

2SK2509

Silicon N-Channel Power F-MOS

■ Features

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

■ Applications

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

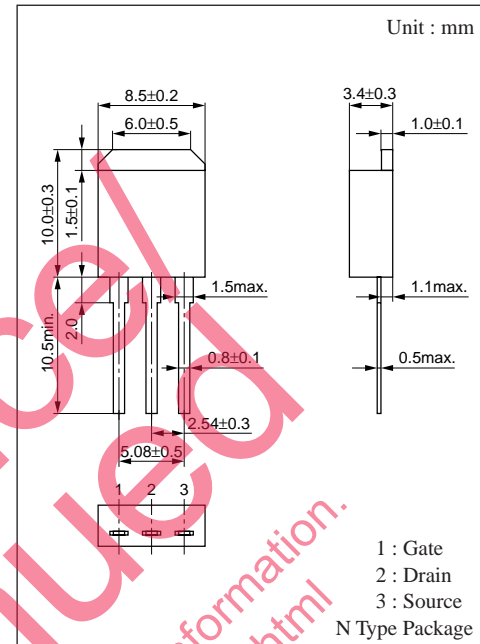
■ Absolute Maximum Ratings (T_c = 25°C)

Parameter	Symbol	Rating	Unit
Drain-Source breakdown voltage	V _{DSS}	500	V
Gate-Source voltage	V _{GSS}	±30	V
Drain current	DC	I _D	±2.5
	Pulse	I _{DP}	±5
Avalanche energy capability	EAS*	15.6	mJ
Allowable power dissipation	T _c = 25°C	P _D	40
	T _a = 25°C		1.3
Channel temperature	T _{ch}	150	°C
Storage temperature	T _{stg}	-55 to +150	°C

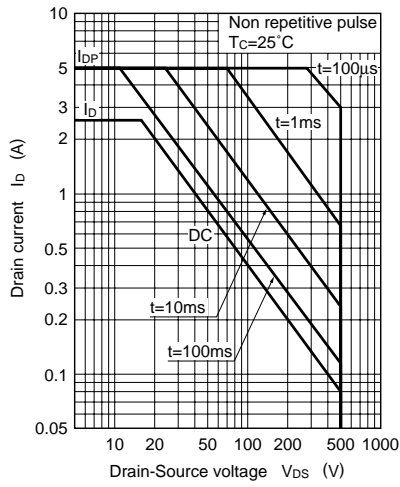
* L= 5mH, I_L= 2.5A, 1 pulse

■ Electrical Characteristics (T_c = 25°C)

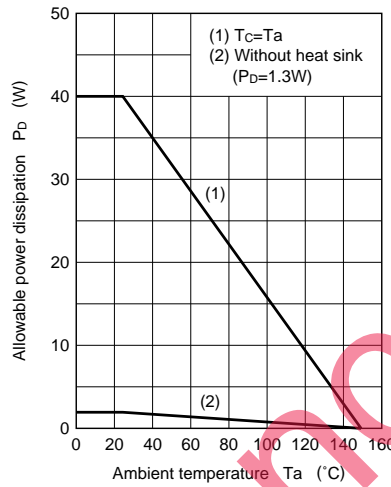
Parameter	Symbol	Condition	Min	Typ	Max	Unit
Drain-Source cut-off current	I _{DSS}	V _{DS} = 400V, V _{GS} = 0			100	μA
Gate-Source leakage current	I _{GSS}	V _{GS} =±30V, V _{DS} = 0			±1	μA
Drain-Source breakdown voltage	V _{DSS}	I _D =1mA, V _{GS} = 0	500			V
Gate threshold voltage	V _{th}	V _{DS} = 25V, I _D =1mA	2		5	V
Drain-Source ON-resistance	R _{DS(on)}	V _{GS} =10V, I _D =1.5A		3.2	4	Ω
Forward transadmittance	Y _{fs}	V _{DS} = 25V, I _D =1.5A	1	1.5		S
Diode forward voltage	V _{DSF}	I _{DR} = 2.5A, V _{GS} = 0			-1.5	V
Input capacitance	C _{iss}	V _{DS} = 20V, V _{GS} = 0, f= 1MHz		330		pF
Output capacitance	C _{oss}				55	pF
Feedback capacitance	C _{rss}				20	pF
Turn-on time (delay time)	t _{d(on)}	V _{DD} =150V, I _D =1.5A V _{GS} =10V, R _L =100Ω		15		ns
Rise time	t _r			25		ns
Fall time	t _f			30		ns
Turn-off time (delay time)	t _{d(off)}			55		ns
Channel-Case heat resistance	R _{th(ch-c)}				3.125	°C/W
Channel-Atmosphere heat resistance	R _{th(ch-a)}				96.15	°C/W



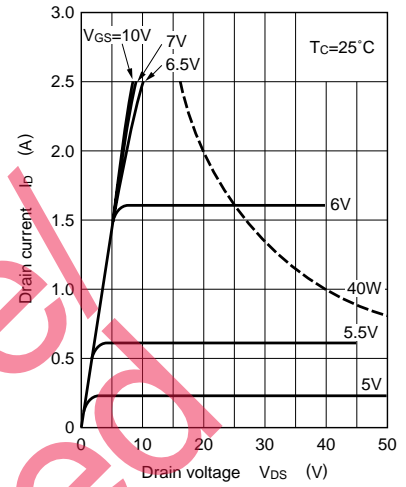
Area of safe operation (ASO)



