2SK1613

Silicon N-Channel Power F-MOS FET

■ Features

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

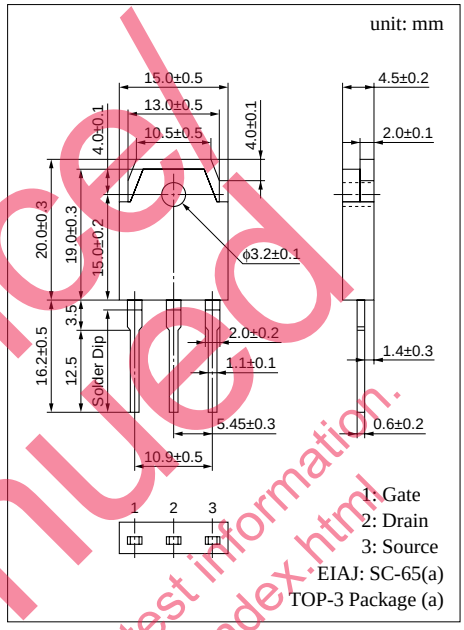
■ Applications

- 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}	900	V
Gate to Source voltage		V_{GSS}	±30	V
Drain current	DC	I_D	±5	A
	Pulse	I_{DP}	±10	A
Avalanche energy capacity		EAS*	45	mJ
Allowable power dissipation	T_C = 25°C	P_D	100	W
	Ta = 25°C		2.5	
Channel temperature		T_{ch}	150	°C
Storage temperature		T_{stg}	–55 to +150	°C

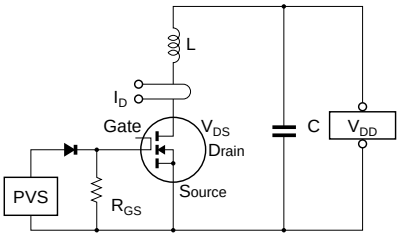
* Single pulse



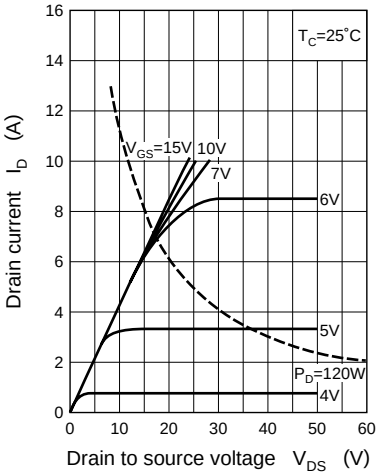
■ Electrical Characteristics (T_C = 25°C)

Parameter	Symbol	Conditions	min	typ	max	Unit
Drain to Source cut-off current	I_{DSS}	V_{DS} = 720V, 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	900			V
Avalanche energy capacity	EAS*	L = 3.6mH, I_D = 5A, V_{DD} = 50V	45			mJ
Gate threshold voltage	V_{th}	V_{DS} = 25V, I_D = 1mA	2		5	V
Drain to Source ON-resistance	$R_{DS(on)}$	V_{GS} = 10V, I_D = 3A		2	2.8	Ω
Forward transfer admittance	$\|Y_{fs}\|$	V_{DS} = 25V, I_D = 3A	1.5	3.5		S
Input capacitance (Common Source)	C_{iss}	V_{DS} = 20V, V_{GS} = 0, f = 1MHz		1400		pF
Output capacitance (Common Source)	C_{oss}			140		pF
Reverse transfer capacitance (Common Source)	C_{rss}			60		pF
Turn-on time	t_{on}	V_{GS} = 10V, I_D = 3A V_{DD} = 200V, R_L = 66Ω		90		ns
Fall time	t_f			60		ns
Turn-off time (delay time)	$t_{d(off)}$			170		ns

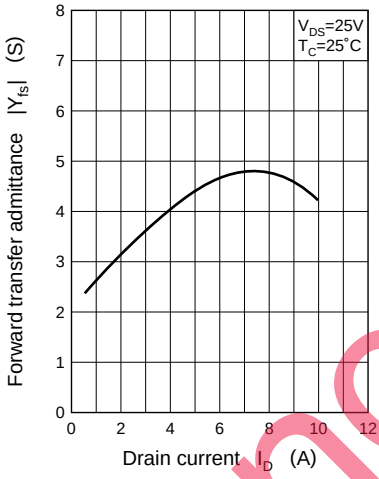
* Avalanche energy capacity test circuit



