

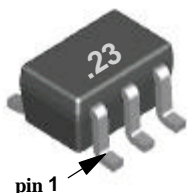
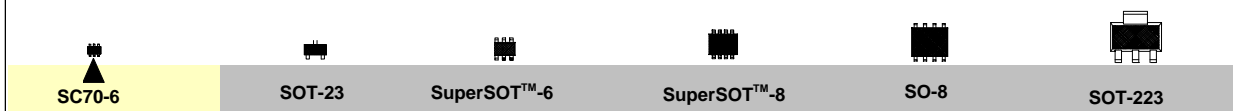
## FDG6323L Integrated Load Switch

### General Description

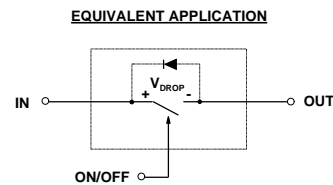
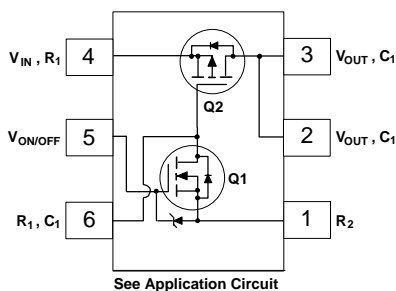
This device is particularly suited for compact power management in portable electronic equipment where 2.5V to 8V input and 0.6A output current capability are needed. This load switch integrates a small N-Channel power MOSFET (Q1) which drives a large P-Channel power MOSFET (Q2) in one tiny SC70-6 package.

### Features

- $V_{DROPP}=0.2V$  @  $V_{IN}=5V$ ,  $I_L=0.36A$ .  $R_{(ON)} = 0.55\Omega$   
 $V_{DROPP}=0.2V$  @  $V_{IN}=2.5V$ ,  $I_L=0.27A$ .  $R_{(ON)} = 0.75\Omega$ .
- Very small package outline SC70-6.
- Control MOSFET (Q1) includes Zener protection for ESD ruggedness (>6KV Human Body Model).
- High density cell design for extremely low on-resistance.
- Compact industry standard SC70-6 surface mount package.



**SC70-6**



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

Symbol	Parameter	FDG6323L	Units
$V_{IN}$	Input Voltage Range	2.5 - 8	V
$V_{ON/OFF}$	On/Off Voltage Range	1.5 - 8	V
$I_L$	Load Current - Continuous (Note 1)	0.6	A
	- Pulsed (Note 1 & 3)	1.8	
$P_D$	Maximum Power Dissipation (Note 2)	0.3	W
$T_J, T_{STG}$	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

$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient (Note 2)	415	$^\circ\text{C/W}$
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## Electrical Characteristics ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

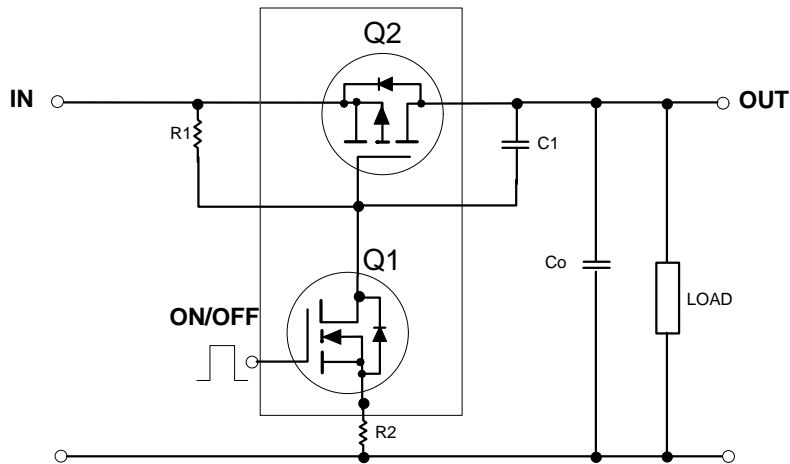
Symbol	Parameter	Conditions	Min	Typ	Max	Units
<b>OFF CHARACTERISTICS</b>						
$I_{FL}$	Forward Leakage Current	$V_{IN} = 8\text{ V}, V_{ON/OFF} = 0\text{ V}$			1	$\mu\text{A}$
<b>ON CHARACTERISTICS (Note 3)</b>						
$V_{DROP}$	Conduction Voltage Drop	$V_{IN} = 5\text{ V}, V_{ON/OFF} = 3.3\text{ V}, I_L = 0.36\text{ A}$		0.14	0.2	V
		$V_{IN} = 2.5\text{ V}, V_{ON/OFF} = 3.3\text{ V}, I_L = 0.27\text{ A}$		0.15	0.2	
$R_{(ON)}$	$Q_2$ - Static On-Resistance	$V_{GS} = -5\text{ V}, I_D = -0.6\text{ A}$		0.41	0.55	$\Omega$
		$V_{GS} = -2.5\text{ V}, I_D = -0.5\text{ A}$		0.58	0.75	
$I_L$	Load Current	$V_{DROP} = 0.2\text{ V}, V_{IN} = 5\text{ V}, V_{ON/OFF} = 3.3\text{ V}$	0.36			A
		$V_{DROP} = 0.2\text{ V}, V_{IN} = 2.5\text{ V}, V_{ON/OFF} = 3.3\text{ V}$	0.27			