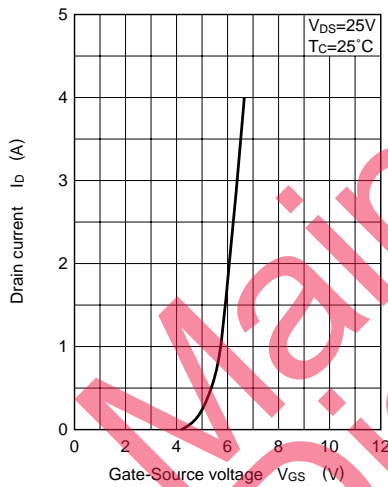
$P_D - T_a$



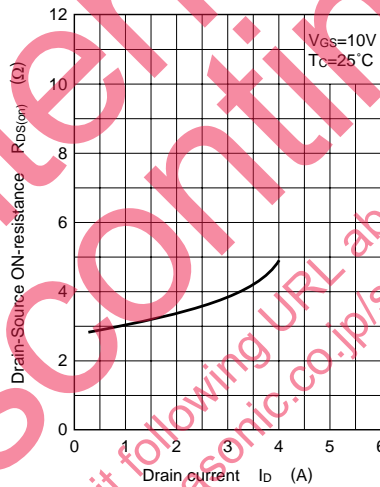
$I_D - V_{DS}$



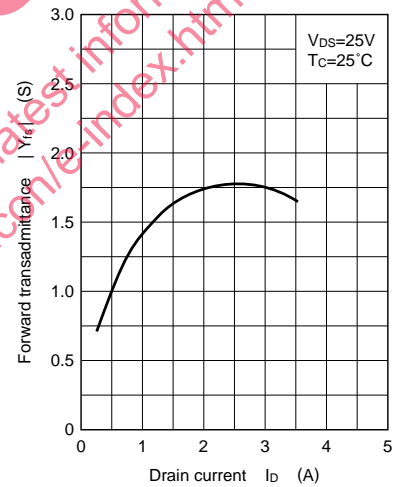
$I_D - V_{GS}$



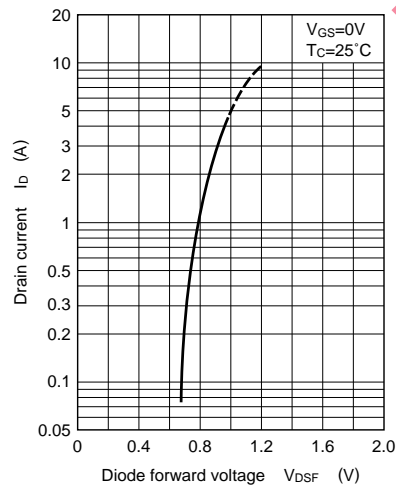
$R_{DS(on)} - I_D$



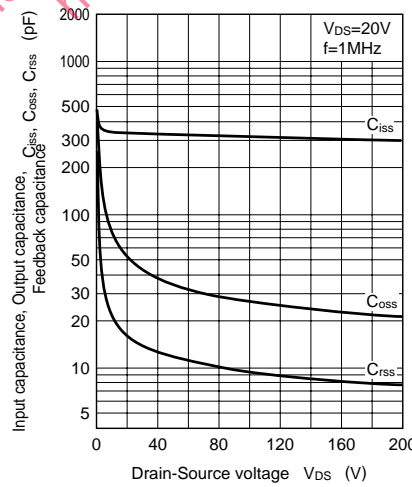
$g_{fs} - I_D$



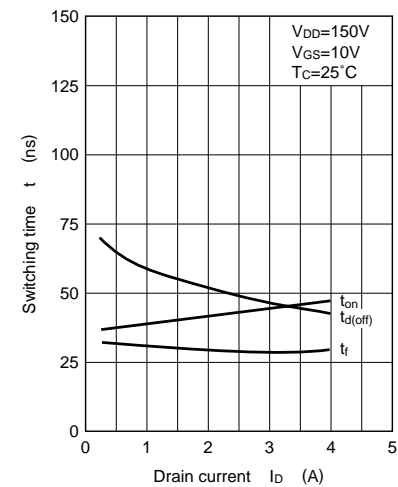
$I_{DR} - V_{DSF}$



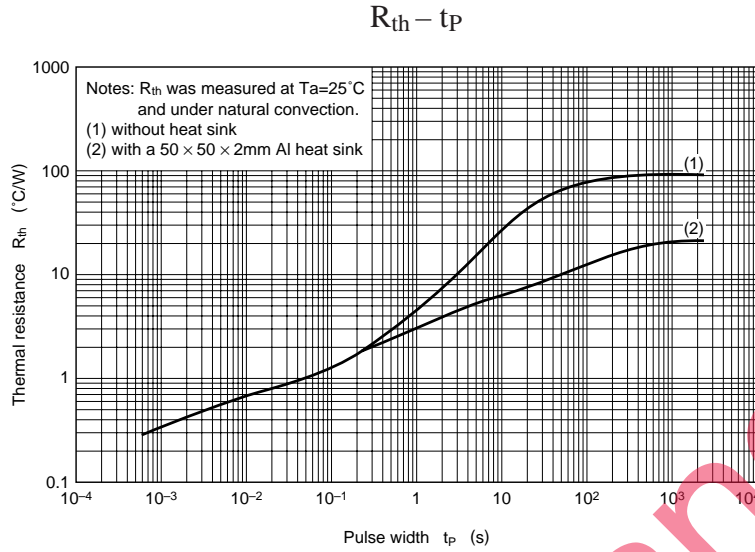
$C_{iss}, C_{oss}, C_{rss} - V_{DS}$



$t - I_D$



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