

5A, Ultra-Low On Resistance, Wide Input Range Load Switch with EN Control and Configurable Reverse Blocking

DESCRIPTION

ETA7015 is an ultra-low Ron load switch capable of passing current up to 5A. It employs a unique 2-NMOS switches topology, that an ultra-low on resistance (13mohm) is achieved by connecting the 2 NMOS in parallel (Low Ron mode), or a 55mohm switch with on body diode effect is achieved by connecting the 2 NMOS in series (Reverse Blocking mode). With a separate input bias voltage (VBIAS) that ranges from 4V to 27V, Input range (VIN) can be even wider down to sub 1V range. An OVP feature is also included that it is internally set at 28V. The load switch can be turned on/off with an EN pin. It also include a quick output discharge function when off, Other protections include short-circuit protection, thermal shutdown, and UVLO.

The ETA7015 is available in an ESOP8 and SOT23-6 package.

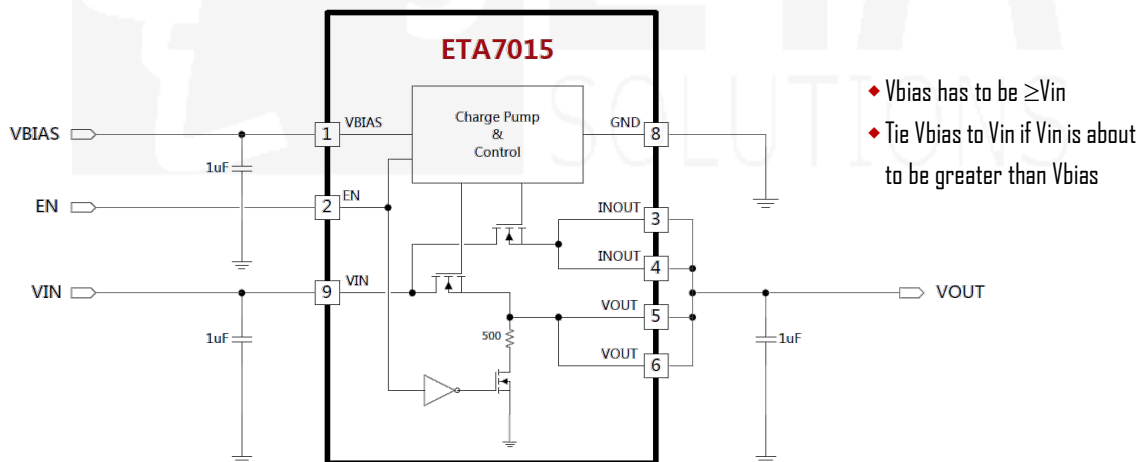
FEATURES

- ◆ 13mΩ Switch ON Resistance
- ◆ Reverse Blocking Configurable
- ◆ Up to 5A Current
- ◆ Wide Input voltage Range
- ◆ OVP at 28V
- ◆ Quick Output Discharge
- ◆ Separate VBIAS pin
- ◆ Short Circuit protection
- ◆ Thermal Shutdown

APPLICATIONS

- ◆ Tablet, MID
- ◆ Notebook
- ◆ Consumer Electronics

TYPICAL APPLICATION



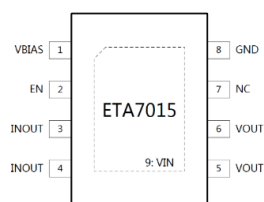
Application Circuit of Ultra-Low On Resistance, Low Ron mode, for ESOP8 Package

ORDERING

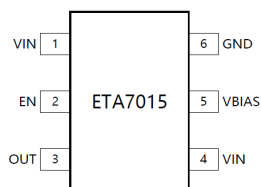
INFORMATION

PART No.	PACKAGE	TOP MARK	Pcs/Reel
ETA7015E8A	ESOP-8	ETA7015 YWW2L	4000
ETA7015S2G	SOT23-6	DFYW	3000

PIN CONFIGURATION



ESOP8



SOT23-6

ABSOLUTE MAXIMUM RATINGS

(Note: Exceeding these limits may damage the device. Exposure to absolute maximum rating conditions for long periods may affect device reliability.)

VIN, INOUT, VOUT Voltage	-0.3V to 20V
EN Pin Voltage	-0.3V to 30V
VBIAS Pin Voltage.....	-0.3V to 30V
Operating Temperature Range	-40°C to 85°C
Storage Temperature Range	-55°C to 150°C
Thermal Resistance	θ_{JC} θ_{JA}
ESOP-8.....	10.....50 °C /W
SOT23-6.....	60.....140 °C /W
Lead Temperature (Soldering, 10sec)	260°C
ESD HBM (Human Body Mode)	2KV
ESD MM (Machine Mode)	200V

ELECTRICAL CHARACTERISTICS

(VIN = 0.8V to 13.2V, VBIAS=12V, Cin=1uF, Cour=0.1uF, unless otherwise specified. Typical values are at TA = 25oC.)

