

**US94060**

Preliminary

CMOS IC**HIGH SIDE POWER SWITCHES****■ DESCRIPTION**

The UTC **US94060** are high-side load switches incorporating a low on-resistance P-channel MOSFET which provides customers over 2A continuous current.

The UTC **US94060** is characterized by a fast turn on function. The UTC **US94060** keeps in a floating state when an active pull-down signals is on the enable input until a high level signal applies on the EN pin. Built-in level shift circuitry allows low voltage logic signals to switch to higher supply voltages, on the contrary, high level logic signals can control low level voltages.

The UTC **US94060**'s operating voltage varies from 1.8V ~ 5.5V which makes these devices suitable for 1-cell Lithium ion and 2- to 3-cell NiMH/NiCad/Alkaline powered systems as well as all 5V applications. The 2 μ A low operating current and low shutdown current (less than 1 μ A) make the battery life longer.

The UTC **US94060** is generally suitable for applications, such as load switch in portable devices: cellular phones, PDAs, MP3 players, digital Cameras, portable instrumentation, battery switch-over circuits and level translators.

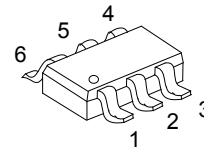
■ FEATURES

- * Operating voltage range: 1.8V ~ 5.5V
- * Providing 2A continuous operating current
- * P-channel MOSFET's R_{ON} : 175m Ω typical
- * Built-in level shift for control logic
- * Quiescent current is as low as 2 μ A
- * Micro-power shutdown less than 1 μ A

■ ORDERING INFORMATION

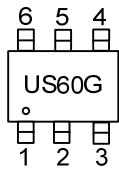
Ordering Number	Package	Packing
US94060G-AG6-R	SOT-26	Tape Reel

US94060G-AG6-R	(1) Packing Type	(1) R: Tape Reel
	(2) Package Type	(2) AG6: SOT-26
	(3) Halogen Free	(3) G: Halogen Free

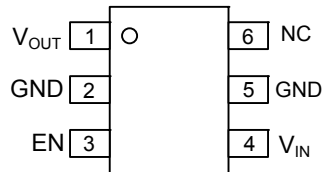


SOT-26

■ MARKING



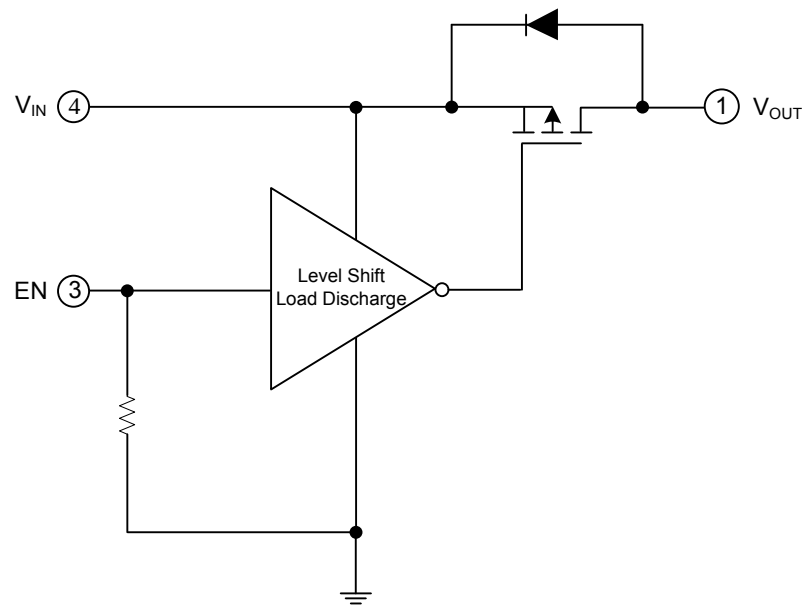
■ PIN CONFIGURATION



■ PIN DESCRIPTION

PIN NO.	PIN NAME	DESCRIPTION
1	V _{OUT}	Drain of P-channel MOSFET.
2, 5	GND	Ground connections. (Should both be connection to electrical ground).
3	EN	Enable (Input): Active-high CMOS compatible control input. Do not leave floating..
4	V _{IN}	Source of P-channel MOSFET.
6	NC	No connect

