

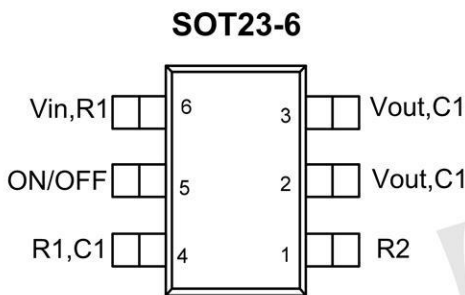
**Product Summary**

- -2.8A,-8V
- RDS(ON)=45mΩ @ VGS=4.5V(Typ)
- RDS(ON)=50mΩ @ VGS=2.5V(Typ)
- RDS(ON)=80mΩ @ VGS=1.8V(Typ)
- FDC6331L Pin to Pin fully compatible

**Application**

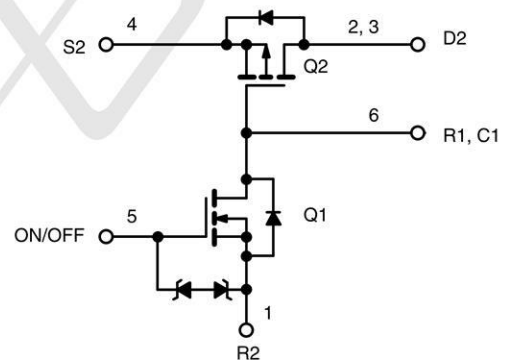
- Battery Packs
- Battery-Powered Portable Equipment
- Cellular and Cordless Telephones

**Package and Pin Configuration**



**Marking: 331K**

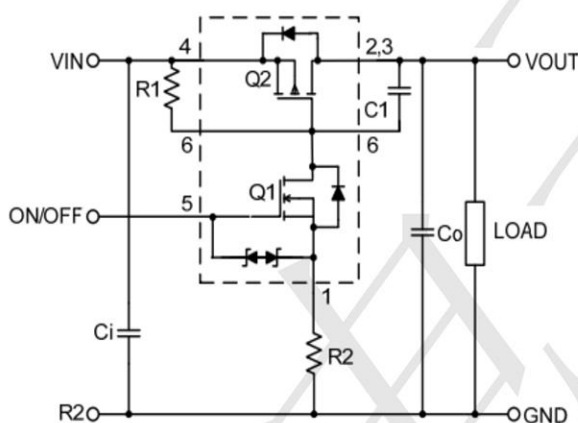
**Circuit diagram**



**Absolute Maximum Ratings (T<sub>A</sub>=25°C unless otherwise noted)**

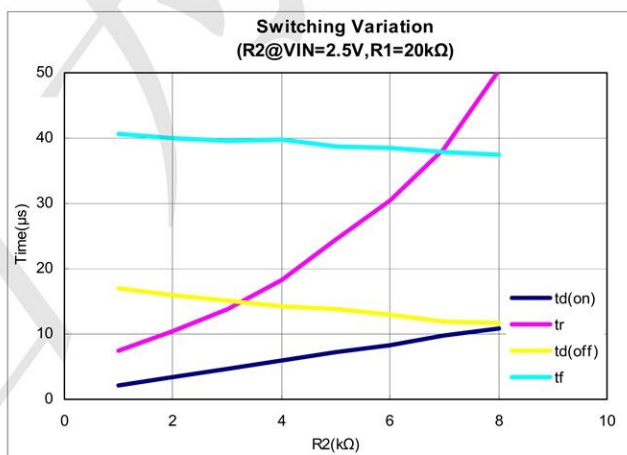
Symbol	Parameter	Limit	Unit
V <sub>IN</sub>	Input Voltage	±8	V
V <sub>ON/OFF</sub>	ON/OFF Voltage	-0.5 to 8	
I <sub>L</sub>	Continuous Load Current	-2.8	A
	Pulse Load Current	-9	
I <sub>S</sub>	Continuous Source Current (Source-Drain Diode)	-1.0	
P <sub>D</sub>	Maximum Power Dissipation	0.7	W
T <sub>J</sub> , T <sub>STG</sub>	Junction and Storage Temperature Range	-50 to +150	°C
ESD	ESD Rating, MIL-STD-883D HBM	2000	V
R <sub>0JA</sub>	Thermal Resistance, Junction-to-Ambient	250	°C/W

**Typical Application Circuit**



COMPONENTS		
R1	Pull-Up Resistor	Typical 20kΩ to 1MΩ*
R2	Optional Slew-Rate Control	Typical 0 to 50kΩ
C1	Optional Slew-Rate Control	Typical 1000pF

\*Minimum R1 value should be at least  $10 \times R2$  to ensure Q1 turn-on.



