Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

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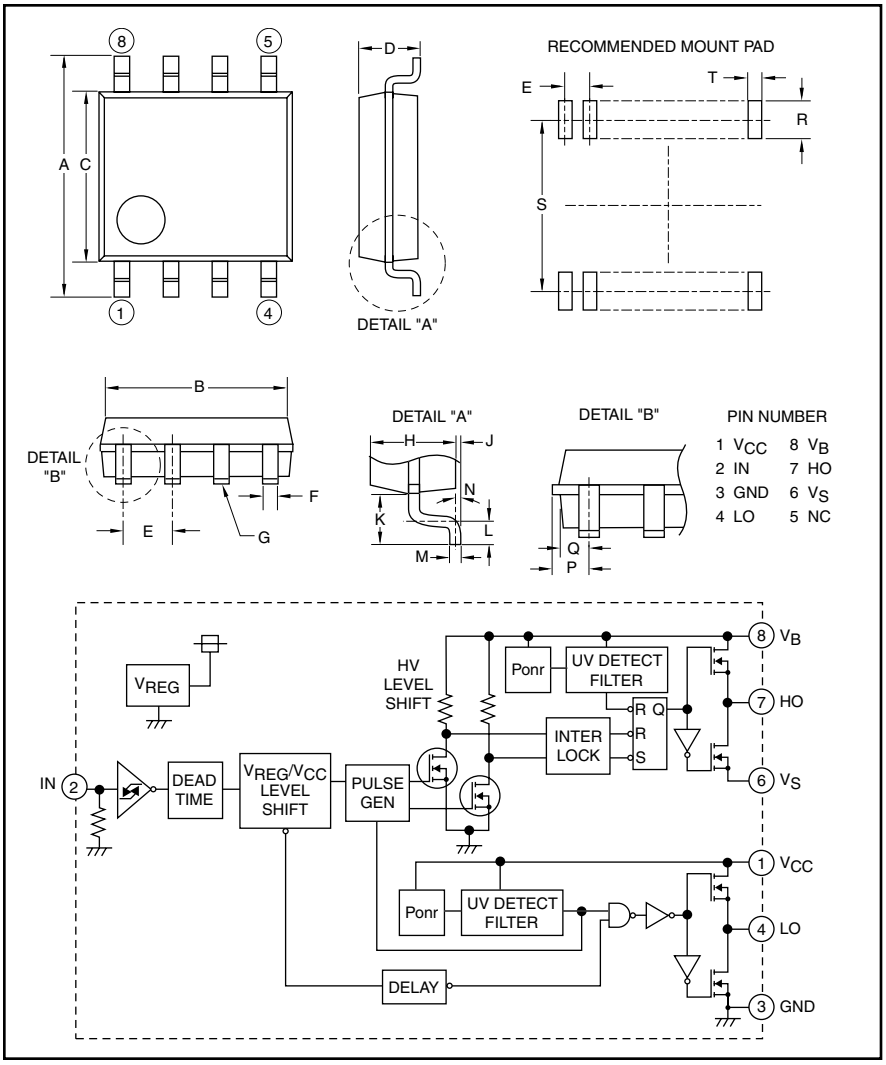
Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832
Email & Skype: info@chipsmall.com Web: www.chipsmall.com
Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China

Powerex, Inc., 200 E. Hillis Street, Youngwood, Pennsylvania 15697-1800 (724) 925-7272

HVIC

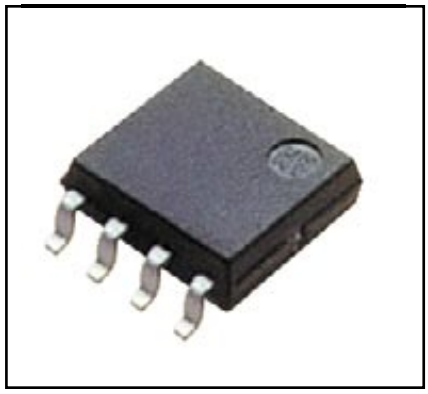
High Voltage
Half-Bridge Driver
600 Volts/±500mA



Outline Drawing and Circuit Diagram

Dimensions	Inches	Millimeters
A	0.24±0.01	6.2±0.3
B	0.2±0.008	5.0±0.2
C	0.17±0.008	4.4±0.2
D	0.08 Max.	1.9 Max.
E	0.05	1.27
F	0.015±0.002	0.4±0.05
G	0.004	0.1
H	0.06	1.5
J	0.002 Min.	0.05 Min.

