

General Description

This device is particularly suited for compact power management in portable electronic equipment where 3V to 20V input and 2.3A 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 SuperSOTTM-6 package.

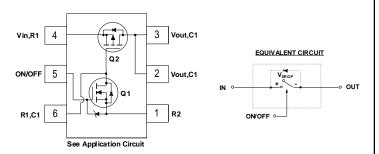
Features

- $V_{\text{DROP}} = 0.2V @ V_{\text{IN}} = 12V, I = 2.5 \text{ A. } R_{\text{I}} = 0.08 \Omega$ $V_{\text{DROP}}^{\text{DROP}} = 0.2V @ V_{\text{IN}}^{\text{IN}} = 5V, I = 1.6 \text{ A. } R_{(ON)}^{\text{ON}} = 0.125 \Omega.$
- Control MOSFET (Q1) includes Zener protection for ESD ruggedness (>6kV Human Body Model).
- High performance PowerTrench[™] technology for extremely low on-resistance.
- SuperSOTTM-6 package design using copper lead frame for superior thermal and electrical capabilities.

Applications

- Power management
- Load actuation





SuperSOT[™]-6

Symbol	Parameter			Ratings	Units	
Vin	Input Voltage	Input Voltage Range (Note 1) 3 - 20				
V _{on/off}	On/Off Volta	ge Range		1.5 - 8		
D	Load Curren	t - Continuous	(Note 2)	2.3	A	
		- Pulsed		10		
PD	Maximum Po	ower Dissipation	(Note 1)	0.7	W	
TJ, T _{stg}	Operating an	d Storage Temperature Ra	ange	-55 to +150	۰C	
ESD		Discharge Rating MIL-STE /-Model (100pf/1500 Ohm)	D-883D	6	kV	
	I Charact		ant (Note 2)	180	∘C/W	
R _{θJA}	Thermal Res	eristics sistance, Junction-to-Ambie sistance, Junction-to-Case	ent (Note 2) (Note 2)	180 60	∘C/W ∘C/W	
R _{θJA} R _{θJC}	Thermal Res Thermal Res e Marking	sistance, Junction-to-Ambie	(Note 2)			

FDC6330L

March 2015

Symbol	Parameter	Test Conditions	Min	Тур	Max	Units
OFF Ch	aracteristics					
l _{FL}	Leakage Current	$V_{IN} = 20 \text{ V}, V_{ON/OFF} = 0 \text{ V}$			1	uА
	Conduction Voltage	V_{IN} = 12 V, $V_{ON/OFF}$ = 3.3 V, I_L = 2.5 A			0.2	V
<mark>ON Cha</mark> ∕ _{DROP}		$\label{eq:VIN} \begin{array}{l} V_{\text{IN}} = 12 \ \text{V}, \ \text{V}_{\text{ON/OFF}} = 3.3 \ \text{V}, \ \text{I}_{\text{L}} = 2.5 \ \text{A} \\ \hline \text{V}_{\text{IN}} = 5 \ \text{V}, \ \text{V}_{\text{ON/OFF}} = 3.3 \ \text{V}, \ \text{I}_{\text{L}} = 1.6 \ \text{A} \end{array}$			0.2 0.2	V V
				0.054	•	-

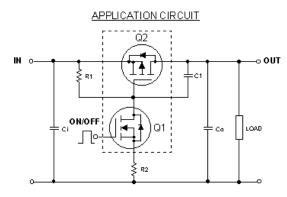
Notes:

1. Range of V _in can be up to 30V, but R _1 and R _2 must be scaled such that V _GS of Q2 does not exceed 20V.

2. $R_{\theta JA}$ 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. $R_{\theta JC}$ is guaranteed by design while $R_{\theta JA}$ is determined by the user's board design.

3. Pulse Test: Pulse Width \leq 300µs, Duty Cycle \leq 2.0%.

FDC6330L Load Switch Application



External Component Recommendation:

