

Product Summary

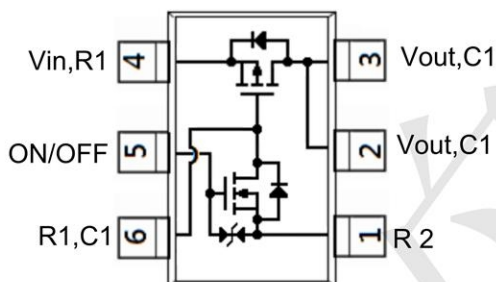
- $V_{drop} = 0.2V @ V_{in}=12V, I_L=2.0A, R_{DS(ON)}=56m\Omega$ Typ
- $V_{drop} = 0.2V @ V_{in}=5.0V, I_L=1.8A, R_{DS(ON)}=90m\Omega$ Typ
- Advanced Trench Process Technology
- Adjustable Turn on/off Slew Rate Control through external R1, R2 and C1
- Lead free in compliance with EU RoHS 2.0
- Green molding compound as per IEC 61249 standard

Application

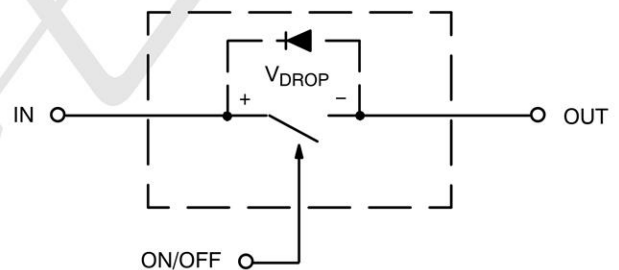
- Battery Packs
- Battery-Powered Portable Equipment
- Cellular and Cordless Telephones

Package and Pin Configuration

SOT23-6



EQUIVALENT CIRCUIT



Marking: 330P

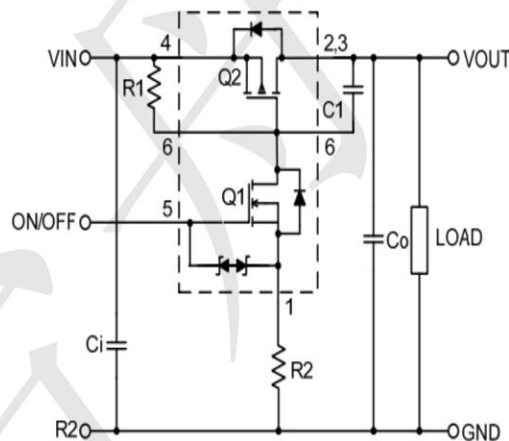
Absolute Maximum Ratings ($T_A=25^\circ C$ unless otherwise noted)

PARAMETER	SYMBOL	Ratings	UNITS
Input Voltage Range ^(Note 1)	V_{IN}	3-20	V
On/Off Voltage Range	V_{ON}/V_{OFF}	1.5-8	V
Continuous Load Current ^t (Note 2,3)	I_D	2.5	A
Pulsed Load Current ^t (Note 4)	I_D	10	A
Power Dissipation ^(Note 2)	P_D	0.83	W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55~150	$^\circ C$
ESD, MIL-STD-883D HBM (100pF/1.5kohm) (Von/off pin)	V_{ESD}	2	kV
Typical Junction to Ambient ^(Note 2)	$R_{\theta JA}$	150	$^\circ C/W$