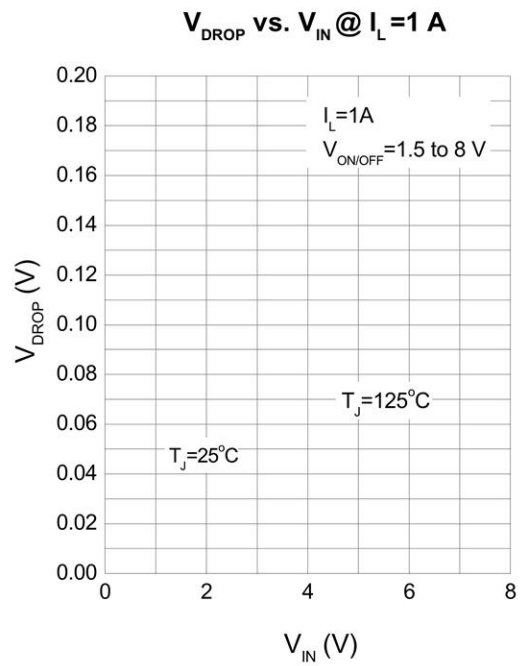
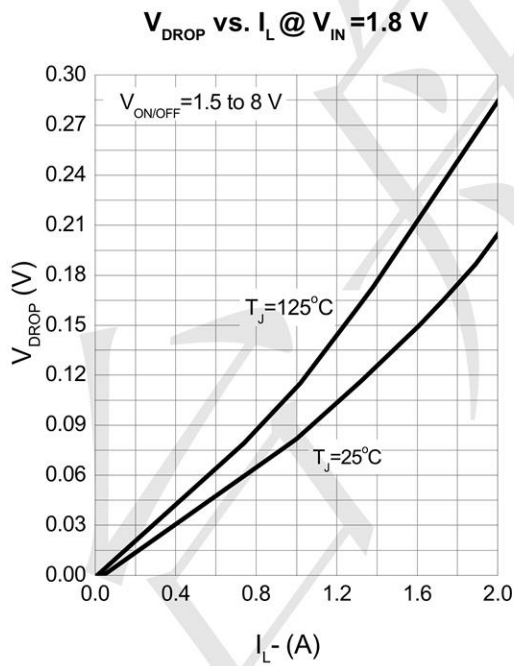
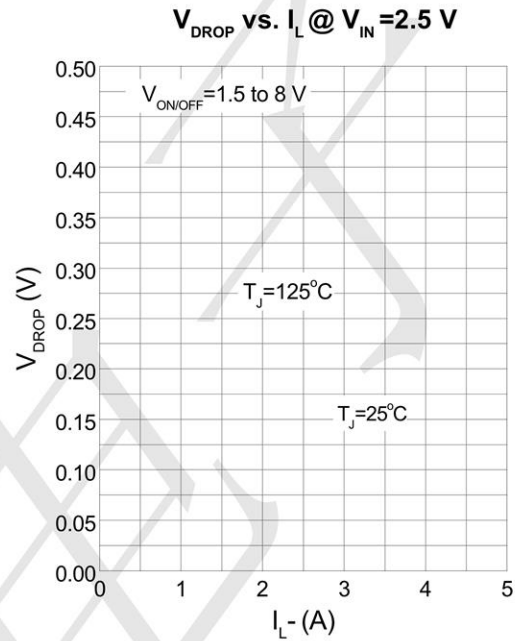
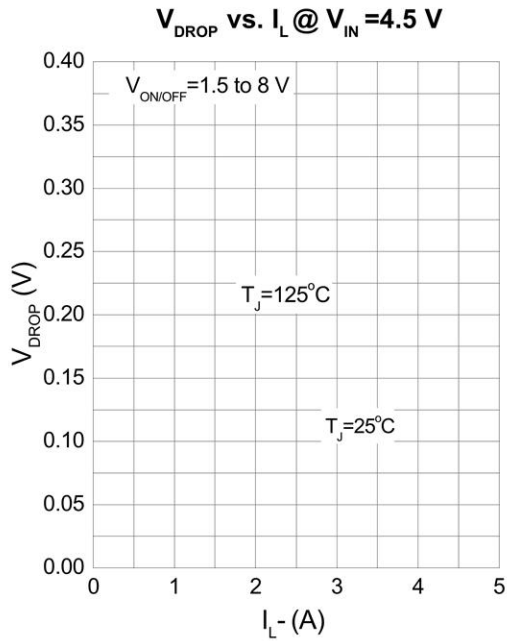
Note 1: For R2 switching variations with other VIN/R1 combinations, see Typical Characteristics.



