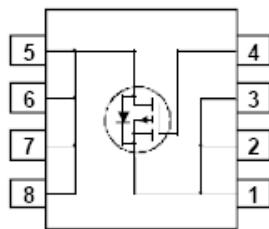
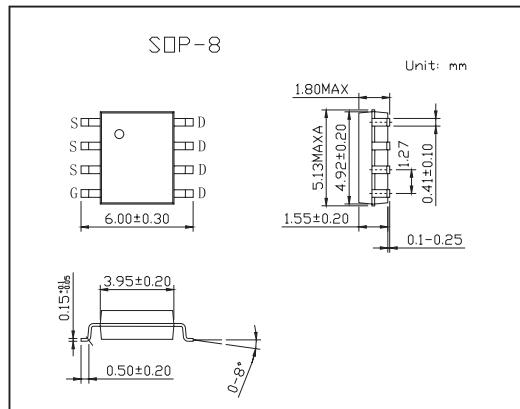


30V P-Channel PowerTrench MOSFET

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_{DSS}	-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	°C
Thermal Resistance Junction to Ambient (Note 1a)	$R_{\theta JA}$	50	°C/W
Thermal Resistance Junction to Ambient (Note 1c)	$R_{\theta JA}$	125	°C/W
Thermal Resistance Junction to Case (Note 1)	$R_{\theta JC}$	25	°C/W

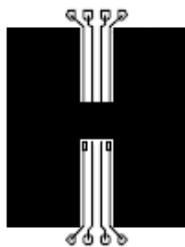
KDS6685

■ Electrical Characteristics Ta = 25°C

Parameter	Symbol	Testconditons	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BVDSS	Vgs = 0 V, Id = -250 μ A	-30			V
Breakdown Voltage Temperature Coefficient	$\frac{\Delta BVDSS}{\Delta T_J}$	Id = -250 μ A, Referenced to 25°C		-21		mV/°C
Zero Gate Voltage Drain Current	IdSS	Vds = -24 V, Vgs = 0 V			-1	μ A
Gate-Body Leakage, Forward	IGSSF	Vgs = 25V, Vds = 0 V			100	nA
Gate-Body Leakage, Reverse	IGSSR	Vgs = -25 V, Vds = 0 V			-100	nA
Gate Threshold Voltage(Not 2)	VGS(th)	Vds = Vgs, Id = -250 μ A	-1	-1.7	-3	V
Gate Threshold Voltage Temperature Coefficient(Not 2)	$\frac{\Delta VGS(th)}{\Delta T_J}$	Id = -250 μ A, Referenced to 25°C		5		mV/°C
Static Drain-Source On-Resistance(Not 2)	RDS(on)	Vgs = -10 V, Id = -8.8 A		15	24	mΩ
		Vgs = -4.5 V, Id = -6.7 A		22	32	
		Vgs = -10 V, Id = -8.8 A, TJ = 125°C		19	39	
On-State Drain Current	Id(on)	Vgs = -10 V, Vds = -5V	-25			A
Forward Transconductance	gfs	Vds = -5 V, Id = -8.8A		24		S
Input Capacitance	Ciss			1604		pF
Output Capacitance	Coss	Vds = -15 V, Vgs = 0 V,f = 1.0 MHz		408		pF
Reverse Transfer Capacitance	Crss			202		pF
Turn-On Delay Time	td(on)			13	23	ns
Turn-On Rise Time	tr	VDD = -15 V, Id = -1 A,Vgs = -10 V, RGEN = 6 Ω (Note 2)		13.5	24	ns
Turn-Off Delay Time	td(off)			42	68	ns
Turn-Off Fall Time	tf			25	40	ns
Total Gate Charge	Qg	Vds = -15 V, Id = -8.8 A,Vgs=-5V(Note 2)		17	24	nC
Gate-Source Charge	Qgs			5		nC
Gate-Drain Charge	Qgd			6		nC
Maximum Continuous Drain-Source Diode Forward Current	Is				-2.1	A
Drain-Source Diode Forward Voltage	Vsd	Vgs = 0 V, Is = -2.1A (Not 2)		-0.73	-1.2	V

Notes:

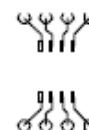
1. R_{AIA} is the sum of the junction-to-case and case-to-ambient thermal resistance where the case thermal reference is defined as the solder mounting surface of the drain pins. R_{AOC} is guaranteed by design while R_{EOA} is determined by the user's board design.



a) 50°C/W when mounted on a 1in² 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%