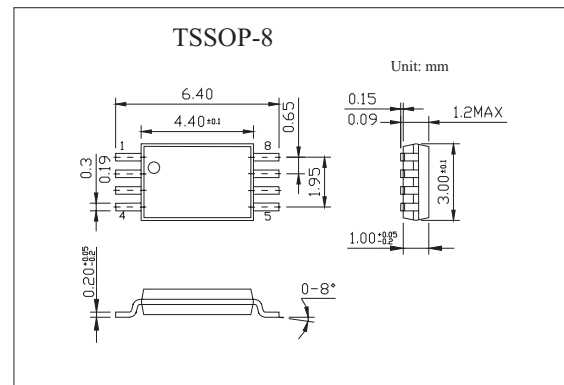
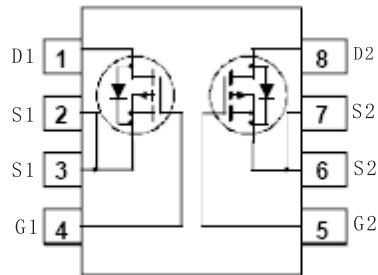


Dual P-Channel 2.5V Specified PowerTrench MOSFET

KDW2504P

■ Features

- -3.8 A, -20 V. $R_{DS(ON)} = 0.043 \Omega$ @ $V_{GS} = -4.5$ V
 $R_{DS(ON)} = 0.070 \Omega$ @ $V_{GS} = -2.5$ V
- Low gate charge
- High performance trench technology for extremely low $R_{DS(ON)}$
- Extended V_{GSS} range (± 12 V) for battery applications

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

Parameter	Symbol	Rating	Unit
Drain to Source Voltage	V_{DSS}	-20	V
Gate to Source Voltage	V_{GS}	± 12	V
Drain Current Continuous (Note 1a)	I_D	-3.8	A
Drain Current Pulsed		-30	A
Power Dissipation for Single Operation (Note 1a)	P_D	1	W
Power Dissipation for Single Operation (Note 1b)		0.6	
Operating and Storage Temperature	T_J, T_{STG}	-55 to 150	$^\circ\text{C}$
Thermal Resistance Junction to Ambient (Note 1a)	$R_{\theta JA}$	125	$^\circ\text{C}/\text{W}$
Thermal Resistance Junction to Ambient (Note 1b)	$R_{\theta JA}$	208	$^\circ\text{C}/\text{W}$

KDW2504P

■ Electrical Characteristics Ta = 25°C

Parameter	Symbol	Testconditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	B _{VDSS}	V _{GS} = 0 V, I _D = -250 μA	-20			V
Breakdown Voltage Temperature Coefficient	$\frac{\Delta B_{VDSS}}{\Delta T_J}$	I _D = -250 μA, Referenced to 25°C		-16		mV/°C
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = -16 V, V _{GS} = 0 V			-1	μA
Gate-Body Leakage, Forward	I _{GSSF}	V _{GS} = -12 V, V _{DS} = 0 V			-100	nA
Gate-Body Leakage, Reverse	I _{GSSR}	V _{GS} = 12 V, V _{DS} = 0 V			100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = -250 μA	-0.6	-1	-1.5	V
Gate Threshold Voltage Temperature Coefficient	$\frac{\Delta V_{GS(th)}}{\Delta T_J}$	I _D = -250 μA, Referenced to 25°C		3		mV/°C
Static Drain-Source On-Resistance	R _{DS(on)}	V _{GS} = -4.5 V, I _D = -3.8 A		0.036	0.043	Ω
		V _{GS} = -2.5 V, I _D = -3.0 A		0.056	0.070	
		V _{GS} = -4.5 V, I _D = -3.8 A, T _J = 125°C		0.049	0.069	
On-State Drain Current	I _{D(on)}	V _{GS} = -4.5 V, V _{DS} = -5V	-15			A
Forward Transconductance	g _{FS}	V _{DS} = -5 V, I _D = -3.5A		13.2		S
Input Capacitance	C _{iss}	V _{DS} = -10 V, V _{GS} = 0 V, f = 1.0 MHz		1015		pF
Output Capacitance	C _{oss}			446		pF
Reverse Transfer Capacitance	C _{rss}			118		pF
Turn-On Delay Time	t _{d(on)}			11	20	ns
Turn-On Rise Time	t _r	V _{DD} = -5 V, I _D = -1 A, V _{GS} = -4.5 V, R _{GEN} = 6 Ω		18	32	ns
Turn-Off Delay Time	t _{d(off)}			34	55	ns
Turn-Off Fall Time	t _f			34	55	ns
Total Gate Charge V _{gs} =5V	Q _g	V _{DS} = -5 V, I _D = -3.8 A, V _{GS} = -4.5V (Note 2)		9.7	16	nC
Gate-Source Charge	Q _{gs}			2.2		nC
Gate-Drain Charge	Q _{gd}			2.4		nC
Maximum Continuous Drain-Source Diode Forward Current	I _S				-0.83	A
Drain-Source Diode Forward Voltage	V _{SD}	V _{GS} = 0 V, I _S = -0.83 A (Note 2)		-0.7	-1.2	V

Notes:

1 R_{θJA} 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_{θJC} is guaranteed by design while R_{θCA} is determined by the user's board design.

a) R_{θJA} is 125°C/W (steady state) when mounted on a 1 inch² copper pad on FR-4.

b) R_{θJA} is 208 °C/W (steady state) when mounted on a minimum copper pad on FR-4.

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