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FDC6329L Integrated Load Switch

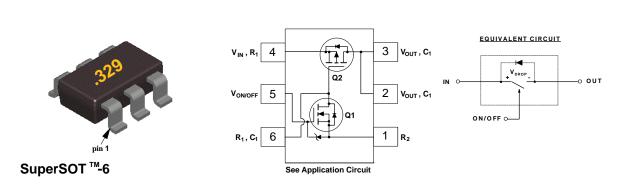
General Description

This device is particularly suited for compact power management in portable electronic equipment where 2.5V to 8V input and 2.5A 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[™]-6 package.

Features

- V_{DROP} =0.2V @ V_{IN} =5V, I_{L} =2.8A. $R_{(ON)}$ = 0.07 Ω V_{DROP} =0.2V @ V_{IN} =2.5V, I_{L} =1.9A. $R_{(ON)}$ = 0.105 Ω .
- Control MOSFET (Q1) includes Zener protection for ESD ruggedness (>6KV Human Body Model).
- High performance trench technology for extremely low on-resistance.
- SuperSOTTM-6 package design using copper lead frame for superior thermal and electrical capabilities.





Absolute Maximum Ratings T_A = 25°C unless otherwise noted

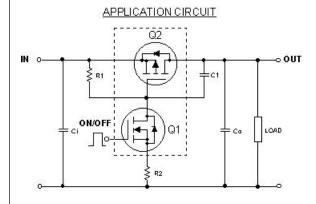
Symbol	Parameter	FDC6329L	Units
V _{IN}	Input Voltage Range (Note 1)	2.5 - 8	V
V _{ON/OFF}	On/Off Voltage Range	1.5 - 8	V
I _L	Load Current - Continuous (Note 2)	2.5	A
	- Pulsed	10	
P _D	Maximum Power Dissipation (Note 2)	0.7	W
T _J ,T _{STG}	Operating and Storage Temperature Range	-55 to 150	℃
ESD	Electrostatic 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 _{FL}	Forward Leakage Current	V _{IN} = 8 V, V _{ONOFF} = 0 V			1	μΑ
ON CHAR	ACTERISTICS (Note 3)					
V _{DROP}	Conduction Voltage	$V_{IN} = 5 \text{ V}, \ V_{ON/OFF} = 3.3 \text{ V}, \ I_{L} = 2.8 \text{ A}$		0.12	0.2	V
		$V_{IN} = 2.5 \text{ V}, \ V_{ON/OFF} = 3.3 \text{ V}, \ I_L = 1.9 \text{ A}$		0.14	0.2	
R _(ON)	Q ₂ - Static On-Resistance	$V_{GS} = -5 \text{ V}, I_{D} = -2.5 \text{ A}$		0.047	0.07	Ω
		$V_{GS} = -2.5 \text{ V}, I_{D} = -2.0 \text{ A}$		0.073	0.105	
I _L	Load Current	$V_{DROP} = 0.2 \text{ V}, V_{IN} = 5 \text{ V}, V_{ON/OFF} = 3.3 \text{ V}$	2.8			Α
		$V_{DROP} = 0.2 \text{ V}, V_{IN} = 2.5 \text{ V}, V_{ON/OFF} = 3.3 \text{ V}$	1.9			

Notes:

- 1. Range of V_{in} can be up to 8V, but R_1 and R_2 must be scaled such that V_{GS} of Q2 does not exceed -8V.
- 2. $R_{g,h}$ 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. $R_{g,c}$ is guaranteed by design while $R_{g,c}$ is determined by the user's board design.
- 3. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2.0%.

FDC6329L Load Switch Application



External Component Recommendation:

For applications where Co $\leq 1 \mu F.$

For slew rate control, select R2 in the range of $1k - 4.7k\Omega$.

For additional in-rush current control, $C1 \le 1000pF$ can be added.

Select R1 so that the R1/R2 ratio ranges from 10 - 100. R1 is required to turn Q2 off.

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

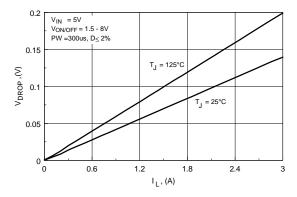


Figure 1. Conduction Voltage Drop Variation with Load Current.

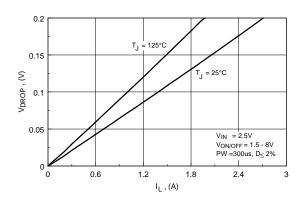


Figure 2. Conduction Voltage Drop Variation with Load Current.

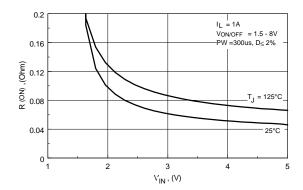


Figure 3. On-Resistance Variation with Input Voltage.

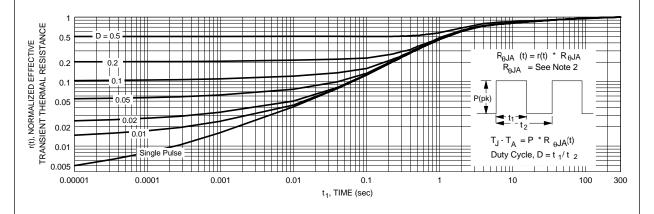


Figure 4. Transient Thermal Response Curve.

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

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FACT™ QFET™ FACT Quiet Series™ QS™

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