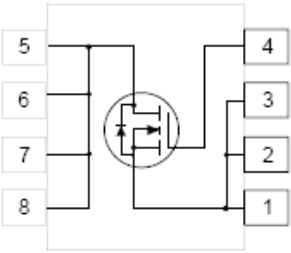
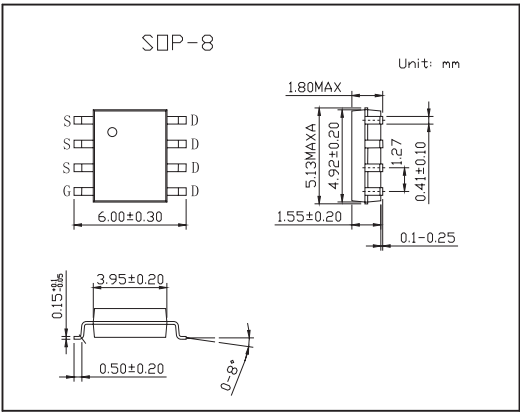


60V N-Channel PowerTrench™ MOSFET

KDS5670

Features

- 10 A, 60 V. $R_{DS(ON)} = 0.014 \Omega$ @ $V_{GS} = 10 \text{ V}$
 $R_{DS(ON)} = 0.017 \Omega$ @ $V_{GS} = 6 \text{ V}$
- Low gate charge
- Fast switching speed.
- High performance trench technology for extremely low $R_{DS(ON)}$
- High power and current handling capability



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

Parameter	Symbol	Rating	Unit
Drain to Source Voltage	V_{DS}	60	V
Gate to Source Voltage	V_{GS}	± 20	V
Drain Current Continuous (Note 1a)	I_D	10	A
Drain Current Pulsed		50	A
Power dissipation (Note 1a)	P_D	2.5	W
Power dissipation (Note 1b)		1.2	
Power dissipation (Note 1c)		1	
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to 175	$^\circ\text{C}$
Thermal Resistance Junction to Ambient (Note 1a)	$R_{\theta JA}$	50	$^\circ\text{C/W}$
Thermal Resistance Junction to Case (Note 1)	$R_{\theta JC}$	25	$^\circ\text{C/W}$

KDS5670

■ Electrical Characteristics Ta = 25°C

Parameter	Symbol	Testconditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BVDSS	V _{GS} = 0 V, I _D = 250 μ A	60			V
Breakdown Voltage Temperature Coefficient	$\frac{\Delta B_{V_{DS}}}{\Delta T_J}$	I _D = 250 μ A, Referenced to 25°C		58		mV/°C
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 48 V, V _{GS} = 0 V			1	μ A
Gate-Body Leakage, Forward	I _{GSSF}	V _{GS} = 20 V, V _{DS} = 0 V			100	nA
Gate-Body Leakage, Reverse	I _{GSSR}	V _{GS} = -20 V, V _{DS} = 0 V			-100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250 μ A	2	2.4	4	V
Gate Threshold Voltage Temperature Coefficient	$\frac{\Delta V_{GS(th)}}{\Delta T_J}$	I _D = 250 μ A, Referenced to 25°C		6.8		mV/°C
Static Drain-Source On-Resistance	R _{DS(on)}	V _{GS} = 10 V, I _D = 10 A		0.012	0.014	Ω
		V _{GS} = 10 V, I _D = 10 A, T _J = 125°C		0.019	0.027	
		V _{GS} = 6 V, I _D = 9 A		0.014	0.017	
On-State Drain Current	I _{D(on)}	V _{GS} = 10 V, V _{DS} = 5V	25			A
Forward Transconductance	g _{FS}	V _{DS} = 5V, I _D = 10 A		39		S
Input Capacitance	C _{iss}	V _{DS} = 15 V, V _{GS} = 0 V, f = 1.0 MHz		2900		pF
Output Capacitance	C _{oss}			685		pF
Reverse Transfer Capacitance	C _{rss}			180		pF
Turn-On Delay Time	t _{d(on)}	V _{DD} = 30 V, I _D = 1 A, V _{GS} = 10 V, R _{GEN} = 6 Ω (Note 2)		16	29	ns
Turn-On Rise Time	t _r			10	20	ns
Turn-Off Delay Time	t _{d(off)}			50	80	ns
Turn-Off Fall Time	t _f			23	42	ns
Total Gate Charge	Q _g	V _{DS} = 20 V, I _D = 10 A, V _{GS} = 10 V (Note 2)		49	70	nC
Gate-Source Charge	Q _{gs}			9		nC
Gate-Drain Charge	Q _{gd}			10.4		nC
Maximum Continuous Drain-Source Diode Forward Current	I _S				2.1	A
Drain-Source Diode Forward Voltage	V _{SD}	V _{GS} = 0 V, I _S = 2.1 A (Not 2)		0.72	1.2	V

Notes:

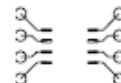
1. R_{θJA} is the sum of the junction-to-case and case-to-ambient thermal resistance where the case thermal reference is defined as the solder mounting surface of the drain pins. R_{θJC} is guaranteed by design while R_{θJA} is determined by the user's board design.



a) 50° C/W when mounted on a 0.5 in² pad of 2 oz. copper.



b) 105° C/W when mounted on a 0.02 in² pad of 2 oz. copper.



c) 125° C/W when mounted on a minimum pad.

Scale 1 : 1 on letter size paper

2. Pulse Test: Pulse Width ≤ 300 μ s, Duty Cycle ≤ 2.0%