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
Iq, Quiescent Current	VBIAS=VEN=12V, Iout=0A		160		uA
I _{sd} , Shutdown Current	VBIAS=12V, VEN=0V		0	5	uA
UVLO, Under-Voltage Lockout	Under Voltage Lock out(rising)		3.68		V
	HYS		0.5		V
R _{onp} , On Resistance from Vin to Vout	VIN=VBIAS=12V,Iout=0.2A		13.5		mΩ
R _{ons} , On Resistance from Inout to Vout	VIN=VBIAS=12V,Iout=0.2A		55		mΩ
R _{discharge} , Output Discharge Resistor	VIN=12V,VEN=0		500		Ω
Trise, Output Rise Time from EN to VOUT	VIN=12V		80		us
I _{EN} , EN input current	VEN=5V OR 0V		2		uA
EN Logic Input High	ON	1.0			V
EN Logic Input Low	OFF			0.4	V
OVP (for Vbias pin)	Over-Voltage Protect		28		V

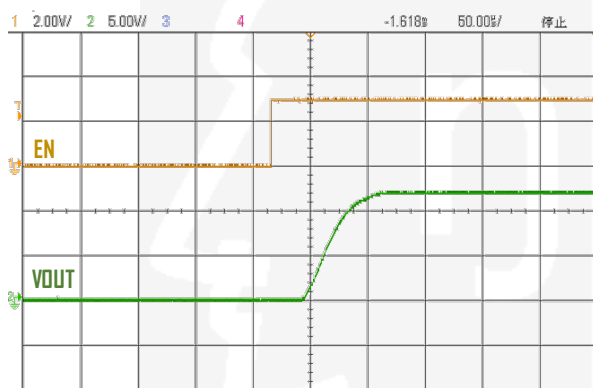
PIN DESCRIPTION

ESOP8 PIN#	SOT23-6 PIN#	NAME	DESCRIPTION
1	5	VBIAS	Bias Voltage, has to be greater than or equal to VIN
2	2	EN	Enable Pin, active high. Do not leave floating
3,4		INOUT	Switch Output in Low Ron mode, and Switch Input in Reverse Blocking mode
5,6	3	VOUT	Switch Output
7		NC	No connect
8	6	GND	Ground
9 / Pad	1,4	VIN	Input power supply

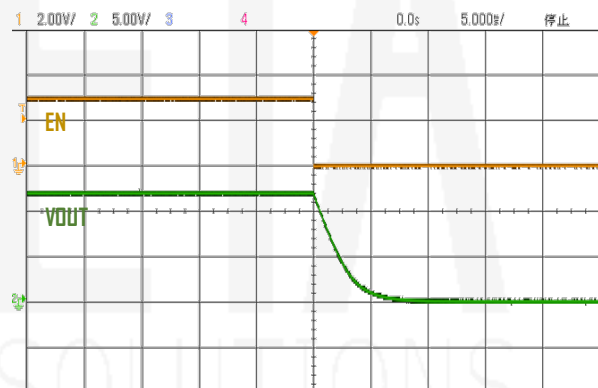
TYPICAL CHARACTERISTICS

(Typical values are at $T_A = 25^\circ\text{C}$ unless otherwise specified.)

