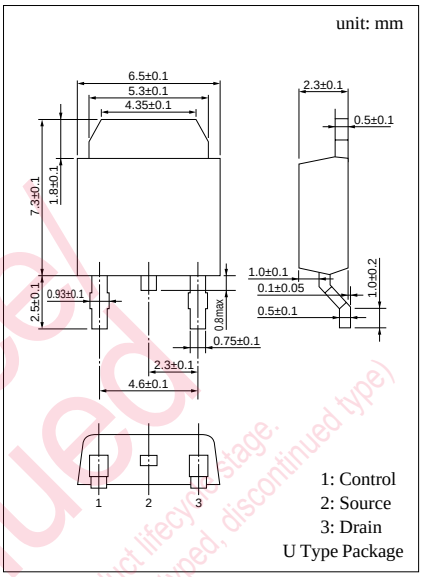
MIP161

Silicon MOS IC

■ Features

- Single chip IC with high breakdown voltage power MOS FET and CMOS control circuits
- Allowing to input worldwide mains (AC 85 to 274V)
- An over voltage protection circuit for the secondary side, a pulse-by-pulse overcurrent protection circuit and a timer auto-restart circuit are integrated.



■ Applications

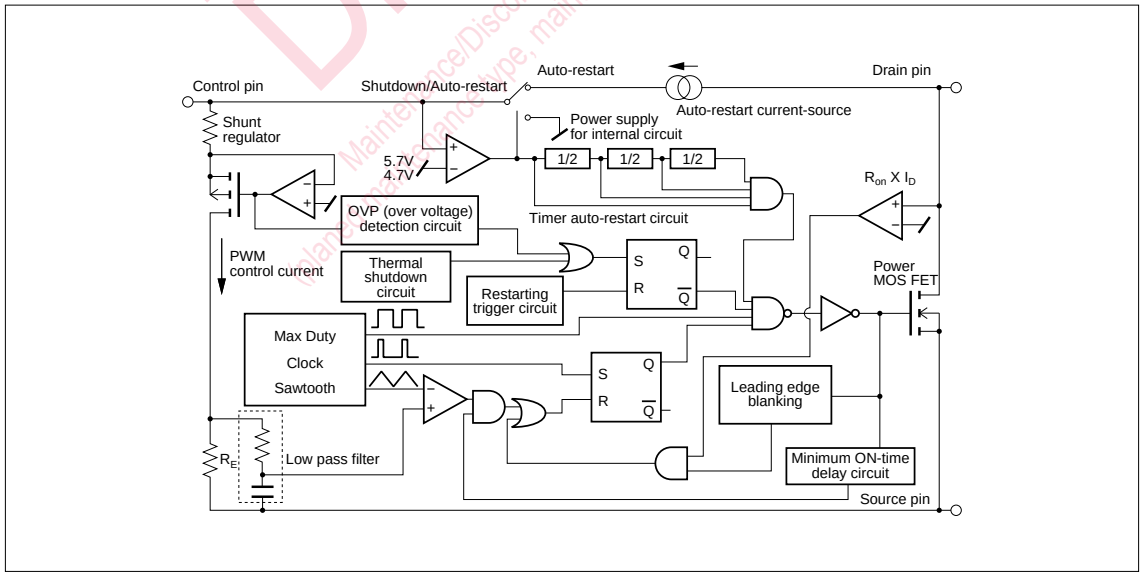
- Switching power supply (to 5W)
- AC adaptor
- Battery charger

■ Absolute Maximum Ratings (Ta = 25°C)

Parameter	Symbol	Ratings	Unit
Drain voltage	V_D	700	V
Control voltage	V_C	8	V
Output current	I_D	$I_{LIMIT\ MAX}$	A
Control current	I_C	0.1	A
Channel temperature	T_{ch}	150	°C
Storage temperature	T_{stg}	−55 to +150	°C

Maintenance/Discontinued
(Maintenance/Discontinued includes following four Product lifecycle stage.
Maintenance type, maintenance type, planed discontinued tyned, discontinued type)