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

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNITS
Off Characteristics						
Leakage Current	I_{FL}	$V_{IN}=20\text{V}, V_{ON}/V_{OFF}=0\text{V}$	-	-	1	μA
Diode Forward Voltage	V_{SD}	$I_S=-1.0\text{A}$	-	-0.76	-1.2	V
On Characteristics						
Conduction Voltage	V_{drop}	$V_{in}=12\text{V}, V_{on/oFF}=3.3\text{V}, I_L=2.0\text{A},$		-	0.2	V
		$V_{in}=5\text{V}, V_{on/oFF}=5.0\text{V}, I_L=1.8\text{A},$		-	0.2	V
Drain-Source On-State Resistance (Q2)	$R_{DS(on)}$	$V_{GS}=-12\text{V}, I_D=-2.0\text{A}$	-	56	90	m Ω
		$V_{GS}=-5.0\text{V}, I_D=-1.8\text{A}$	-	95	120	
Load Current	I_L	$V_{drop}=0.2\text{V}, V_{in}=12\text{V}, V_{on/oFF}=3.3\text{V}$	2.0	-		A
		$V_{drop}=0.2\text{V}, V_{in}=5\text{V}, V_{on/oFF}=3.3\text{V}$	1.8	-		

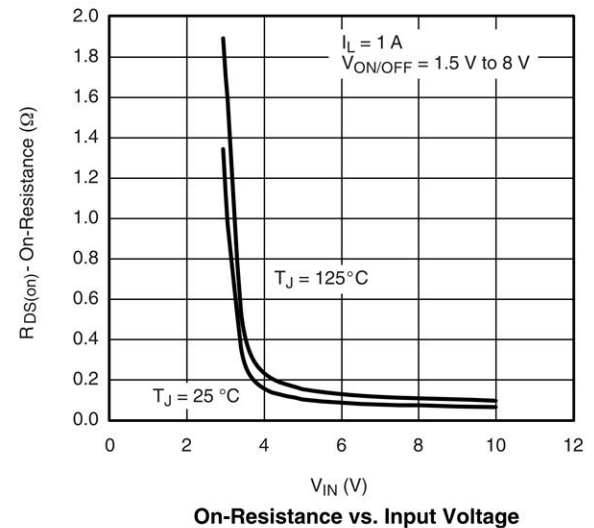
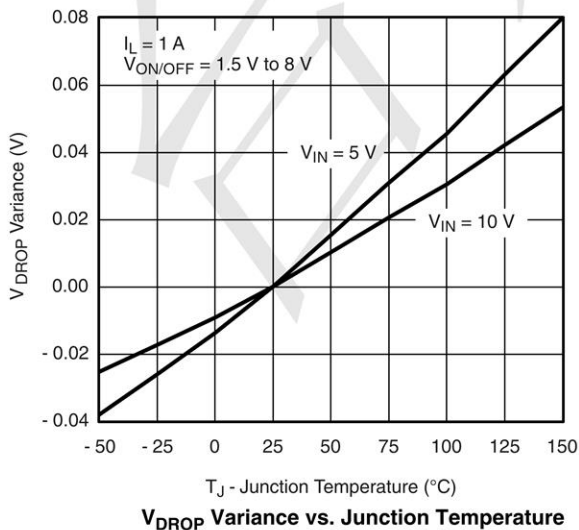
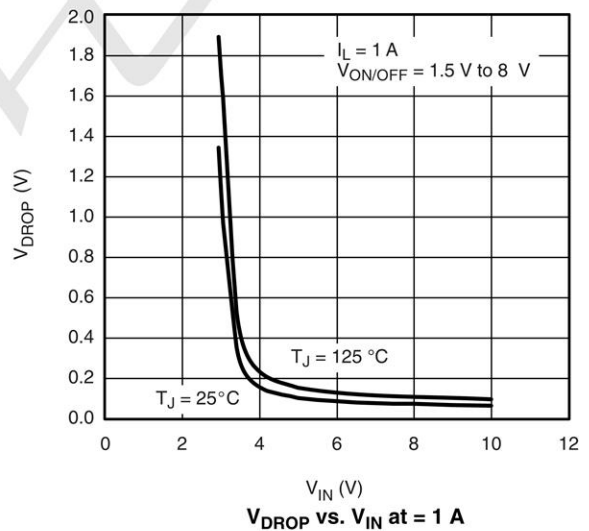
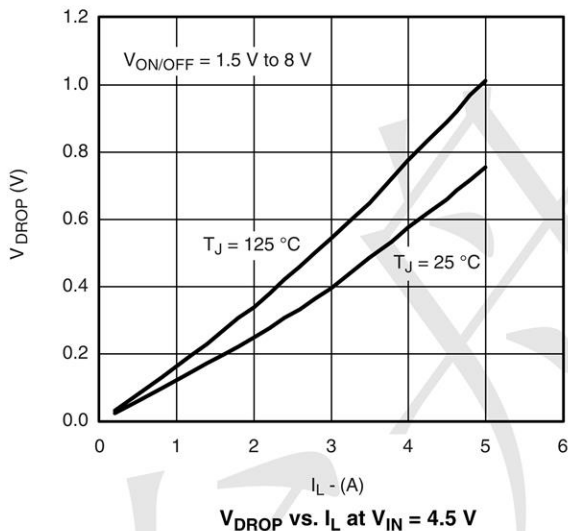
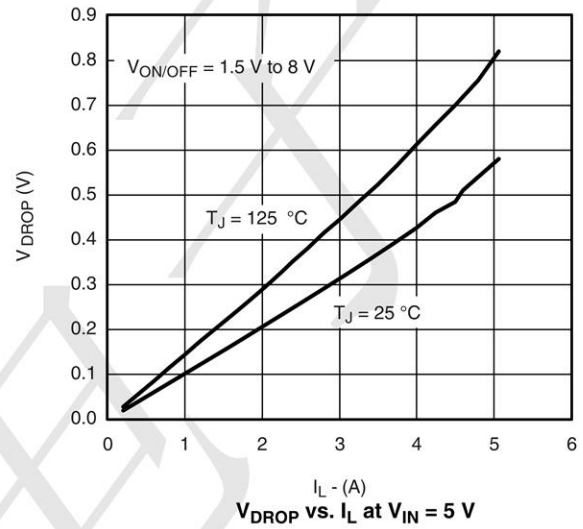
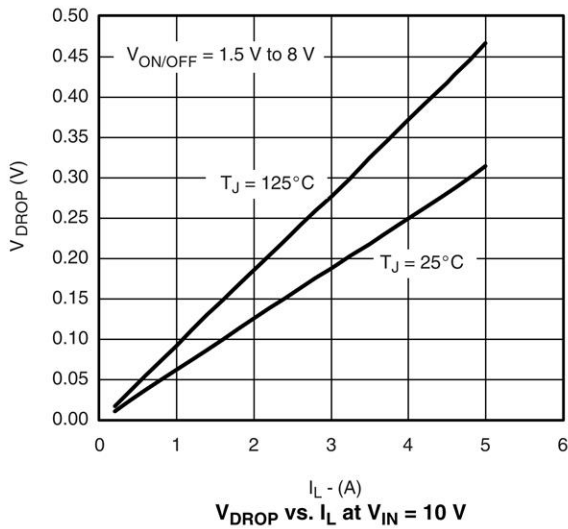
Typical Application Circuit