### Notes:

- Range of  $V_{in}$  can be up to 8V, but  $R_1$  and  $R_2$  must be scaled such that  $V_{GS}$  of  $Q_2$  does not exceed -8V.
- $R_{thJA}$  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.  
 $R_{thJC}$  is guaranteed by design while  $R_{thCA}$  is determined by the user's board design.
- Pulse Test: Pulse Width  $\leq 300\mu\text{s}$ , Duty Cycle  $\leq 2.0\%$

## FDG6323L Load Switch Application

### APPLICATION CIRCUIT



### External Component Recommendation

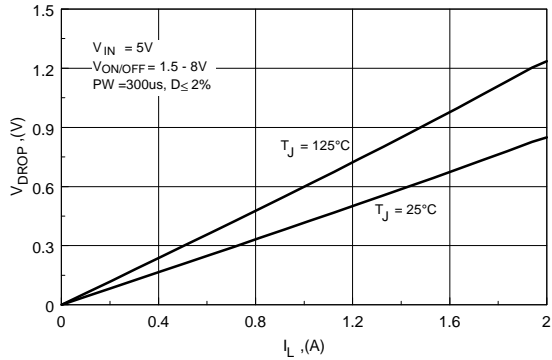
$R_1$  is required to turn  $Q_2$  off.  
 $R_2$  is optional for Slew Rate Control.

For  $C_o \leq 1\mu\text{F}$  applications:

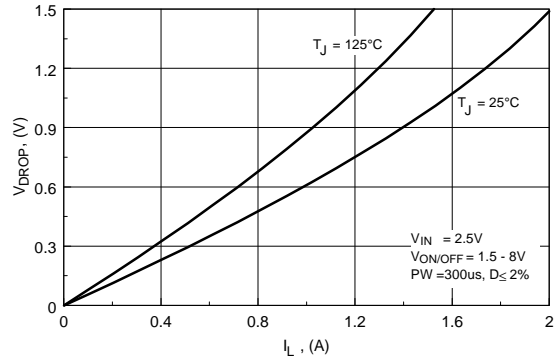
First select  $R_2$ , 100 - 1K $\Omega$ , for Slew Rate control.

Then select  $R_1$  such that  $R_1/R_2$  ratio maintains between 10 - 100.

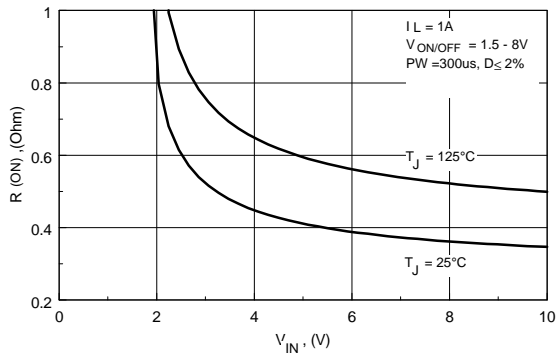
**Typical Electrical Characteristics** ( $T_A = 25\text{ }^\circ\text{C}$  unless otherwise noted )



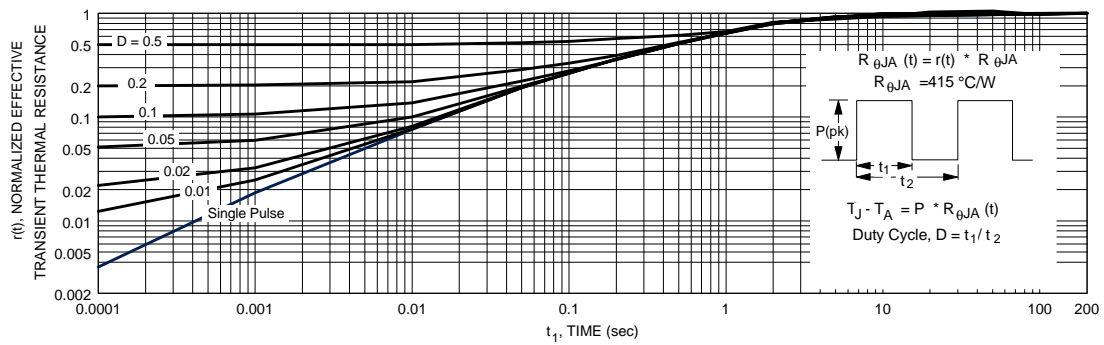
**Figure 1. Conduction Voltage Drop Variation with Load Current.**



**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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