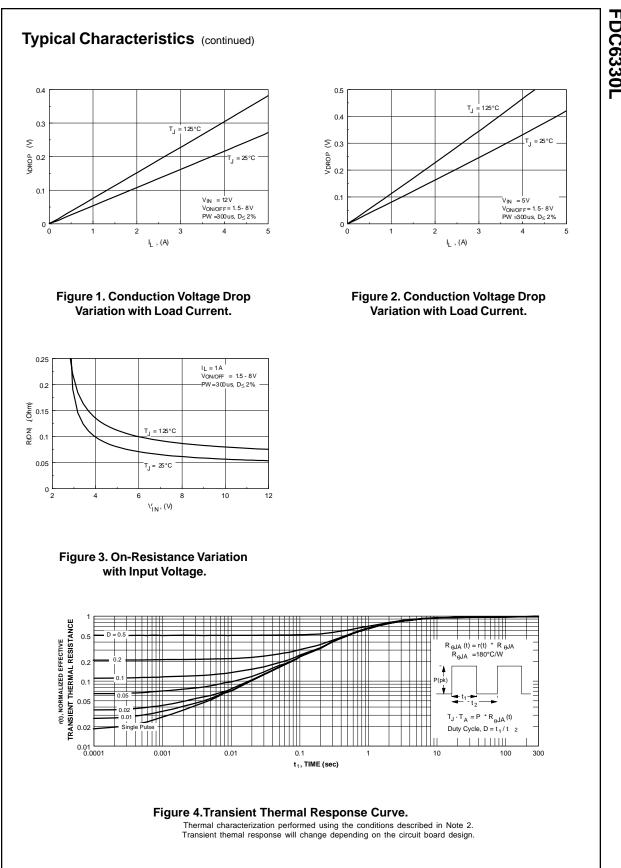
For applications where $Co \le 1\mu F$.

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

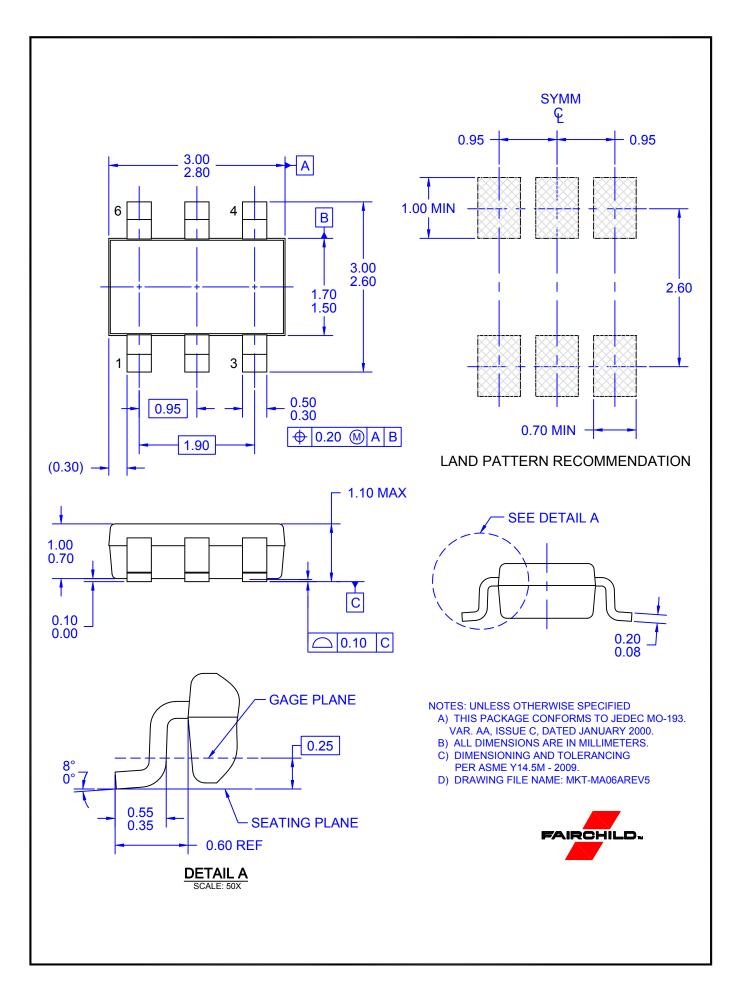
For additional in-rush current control, $C1 \le 1000 pF$ can be added.

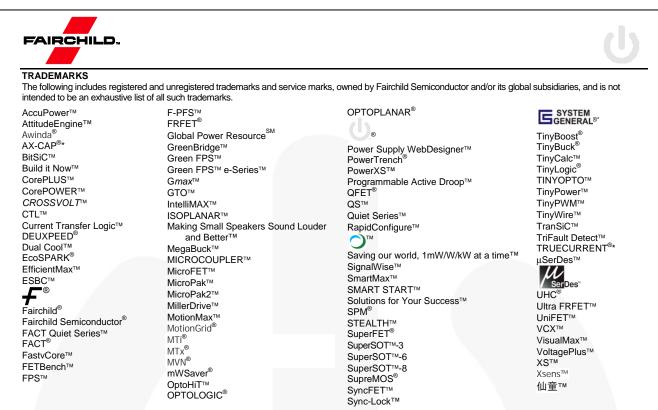
Select R1 so that the R1/R2 ratio ranges from 10 - 100. R1 is required to turn Q2 off.

FDC6330L Rev. 1.3



FDC6330L





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Rev. 176