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MIP301

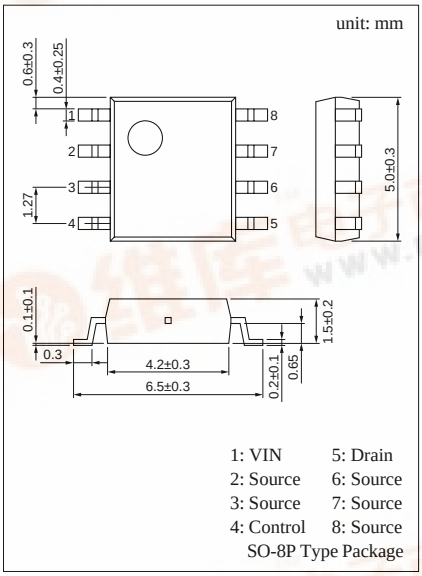
Silicon MOS IC

■ Features

- 100V high breakdown voltage MOS FET and CMOS control circuits are integrated into one chip
- 5V and 3 - 5W output with 24VDC input (Flyback method)

■ Applications

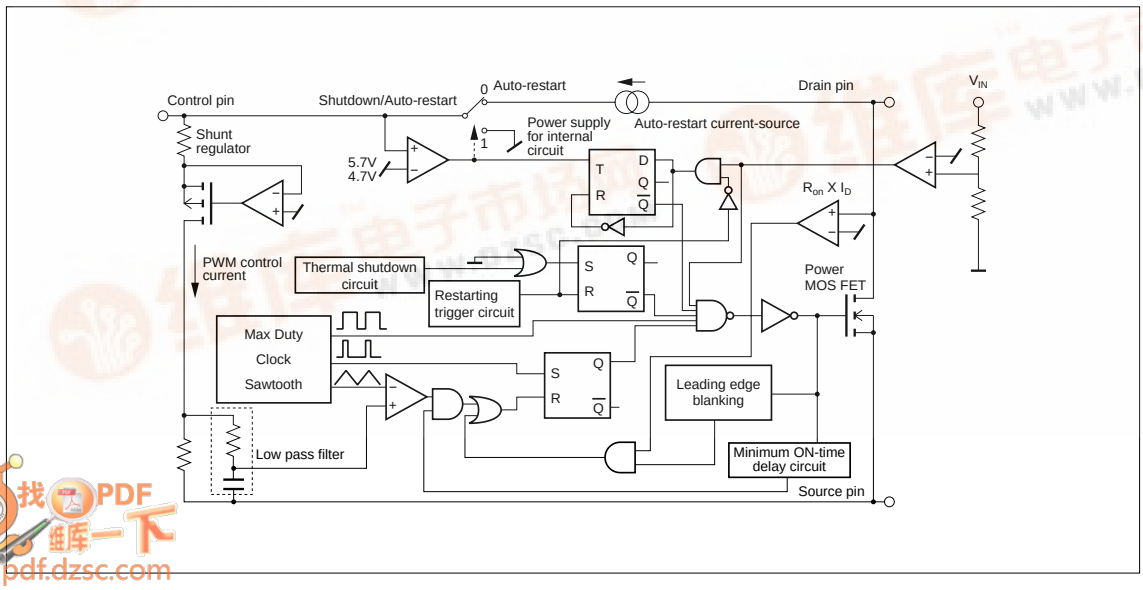
- IPD for DC/DC converter



■ Absolute Maximum Ratings (Ta = 25 ± 3°C)

Parameter	Symbol	Ratings	Unit
Drain voltage	V_D	90	V
Control voltage	V_C	8	V
Input voltage	V_{IN}	30	V
Output current	I_D	1.1	A
Control current	I_C	0.1	A
Channel temperature	T_{ch}	150	°C
Storage temperature	T_{stg}	–55 to +150	°C

■ Block Diagram



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

	Parameter	Symbol	Conditions	min	typ	max	Unit
Control functions	Output frequency	f_{OSC}	I_C = 2mA	180	200	220	kHz
	Maximum duty cycle	MAXDC	I_C = 2mA	77	80	83	%
	Minimum duty cycle	MINDC	I_C = 10mA	0	3	5	%
	PWM gain	GPWM		–21	–16	–11	%/mA
	Circuit current	Is		0.8	2.5	4	mA
	Dynamic impedance	ZC	I_C = 3mA	10	15	25	Ω
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	mA
	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
Circuit protection	Self-protection current limit	I_{LIMIT}		0.9	1	1.1	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
	Power-up reset threshold voltage	$V_{C\ reset}$		2.3	3.3	4.2	V
Output	ON-state resistance	$R_{DS(on)}$	I_D = 1A		1.8	2.2	Ω
	OFF-state current	I_{DSS}	V_{DS} = 82V Output MOS FET disabled		0.01	0.25	mA
	Breakdown voltage	V_{DSS}	I_D = 0.25mA Output MOS FET disabled	92			V
	Rise time	t_r			0.1	0.2	µs
	Fall time	t_f			0.1	0.2	µs
Power supply voltage	Start threshold voltage	$V_{IN(START)}$		16		18.2	V
	Stop threshold voltage	$V_{IN(STOP)}$		10		12.2	V
	Input hysteresis voltage	ΔV_{IN}		5.5		7.5	V
	Shunt regulator voltage	V_C	I_C = 3mA	5.4	5.7	6.1	V
	Control supply/discharge current	I_{CD}	Output MOS FET disabled	0.5	0.8	1.1	mA