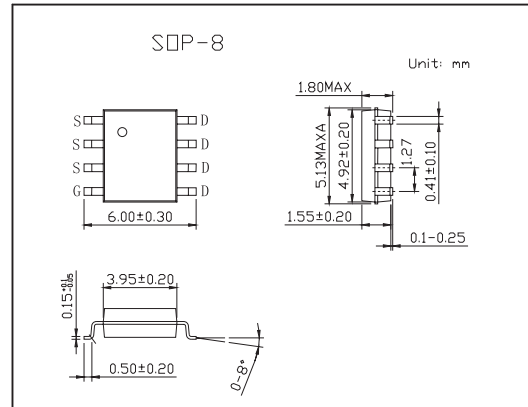
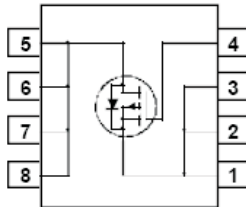


P-Channel 2.5V Specified PowerTrench MOSFET

KDS6375

■ Features

- -8 A, -20 V. $R_{DS(ON)} = 24m\Omega$ @ $V_{GS} = -4.5V$
 $R_{DS(ON)} = 32m\Omega$ @ $V_{GS} = -2.5V$
- Low gate charge(26nC typical)
- 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} | -20 | V |
| Gate to Source Voltage | V_{GS} | ± 8 | V |
| Drain Current Continuous (Note 1a) | I_D | -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 | $^\circ\text{C}/\text{W}$ |

KDS6375

■ 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 μA | -20 | | | V |
| Breakdown Voltage Temperature Coefficient | $\frac{\Delta BV_{DSS}}{\Delta T_J}$ | I _D = -250 μA, Referenced to 25°C | | -13 | | 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} = 8V, V _{DS} = 0 V | | | 100 | nA |
| Gate-Body Leakage, Reverse | I _{GSSR} | V _{GS} = -8 V, V _{DS} = 0 V | | | -100 | nA |
| Gate Threshold Voltage(Not 2) | V _{GS(th)} | V _{DS} = V _{GS} , I _D = -250 μA | -0.4 | -0.7 | -1.5 | V |
| Gate Threshold Voltage Temperature Coefficient(Not 2) | $\frac{\Delta V_{GS(th)}}{\Delta T_J}$ | I _D = -250 μA, Referenced to 25°C | | 3 | | mV/°C |
| Static Drain-Source On-Resistance(Not 2) | R _{DS(on)} | V _{GS} = -4.5 V, I _D = -8 A | | 14 | 24 | mΩ |
| | | V _{GS} = -2.5 V, I _D = -7 A | | 19 | 32 | |
| | | V _{GS} = -4.5 V, I _D = -8 A, T _J = 125°C | | 18 | 39 | |
| On-State Drain Current | I _{D(on)} | V _{GS} = -4.5 V, V _{DS} = -5V | -50 | | | A |
| Forward Transconductance | g _{FS} | V _{DS} = -5 V, I _D = -8A | | 35 | | S |
| Input Capacitance | C _{iss} | V _{DS} = -10 V, V _{GS} = 0 V, f = 1.0 MHz | | 2694 | | pF |
| Output Capacitance | C _{oss} | | 480 | | pF | |
| Reverse Transfer Capacitance | C _{rss} | | 229 | | pF | |
| Turn-On Delay Time | t _{d(on)} | | | 12 | 22 | ns |
| Turn-On Rise Time | t _r | V _{DD} = -10 V, I _D = -1 A, V _{GS} = -4.5 V, R _{GEN} = 6 Ω (Note 2) | | 9 | 17 | ns |
| Turn-Off Delay Time | t _{d(off)} | | | 124 | 197 | ns |
| Turn-Off Fall Time | t _f | | | 57 | 92 | ns |
| Total Gate Charge | Q _g | | | 26 | 36 | nC |
| Gate-Source Charge | Q _{gs} | V _{DS} = -10 V, I _D = -8 A, V _{GS} = -4.5V (Note 2) | | 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) | | -0.7 | -1.2 | V |

Notes:

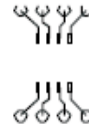
1. R_{θJA} is the sum of the junction-to-case and case-to-ambient thermal resistance where the case thermal reference is defined as the solder mounting surface of the drain pins. R_{θJC} is guaranteed by design while R_{θJA} is determined by the user's board design.



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



b) 105 °C/W when mounted on a .04in² 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%