

## 2SK1406

## Silicon N-Channel Power F-MOS FET

## ■ Features

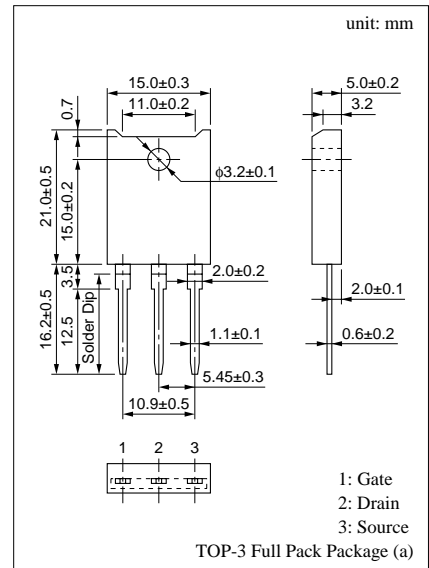
- Low ON-resistance  $R_{DS(on)}$ :  $R_{DS(on)} = 0.32\Omega$  (typ.)
- High-speed switching:  $t_f = 140\text{ns}$  (typ.)
- No secondary breakdown
- High breakdown voltage, large allowable power dissipation

## ■ Applications

- Contactless relay
- Diving circuit for a solenoid
- Driving circuit for a motor
- Control equipment
- Switching power supply

■ Absolute Maximum Ratings ( $T_C = 25^\circ\text{C}$ )

Parameter	Symbol	Rated	Unit
Drain to Source breakdown voltage	$V_{DSS}$	500	V
Gate to Source voltage	$V_{GSS}$	$\pm 20$	V
Drain current	DC	$I_D$	$\pm 20$ A
	Pulse	$I_{DP}$	$\pm 40$ A
Allowable power dissipation	$T_C = 25^\circ\text{C}$	$P_D$	100 W
	$T_a = 25^\circ\text{C}$		3 W
Channel temperature	$T_{ch}$	150	$^\circ\text{C}$
Storage temperature	$T_{stg}$	-55 to +150	$^\circ\text{C}$

■ Electrical Characteristics ( $T_C = 25^\circ\text{C}$ )

Parameter	Symbol	Conditions	min	typ	max	Unit	
Drain to Source cut-off current	$I_{DSS}$	$V_{DS} = 400\text{V}, V_{GS} = 0$			0.1	mA	
Gate to Source leakage current	$I_{GSS}$	$V_{GS} = \pm 20\text{V}, V_{DS} = 0$			$\pm 1$	$\mu\text{A}$	
Drain to Source breakdown voltage	$V_{DSS}$	$I_D = 1\text{mA}, V_{GS} = 0$	500			V	
Gate threshold voltage	$V_{th}$	$V_{DS} = 25\text{V}, I_D = 1\text{mA}$	1		5	V	
Drain to Source ON-resistance	$R_{DS(on)}$	$V_{GS} = 10\text{V}, I_D = 10\text{A}$		0.32	0.4	$\Omega$	
Drain to Source ON-voltage	$V_{DS(on)}$	$V_{GS} = 10\text{V}, I_D = 20\text{A}$			9	V	
Forward transfer admittance	$ Y_{fs} $	$V_{DS} = 25\text{V}, I_D = 10\text{A}$	7.2	12		S	
Input capacitance (Common Source)	$C_{iss}$	$V_{DS} = 20\text{V}, V_{GS} = 0, f = 1\text{MHz}$		3000		pF	
Output capacitance (Common Source)	$C_{oss}$				430		pF
Reverse transfer capacitance (Common Source)	$C_{rss}$				175		pF
Turn-on time	$t_{on}$	$V_{GS} = 10\text{V}, I_D = 10\text{A}$		150		ns	
Fall time	$t_f$				140		ns
Turn-off time (delay time)	$t_{d(off)}$	$V_{DS} = 150\text{V}, R_L = 15\Omega$		480		ns	

