

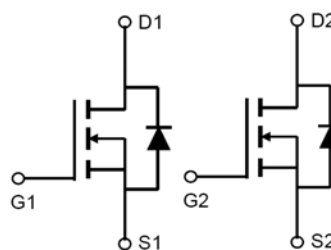
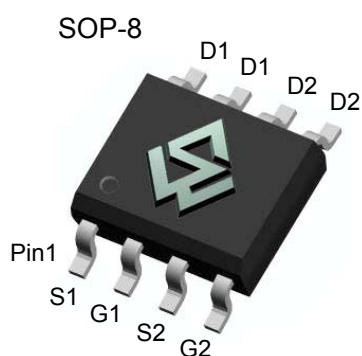
20V Dual N-Channel Enhancement-Mode MOSFET

General Description

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

Product Summary

- BV_{DSS} 20V
- $R_{DS(on)}$ @VGS = 4.5V < 55mΩ
- $R_{DS(on)}$ @VGS = 2.5V < 80mΩ



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

Parameter	Symbol	Maximum	Units
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	± 10	V
Drain Current ($T_A=25^\circ\text{C}$)	I_D	3.5	A
Drain Current ($T_A=75^\circ\text{C}$)		2.0	A
Pulsed Drain Current ^a	I_{DM}	12	A
Power Dissipation ^b ($T_A=25^\circ\text{C}$)	P_D	2.0	W
Power Dissipation ^b ($T_A=75^\circ\text{C}$)		1.4	W
Junction and Storage Temperature Range	T_J, T_{STG}	-55 ~ +150	$^\circ\text{C}$

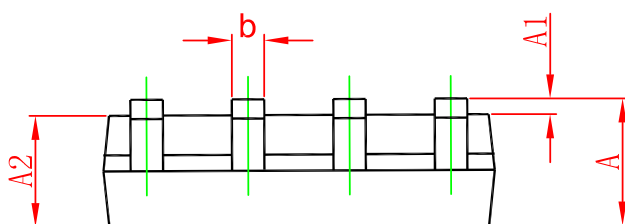
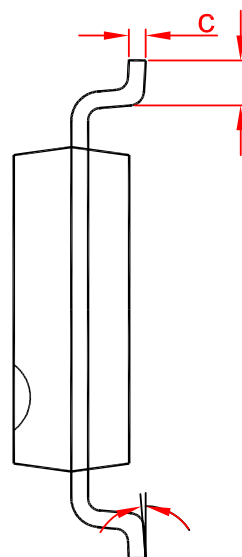
Thermal Characteristics

Parameter	Symbol	Maximum	Units
Junction-to-Ambient ^a ($t \leq 10\text{s}$)	$R_{\theta JA}$	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 ($T_A = 25^\circ\text{C}$ unless otherwise noted)						
Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS} = 0V, I_D = 250\mu\text{A}$	20			V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS} = 20V, V_{GS} = 0V$			1	μA
I_{GSS}	Gate-Body Leakage Current	$V_{GS} = \pm 10V, V_{DS} = 0V$			± 100	nA
On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250\mu\text{A}$	0.45		1.2	V
$R_{DS(ON)}$	Drain-Source On-State Resistance	$V_{GS} = 4.5V, I_D = 3.5A$		45	55	$\text{m}\Omega$
		$V_{GS} = 2.5V, I_D = 2.0A$		60	80	$\text{m}\Omega$
g_{FS}	Forward Transconductance	$V_{DS} = 4.5V, I_D = 6.0A$		20		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				2.0	A
Dynamic Characteristics						
C_{iss}	Input Capacitance	$V_{DS} = 10V, V_{GS} = 0V$ $f = 1.0\text{MHz}$		650		pF
C_{oss}	Output Capacitance			165		pF
C_{rss}	Reverse Transfer Capacitance			143		pF
Switching Characteristics						
Q_g	Total Gate Charge	$V_{DS} = 10V, I_D = 3.0A$ $V_{GS} = 4V$		11.5		nC
Q_{gs}	Gate-Source Charge			1.2		nC
Q_{gd}	Gate-Drain Charge			3.5		nC
$t_{D(ON)}$	Turn-On Delay Time	$V_{DD} = 10V, I_D = 1A$ $V_{GS} = 4V$ $R_{GEN} = 3\text{ohm}$		4.5		ns
t_r	Turn-On Rise Time			14		ns
$t_{D(OFF)}$	Turn-Off Delay Time			29		ns
t_f	Turn-Off Fall Time			8.2		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 $\leq 10\text{s}$ 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.

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°