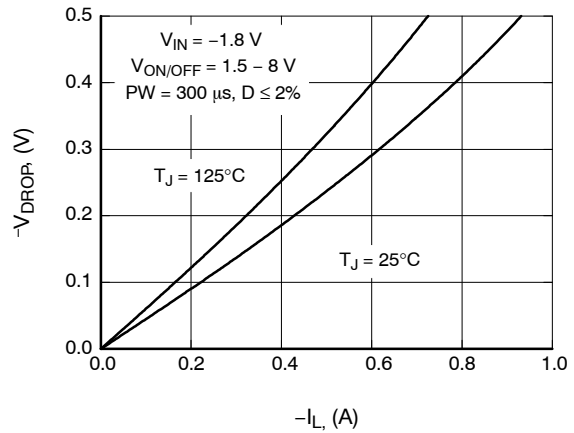


Figure 2. Conduction Voltage Drop Variation with Load Current

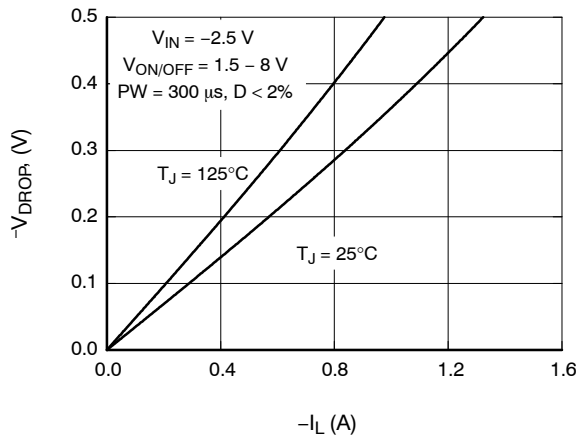


Figure 3. Conduction Voltage Drop Variation with Load Current

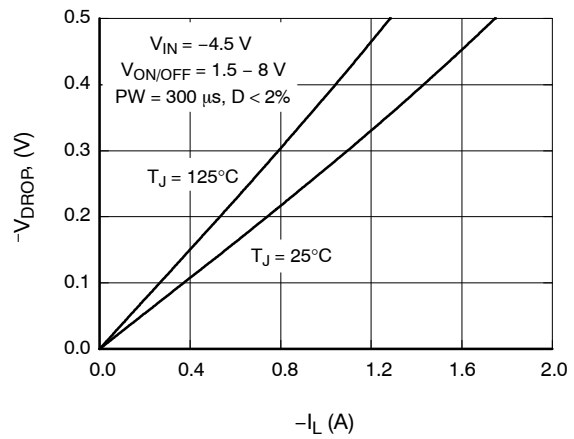


Figure 4. Conduction Voltage Drop Variation with Load Current

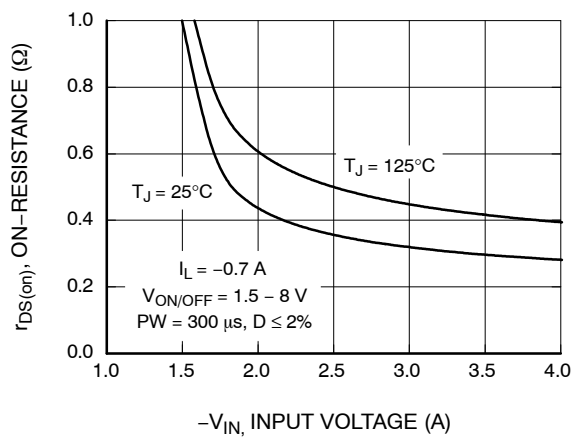


Figure 5. On-Resistance Variation with Input Current

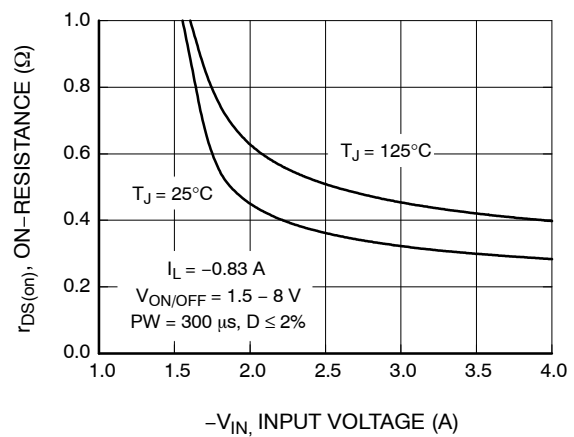
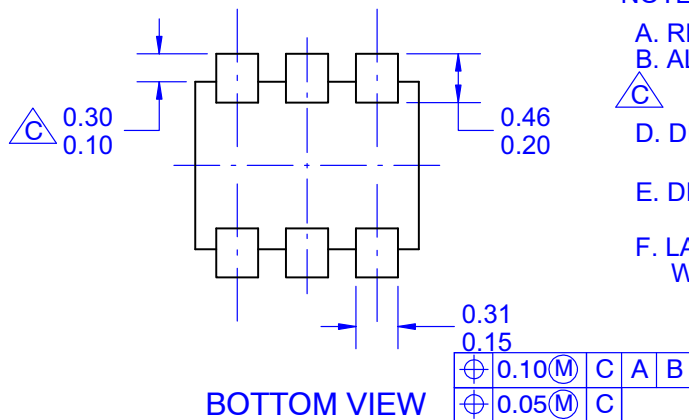
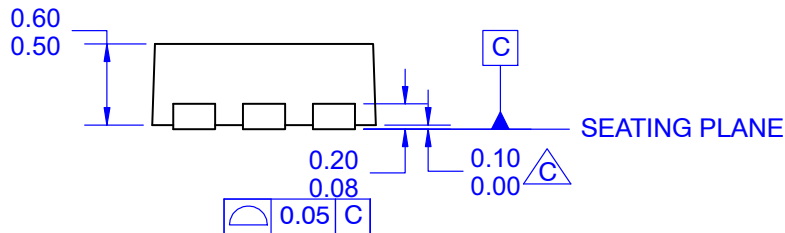
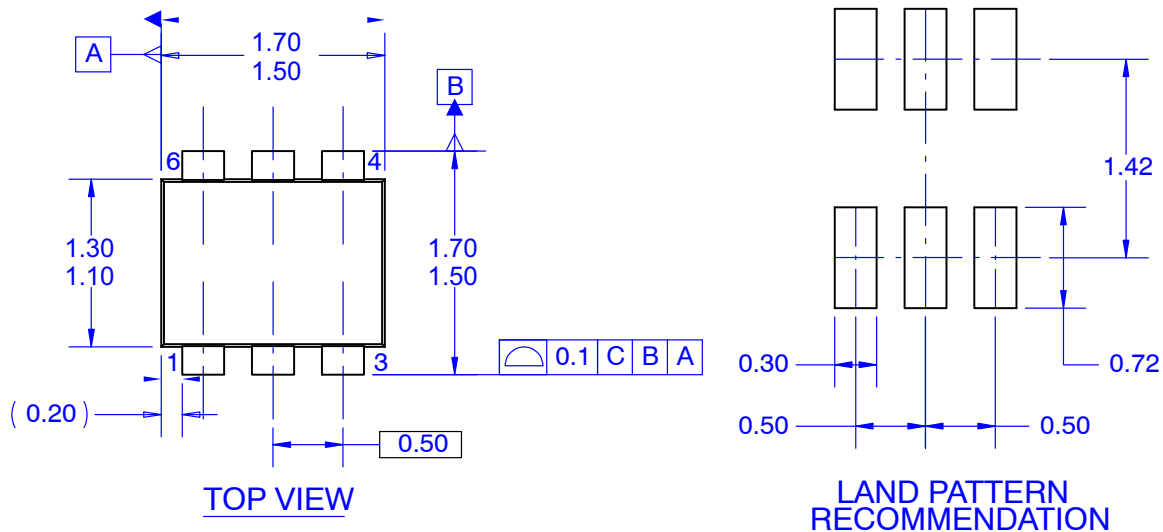


Figure 6. On-Resistance Variation with Input Current

SOT-563
CASE 419BH
ISSUE O

DATE 31 AUG 2016



NOTES: UNLESS OTHERWISE SPECIFIED.

- A. REFERENCE TO JEDEC MO293.
- B. ALL DIMENSIONS ARE IN MILLIMETERS.
- $\triangle C$ DOES NOT COMPLY JEDEC STANDARD VALUE.
- D. DIMENSIONS ARE EXCLUSIVE OF BURRS, MOLD FLASH AND TIE BAR PROTRUSION.
- E. DIMENSION AND TOLERANCE AS PER ASME Y14.5-2009.
- F. LANDPATTERN RECOMMENDATION GENERATED WITH IPC LANDPATTERN GENERATOR

DOCUMENT NUMBER:	98AON13790G	Electronic versions are uncontrolled except when accessed directly from the Document Repository. Printed versions are uncontrolled except when stamped "CONTROLLED COPY" in red.
DESCRIPTION:	SOT-563	PAGE 1 OF 1

onsemi and Onsemi are trademarks of Semiconductor Components Industries, LLC dba onsemi or its subsidiaries in the United States and/or other countries. onsemi reserves the right to make changes without further notice to any products herein. onsemi makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does onsemi 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. onsemi does not convey any license under its patent rights nor the rights of others.

