

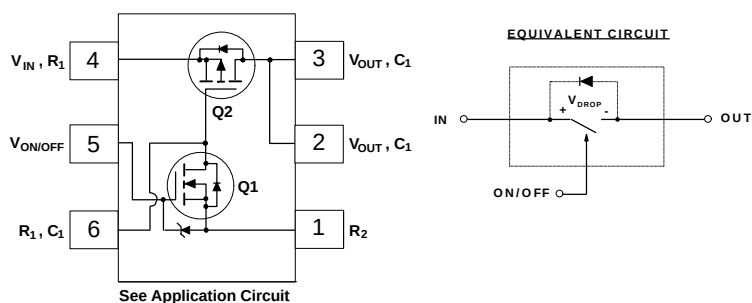
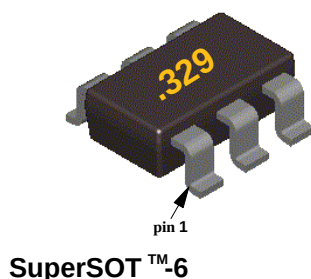
FDC6329L Integrated Load Switch

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

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



Absolute Maximum Ratings $T_A = 25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	FDC6329L	Units
V_{IN}	Input Voltage Range (Note 1)	2.5 - 8	V
$V_{\text{ON/OFF}}$	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
$T_{\text{J}}, T_{\text{STG}}$	Operating and Storage Temperature Range	-55 to 150	$^\circ\text{C}$
ESD	Electrostatic Discharge Rating MIL-STD-883D Human Body Model (100pf/1500Ohm)	6	kV

THERMAL CHARACTERISTICS

$R_{\theta\text{JA}}$	Thermal Resistance, Junction-to-Ambient (Note 2)	180	$^\circ\text{C/W}$
$R_{\theta\text{JC}}$	Thermal Resistance, Junction-to-Case (Note 2)	60	$^\circ\text{C/W}$

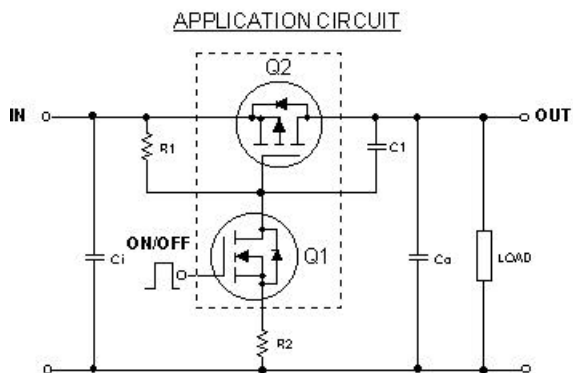
Electrical Characteristics (T_A = 25°C unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
OFF CHARACTERISTICS						
I _{FL}	Forward Leakage Current	V _{IN} = 8 V, V _{ON/OFF} = 0 V			1	μA
ON CHARACTERISTICS (Note 3)						
V _{DROP}	Conduction Voltage	V _{IN} = 5 V, V _{ON/OFF} = 3.3 V, I _L = 2.8 A		0.12	0.2	V
		V _{IN} = 2.5 V, V _{ON/OFF} = 3.3 V, I _L = 1.9 A		0.14	0.2	
R _(ON)	Q ₂ - Static On-Resistance	V _{GS} = -5 V, I _D = -2.5 A		0.047	0.07	Ω
		V _{GS} = -2.5 V, I _D = -2.0 A		0.073	0.105	
I _L	Load Current	V _{DROP} = 0.2 V, V _{IN} = 5 V, V _{ON/OFF} = 3.3 V	2.8			A
		V _{DROP} = 0.2 V, V _{IN} = 2.5 V, V _{ON/OFF} = 3.3 V	1.9			

Notes:

- Range of V_{in} can be up to 8V, but R₁ and R₂ must be scaled such that V_{GS} of Q₂ does not exceed -8V.
- R_{θJA} 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_{θJC} is guaranteed by design while R_{θCA} is determined by the user's board design.
- Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2.0%.

