



40V Complementary Enhancement-Mode MOSFET

General Description

- Low gate charge.
- Use as a load switch.
- Use in PWM applications

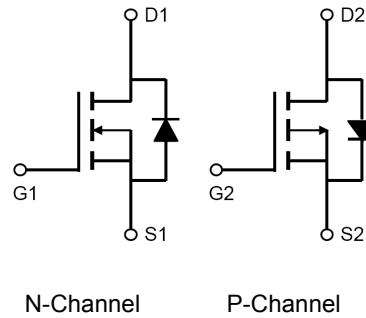
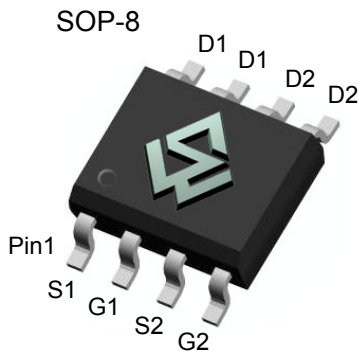
Product Summary

N-Channel

- $BV_{DSS} = 40V$
- $R_{DS(on)} (@VGS = 10V) < 35m\Omega$
- $R_{DS(on)} (@VGS = 4.5V) < 50m\Omega$

P-Channel

- $BV_{DSS} = -40V$
- $R_{DS(on)} (@VGS = -10V) < 50m\Omega$
- $R_{DS(on)} (@VGS = -4.5V) < 75m\Omega$



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

Parameter	Symbol	Maximum		Units
		N-Channel	P-Channel	
Drain-Source Voltage	V_{DS}	40	-40	V
Gate-Source Voltage	V_{GS}	± 20	± 20	V
Drain Current ($T_c=25^\circ C$)	I_D	7.0	-7.5	A
Drain Current ($T_c=75^\circ C$)		5.6	-5.1	A
Pulsed Drain Current ^a	I_{DM}	14.5	-13	A
Power Dissipation ^b ($T_c=25^\circ C$)	P_D	2.5	3.0	W
Junction and Storage Temperature Range	T_J, T_{STG}	-55 ~ +150	-55 ~ +150	$^\circ C$

Thermal Characteristics

Parameter	Symbol	Maximum		Units
		N-Channel	P-Channel	
Junction-to-Ambient ^a ($t \leq 10s$)	$R_{\theta JA}$	50	60	$^\circ C/W$
Junction-to-Ambient ^{a,d} (Steady-State)		80	90	$^\circ C/W$
Junction-to-Case	$R_{\theta Jc}$	50	60	$^\circ C/W$



N-Channel Electrical Characteristics (T _A = 25°C unless otherwise noted)						
Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
B _V DSS	Drain-Source Breakdown Voltage	V _{GS} = 0V , I _D = 250uA	40			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = 40V , 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 = 5A		28	35	mΩ
		V _{GS} = 4.5V , I _D = 4A		38	50	mΩ
g _{FS}	Forward Transconductance	V _{DS} = 5.0V , I _D = 12A		14		S
Drain-Source Diode Characteristics						
V _{SD}	Diode Forward Voltage	V _{GS} = 0V , I _S = 1.0A			1.2	V
I _S	Maximum Body-Diode Continuous Current				7.2	A
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} = 25V , V _{GS} = 0V f = 1.0MHz		493		pF
C _{oss}	Output Capacitance			56		pF
C _{rss}	Reverse Transfer Capacitance			36		pF
Switching Characteristics						
Q _g	Total Gate Charge	V _{DS} = 20V , I _D = 3A V _{GS} = 10V		10.5		nC
Q _{gs}	Gate-Source Charge			2.25		nC
Q _{gd}	Gate-Drain Charge			2.5		nC
t _{D(ON)}	Turn-On Delay Time	V _{DD} = 20V , I _D = 4A V _{GS} = 10 V R _{GEN} = 3.3 ohm		9.9		ns
t _r	Turn-On Rise Time			7.2		ns
t _{D(OFF)}	Turn-Off Delay Time			31		ns
t _f	Turn-Off Fall Time			11		ns