Dimensions	Inches	Millimeters
K	0.04	0.9
L	0.015±0.008	0.4±0.2
M	0.006±0.002	0.15±0.05
N	10° Max.	10° Max.
P	0.03	0.745
Q	0.023	0.595
R	0.05 Min.	1.27 Min.
S	0.23	5.72
T	0.76	0.76



Description:
M81713FP is a high voltage Power MOSFET and IGBT driver for half-bridge applications.

Features:
- ☐ Shoot Through Interlock
- ☐ Output Current ±500mA
- ☐ Half-Bridge Driver
- ☐ SOP-8 Package
- ☐ Internal Dead Time - Fixed

Applications:
- ☐ HID Ballast
- ☐ PDP
- ☐ MOSFET Driver
- ☐ IGBT Driver
- ☐ Inverter Module Control

Ordering Information:
M81713FP is a ±500mA, 600 Volt HVIC, High Voltage Half-Bridge Driver

Absolute Maximum Ratings, T_a = 25°C unless otherwise specified

Characteristics	Symbol	M81713FP	Units
High Side Floating Supply Absolute Voltage	V_B	-0.5 ~ 624	Volts
High Side Floating Supply Offset Voltage	V_S	V_B-24 ~ V_B+0.5	Volts
High Side Floating Supply Voltage ($V_{BS} = V_B - V_S$)	V_{BS}	-0.5 ~ 24	Volts
High Side Output Voltage	V_{HO}	V_S-0.5 ~ V_B+0.5	Volts
Low Side Fixed Supply Voltage	V_{CC}	-0.5 ~ 24	Volts
Low Side Output Voltage	V_{LO}	-0.5 ~ V_{CC}+0.5	Volts
Logic Input Voltage	V_{IN}	-0.5 ~ V_{CC}+0.5	Volts
Allowable Offset Voltage Transient	dVs/dt	±50	V/ns
Package Power Dissipation (T_a = 25°C, On Board)	P_d	0.6	Watts
Linear Derating Factor (T_a > 25°C, On Board)	$K\theta$	6.0	mW/°C
Junction to Case Thermal Resistance	$R_{th(j-c)}$	50	°C/W
Junction Temperature	T_j	-20 ~ 150	°C
Operation Temperature	T_{opr}	-20 ~ 125	°C
Storage Temperature	T_{stg}	-40 ~ 150	°C

Recommended Operating Conditions

Characteristics	Symbol	Test Conditions	Min.	Typ.	Max.	Units
High Side Floating Supply Absolute Voltage	V_B		V_S+10	—	V_S+20	Volts
High Side Floating Supply Offset Voltage	V_S	V_B > 10V	-5	—	500	Volts
High Side Floating Supply Voltage	V_{BS}	$V_B = V_B - V_S$	10	—	20	Volts
High Side Output Voltage	V_{HO}		V_S	—	V_B	Volts
Low Side Fixed Supply Voltage	V_{CC}		10	—	20	Volts
Logic Supply Voltage	V_{LO}		0	—	V_{CC}	Volts
Logic Input Voltage	V_{IN}		0	—	V_{CC}	Volts

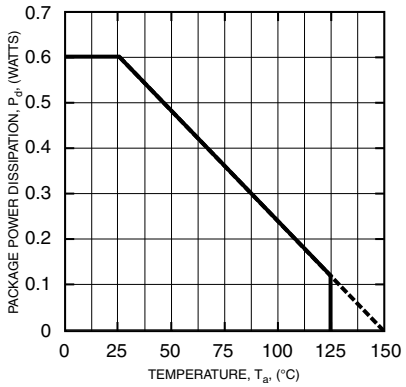
Electrical Characteristics, T_a = 25°C, $V_{CC} = V_{BS}$ (= $V_B - V_S$) = 15V unless otherwise specified