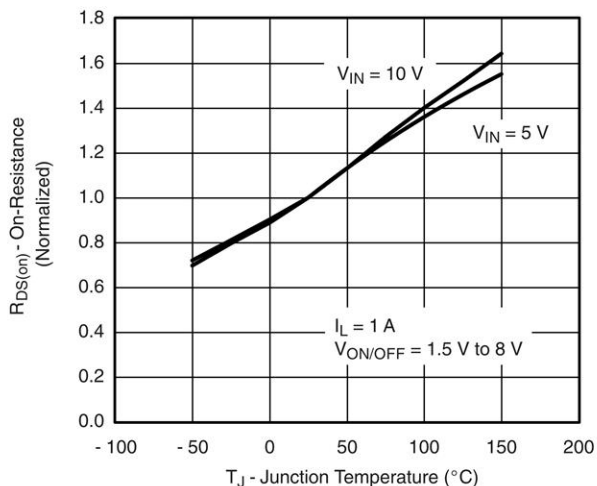


Component Table

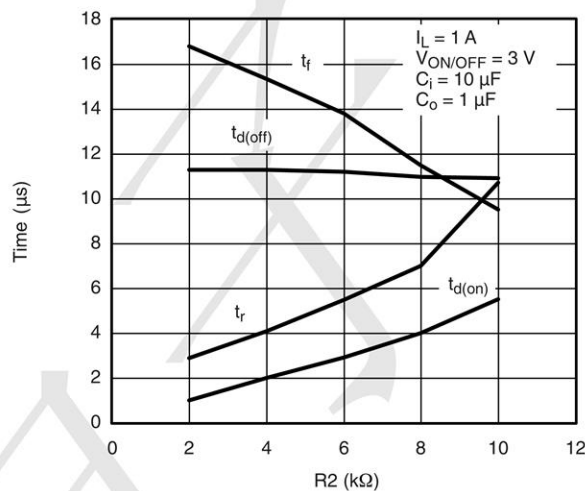
R1	Pull-Up Resistor	Typical 10k Ω to 1M Ω
R2	Optional Slew-Rate Control	Typical 0k Ω to 100k Ω
C1	Optional Slew-Rate Control	Typical 1 μF
Note: R1 should be at least 10 * R2 to ensure Q1 turn-on		

Typical Operating Characteristics

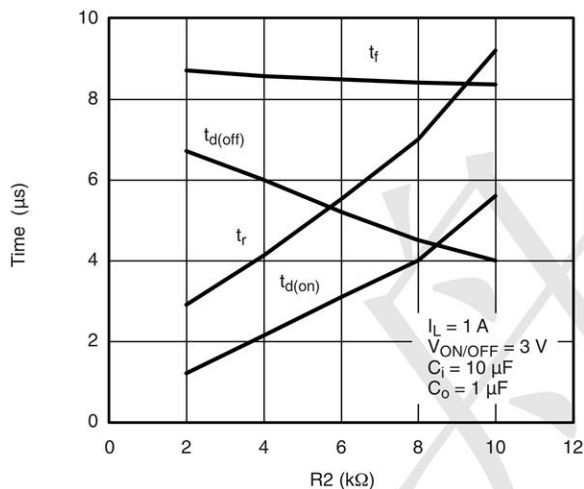




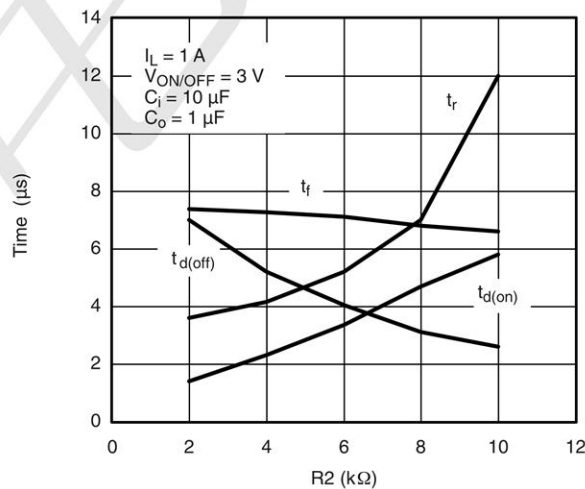
Normalized On-Resistance vs. Junction Temperature



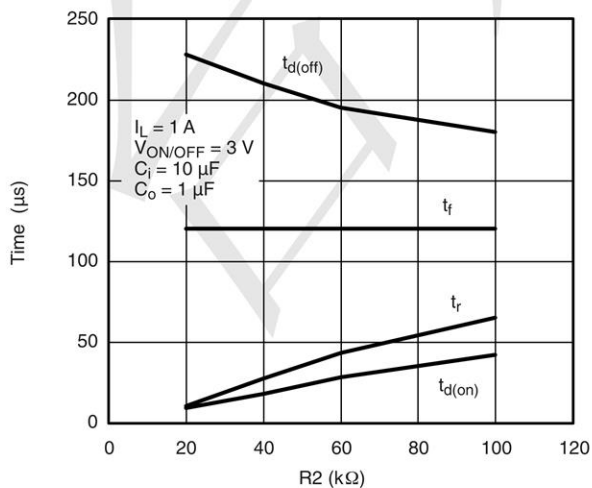
Switching Variation R_2 at $V_{IN} = 10V$, $R_1 = 20k\Omega$