FDC6329L Load Switch Application



External Component Recommendation:

For applications where C₀ ≤ 1μF.

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

For additional in-rush current control, C₁ ≤ 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 ($T_A = 25^\circ\text{C}$ unless otherwise noted)

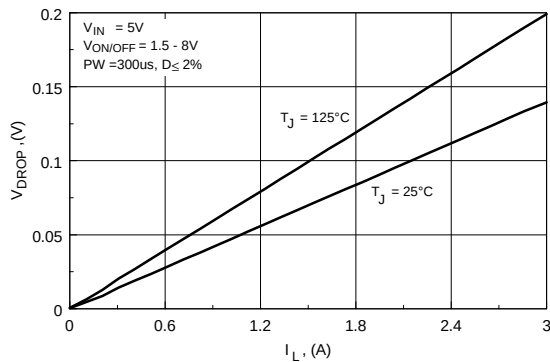


Figure 1. Conduction Voltage Drop Variation with Load Current.

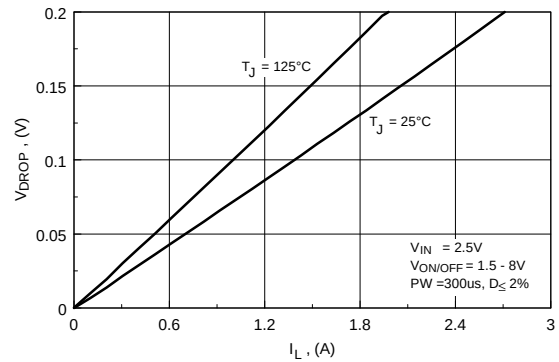


Figure 2. Conduction Voltage Drop Variation with Load Current.

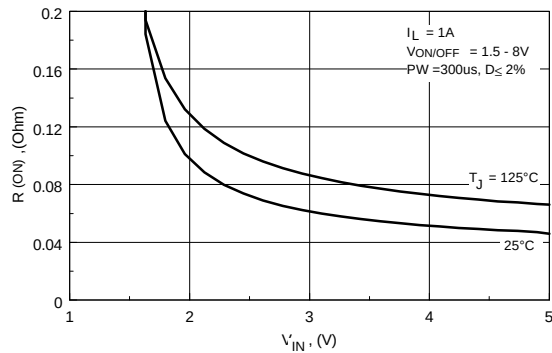


Figure 3. On-Resistance Variation with Input Voltage.

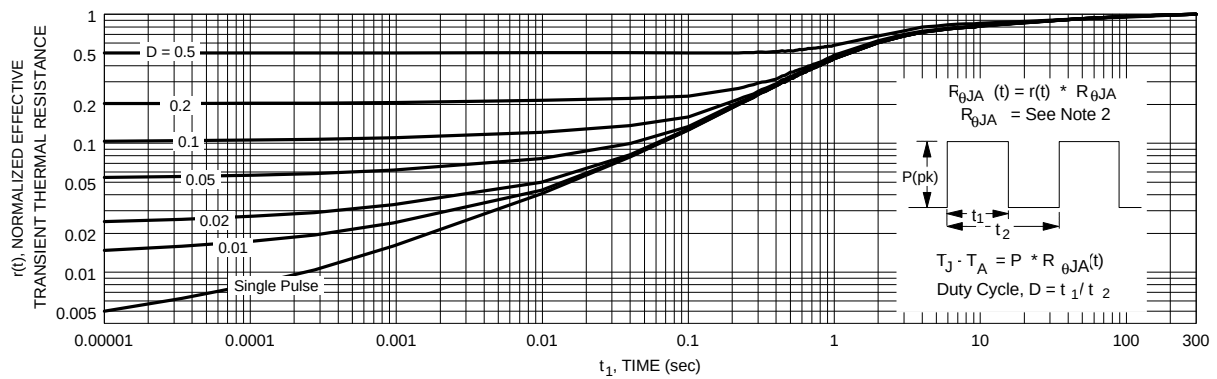


Figure 4. Transient Thermal Response Curve.

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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