2SK870

Silicon N-channel Power F-MOS FET

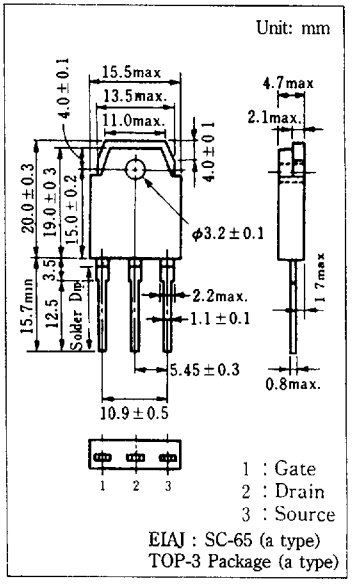
■ Features

- Low ON resistance R_{DS} (on) : R_{DS} (on) = 0.23Ω (typ.)
- High switching rate : t_f = 140ns (typ.)
- No secondary breakdown
- High breakdown voltage, large power

■ Application

- No contact relay
- Solenoid drive
- Motor drive
- Control equipment
- Switching power source

■ Package Dimensions



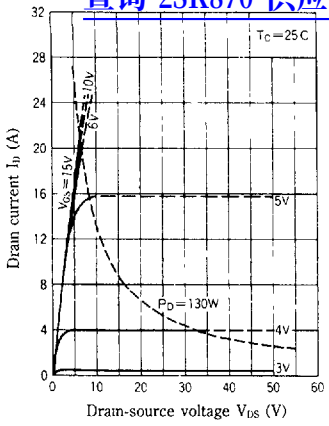
■ Absolute Maximum Ratings (Tc=25°C)

Item		Symbol	Value	Unit
Drain-source voltage		V_{DSS}	500	V
Gate-source voltage		V_{GSS}	±20	V
Drain current	DC	I_D	20	A
	Peak-to-peak value	I_{DP}	40	
Power dissipation	Tc=25℃	P_D	130	W
	Ta=25℃		2.5	
Channel temperature		T_{ch}	150	℃
Storage temperature		T_{stg}	−55~+150	℃

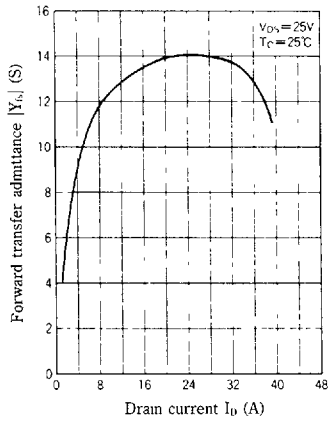
■ Electrical Characteristics (Tc=25°C)

Item	Symbol	Condition	min.	typ.	max.	Unit
Drain current	I_{DSS}	V_{DS}=400V, V_{GS}=0			0.1	mA
Gate-source current	I_{GSS}	V_{GS}=±20V, V_{DS}=0			±1	μA
Drain-source voltage	V_{DSS}	I_D=1mA, V_{GS}=0	500			V
Gate threshold voltage	Vth	V_{DS}=25V, I_D=1mA	1		5	V
Drain-source ON resistance	R_{DS}(on)	V_{GS}=10V, I_D=10A		0.23	0.40	Ω
Drain-source ON voltage	V_{DS}(on)	V_{GS}=10V, I_D=20A			9.0	V
Forward transfer admittance	| Yfs |	V_{DS}=25V, I_D=10A	7.2	12.0		S
Input capacitance	Ciss	V_{DS}=20V, V_{GS}=0, f=1MHz		3000		pF
Output capacitance	Coss			430		pF
Reverse transfer capacitance	Crss			175		pF
Turn-on time	ton	V_{GS}=10V, I_D=10A V_{DD}=150V, R_L=15Ω		150		ns
Fall time	t_f			140		ns
Delay time	t_d(off)			480		ns

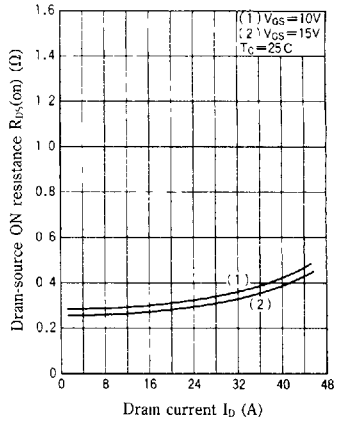
$I_D - V_{DS}$



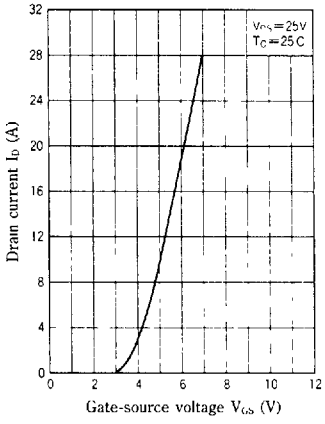
$|Y_{fs}| - I_D$



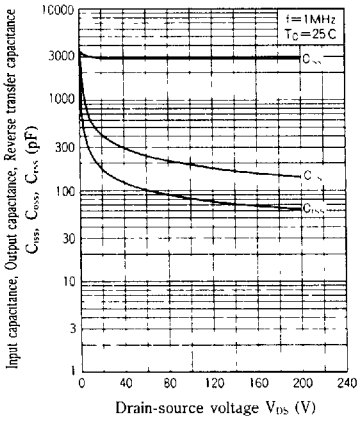
$R_{DS}(on) - I_D$



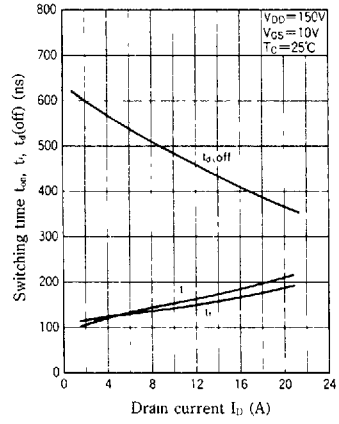
$I_D - V_{GS}$



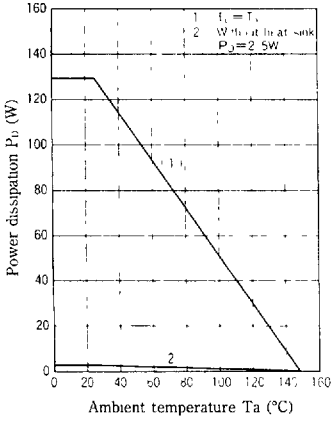
C_{iss}, C_{oss}, $C_{rss} - V_{DS}$



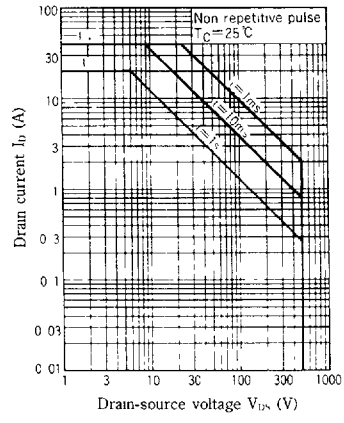
t_{on}, t_f, $t_d(off) - I_D$



$P_D - Ta$



Safety operation area (ASO)



$R_{DS}(on) - I_D$