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.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!

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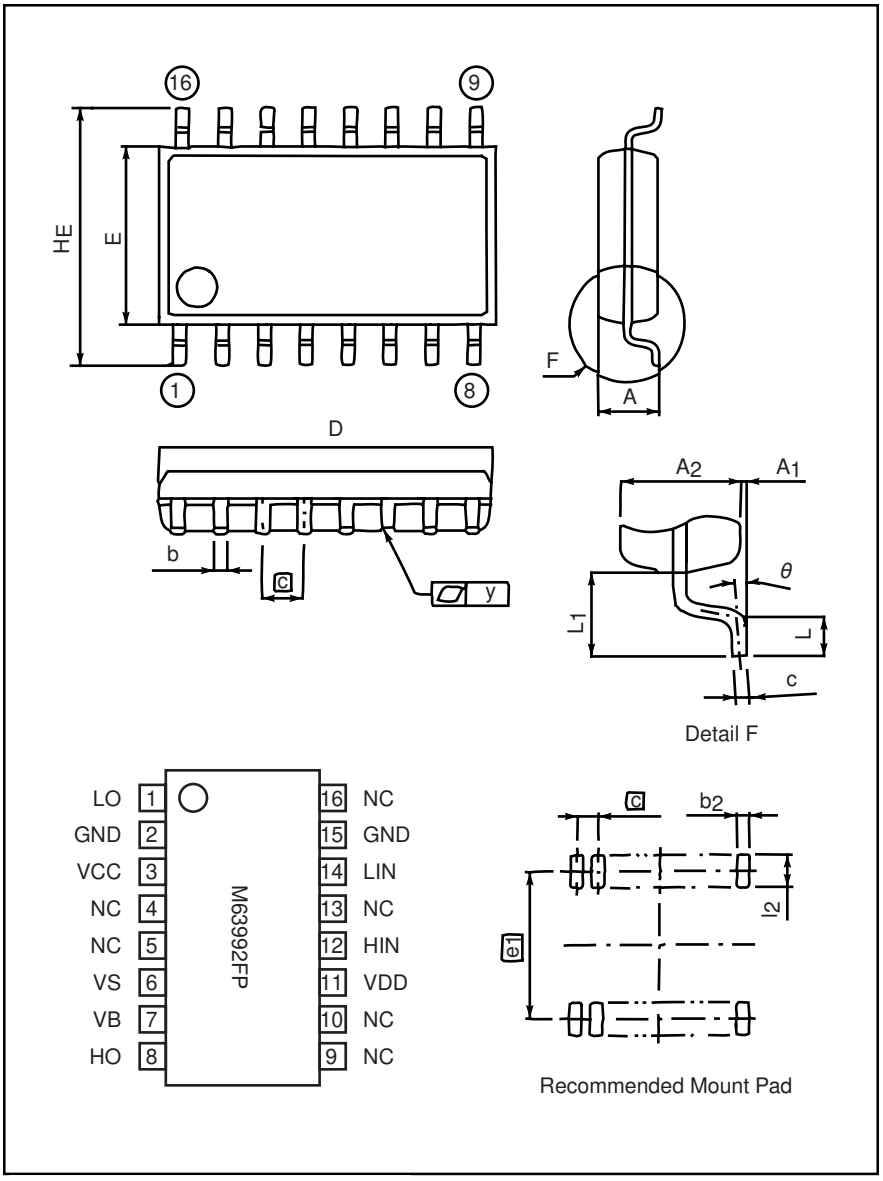
HVIC
Half-Bridge Driver



Outline Drawing and Pin Diagram

Dimensions	Inches	Millimeters
A	0.08 Max.	2.1 Max.
A_1	0.004±0.004/0	0.1±0.1/0
A_2	0.07	1.8
b	0.02+0.004/-0.002	0.4+0.1/-0.05
c	0.01+0.002/-0.008	0.2+0.05/-0.02
[c]	0.05	1.27
D	0.4±0.004	10.1±0.1
E	0.21±0.004	5.3±0.1

Dimensions	Inches	Millimeters
H_E	0.31±0.01	7.8±0.3
L	0.02±0.01	0.6±0.2
L_1	0.05	1.25
[e1]	0.31	7.62
y	0.004 Max.	0.1 Max.
θ	0° – 8°	0° – 8°
b_2	0.03	0.76
l_2	0.05 Min.	1.27 Min.

Description:
M63991FP is a high voltage, Power MOSFET/IGBT module driver for half-bridge applications.

Features:
- ☐ 600V Floating Supply Voltage
- ☐ ±500mA Output Current
- ☐ Half-Bridge Driver
- ☐ SOP-16 Package

Application:
- ☐ Appliances
- ☐ Air Conditioners
- ☐ AC Servo Motors
- ☐ General Purpose Power Supplies

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

Ratings	Symbol	Test Conditions	M63991FP	Units
High Side Floating Supply Voltage	V_B		-0.5 ~ 624	Volts
High Side Floating Supply Offset Voltage	V_S		V_B-24/+0.5	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 Supply Voltage	V_{DD}		-0.5 ~ 7	Volts
Logic Input Voltage	V_{IN}	H_{IN}, L_{IN}	-0.5 ~ V_{DD}+0.5	Volts
Allowable Offset Supply Voltage Transient	dV_S/dt		±50	V/ns
Package Power Dissipation	P_t	T_a = 25°C, On Board	1.1	W
Linear Derating Factor	$K\theta$	T_a > 25°C, On Board	-11	mW/°C
Junction Temperature	T_j		-20 ~ 125	°C
Operation Temperature	T_{opr}		-20 ~ 75	°C
Storage Temperature	T_{stg}		-40 ~ 125	°C

