2SK2580(Tentative)

Silicon N-Channel Power F-MOS

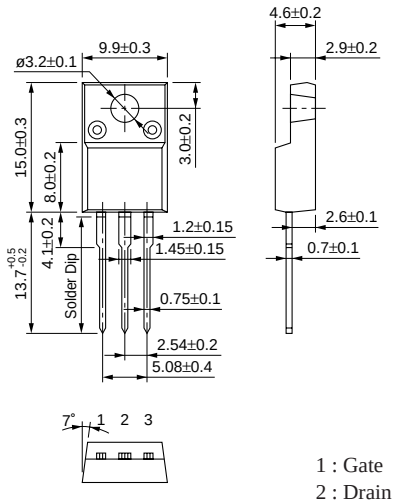
■ Features

- Avalanche energy capability guaranteed
- High-speed switching
- Low ON-resistance
- No secondary breakdown
- Low-voltage drive

■ Applications

- Non-contact relay
- Solenoid drive
- Motor drive
- Control equipment
- Switching mode regulator

Unit : mm



1 : Gate
2 : Drain
3 : Source
TO-220E Package

■ Absolute Maximum Ratings (Tc = 25˚C)

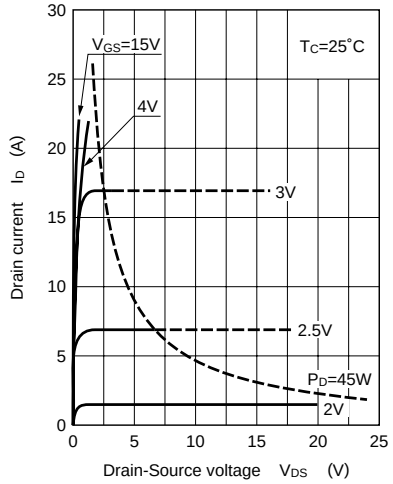
Parameter		Symbol	Rating	Unit
Drain-Source breakdown voltage		V_{DSS}	60	V
Gate-Source voltage		V_{GSS}	±20	V
Drain current	DC	I_D	±40	A
	Pulse	I_{DP}	±80	A
Avalanche energy capability		EAS *	20	mJ
Allowable power dissipation	T_C= 25˚C	P_D	45	W
	Ta= 25˚C		2	
Channel temperature		T_{ch}	150	˚C
Storage temperature		T_{stg}	–55 to +150	˚C

* L= 0.1mH, I_L= 20A, 1 pulse

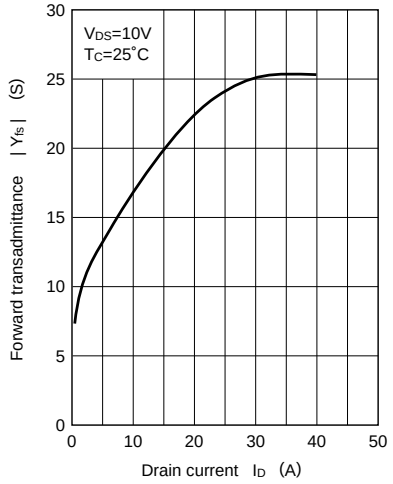
■ Electrical Characteristics (Tc = 25˚C)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Drain-Source cut-off current	I_{DSS}	V_{DS}= 40V, V_{GS}= 0			10	μ A
Gate-Source leakage current	I_{GSS}	V_{GS}=±20V, V_{DS}= 0			±1	μ A
Drain-Source breakdown voltage	V_{DSS}	I_D=1mA, V_{GS}= 0	60			V
Gate threshold voltage	V_{th}	V_{DS}=10V, I_D=1mA	1		2.5	V
Drain-Source ON-resistance	$R_{DS(on)}1$	V_{GS}=10V, I_D= 20A		24	35	mΩ
	$R_{DS(on)}2$	V_{GS}= 4V, I_D=10A		33	50	mΩ
Forward transadmittance	$\|Y_{fs}\|$	V_{DS}=10V, I_D= 20A	13	22		S
Diode forward voltage	V_{DSF}	I_{DR}= 20A, V_{GS}= 0			–1.7	V
Input capacitance	C_{iss}	V_{DS}=10V, V_{GS}= 0, f=1MHz		3200		pF
Output capacitance	C_{oss}			1400		pF
Feedback capacitance	C_{rss}			600		pF
Turn-on time	t_{on}	V_{DD}= 30V, I_D= 20A V_{GS}=10V, R_L=1.5Ω		200		ns
Fall time	t_f			320		ns
Turn-off time (delay time)	$t_{d(off)}$			690		ns
Channel-Case heat resistance	$R_{th(ch-c)}$				2.78	˚C/W
Channel-Atmosphere heat resistance	$R_{th(ch-a)}$				62.5	˚C/W