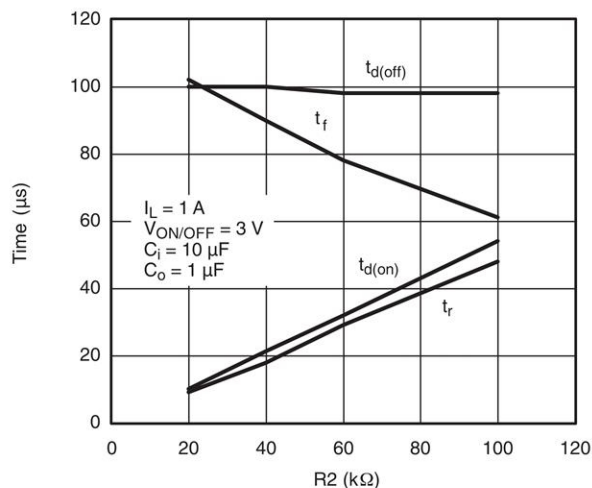
Switching Variation R_2 at $V_{IN} = 5V$, $R_1 = 20k\Omega$



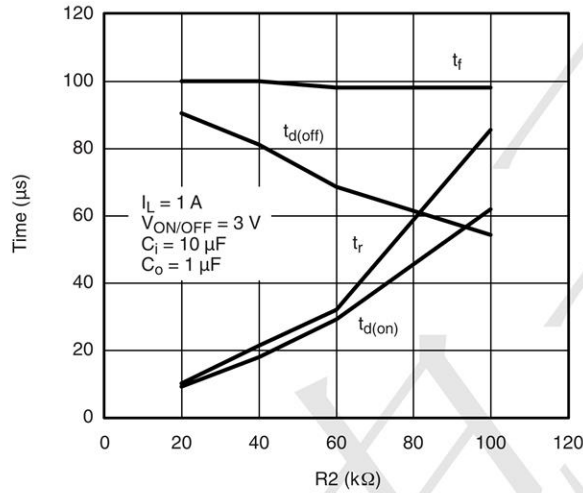
Switching Variation R_2 at $V_{IN} = 4.5V$, $R_1 = 20k\Omega$



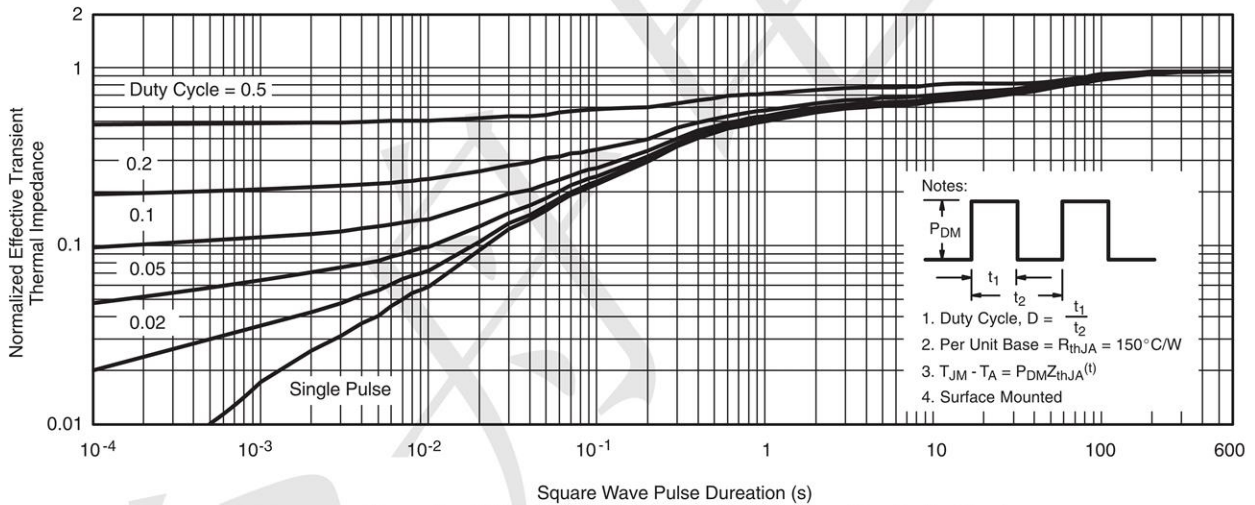
Switching Variation R_2 at $V_{IN} = 10V$, $R_1 = 300k\Omega$