onsemi, **Onsemi**, and other names, marks, and brands are registered and/or common law trademarks of Semiconductor Components Industries, LLC dba "**onsemi**" or its affiliates and/or subsidiaries in the United States and/or other countries. **onsemi** owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of **onsemi**'s product/patent coverage may be accessed at www.onsemi.com/site/pdf/Patent-Marking.pdf. **onsemi** reserves the right to make changes at any time to any products or information herein, without notice. The information herein is provided "as-is" and **onsemi** makes no warranty, representation or guarantee regarding the accuracy of the information, product features, availability, functionality, or suitability of its products for any particular purpose, nor does **onsemi** 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 **onsemi** products, including compliance with all laws, regulations and safety requirements or standards, regardless of any support or applications information provided by **onsemi**. "Typical" parameters which may be provided in **onsemi** 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. **onsemi** does not convey any license under any of its intellectual property rights nor the rights of others. **onsemi** 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 **onsemi** products for any such unintended or unauthorized application, Buyer shall indemnify and hold **onsemi** and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that **onsemi** was negligent regarding the design or manufacture of the part. **onsemi** is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

ADDITIONAL INFORMATION

TECHNICAL PUBLICATIONS:

Technical Library: www.onsemi.com/design/resources/technical-documentation
onsemi Website: www.onsemi.com

ONLINE SUPPORT: www.onsemi.com/support

For additional information, please contact your local Sales Representative at
www.onsemi.com/support/sales