Characteristics	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Floating Supply Leakage Current	I_{FS}	$V_B = V_S$ = 600V	—	—	1.0	µA
V_{BS} Standby Current	I_{BS}	IN = 0V	—	0.2	0.5	mA
V_{CC} Standby Current	I_{CC}	IN = 0V	0.2	0.5	0.75	mA
High Level Output Voltage	V_{OH}	I_O = 0A, L_O, H_O	13.8	14.4	—	Volts
Low Level Output Voltage	V_{OL}	I_O = 0A, L_O, H_O	—	—	0.1	Volts
High Level Input Threshold Voltage	V_{IH}	H_{IN}, L_{IN}	2.1	3.0	4.0	Volts
Low Level Input Threshold Voltage	V_{IL}	H_{IN}, L_{IN}	0.6	1.5	2.0	Volts
High Level Input Bias Current	I_{IH}	V_{IN} = 5V	—	25	75	µA
Low Level Input Bias Current	I_{IL}	V_{IN} = 0V	—	—	1.0	µA
V_{BS} Supply UV Reset Voltage	V_{BSuvr}		8.0	8.9	9.8	Volts
V_{BS} Supply UV Hysteresis Voltage	V_{BSuvh}		0.5	0.7	—	Volts
V_{BS} Supply UV Filter Time	tV_{BSuv}		—	7.5	—	µs
V_{CC} Supply UV Reset Voltage	V_{CCuvr}		8.0	8.9	9.8	Volts
V_{CC} Supply UV Hysteresis Voltage	V_{CCuvh}		0.5	0.7	—	Volts

Electrical Characteristics, T_a = 25°C, V_{CC} = V_{BS} (= V_B – V_S) = 15V unless otherwise specified

Characteristics	Symbol	Test Conditions	Min.	Typ.	Max.	Units
V_{CC} Supply UV Filter Time	tV_{CCuv}		—	7.5	—	µs
Output High Level Short Circuit Pulsed Current	I_{OH}	V_O = 0V, P_W < 10µs	—	-500	—	mA
Output Low Level Short Circuit Pulsed Current	I_{OL}	V_O = 15V, P_W < 10µs	—	500	—	mA
Output High Level ON Resistance	R_{OH}	I_O = -200mA, R_{OH} = (V_{OH} – V_O)/I_O	—	30	—	Ω
Output Low Level ON Resistance	R_{OL}	I_O = 200mA, R_{OL} = V_O /I_O	—	12	—	Ω
Dead Time LO Turn-Off to HO Turn-ON and HO Turn-Off to LO Turn-On	t_{DEAD}	C_L = 1000pF between HO – V_S, LO-GND	0.5	—	1.0	µs
Power On Reset Voltage	V_{Ponr}		—	—	6	Volts
Power On Reset Filter Time	$t_{Ponr(FIL)}$		300	—	—	ns
Turn-On Propagation Delay	t_{dLH}	C_L = 1000pF between HO – V_S, LO – GND	0.6	0.9	1.2	µs
Turn-Off Propagation Delay	t_{dHL}	C_L = 1000pF between HO – V_S, LO – GND	0.1	0.15	0.2	µs
High Side Turn-On Rise Time	t_{rH}	C_L = 1000pF between LO – GND	—	75	180	ns
High Side Turn-Off Fall Time	t_{fH}	C_L = 1000pF between LO – GND	—	75	180	ns
Low Side Turn-On Rise Time	t_{rL}	C_L = 1000pF between LO – GND	—	75	180	ns
Low Side Turn-Off Fall Time	t_{fL}	C_L = 1000pF between LO – GND	—	75	180	ns

