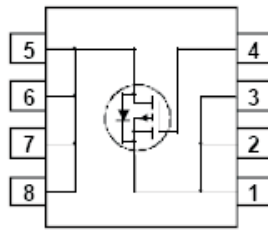
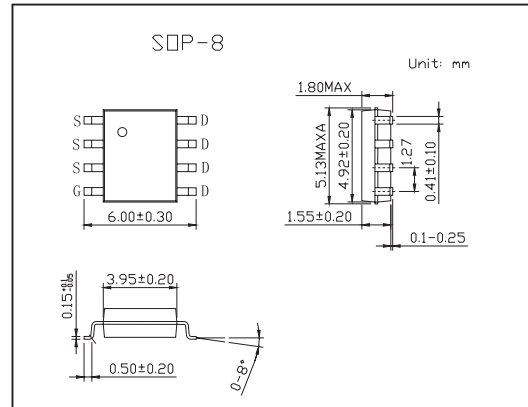


30V P-Channel PowerTrench MOSFET

KDS6685

■ Features

- -8.8 A, -30 V. $R_{DS(ON)} = 20\text{m}\Omega$ @ $V_{GS} = -10\text{V}$
 $R_{DS(ON)} = 35\text{m}\Omega$ @ $V_{GS} = -4.5\text{V}$
- Low gate charge(17 nC typical)
- 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}	-30	V
Gate to Source Voltage	V_{GS}	± 25	V
Drain Current Continuous (Note 1a)	I_D	-8.8	A
Drain Current Pulsed		-50	A
Power Dissipation for Single Operation (Note 1a)	P_D	2.5	W
Power Dissipation for Single Operation (Note 1b)		1.2	
Power Dissipation for Single Operation (Note 1c)		1	
Operating and Storage Temperature	T_J, T_{STG}	-55 to 175	$^\circ\text{C}$
Thermal Resistance Junction to Ambient (Note 1a)	$R_{\theta JA}$	50	$^\circ\text{C}/\text{W}$
Thermal Resistance Junction to Ambient (Note 1c)	$R_{\theta JA}$	125	$^\circ\text{C}/\text{W}$
Thermal Resistance Junction to Case (Note 1)	$R_{\theta JC}$	25	$^\circ\text{C}/\text{W}$

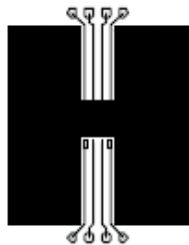
KDS6685

■ Electrical Characteristics Ta = 25°C

Parameter	Symbol	Testconditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BVDSS	V _{GS} = 0 V, I _D = -250 μA	-30			V
Breakdown Voltage Temperature Coefficient	$\frac{\Delta BVDSS}{\Delta T_J}$	I _D = -250 μA, Referenced to 25°C		-21		mV/°C
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = -24 V, V _{GS} = 0 V			-1	μA
Gate-Body Leakage, Forward	I _{GSSF}	V _{GS} = 25V, V _{DS} = 0 V			100	nA
Gate-Body Leakage, Reverse	I _{GSSR}	V _{GS} = -25 V, V _{DS} = 0 V			-100	nA
Gate Threshold Voltage(Not 2)	V _{GS(th)}	V _{DS} = V _{GS} , I _D = -250 μA	-1	-1.7	-3	V
Gate Threshold Voltage Temperature Coefficient(Not 2)	$\frac{\Delta V_{GS(th)}}{\Delta T_J}$	I _D = -250 μA, Referenced to 25°C		5		mV/°C
Static Drain-Source On-Resistance(Not 2)	R _{DS(on)}	V _{GS} = -10 V, I _D = -8.8 A		15	24	mΩ
		V _{GS} = -4.5 V, I _D = -6.7 A		22	32	
		V _{GS} = -10 V, I _D = -8.8 A, T _J = 125°C		19	39	
On-State Drain Current	I _{D(on)}	V _{GS} = -10 V, V _{DS} = -5V	-25			A
Forward Transconductance	g _{FS}	V _{DS} = -5 V, I _D = -8.8A		24		S
Input Capacitance	C _{iss}	V _{DS} = -15 V, V _{GS} = 0 V, f = 1.0 MHz		1604		pF
Output Capacitance	C _{oss}		408		pF	
Reverse Transfer Capacitance	C _{rss}		202		pF	
Turn-On Delay Time	t _{d(on)}			13	23	ns
Turn-On Rise Time	t _r	V _{DD} = -15 V, I _D = -1 A, V _{GS} = -10 V, R _{GEN} = 6 Ω (Note 2)		13.5	24	ns
Turn-Off Delay Time	t _{d(off)}		42	68	ns	
Turn-Off Fall Time	t _f		25	40	ns	
Total Gate Charge	Q _g	V _{DS} = -15 V, I _D = -8.8 A, V _{GS} = -5V (Note 2)		17	24	nC
Gate-Source Charge	Q _{gs}		5		nC	
Gate-Drain Charge	Q _{gd}		6		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 = -2.1A (Not 2)		-0.73	-1.2	V

Notes:

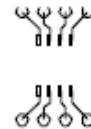
1. R_{θJA} is the sum of the junction-to-case and case-to-ambient thermal resistance where the case thermal reference is defined as the solder mounting surface of the drain pins. R_{θJC} is guaranteed by design while R_{θCA} is determined by the user's board design.



a) 50°C/W when mounted on a 1 in² pad of 2 oz copper



b) 105°C/W when mounted on a .04 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 < 300μs, Duty Cycle < 2.0%