2SK1612

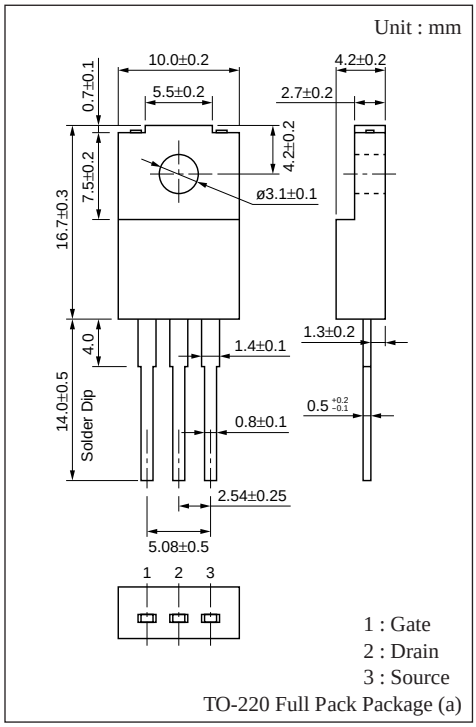
Silicon N-Channel Power F-MOS

■ Features

- High avalanche energy capability
- V_{GSS} : 30V guaranteed
- Low $R_{DS(on)}$, high-speed switching characteristic

■ Applications

- High-speed switching (switching mode regulator)
- For high-frequency power amplification



■ Absolute Maximum Ratings (Tc = 25˚C)

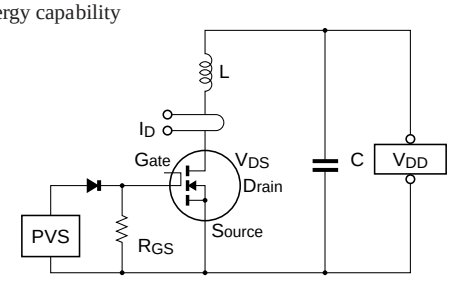
Parameter		Symbol	Rating	Unit
Drain-Source breakdown voltage		V_{DSS}	900	V
Gate-Source voltage		V_{GSS}	±30	V
Drain current	DC	I_D	±3	A
	Pulse	I_{DP}	±6	A
Avalanche energy capability		EAS*	15	mJ
Allowable power dissipation	T_C = 25˚C	P_D	50	W
	Ta = 25˚C		2	
Channel temperature		T_{ch}	150	˚C
Storage temperature		T_{stg}	–55 to +150	˚C

* Single pulse

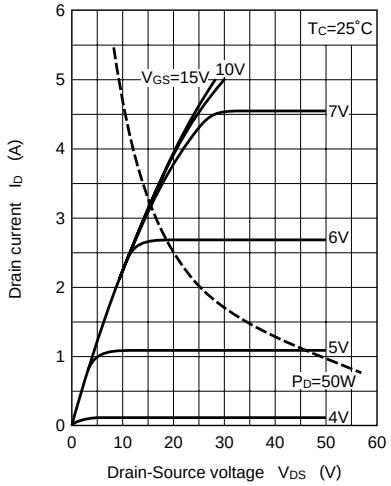
■ Absolute Maximum Ratings (Tc = 25˚C)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Drain-Source cut-off current	I_{DSS}	V_{DS}=720V, V_{GS}=0			0.1	mA
Gate-Source leakage current	I_{GSS}	V_{GS}=±30V, V_{DS}=0			±1	μ A
Drain-Source breakdown voltage	V_{DSS}	I_D=1mA, V_{GS}=0	900			V
Avalanche energy capability	EAS*	L=3.4mH, I_D=3A, V_{DD}=50V	15			mJ
Gate threshold voltage	V_{th}	V_{DS}=25V, I_D=1mA	1		5	V
Drain-Source ON-resistance	$R_{DS(on)}$	V_{GS}=10V, I_D=2A		3.8	5	Ω
Forward transadmittance	$\|Y_{fs}\|$	V_{DS}=25V, I_D=2A	1.5	2.2		S
Input capacitance	C_{iss}	V_{DS}=20V, V_{GS}= 0, f=1MHz		730		pF
Output capacitance	C_{oss}			90		pF
Feedback capacitance	C_{rss}			40		pF
Turn-on time	t_{on}	V_{GS}=10V, I_D=2A V_{DD}=200V, R_L=100Ω		40		ns
Fall time	t_f			35		ns
Turn-off time (delay time)	$t_{d(off)}$			105		ns