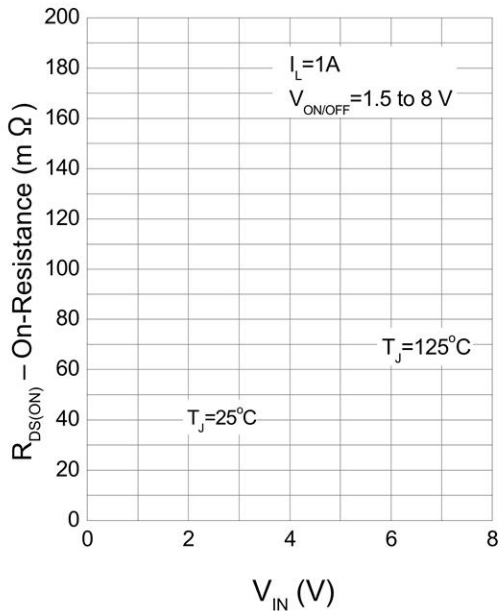
**Electrical Characteristics (  $T_A = 25^\circ\text{C}$  unless otherwise noted )**

Symbol	Parameter	Test Condition	Min	Typ	Max	Unit
<b>OFF Characteristics</b>						
$I_{FL}$	Reverse Leakage Current	$V_{IN}=8.0V, V_{ON/OFF}=0V$			1	$\mu\text{A}$
$V_{SD}$	Diode Forward Voltage	$I_S = -1A$	-0.4	-0.65	-1.5	V
<b>ON Characteristics</b>						
$V_{IN}$	Input Voltage Range		8.0			V
$R_{DS(ON)}$	Static Drain-to-Source On-Resistance	$V_{ON/OFF}=1.8V, V_{IN}=4.5V, I_D=1.0A$		0.045	0.055	$\Omega$
		$V_{ON/OFF}=1.8V, V_{IN}=2.5V, I = 1.0A$		0.050	0.065	
		$V_{ON/OFF}=1.8V, V_{IN}=1.8V, I = 1.0A$		0.080	0.150	
$I_{D(on)}$	On-State (P-Channel) Drain Current	$V_{IN-OUT} \leq 0.2V, V_{IN}=5V, V_{ON/OFF}=1.5V$	1			A
		$V_{IN-OUT} \leq 0.3V, V_{IN}=3V, V_{ON/OFF}=1.8V$	1			