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

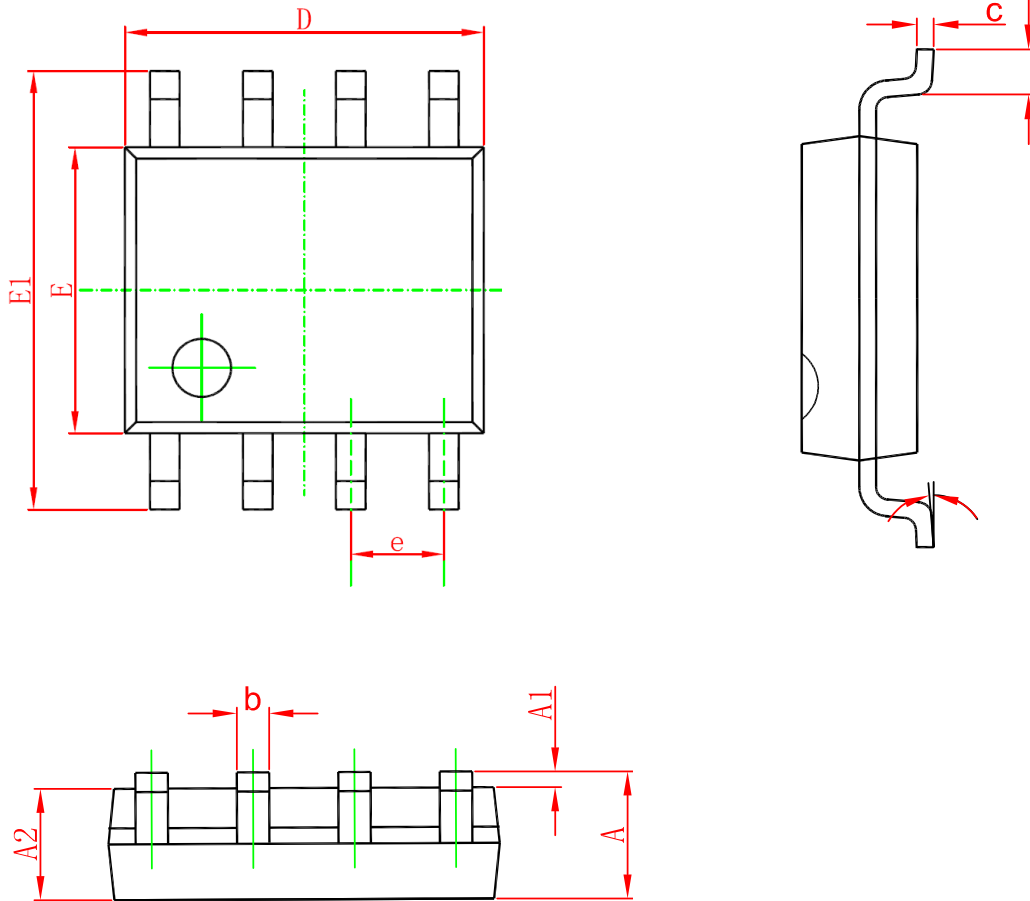


P-Channel Electrical Characteristics (T _A = 25°C unless otherwise noted)						
Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
B _V DSS	Drain-Source Breakdown Voltage	V _{GS} = 0V , I _D = -250uA	-40			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = -40V , V _{GS} = 0V			-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 = -4.5A		40	50	mΩ
		V _{GS} = -4.5V , I _D = -3.5A		60	75	mΩ
g _{FS}	Forward Transconductance	V _{DS} = -5.0V , I _D = -6.0A		12		S
Drain-Source Diode Characteristics						
V _{SD}	Diode Forward Voltage	V _{GS} = 0V , I _S = -1.0A			-1.2	V
I _S	Maximum Body-Diode Continuous Current				-7.5	A
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} = -15V , V _{GS} = 0V f = 1.0MHz		904		pF
C _{oss}	Output Capacitance			88		pF
C _{rss}	Reverse Transfer Capacitance			70		pF
Switching Characteristics						
Q _g	Total Gate Charge	V _{DS} = -20V , I _D = -6A V _{GS} = -4.5V		13		nC
Q _{gs}	Gate-Source Charge			3.54		nC
Q _{gd}	Gate-Drain Charge			3.1		nC
t _{D(ON)}	Turn-On Delay Time	V _{DD} = -20V , I _D = -1A V _{GS} = -10 V R _{GEN} = 3.3 ohm		7.2		ns
t _r	Turn-On Rise Time			5.8		ns
t _{D(OFF)}	Turn-Off Delay Time			18.6		ns
t _f	Turn-Off Fall Time			6.6		ns

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



SOP-8 Package Outline



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.006	0.010
D	4.700	5.100	0.185	0.200
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.270(BSC)		0.050(BSC)	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°

单击下面可查看定价，库存，交付和生命周期等信息

[>>SiliconWisdom\(矽睿半导体\)](#)