2SK1607

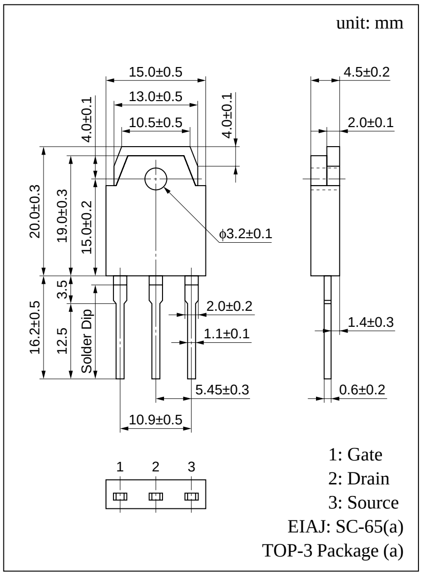
Silicon N-Channel Power F-MOS FET

■ Features

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

■ Applications

- High-speed switching (switching power supply)
- For high-frequency power amplification



■ Absolute Maximum Ratings (T_C = 25°C)

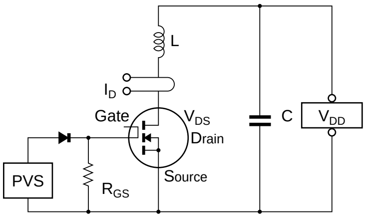
Parameter		Symbol	Ratings	Unit
Drain to Source breakdown voltage		V_{DSS}	450	V
Gate to Source voltage		V_{GSS}	±30	V
Drain current	DC	I_D	±13	A
	Pulse	I_{DP}	±26	A
Avalanche energy capacity		EAS^*	200	mJ
Allowable power dissipation	T_C = 25°C	P_D	120	W
	Ta = 25°C		2.5	
Channel temperature		T_{ch}	150	°C
Storage temperature		T_{stg}	–55 to +150	°C

* Single pulse

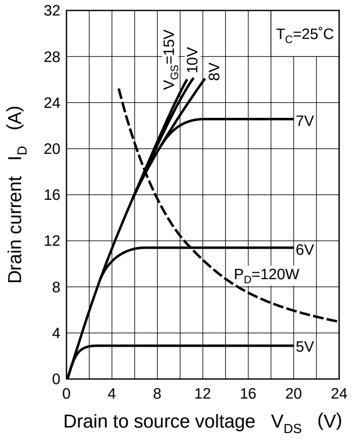
■ Electrical Characteristics (T_C = 25°C)

Parameter	Symbol	Conditions	min	typ	max	Unit
Drain to Source cut-off current	I_{DSS}	V_{DS} = 360V, V_{GS} = 0			0.1	mA
Gate to Source leakage current	I_{GSS}	V_{GS} = ±30V, V_{DS} = 0			±1	µA
Drain to Source breakdown voltage	V_{DSS}	I_D = 1mA, V_{GS} = 0	450			V
Avalanche energy capacity	EAS^*	L = 2.4mH, I_D = 13A, V_{DD} = 50V	200			mJ
Gate threshold voltage	V_{th}	V_{DS} = 25V, I_D = 1mA	1		5	V
Drain to Source ON-resistance	$R_{DS(on)}$	V_{GS} = 10V, I_D = 7A		0.34	0.45	Ω
Forward transfer admittance	$\lvert Y_{fs} \rvert$	V_{DS} = 25V, I_D = 7A	5	8		S
Input capacitance (Common Source)	C_{iss}	V_{DS} = 20V, V_{GS} = 0, f = 1MHz		1700		pF
Output capacitance (Common Source)	C_{oss}			300		pF
Reverse transfer capacitance (Common Source)	C_{rss}			120		pF
Turn-on time	t_{on}	V_{GS} = 10V, I_D = 7A V_{DD} = 150V, R_L = 21.4Ω		110		ns
Fall time	t_f			90		ns
Turn-off time (delay time)	$t_{d(off)}$			220		ns

