

# 2SK657

## Silicon N-Channel MOS FET

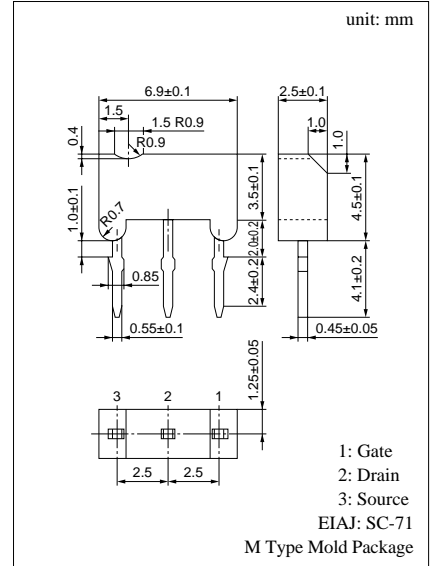
For switching

### ■ Features

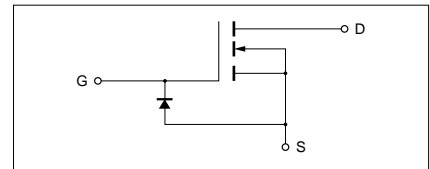
- High-speed switching
- M type package, allowing easy automatic and manual insertion as well as stand-alone fixing to the printed circuit board.

### ■ Absolute Maximum Ratings (Ta = 25°C)

Parameter	Symbol	Ratings	Unit
Drain to Source breakdown voltage	$V_{DSS}$	50	V
Gate to Source voltage	$V_{GSO}$	8	V
Drain current	$I_D$	$\pm 100$	mA
Max drain current	$I_{DP}$	$\pm 200$	mA
Allowable power dissipation	$P_D$	400	mW
Channel temperature	$T_{ch}$	150	°C
Storage temperature	$T_{stg}$	-55 to +150	°C



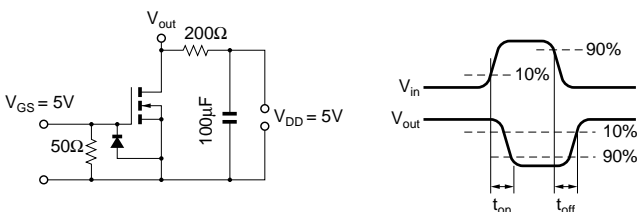
### Internal Connection



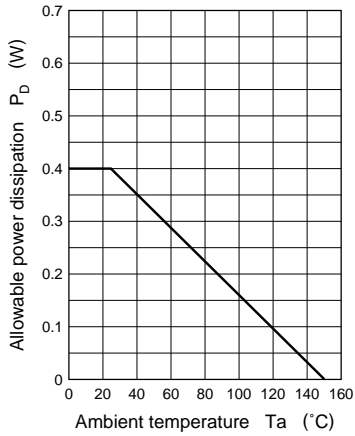
### ■ Electrical Characteristics (Ta = 25°C)

Parameter	Symbol	Conditions	min	typ	max	Unit
Drain to Source cut-off current	$I_{DSS}$	$V_{DS} = 10V, V_{GS} = 0$			10	$\mu A$
Gate to Source leakage current	$I_{GSS}$	$V_{GS} = 8V, V_{DS} = 0$			50	$\mu A$
Drain to Source breakdown voltage	$V_{DSS}$	$I_D = 100\mu A, V_{GS} = 0$	50			V
Gate threshold voltage	$V_{th}$	$I_D = 100\mu A, V_{DS} = V_{GS}$	1.5		3.5	V
Drain to Source ON-resistance	$R_{DS(on)}$	$I_D = 20mA, V_{GS} = 5V$			50	$\Omega$
Forward transfer admittance	$ Y_{fs} $	$I_D = 20mA, V_{DS} = 5V, f = 1kHz$	20			mS
Input capacitance (Common Source)	$C_{iss}$	$V_{DS} = 5V, V_{GS} = 0, f = 1MHz$			15	pF
Output capacitance (Common Source)	$C_{oss}$				6	pF
Reverse transfer capacitance (Common Source)	$C_{rss}$				1.2	pF
Turn-on time	$t_{on}^*$	$V_{DD} = 5V, V_{GS} = 0 \text{ to } 5V, R_L = 200\Omega$		10		ns
Turn-off time	$t_{off}^*$	$V_{DD} = 5V, V_{GS} = 5 \text{ to } 0V, R_L = 200\Omega$		20		ns

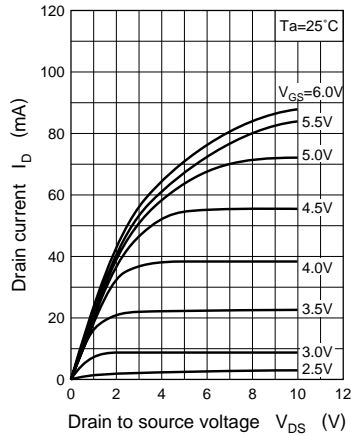
\*  $t_{on}, t_{off}$  measurement circuit



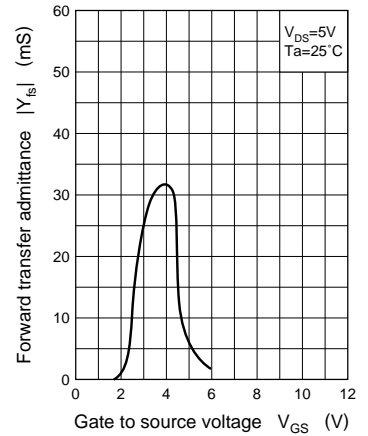
$P_D - T_a$



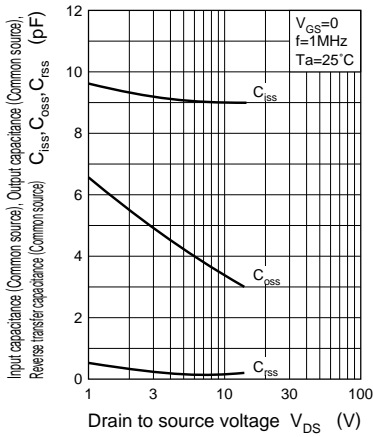
$I_D - V_{DS}$



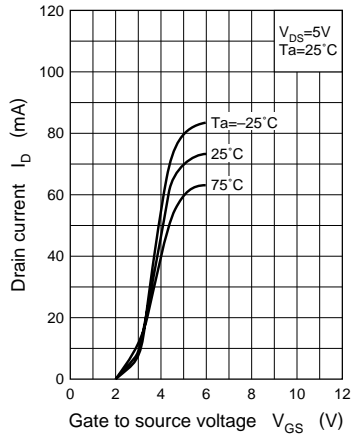
$|Y_{fs}| - V_{GS}$



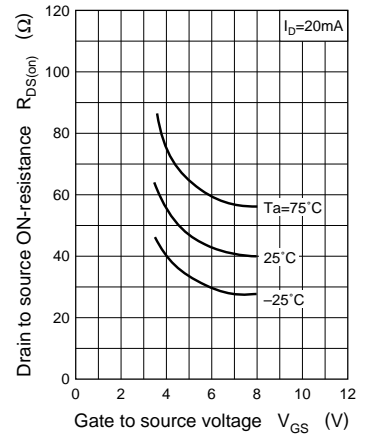
$C_{iss}, C_{oss}, C_{rss} - V_{DS}$



$I_D - V_{GS}$



$R_{DS(on)} - V_{GS}$



$V_{IN} - I_O$