■ Block Diagram



■ Electrical Characteristics (T_C = 25 ± 2°C)

	Parameter	Symbol	Conditions	min	typ	max	Unit
Control functions	Output frequency	f_{OSC}	I_C = 2mA	90	100	110	kHz
	Maximum duty cycle	MAXDC	I_C = 2mA	64	67	70	%
	Minimum duty cycle	MINDC	I_C = 10mA	1	2	3	%
Auto-restart	Control pin charging current	I_C	V_C = 0	–2.4	–1.9	–1.2	mA
			V_C = 5V	–2	–1.5	– 0.8	
	Auto-restart threshold voltage	$V_{C(on)}$		5	5.7	6.3	V
	Lockout threshold voltage	$V_{C(off)}$		4	4.7	5.3	V
	Auto-restart hysteresis voltage	ΔV_C		0.5	1	1.5	V
	Auto-restart duty cycle	T_{SW}/T_{TIM}			5	8	%
	Auto-restart frequency	f_{TIM}		0.5	1.2	2	Hz
Circuit protection	Self-protection current limit	I_{LIMIT}		0.415	0.5	0.585	A
	Leading edge blanking delay	$t_{on(BLK)}$	I_C = 3mA		0.25		µs
	Current limit delay	$t_{d(OCL)}$	I_C = 3mA		0.1		µs
	Thermal shutdown temperature	T_{OTP}	I_C = 3mA	130	140	150	°C
	Latched shutdown trigger current	I_{OVP}		25	45	75	mA
	Power-up reset threshold voltage	$V_{C\ reset}$		2.3	3.3	4.2	V
Output	ON-state resistance	$R_{DS(on)}$	I_D = 0.1A		15	18	Ω
	OFF-state current	I_{DSS}	V_{DS} = 650V, I_C = 3mA latch mode		0.5	0.9	mA
	Breakdown voltage	V_{DSS}	I_C = 3mA, I_D = 0.25mA latch mode	700			V
	Rise time	t_r			0.1	0.2	µs
	Fall time	t_f			0.1	0.2	µs
Power Supply voltage	Drain supply voltage	$V_{D(MIN)}$		36			V
	Shunt regulator voltage	V_C	I_C = 3mA	5.5	5.8	6.1	V
	Control supply/discharge current	I_{CD1}	Output MOS FET enabled	0.7	1.4	1.8	mA
		I_{CD2}	Output MOS FET disabled	0.5	0.8	1.1	mA

Maintenance/ Discontinued
Maintenance/Discontinued (planed maintenance type, maintenance service, planed discontinued type, discontinued within following four years product lifecycle started)

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Attached table "IPD availability by customer"

Parts No.			Companies/areas to which products can be sold	Companies/areas to which products cannot be sold	Application
MIP13□ MIP14□ MIP15□ MIP16□	MIP17□ MIP18□ MIP01□□ MIP02□□	MIP2□□□ MIP3□□□ MIP4□□□ MIP9A□□	· Japanese companies in Japan · Japanese companies in Asia (50% or more owned)	· Companies in European and American countries · Asian companies in Asia · Other local companies	· For power supply · For DC-DC converter
MIP10□ MIP11□ MIP803/804/806 MIP9E□□	MIP811/812 MIP814/815/816 MIP82□ MIP55□		· Japanese companies in Japan · Japanese companies in Asia (50% or more owned) · Asian companies in Asia	· Companies in European and American countries · Other local companies	· For power supply · For EL driver · For LED lighting driver
MIP50□ MIP51□	MIP7□□		· No restrictions in terms of contract	· No restrictions in terms of contract	· For lamp driver/ car electronics accessories

Note) If you have any inquiries about sales, contact Corporate Marketing & Sales Division of our company.

Maintenance/ Discontinued
(planned maintenance/ Discontinuation includes one of four Product lifecycle stages: maintenance type, maintenance type, planned discontinued type, discontinued type)