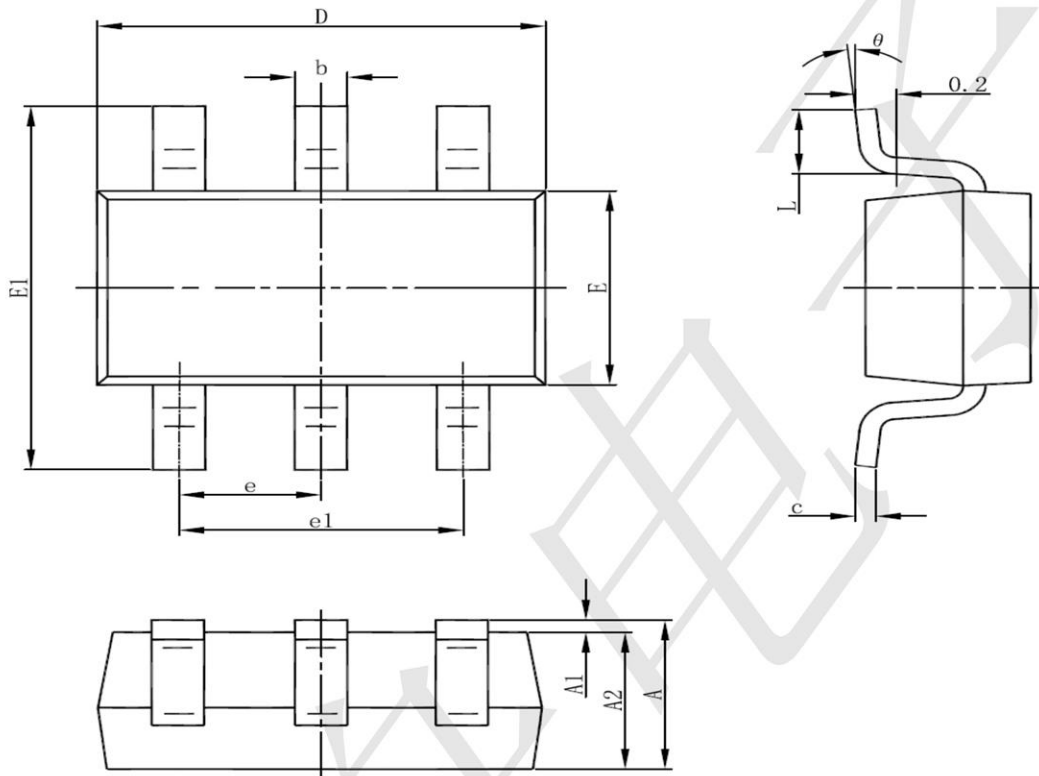
Switching Variation R_2 at $V_{IN} = 5V$, $R_1 = 300k\Omega$



Switching Variation
R2 at $V_{IN} = 4.5\text{ V}$, $R_1 = 300\ \text{k}\Omega$



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°

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