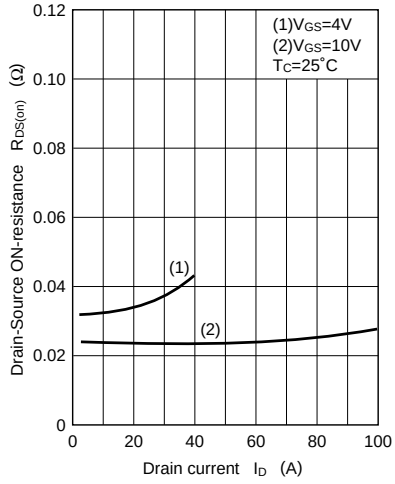
$I_D - V_{DS}$



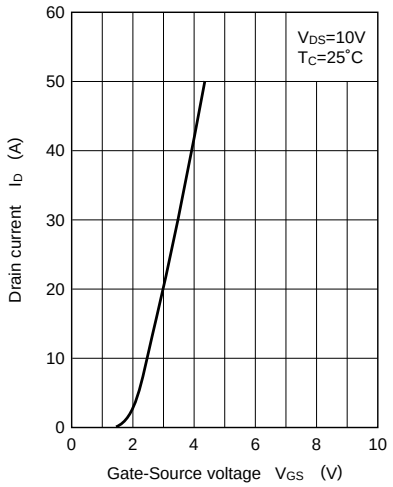
$|Y_{fs}| - I_D$



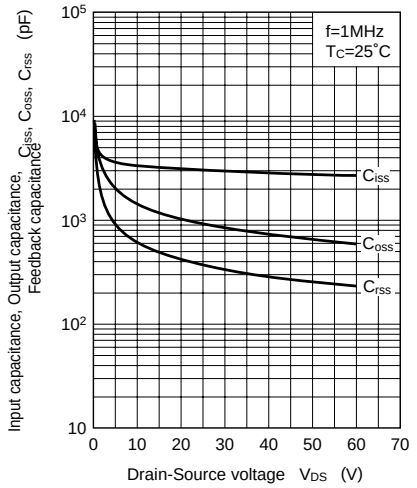
$R_{DS(on)} - I_D$



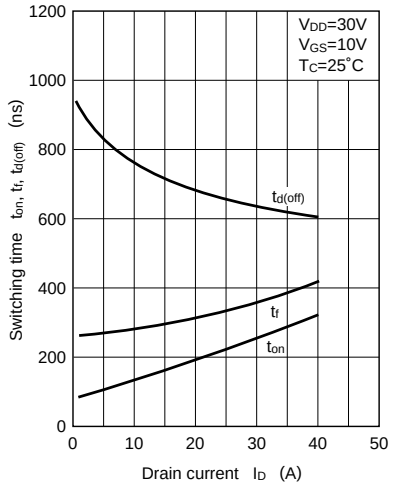
$I_D - V_{GS}$



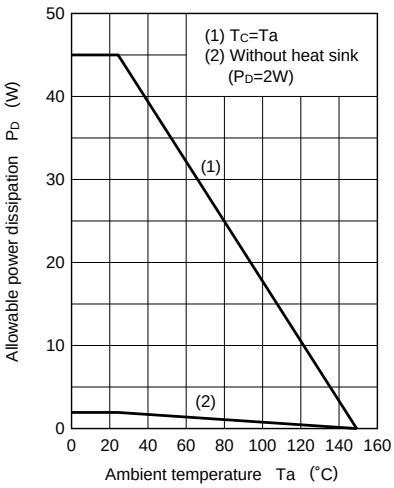
$C_{iss}, C_{oss}, C_{rss} - V_{DS}$



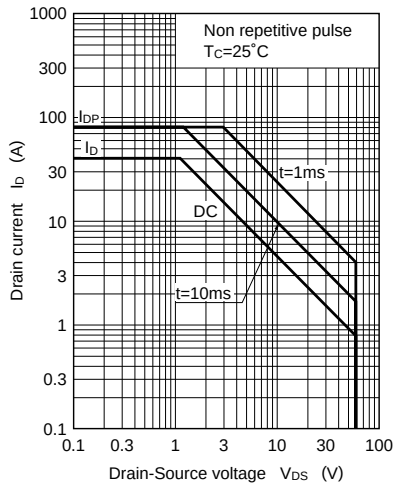
$t_{on}, t_r, t_f, t_{d(off)} - I_D$



$P_D - Ta$



Area of safe operation (ASO)



$R_{DS(on)} - I_D$