



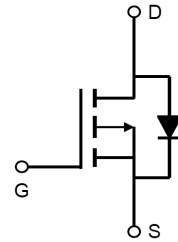
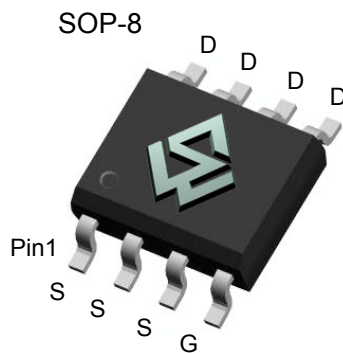
30V Single P-Channel Enhancement-Mode MOSFET

General Description

- Low gate charge.
- Uses advanced trench process technology.
- Use in PWM applications

Product Summary

- BV_{DSS} -30V
- $R_{DS(on)}$ @ $V_{GS} = 10V$ < 60m Ω
- $R_{DS(on)}$ @ $V_{GS} = 4.5V$ < 90m Ω

Absolute Maximum Ratings ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Maximum	Units
Drain-Source Voltage	V_{DS}	-30	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current ($T_A=25^\circ\text{C}$)	I_D	-5.3	A
Drain Current ($T_A=75^\circ\text{C}$)		-2.8	A
Pulsed Drain Current ^a	I_{DM}	-18	A
Power Dissipation ^b ($T_A=25^\circ\text{C}$)	P_D	2.5	W
Power Dissipation ^b ($T_A=75^\circ\text{C}$)		1.0	W
Junction and Storage Temperature Range	T_J, T_{STG}	-55 ~ +150	$^\circ\text{C}$

Thermal Characteristics

Parameter	Symbol	Maximum	Units
Junction-to-Ambient ^a ($t \leq 10s$)	$R_{\theta JA}$	50	$^\circ\text{C/W}$
Junction-to-Ambient ^{a,d} (Steady-State)		90	$^\circ\text{C/W}$
Junction-to-Lead (Steady-State)	$R_{\theta JL}$	25	$^\circ\text{C/W}$

Electrical Characteristics (T _A = 25°C unless otherwise noted)						
Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} = 0V , I _D = -250uA	-30			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = -24V , V _{GS} = 0V			-1	uA
I _{GSS}	Gate-Body Leakage Current	V _{GS} = ±20V, V _{DS} = 0V			±100	nA
On Characteristics						
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D = -250uA	-1		-2.5	V
R _{DS(ON)}	Drain-Source On-State Resistance	V _{GS} = -10V , I _D = -5.3A			60	mΩ
		V _{GS} = -4.5V , I _D = -4.5A			90	mΩ
g _{FS}	Forward Transconductance	V _{DS} = -10V , I _D = -5.3A		18		S
Drain-Source Diode Characteristics						
V _{SD}	Diode Forward Voltage	V _{GS} = 0V , I _S = -1.0A			-1.3	V
I _S	Maximum Body-Diode Continuous Current				-2.0	A
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} = -15V , V _{GS} = 0V f = 1.0MHz		553		pF
C _{oss}	Output Capacitance			93		pF
C _{rss}	Reverse Transfer Capacitance			63		pF
Switching Characteristics						
Q _g	Total Gate Charge	V _{DS} = -15V , I _D = -5.3A V _{GS} = -10V		12		nC
Q _{gs}	Gate-Source Charge			4		nC
Q _{gd}	Gate-Drain Charge			5		nC
t _{D(ON)}	Turn-On Delay Time	V _{DD} = -15V , I _D = -1A V _{GS} = -10 V R _{GEN} = -6 ohm		14		ns
t _r	Turn-On Rise Time			5		ns
t _{D(OFF)}	Turn-Off Delay Time			20		ns
t _f	Turn-Off Fall Time			6		ns

- Repetitive rating, Pulse width limited by junction temperature $T_{J(MAX)}=150^\circ\text{C}$. Ratings are based on low frequency and duty cycles to keep initial $T_J=25^\circ\text{C}$
- The power dissipation P_D is based on $T_{J(MAX)}=150^\circ\text{C}$, using $\leq 10s$ junction-to-ambient thermal resistance.
- The value of $R_{\theta JA}$ is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with $T_A = 25^\circ\text{C}$. The value in any given application depends on the user's specific board design.
- The $R_{\theta JA}$ is the sum of the thermal impedance from junction to lead $R_{\theta JL}$ and lead to ambient.