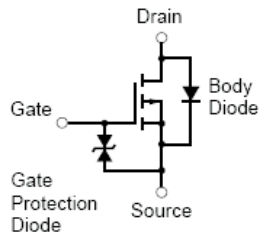
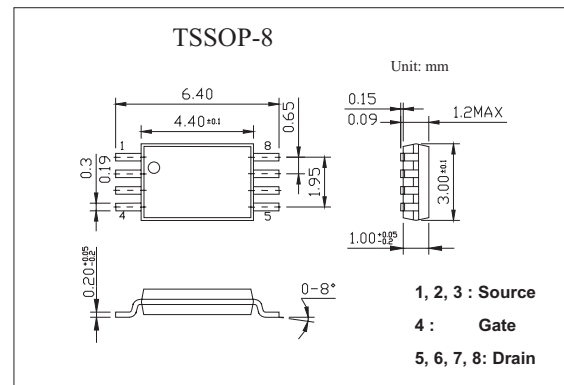


## MOS Field Effect Transistor

### KPA1816

#### ■ Features

- 1.8V drive available
- Low on-state resistance  
 $R_{DS(on)1} = 15 \text{ m}\Omega$  TYP. ( $V_{GS} = -4.5 \text{ V}$ ,  $I_D = -4.5 \text{ A}$ )  
 $R_{DS(on)2} = 16 \text{ m}\Omega$  TYP. ( $V_{GS} = -4.0 \text{ V}$ ,  $I_D = -4.5 \text{ A}$ )  
 $R_{DS(on)3} = 22.5 \text{ m}\Omega$  TYP. ( $V_{GS} = -2.5 \text{ V}$ ,  $I_D = -4.5 \text{ A}$ )  
 $R_{DS(on)4} = 41.5 \text{ m}\Omega$  TYP. ( $V_{GS} = -1.8 \text{ V}$ ,  $I_D = -2.5 \text{ A}$ )
- Built-in G-S protection diode against ESD



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

Parameter	Symbol	Rating	Unit
Drain to Source Voltage ( $V_{GS} = 0$ )	$V_{bss}$	-12	V
Gate to Source Voltage ( $V_{DS} = 0$ )	$V_{GSS}$	$\pm 8.0$	V
Drain Current (DC) $T_a = 25^\circ\text{C}$	$I_{D(DC)}$	$\pm 9.0$	A
Drain Current (Pulse) *1	$I_{D(pulse)}$	$\pm 36$	A
Total Power Dissipation(2 unit) *2	$P_T$	2.0	W
Channel Temperature	$T_{ch}$	150	$^\circ\text{C}$
Storage Temperature	$T_{sig}$	-55 to + 150	$^\circ\text{C}$

\*1  $PW \leq 10 \mu\text{s}$ , Duty cycle  $\leq 1\%$

\*2 Mounted on ceramic substrate of  $5000\text{mm}^2 \times 1.1 \text{ mm}$

## KPA1816

## ■ Electrical Characteristics Ta = 25°C

Parameter	Symbol	Testconditions	Min	Typ	Max	Unit
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = -12\text{ V}, V_{GS} = 0$			-1.0	$\mu\text{ A}$
Gate Leakage Current	$I_{GSS}$	$V_{GS} = \pm 8\text{ V}, V_{DS} = 0$			$\pm 10$	$\mu\text{ A}$
Gate Cut-off Voltage	$V_{GS(off)}$	$V_{DS} = -10\text{ V}, I_D = -1\text{ mA}$	-0.45	-0.75	-1.5	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS} = -10\text{ V}, I_D = -4.5\text{ A}$	11	22		S
Drain to Source On-state Resistance	$R_{DS(on)1}$	$V_{DS} = -4.5\text{ V}, I_D = -4.5\text{ A}$		12.0	15	$\text{m}\Omega$
	$R_{DS(on)2}$	$V_{GS} = -4.0\text{ V}, I_D = -4.5\text{ A}$		12.5	16	$\text{m}\Omega$
	$R_{DS(on)3}$	$V_{GS} = -2.5\text{ V}, I_D = -4.5\text{ A}$		16.2	22.5	$\text{m}\Omega$
	$R_{DS(on)4}$	$V_{GS} = -1.8\text{ V}, I_D = -2.5\text{ A}$		23.7	41.5	$\text{m}\Omega$
Input Capacitance	$C_{iss}$	$V_{DS} = -10\text{ V}, V_{GS} = 0, f = 1\text{ MHz}$		1570		pF
Output Capacitance	$C_{oss}$			400		pF
Reverse Transfer Capacitance	$C_{rss}$			240		pF
Turn-on Delay Time	$t_{d(on)}$			16		ns
Rise Time	$t_r$	$I_D = -4.5\text{ A}, V_{GS} = -4.0\text{ V}, V_{DD} = -10\text{ V}, R_G = 10\ \Omega$		132		ns
Turn-off Delay Time	$t_{d(off)}$			223		ns
Fall Time	$t_f$			295		ns
Total Gate Charge	$Q_G$			15		nC
Gate to Source Charge	$Q_{GS}$	$I_D = -9.0\text{ A}, V_{DD} = -10\text{ V}, V_{GS} = -4.0\text{ V}$		3.0		nC
Gate to Drain Charge	$Q_{GD}$			4.5		nC
Body Diode forward Voltage	$V_{F(S-D)}$		$I_F = 9.0\text{ A}, V_{GS} = 0$		0.82	
Reverse Recovery Time	$t_{rr}$	$I_F = 9.0\text{ A}, V_{GS} = 0\text{ V}$		490		ns
Reverse Recovery Charge	$Q_{rr}$		$di/dt = 100\text{ A}/\mu\text{ s}$		580	