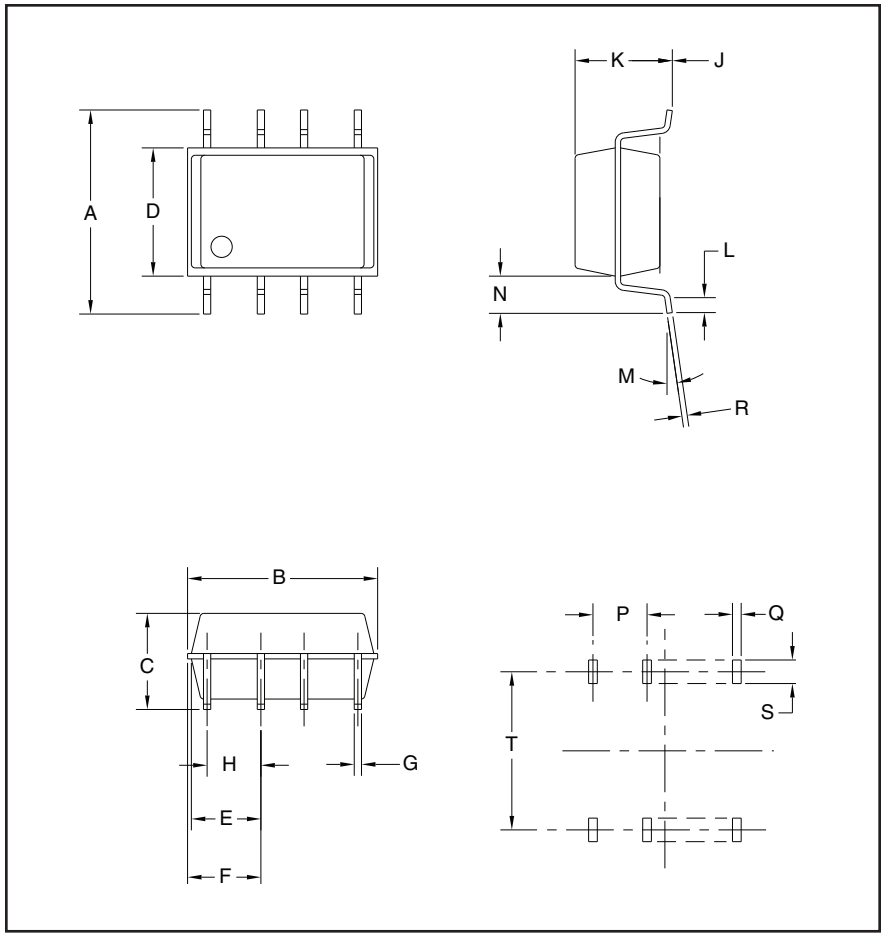
Powerex, Inc., 173 Pavilion Lane, Youngwood, Pennsylvania 15697 (724) 925-7272

M63994FP

HVIC
Half-Bridge Driver



Outline Drawing and Pin Diagram

Dimensions	Inches	Millimeters
A	0.24	6.2±0.3
B	0.20	5.0±0.2
C	0.08 Max.	1.9 Max.
D	0.17	4.4±0.2
E	0.02	0.595
F	0.03 Max.	0.745 Max.
G	0.02	0.4 +0.1/-0.05
H	0.05	1.27
J	0.002 Min.	0.05 Min.

Dimensions	Inches	Millimeters
K	0.06	1.5
L	0.02	0.4±0.2
M	10° Max.	10° Max.
N	0.04	0.9
P	0.05	1.27
Q	0.03	0.76
R	0.01	0.15 +0.05/-0.02
S	0.05 Min.	1.27 Min.
T	0.23	5.72

Description:
M63994FP is a high voltage, Power MOSFET/IGBT module driver for half-bridge applications.

