

# 2SK1257

## Silicon N-channel Power F-MOS FET

### ■ Features

- Low ON resistance  $R_{DS(on)}$  :  $R_{DS(on)1} = 0.024\Omega$  (typ.)
- High switching rate :  $t_f = 320\text{ns}$  (typ.)
- No secondary breakdown
- Low voltage drive is possible ( $V_{GS} = 4\text{V}$ ).

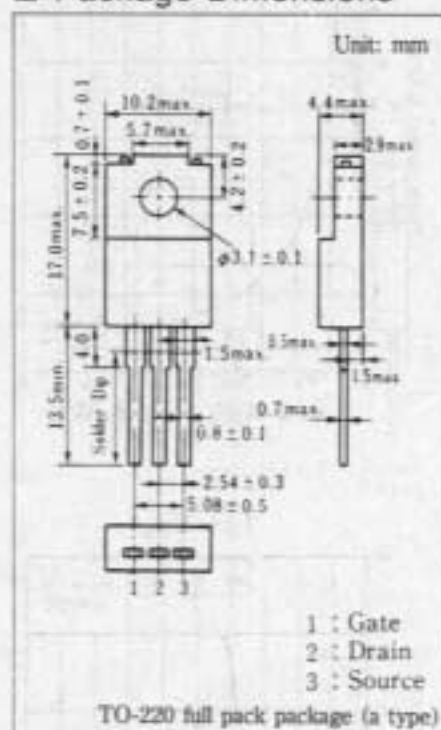
### ■ Application

- DC-DC converter
- No contact relay
- Solenoid drive
- Motor drive

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

Item	Symbol	Value	Unit
Drain-source voltage	$V_{DS}$	60	V
Gate-source voltage	$V_{GS}$	$\pm 20$	V
Drain current	At 4V driving	$I_D$	20
	DC	$I_D$	40
	Pulse-width limiter	$I_{DP}$	80
Power dissipation	$T_c = 25^\circ\text{C}$	$P_D$	45
	$T_a = 25^\circ\text{C}$		2.0
Channel temperature	$T_{ch}$	150	$^\circ\text{C}$
Storage temperature	$T_{stg}$	$-55 \sim +150$	$^\circ\text{C}$

### ■ Package Dimensions



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

Item	Symbol	Condition	min.	typ.	max.	Unit
Drain current	$I_{DSS}$	$V_{DS} = 40\text{V}, V_{GS} = 0$			10	$\mu\text{A}$
Gate-source current	$I_{GSS}$	$V_{GS} = \pm 20\text{V}, V_{DS} = 0$			$\pm 1$	$\mu\text{A}$
Drain-source voltage	$V_{DSS}$	$I_D = 1\text{mA}, V_{GS} = 0$	60			V
Gate threshold voltage	$V_{th}$	$V_{DS} = 10\text{V}, I_D = 1\text{mA}$	1		2.5	V
Drain-source ON resistance	$R_{DS(on)1}$	$V_{GS} = 10\text{V}, I_D = 20\text{A}$		0.024	0.035	$\Omega$
Drain-source ON resistance	$R_{DS(on)2}$	$V_{GS} = 4\text{V}, I_D = 10\text{A}$		0.033	0.05	$\Omega$
Forward transfer admittance	$ Y_{fs} $	$V_{DS} = 10\text{V}, I_D = 20\text{A}$	13	22		S
Input capacitance	$C_{iss}$	$V_{DS} = 10\text{V}, V_{GS} = 0, f = 1\text{MHz}$		3200		pF
Output capacitance	$C_{oss}$			1400		pF
Reverse transfer capacitance	$C_{rss}$			600		pF
Turn-on time	$t_{on}$	$V_{GS} = 10\text{V}, I_D = 20\text{A}$ $V_{DD} \approx 30\text{V}, R_L = 1.5\Omega$		200		ns
Fall time	$t_f$			320		ns
Delay time	$t_d(\text{off})$			690		ns