THERMAL DERATING FACTOR CHARACTERISTICS



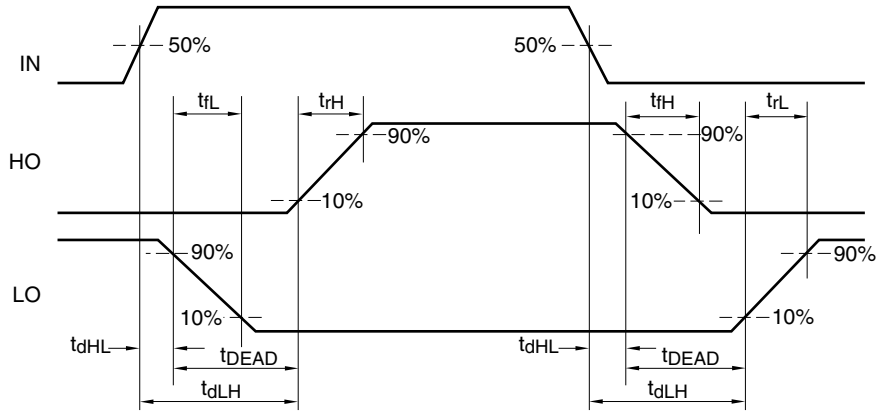
1. Input/Output Logic
   HO has positive logic with reference to IN. LO has negative logic with reference to IN.
2. Logic During UV (V_{CC}, V_{BS}) Error

Error Signal	HO	LO
UV Error (V_{CC})*	HO outputs "L" level as long as UV error for V_{CC} is detected. HO responds to IN if V_{CC} exceeds V_{CC} UV reset level.	LO is locked at "L" as long as UV error for V_{CC} is detected. After V_{CC} exceeds V_{CC} UV reset level, the lock for LO is removed and responds to IN signal.
UV Error (V_{BS})	HO is locked at "L" as long as UV error for V_{BS} is detected. After V_{BS} exceeds V_{BS} UV reset level, the lock for HO is removed following an "L" state of the IN signal, and then HO responds to the input.	LO is independent of V_{BS} to respond to IN.

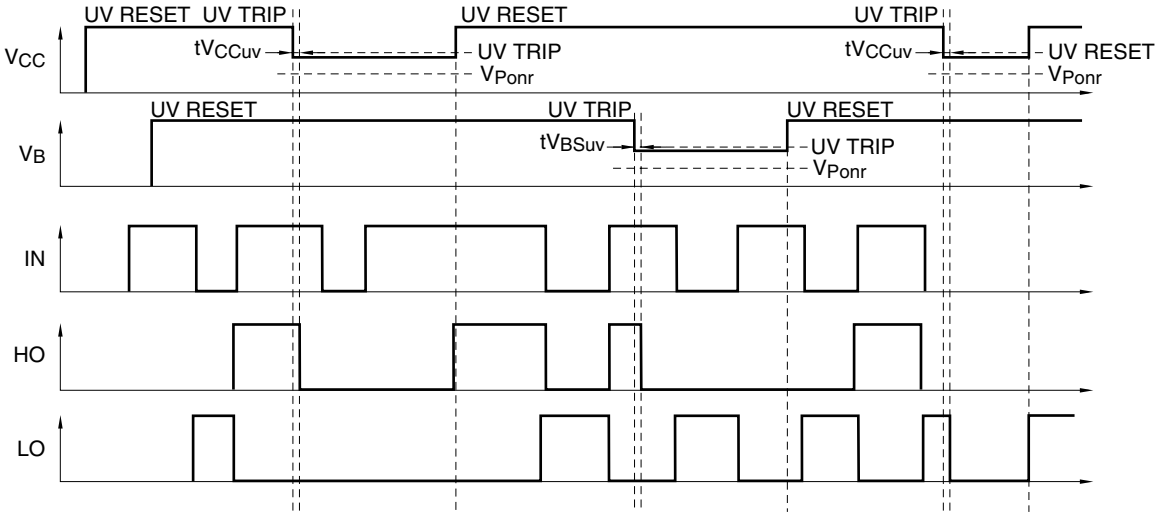
*If UV error for V_{CC} is detected when HO is in "H" level and the falling speed for V_{CC} exceeds 0.03V/µm, the OFF signal for HO might not be transimitted from low side to high side and then HO stays "H".

3. Allowable Supply Voltage Transient
   It is recommended supplying V_{CC} first and V_{BS} second. In the case of shutting off supply voltage, it is recommended to shut off V_{BS} first and V_{CC} second. At the time of starting, V_{CC} and V_{BS}, the power supply should be increased slowly (below 50V/µs). If it is increased rapidly, output signal (HO or LO) may be "H".

INPUT/OUTPUT TIMING DIAGRAM



UV SEQUENCE



Ponr (Power-On-Reset) SEQUENCE