Recommended Operating Conditions

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Units
High Side Floating Supply Voltage	V_B		V_S+13.5	—	V_S+20	Volts
High Side Floating Supply Offset Voltage	V_S		-5	—	500	Volts
Low Side Fixed Supply Voltage	V_{CC}		13.5	—	20	Volts
Logic Supply Voltage	V_{DD}		4.5	—	5.5	Volts
Logic Input Voltage	V_{IN}	H_{IN}, L_{IN}	0	—	V_{DD}	Volts

Function Table

H_{IN}	L_{IN}	V_{BS} U_V	V_{CC} U_V	HO	LO	Behavioral State
L	L	H	H	L	L	LO = OFF, HO = OFF
L	H	H	H	L	H	LO = ON, HO = OFF
H	L	H	H	H	L	LO = OFF, HO = ON
H	H	H	H	L	L	LO = OFF, HO = OFF, L_{IN} = H_{IN} = H Simultaneously
X	L	L	H	L	L	LO = OFF, HO = OFF, V_{BS} U_V Tripped
X	H	L	H	L	H	LO = ON, HO = OFF, V_{BS} U_V Tripped
L	X	H	L	L*	L	LO = OFF, HO = OFF, V_{CC} U_V Tripped
H	X	H	L	H*	L	LO = OFF, HO = ON, V_{CC} U_V Tripped

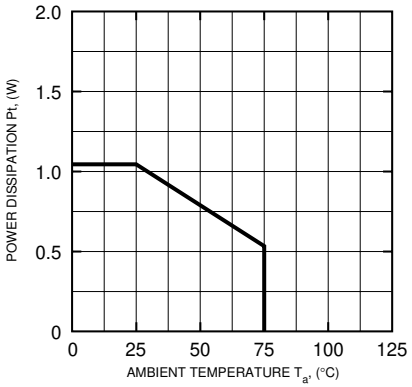
* Note: "L" state of V_{BS} U_V and V_{CC} U_V means that supply is below trip level.
If V_{CC} becomes less than U_V trip, HO state will not change.
If V_{CC} becomes less than U_V, H_{IN} state will not transfer to HO.

Electrical Characteristics, T_a = 25°C, V_{CC} = V_{BS} = 15V, V_{DD} = 5V unless otherwise specified

Parameter	Symbol	Test Conditions	Min.	Typ.*	Max.	Units
Floating Supply Leakage Current	I_{FS}	V_B = V_S = 600V	—	—	10	µA
V_{BS} Standby Current	I_{BS}		0.2	0.5	1.0	mA
V_{CC} Standby Current	I_{CC}		0.2	0.5	1.0	mA
V_{DD} Standby Current	I_{DD}		—	—	100	µA
High Level Output Voltage	V_{OH}	I_O = 0A, LO, HO	13.8	14.4	—	Volts
Low Level Output Voltage	V_{OL}	I_O = 0A, LO, HO	—	—	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	1.9	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 Trip Voltage	V_{BSUVT}		9.5	10.5	11.5	Volts
V_{BS} Supply UV Reset Voltage	V_{BSUVR}		10.0	11.0	12.0	Volts
VBS Supply Filter Time	t_{VBSUV}		—	7.5	—	µs
VCC Supply UV Trip Voltage	V_{CCUVT}		9.5	10.5	11.5	Volts
VCC Supply UVReset Voltage	V_{CCUVR}		10.0	11.0	12.0	Volts
VCC Supply Filter Time	t_{VCCUV}		—	7.5	—	µs
Output High Level Short Circuit Pulsed Current	I_{OH}	V_O = 0V, V_{IN} = 5V, PW<10 µs	—	-0.5	—	A
Output Low Level Short Circuit Pulsed Current	I_{OL}	V_O = 15V, V_{IN} = 0V, PW<10 µs	—	0.5	—	A
Output High Level On Resistance	R_{OH}	I_O = -200mA, R_{OH} = (V_{OH} – V_O) /I_O	—	40	—	Ω
Output Low Level On Resistance	R_{OL}	I_O = 200mA, R_{OL} = V_O/I_O	—	20	—	Ω
High SideTurn-On Propagation Delay	t_{dLH} (HO)	CL = 1000pF between HO to V_S	250	300	350	ns
High Side Turn-Off Propagation Delay	t_{dHL}(HO)		230	280	330	ns
High Side Turn-On Rise Time	t_r (HO)		—	80	—	ns
High Side Turn-Off Fall Time	t_f (HO)		—	60	—	ns
Low SideTurn-On Propagation Delay	t_{dLH} (LO)	CL = 1000pF between LO to GND	250	300	350	ns
Low Side Turn-Off Propagation Delay	t_{dHL}(LO)		230	280	330	ns
Low Side Turn-On Rise Time	t_r (LO)		—	80	—	ns
Low Side Turn-Off Fall Time	t_f (LO)		—	60	—	ns
Delay Matching, High Side and Low Side Turn-On	t_{dMon}	I_{tdLH} (HO) – t_{dLH} (LO) I	—	—	30	ns
Delay Matching, High Side and Low Side Turn-Off	t_{dMoff}	I_{tdHL} (HO) – t_{dHL} (LO) I	—	—	30	ns

* The typical values are those measured under ambient temperature (T_a) of 25°C.
There is no guarantee that these values are obtained under any conditions.

THERMAL DERATING FACTOR CHARACTERISTICS (TYPICAL)



BLOCK DIAGRAM