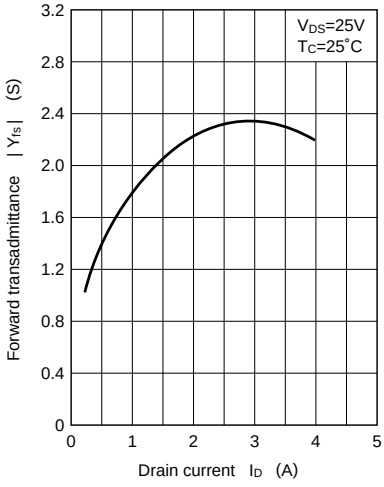
* Avalanche energy capability
Test circuit



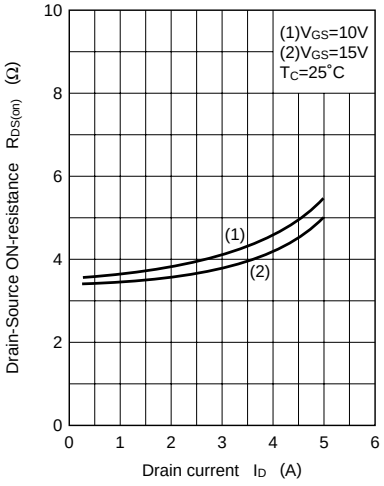
$I_D - V_{DS}$



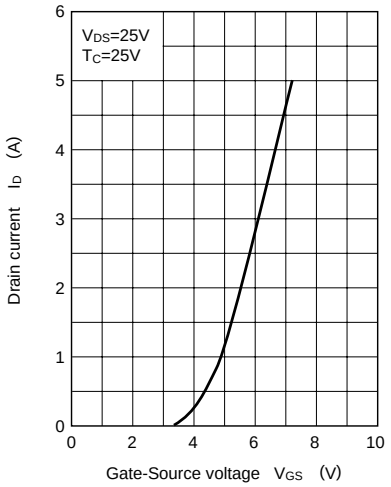
$|Y_{fs}| - I_D$



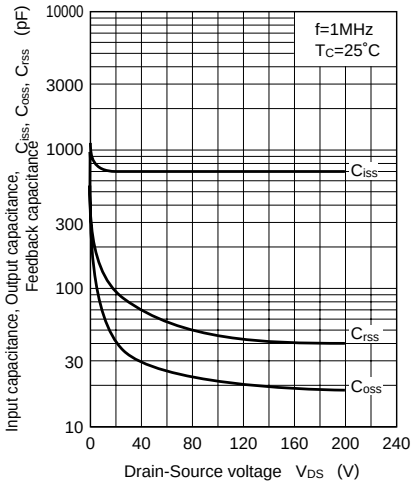
$R_{DS\,(on)} - I_D$



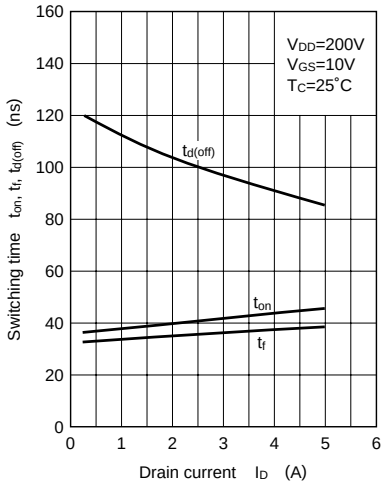
$I_D - V_{GS}$



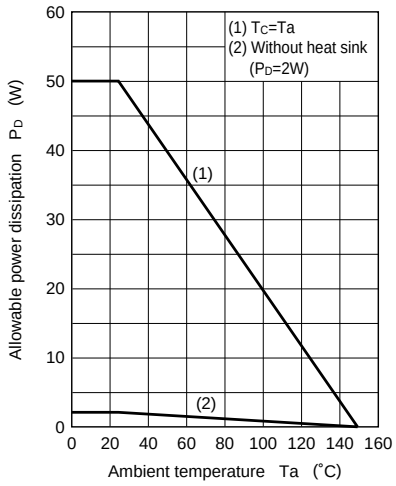
$C_{iss}, C_{oss}, C_{rss} - V_{DS}$



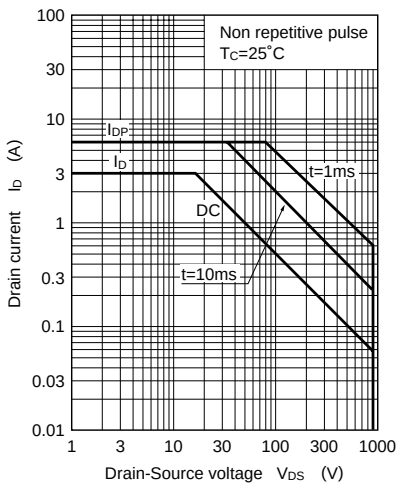
$t_{on}, t_f, t_{d\,(off)} - I_D$



$P_D - Ta$



Area of safe operation (ASO)



$EAS - T_j$