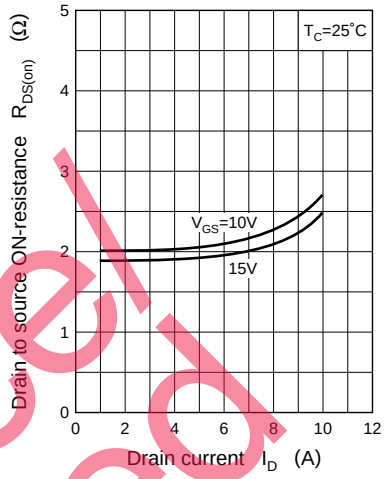
I_D — V_{DS}



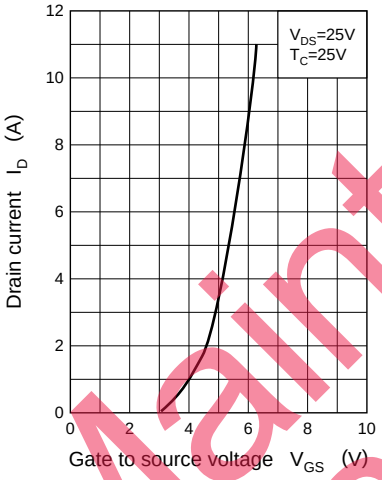
$|Y_{fs}|$ — I_D



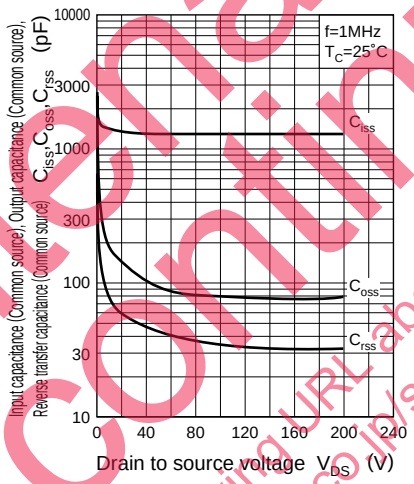
$R_{DS(on)}$ — I_D



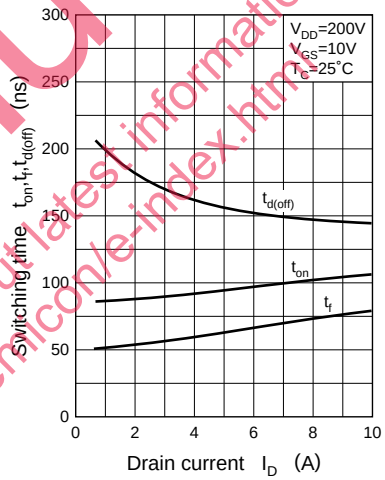
I_D — V_{GS}



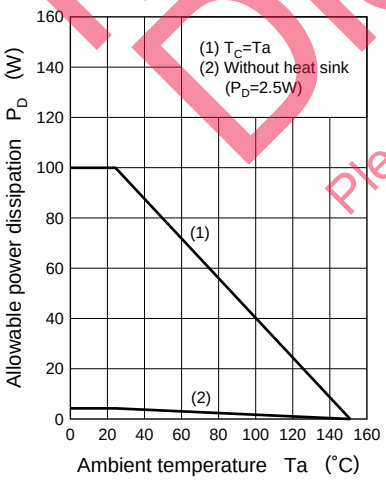
C_{iss}, C_{oss}, C_{rss} — V_{DS}



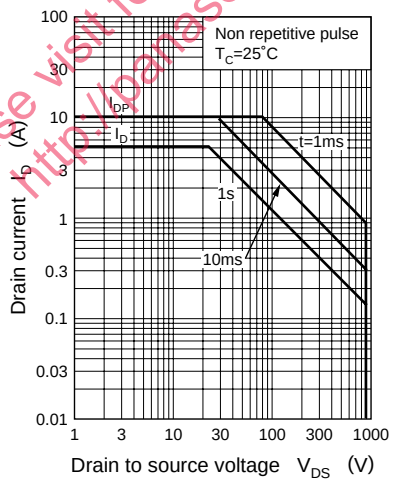
t_{on}, t_f, $t_{d(off)}$ — I_D



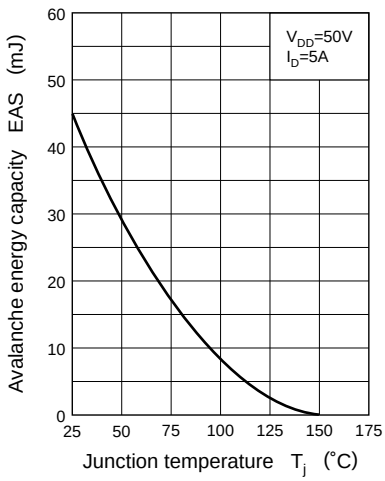
P_D — Ta



Area of safe operation (ASO)



EAS — T_j



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