

KDS8958

■ Features

● N-Channel

7.0 A, 30 V $R_{DS(ON)} = 0.028 \Omega @ V_{GS} = 10 V$

$R_{DS(ON)} = 0.040 \Omega @ V_{GS} = 4.5V$

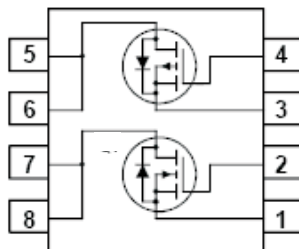
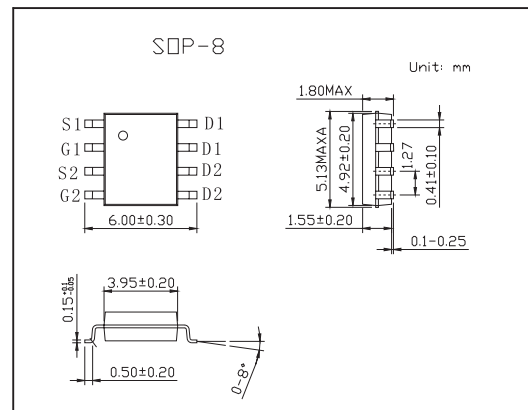
● P-Channel

-5 A, -30 V $R_{DS(ON)} = 0.052 \Omega @ V_{GS} = -10 V$

$R_{DS(ON)} = 0.080 \Omega @ V_{GS} = -4.5V$

● Fast switching speed

● High power and handling capability in a widely used surface mount package



■ Absolute Maximum Ratings $T_a = 25^\circ C$

Parameter	Symbol	N-Channel	P- Channel	Unit
Drain to Source Voltage	V_{DSS}	30	30	V
Gate to Source Voltage	V_{GS}	± 20	± 20	V
Drain Current Continuous (Note 1a)	I_D	7	-5	A
Drain Current Pulsed		20	-20	A
Power Dissipation for Single Operation	P_D	2		W
Power Dissipation for Single Operation (Note 1a)	P_D	1.6		W
(Note 1b)		1		
(Note 1c)		0.9		
Operating and Storage Temperature	T_J, T_{STG}	-55 to 150		$^\circ C$
Thermal Resistance Junction to Ambient (Note 1a)	$R_{\theta JA}$	78		$^\circ C/W$
Thermal Resistance Junction to Case (Note 1)	$R_{\theta JC}$	40		$^\circ C/W$