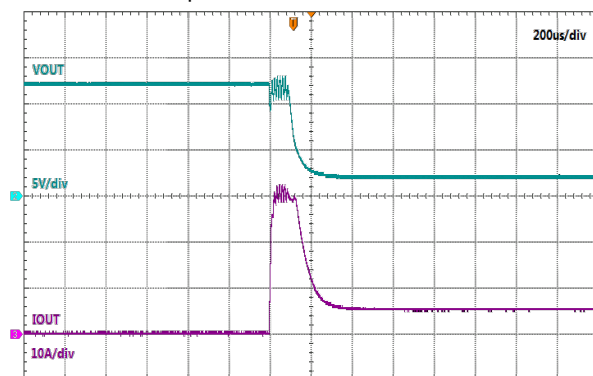
EN's truning ON the Switch



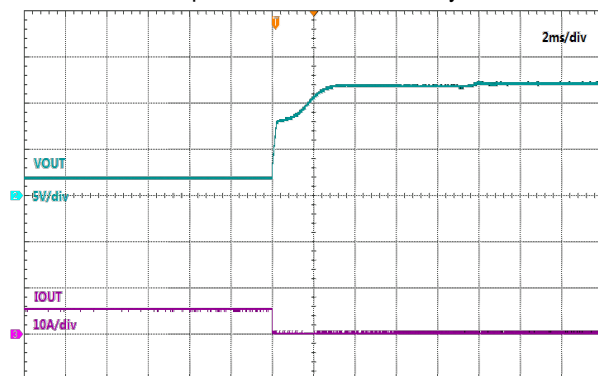
EN's truning OFF the Switch



Output Short Circuit Protection

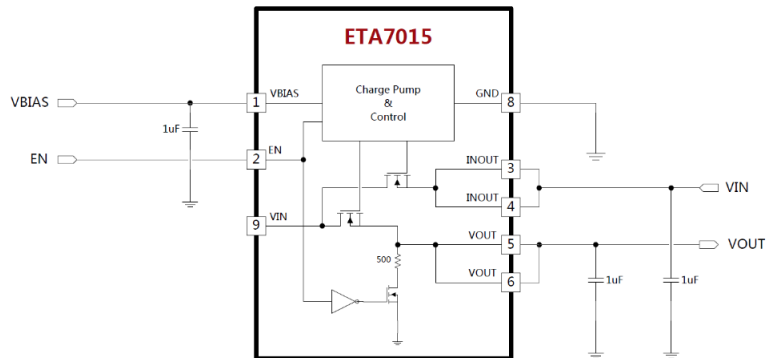


Output Short Circuit Recovery



REVERSE BLOCKING MODE

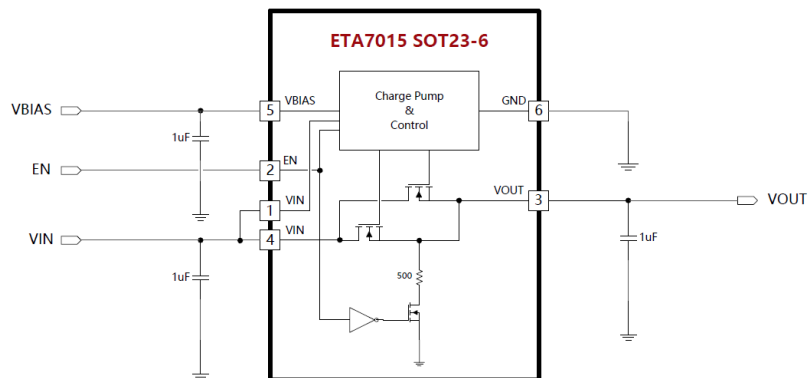
By connecting the internal 2 NMOS in series, an ideal switch, with no body diode effect is achieved. In practice, one can leave the thermal pad (pin 9) floating, and take INOUT pin as the input of the switch and VOUT pin as the output of the switch. Though thermal pad is electrically floating, it is strongly recommended to be connected to the backside heat dissipation copper coil to keep the junction temperature as low as possible.



Application Circuit of Reverse Blocking mode

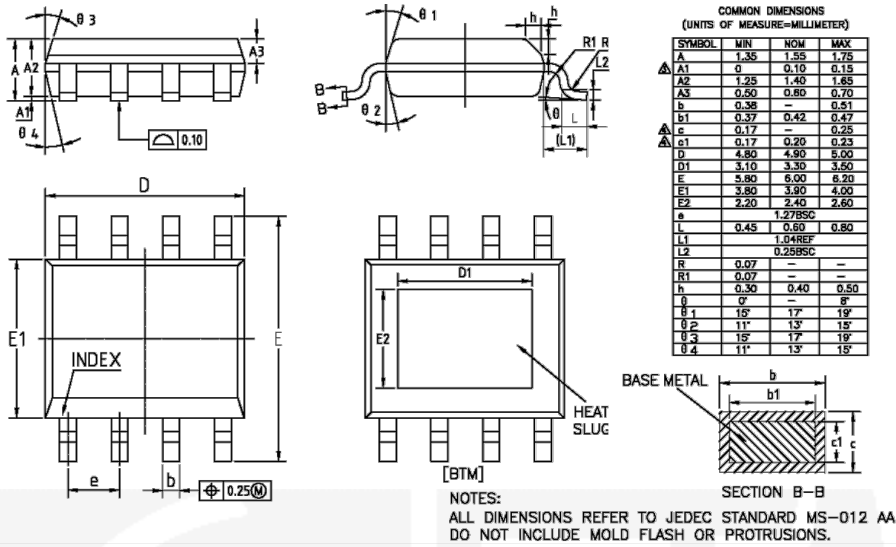
APPLICATION NOTE for SOT23-6 PACKAGE

The application circuit with block diagram of SOT23-6 package is shown on the righthand. There is only Low-Ron mode available and Reverse-Blocking mode is no longer supported due to limited pin out. One must tie the 2 Vin Pins (Pin1 and Pin4) together for proper usage.



PACKAGE OUTLINE

Package: ESOP8



Package: SOT23-6