■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATING

PARAMETER		SYMBOL	RATINGS	UNIT
Input Voltage		V _{IN}	+6	V
Enable Voltage		V _{EN}	+6	V
Continuous Drain Current (Note 3)	T _A = 25°C	I _D	±2	A
	T _A = 85°C		±1.4	
Pulsed Drain Current (Note 5)		I _{DP}	±6	A
Continuous Diode Current (Note 7)		I _S	-50	mA
Power Dissipation (Note 3)(T _A = 85°C)		P _D	270	mW
Operating Ratings (Note 2)				
Input Voltage Range		V _{IN}	+1.8 ~ +5.5	V
Junction Temperature		T _J	+150	°C
Storage Temperature (Note 4)		T _{STG}	-55~+150	°C

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged.
Absolute maximum ratings are stress ratings only and functional device operation is not implied.

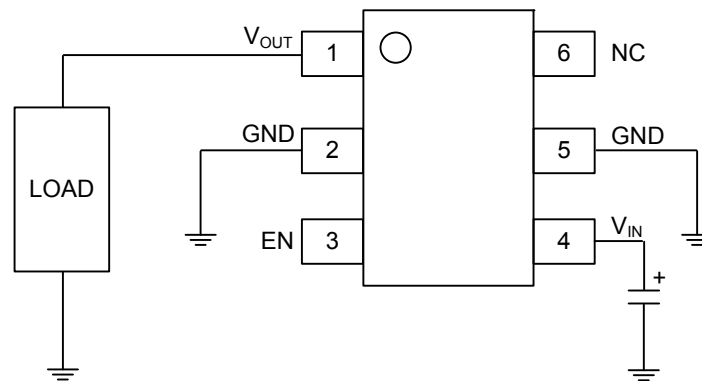
■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient (Note 3)	θ_{JA}	240	$^{\circ}\text{C/W}$

■ ELECTRICAL CHARACTERISTICS ($T_A = 25^{\circ}\text{C}$, unless otherwise specified.)