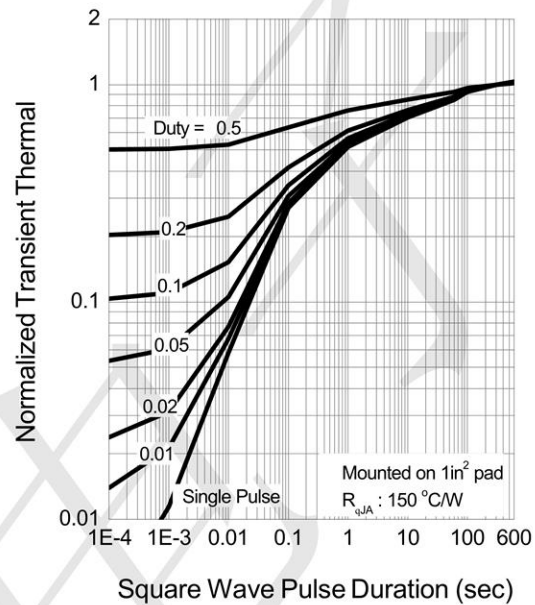
**Typical Operating Characteristics**



**On-Resistance vs. Input Voltage**

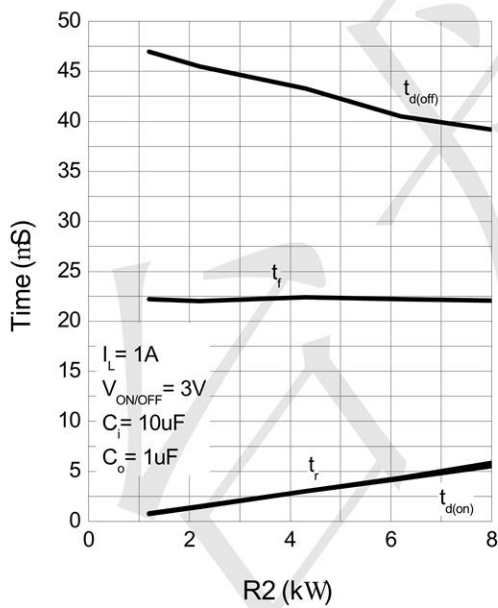


**Thermal Transient Impedance**



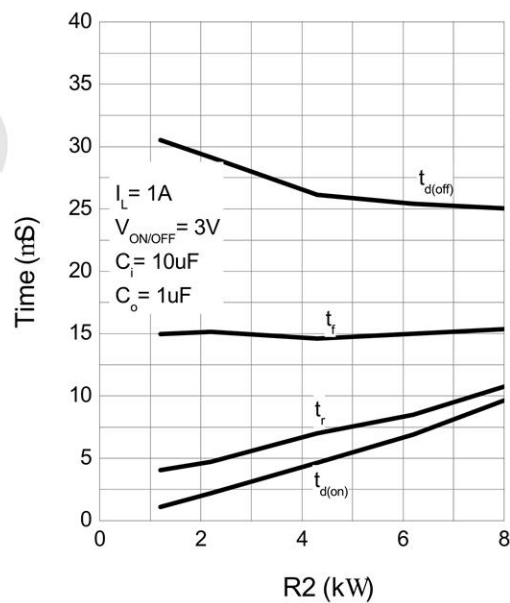
**Switching Variation**

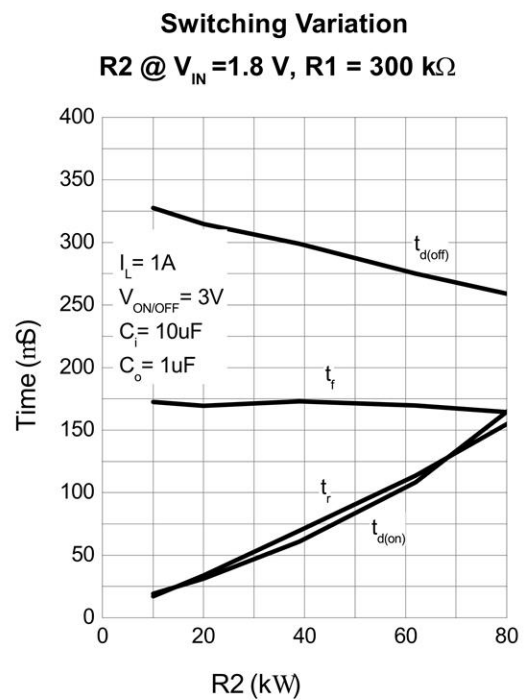
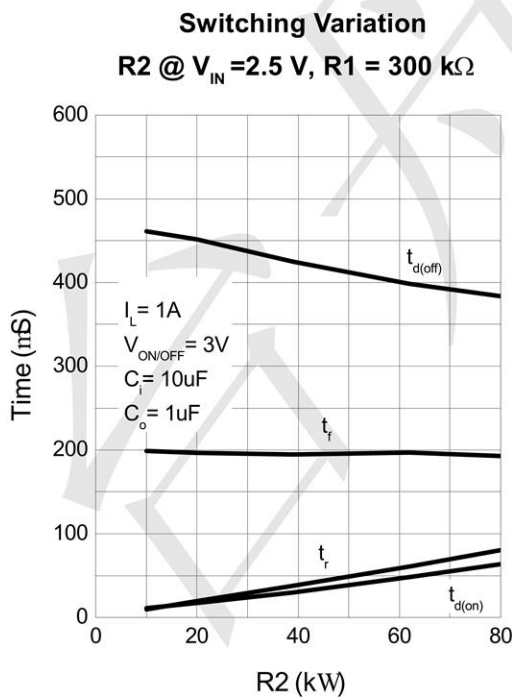
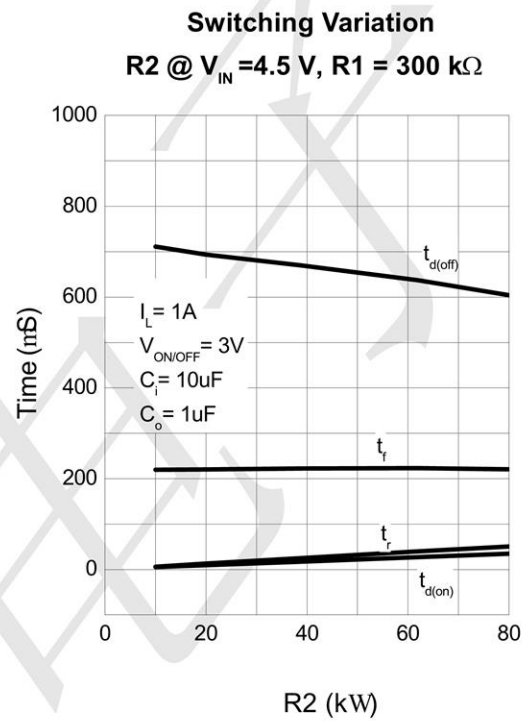
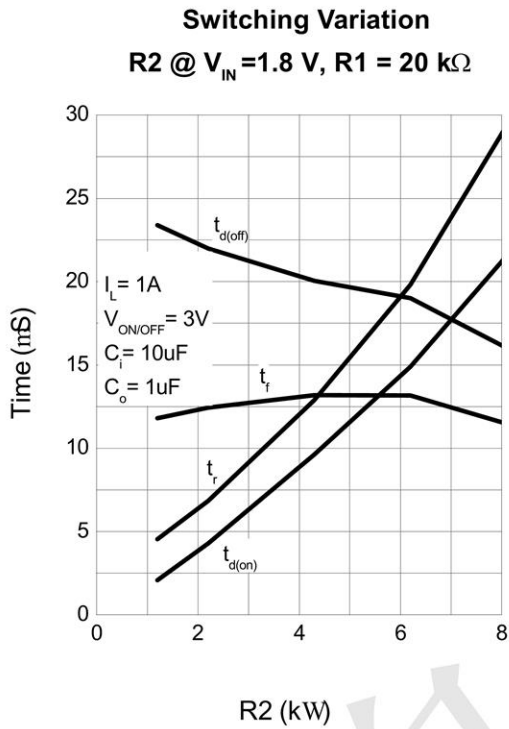
**R2 @  $V_{IN} = 4.5$  V, R1 = 20 k $\Omega$**



