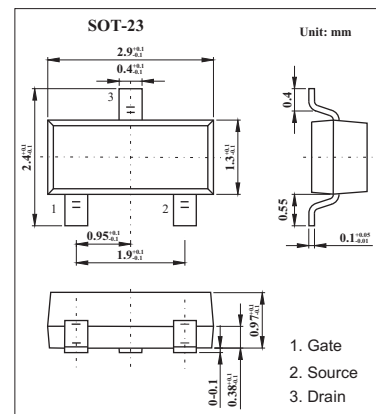
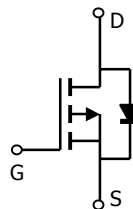


## P-Channel Enhancement Mode Field Effect Transistor KO3413

### ■ Features

- $V_{DS}(V) = -20V$
- $I_D = -3 A$
- $R_{DS(ON)} < 97m\Omega$  ( $V_{GS} = -4.5V$ )
- $R_{DS(ON)} < 130m\Omega$  ( $V_{GS} = -2.5V$ )
- $R_{DS(ON)} < 190m\Omega$  ( $V_{GS} = -1.8V$ )



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

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	$V_{DS}$	-20	V
Gate-Source Voltage	$V_{GS}$	$\pm 8$	V
Continuous Drain Current *1	$I_D$	$T_A=25^\circ C$	-3
		$T_A=70^\circ C$	-2.4
Pulsed Drain Current *2	$I_{DM}$	-15	A
Power Dissipation *1	$P_D$	$T_A=25^\circ C$	1.4
		$T_A=70^\circ C$	0.9
Thermal Resistance.Junction-to-Ambient *1	$R_{\theta JA}$	125	$^\circ C/W$
Junction and Storage Temperature Range	$T_J, T_{STG}$	-55 to 150	$^\circ C$

\*1The value of  $R_{\theta JA}$  is measured with the device mounted on  $1in^2$  FR-4 board with 2oz.

Copper, in a still air environment with  $T_A = 25^\circ C$

\*2 Repetitive rating, pulse width limited by junction temperature.

## KO3413

## ■ Electrical Characteristics Ta = 25°C

Parameter	Symbol	Testconditons	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V <sub>DSS</sub>	I <sub>D</sub> =-250 μA, V <sub>GS</sub> =0V	-20			V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =-16V, V <sub>GS</sub> =0V			-1	μA
		V <sub>DS</sub> =-16V, V <sub>GS</sub> =0V, T <sub>J</sub> =55°C			-5	
Gate-Body leakage current	I <sub>GSS</sub>	V <sub>DS</sub> =0V, V <sub>GS</sub> =±8V			±100	μA
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> I <sub>D</sub> =-250 μA	-0.3	-0.55	-1	V
Static Drain-Source On-Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-3A		81	97	mΩ
		V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-3A T <sub>J</sub> =125°C		111	135	
		V <sub>GS</sub> =-2.5V, I <sub>D</sub> =-2.6A		108	130	
		V <sub>GS</sub> =-1.8V, I <sub>D</sub> =-1A		146	190	
On state drain current	I <sub>D(on)</sub>	V <sub>GS</sub> =-4.5V, V <sub>DS</sub> =-5V	-15			A
Forward Transconductance	g <sub>FS</sub>	V <sub>DS</sub> =-5V, I <sub>D</sub> =-3A	4	7		S
Input Capacitance	C <sub>iss</sub>	V <sub>GS</sub> =0V, V <sub>DS</sub> =-10V, f=1MHz		540		pF
Output Capacitance	C <sub>oss</sub>		72		pF	
Reverse Transfer Capacitance	C <sub>rss</sub>		49		pF	
Gate resistance	R <sub>g</sub>		V <sub>GS</sub> =0V, V <sub>DS</sub> =0V, f=1MHz		12	
Total Gate Charge	Q <sub>g</sub>	V <sub>GS</sub> =-4.5V, V <sub>DS</sub> =-10V, I <sub>D</sub> =-3A		6.1		nC
Gate Source Charge	Q <sub>gs</sub>		0.6		nC	
Gate Drain Charge	Q <sub>gd</sub>		1.6		nC	
Turn-On DelayTime	t <sub>D(on)</sub>			10		ns
Turn-On Rise Time	t <sub>r</sub>	V <sub>GS</sub> =-4.5V, V <sub>DS</sub> =-10V, R <sub>L</sub> 3.3Ω, R <sub>GEN</sub> =3Ω		12		ns
Turn-Off DelayTime	t <sub>D(off)</sub>		44		ns	
Turn-Off Fall Time	t <sub>f</sub>		22		ns	
Body Diode Reverse Recovery Time	t <sub>rr</sub>		I <sub>F</sub> =-3A, di/dt=100A/μs		21	
Body Diode Reverse Recovery Charge	Q <sub>rr</sub>	I <sub>F</sub> =-3A, di/dt=100A/μs		7.5		nC
Maximum Body-Diode Continuous Current	I <sub>S</sub>				-2	A
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =-1A, V <sub>GS</sub> =0V		-0.78	-1	V