■ Electrical Characteristics Ta = 25°C

Parameter	Symbol	Testconditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0 V, I _D = 250 μ A	N-Ch	30		V
		V _{GS} = 0 V, I _D = -250 μ A	P-Ch	-30		
Breakdown Voltage Temperature Coefficient	$\frac{\Delta BV_{DSS}}{\Delta T_J}$	I _D = 250 μ A, Referenced to 25°C	N-Ch		25	mV/°C
		I _D = -250 μ A, Referenced to 25°C	P-Ch		-22	
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 24V, V _{GS} = 0 V	N-Ch		1	μ A
		V _{DS} = -24 V, V _{GS} = 0 V	P-Ch		-1	
Gate-Body Leakage	I _{GSS}	V _{GS} = ±20V, V _{DS} = 0 V	N-Ch		±100	nA
		V _{GS} = ±20 V, V _{DS} = 0 V	P-Ch		±100	
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250 μ A	N-Ch	1	1.6	3
		V _{DS} = V _{GS} , I _D = -250 μ A	P-Ch	-1	-1.7	-3
Gate Threshold Voltage Temperature Coefficient	$\frac{\Delta V_{GS(th)}}{\Delta T_J}$	I _D = 250 μ A, Referenced to 25°C	N-Ch		-4.3	mV/°C
		I _D = -250 μ A, Referenced to 25°C	P-Ch		4	
Static Drain-Source On-Resistance	R _{DS(on)}	V _{GS} = 10 V, I _D = 7A	N-Ch		21	28
		V _{GS} = 10 V, I _D = 7 A, T _J = 125°C			32	42
		V _{GS} = 4.5 V, I _D = 6 A			27	40
Static Drain-Source On-Resistance	R _{DS(on)}	V _{GS} = -10 V, I _D = -5 A	P-Ch		41	52
		V _{GS} = -10 V, I _D = -5 A, T _J = 125°C			58	78
		V _{GS} = -4.5 V, I _D = -4A			58	80
On-State Drain Current	I _{D(on)}	V _{GS} = 10 V, V _{DS} = 5V	N-Ch	20		A
		V _{GS} = -10 V, V _{DS} = -5V	P-Ch	-20		
Forward Transconductance	g _{FS}	V _{DS} = 5V, I _D = 7A	N-Ch		19	S
		V _{DS} = -5V, I _D = -5A	P-Ch		11	
Input Capacitance	C _{iss}	N-Channel V _{DS} = 10 V, V _{GS} = 0 V, f = 1.0 MHz	N-Ch		789	pF
			P-Ch		690	
Output Capacitance	C _{oss}	P-Channel	N-Ch		173	pF
			P-Ch		306	
Reverse Transfer Capacitance	C _{rss}	V _{DS} = -10 V, V _{GS} = 0 V, f = 1.0 MHz	N-Ch		66	pF
			P-Ch		77	
Turn-On Delay Time	t _{d(on)}	N-Channel V _{DD} = 10 V, I _D = 1 A,	N-Ch		6	12
			P-Ch		6.7	13.4
Turn-On Rise Time	t _r	V _{GS} = 10 V, R _{GEN} = 6 Ω (Note 2)	N-Ch		10	18
			P-Ch		9.7	19.4
Turn-Off Delay Time	t _{d(off)}	P-Channel V _{DD} = -10 V, I _D = -1 A,	N-Ch		18	29
			P-Ch		19.8	35.6
Turn-Off Fall Time	t _f	V _{GS} = -10 V, R _{GEN} = 6 Ω (Note 2)	N-Ch		5	12
			P-Ch		12.3	22.2
Total Gate Charge	Q _g	N-Channel V _{DS} = 15V, I _D = 7A, V _{GS} = 10V (Note 2)	N-Ch		16	26
			P-Ch		14	23
Gate-Source Charge	Q _{gs}	P-Channel	N-Ch		2.5	nC
			P-Ch		2.2	
Gate-Drain Charge	Q _{gd}	V _{DS} = -15V, I _D = -5A, V _{GS} = -10V (Note 2)	N-Ch		2.1	nC
			P-Ch		1.9	

KDS8958

■ Electrical Characteristics Ta = 25°C

Parameter	Symbol	Testconditions	Min	Typ	Max	Unit
Maximum Continuous Drain-Source Diode Forward Current	Is	N-Ch			1.3	A
		P-Ch			-1.3	
Drain-Source Diode Forward Voltage	VSD	VGS = 0 V, Is = 1.3A (Not 2)		0.74	1.2	V
		VGS = 0 V, Is = -1.3A (Not 2)		-0.76	-1.2	

Notes:

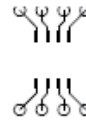
1. $R_{\theta JA}$ is the sum of the junction-to-case and case-to-ambient thermal resistance where the case thermal reference is defined as the solder mounting surface of the drain pins. $R_{\theta JC}$ is guaranteed by design while $R_{\theta CA}$ is determined by the user's board design.



a) 78°/W when mounted on a 0.5 in² pad of 2 oz copper



b) 125°/W when mounted on a .02 in² pad of 2 oz copper



c) 135°/W when mounted on a minimum pad.

Scale 1 : 1 on letter size paper

2. Pulse Test: Pulse Width < 300µs, Duty Cycle < 2.0%