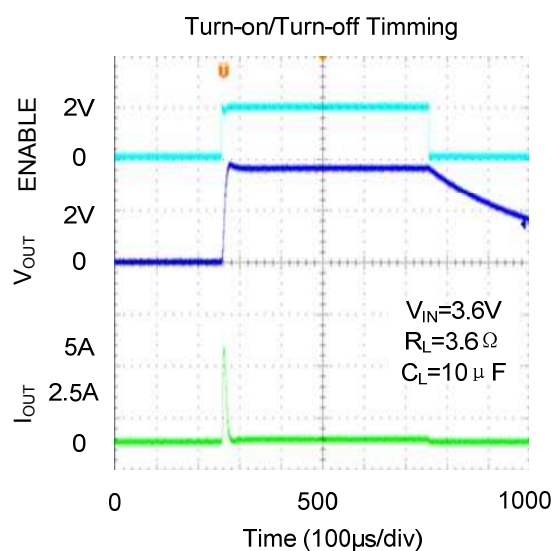
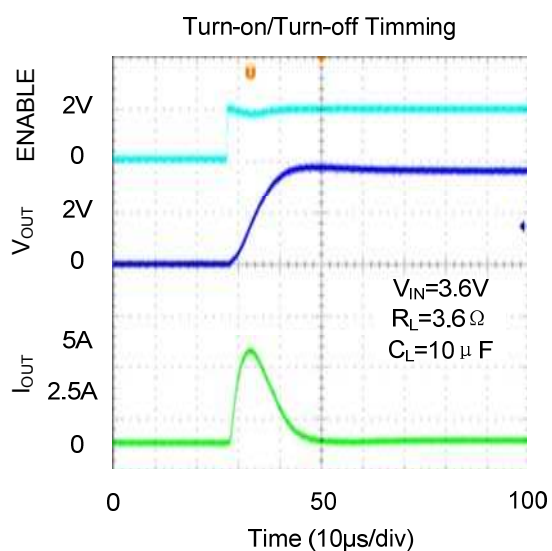
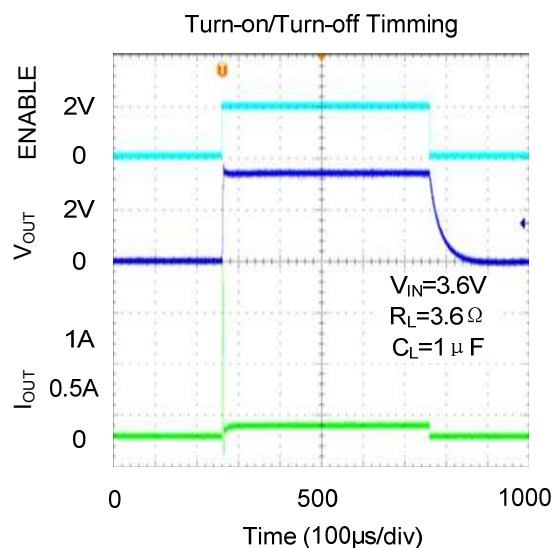
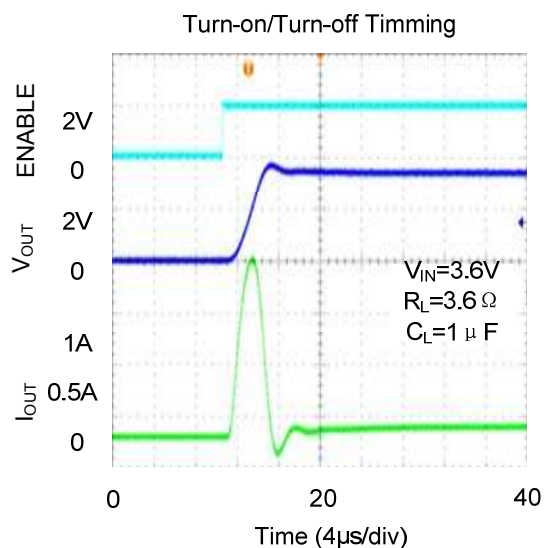
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Static						
EN Threshold Voltage	V _{THD(EN))}	V _{IN} = 1.8V ~ 4.5V, I _D = -250μA	0.5		1.2	V
EN Input Current (Quiescent Current)	I _{Q(EN)}	V _{IN} = V _{EN} = 5.5V		2	4	μA
OFF State Leakage Current	I _{LEAK}	V _{EN} = OPEN or 0V, V _{IN} = +5.5V			1	μA
P-Channel Drain-Source On-Resistance	R _{DS(ON)}	V _{IN} = 4.5V, I _D = -100 mA, V _{EN} = 1.5V		175	200	mΩ
		V _{IN} = 3.6V, I _D = -100 mA, V _{EN} = 1.5V		185	215	
		V _{IN} = 2.5V, I _D = -100 mA, V _{EN} = 1.5V		205	245	
		V _{IN} = 1.8V, I _D = -100 mA, V _{EN} = 1.5V		270	325	
Dynamic (Note 6)						
Turn-ON Delay Time	t _{D(ON)}	V _{IN} = 3.6V, I _D = -100mA, V _{EN} = 1.5V		850	1500	ns
Turn-ON Rise Time	t _R	V _{IN} = 3.6V, I _D = -100mA, V _{EN} = 1.5V	0.5	1	5	μs
Turn-OFF Delay Time	t _{D(OFF)}	V _{IN} = 3.6V, I _D = -100mA, V _{EN} = 1.5V		100	150	ns
Turn-OFF Fall Time	t _F	V _{IN} = 3.6V, I _D = -100mA, V _{EN} = 1.5V		60	100	ns

■ TYPICAL APPLICATION CIRCUIT



Load Switch Application with Capacitive Load Discharge

■ TYPICAL CHARACTERISTICS



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