Features:
- ☐ 600V Floating Supply Voltage
- ☐ ±500mA Output Current
- ☐ Single Input Type
- ☐ Internally Set Deadtime
- ☐ Half-Bridge Driver
- ☐ Undervoltage Lockout
- ☐ SOP-8 Package

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

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

Ratings	Symbol	Test Conditions	M63994FP	Units
High Side Floating Supply 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 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 Supply Voltage Transient	dV_S/dt		±50	V/ns
Package Power Dissipation	P_t	8 Lead DIP, No Board, T_a = 25°C	1.0	W
		8 Lead SOP, No Board, T_a = 25°C	0.6	W
Linear Derating Factor	Kθ	8 Lead DIP, No Board, T_a > 25°C	10	mW/°C
		8 Lead SOP, No Board, T_a > 25°C	6	mW/°C
Junction Temperature	T_j		-20 ~ 125	°C
Operation Temperature	T_{opr}		-20 ~ 100	°C
Storage Temperature	T_{stg}		-40 ~ 125	°C

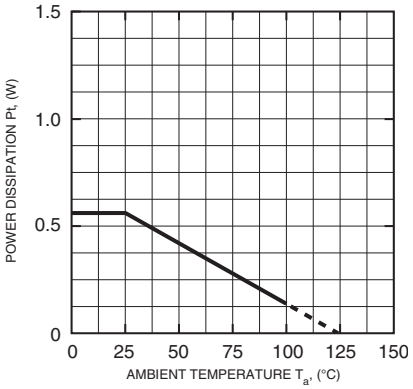
Recommended Operating Conditions

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 Input Voltage	V_{IN}		0	—	V_{CC}	Volts

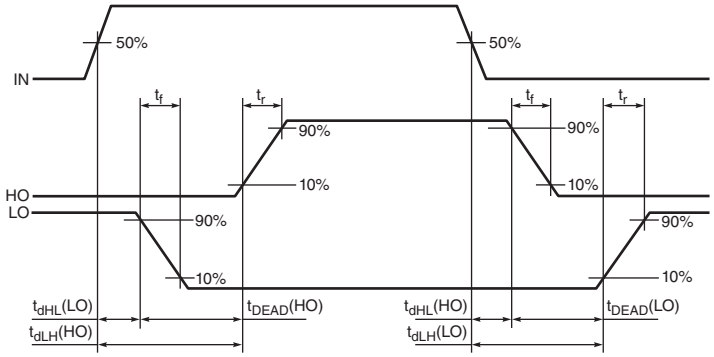
Electrical Characteristics, T_a = 25°C, V_{CC} = V_{BS} = 15V, unless otherwise specified

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}		—	500	—	µA
V_{CC} Standby Current	I_{CC}		—	500	—	µA
High Level Input Threshold Voltage	V_{INH}		—	9.5	—	Volts
Low Level Input Threshold Voltage	V_{INL}		—	6	—	Volts
High Level Input Bias Current	I_{INH}	V_{IN} = 15V	—	75	—	µA
Low Level Input Bias Current	I_{INL}	V_{IN} = 0V	—	1	—	µA
V_{BS} Supply UV Reset Voltage	V_{BSUVR}		7.5	8.5	9.5	Volts
V_{BS} Supply UV Trip Voltage	V_{BSUVT}		6.5	7.5	8.5	Volts
V_{BS} Supply Filter Time	t_{VBSUV}		—	7.5	—	µs
V_{CC} Supply UV Reset Voltage	V_{CCUVR}		7.5	8.5	9.5	Volts
V_{CC} Supply UV Trip Voltage	V_{CCUVT}		6.5	7.5	8.5	Volts
V_{CC} Supply Filter Time	t_{VCCUV}		—	7.5	—	µs
High Level Output Voltage	V_{OH}	I_O = 0A	13.8	14.4	—	Volts
Low Level Output Voltage	V_{OL}	I_O = 0A	—	—	0.1	Volts
Output High Level Short Circuit Pulsed Current	IH_{OH}	V_{IN} = 15V, V_O = 0V, P_W < 10µs	—	-0.5	—	A
Output Low Level Short Circuit Pulsed Current	IH_{OL}		—	0.5	—	A
Output High Level Short Circuit Pulsed Current	IL_{OH}		—	-0.5	—	A
Output Low Level Short Circuit Pulsed Current	IL_{OL}		—	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
Deadtime LO Turn-Off to HO Turn-On & HO Turn-Off to LO Turn-On	t_{DEAD}	C_L = 1000pF Between LO(HO) to GND(V_S)	0.05	0.75	1.00	µs
Output Turn-On Propagation Delay	t_{dLH}		0.7	1.0	1.3	µs
Output Turn-Off Propagation Delay	t_{dHL}		0.20	0.25	0.30	µs
Output Turn-On Rise Time	t_r		—	75	180	ns
Output Turn-Off Fall Time	t_f		—	75	180	ns

THERMAL DERATING FACTOR CHARACTERISTICS (TYPICAL)



INPUT/OUTPUT TIMING DIAGRAM



BLOCK DIAGRAM