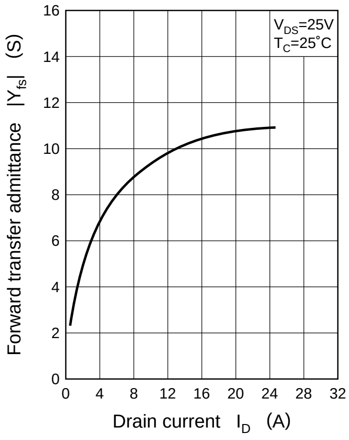
* Avalanche energy capacity test circuit



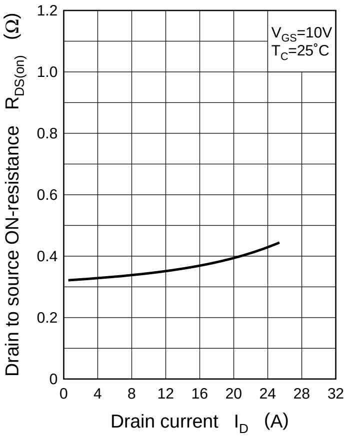
I_D — V_{DS}



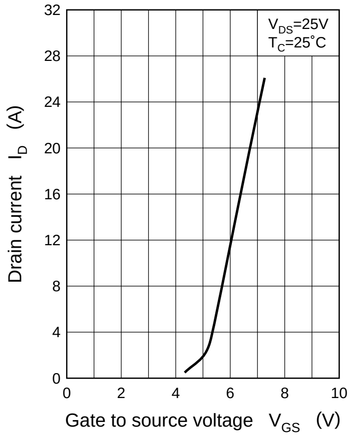
$|Y_{fs}|$ — I_D



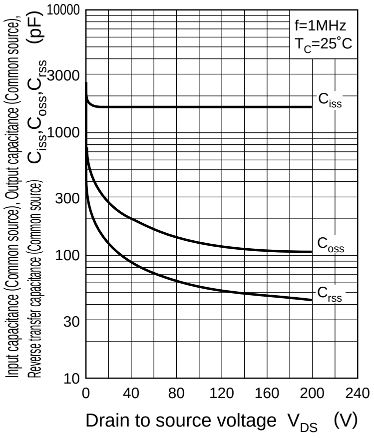
$R_{DS(on)}$ — I_D



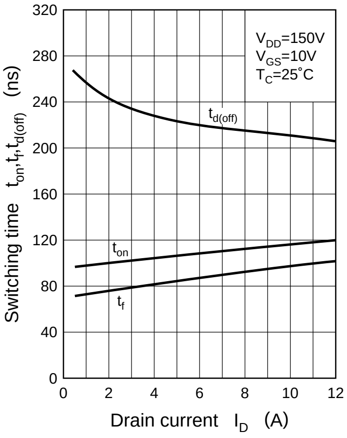
I_D — V_{GS}



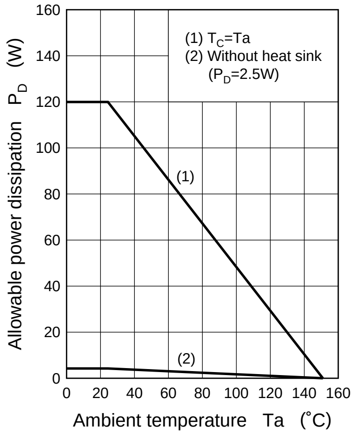
C_{iss}, C_{oss}, C_{rss} — V_{DS}



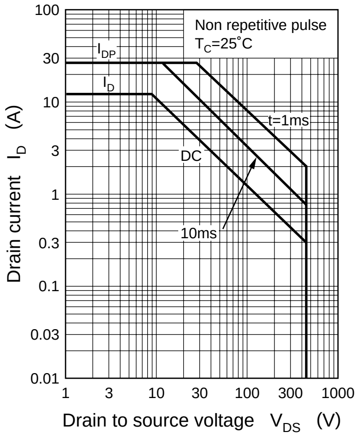
t_{on}, t_f, $t_{d(off)}$ — I_D



P_D — Ta



Area of safe operation (ASO)



EAS — T_j