**Switching Variation**

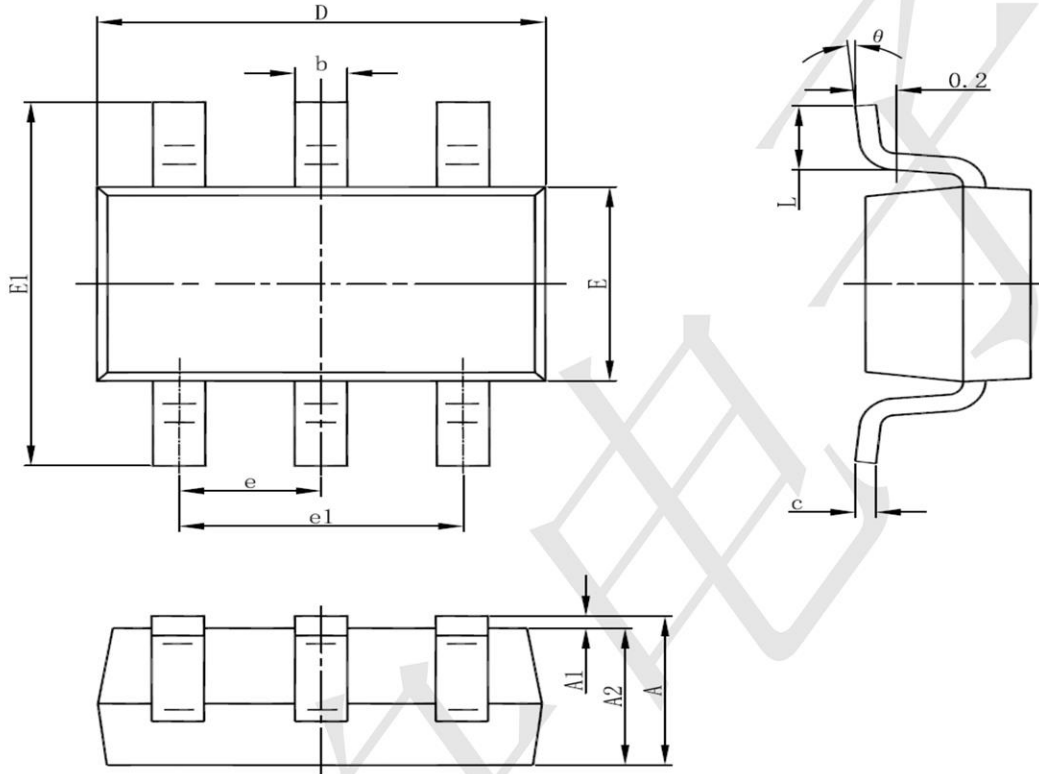
**R2 @  $V_{IN} = 2.5$  V, R1 = 20 k $\Omega$**







**SOT23-6 Package Information**



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°