

2SK2538

Silicon N-Channel Power F-MOS

■ Features

- Avalanche energy capability guaranteed
- High-speed switching
- No secondary breakdown

■ Applications

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

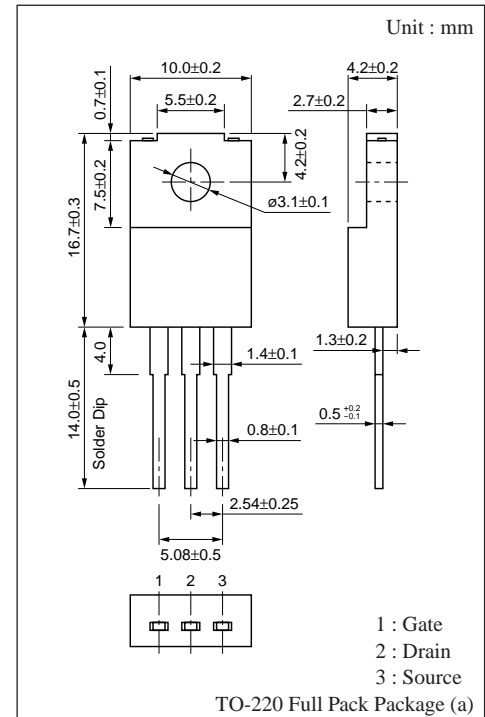
■ Absolute Maximum Ratings (T_c = 25°C)

Parameter	Symbol	Rating	Unit	
Drain-Source breakdown voltage	V _{DSS}	250	V	
Gate-Source voltage	V _{GS}	±30	V	
Drain current	DC	I _D	±2	A
	Pulse	I _{DP}	±4	A
Avalanche energy capability	EAS*	10	mJ	
Allowable power dissipation	T _C = 25°C	P _D	30	W
	T _a = 25°C		2	
Channel temperature	T _{ch}	150	°C	
Storage temperature	T _{stg}	-55 to +150	°C	

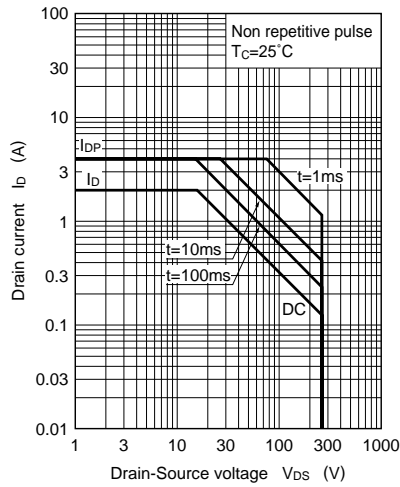
* L= 5mH, I_L= 2A, V_{DD}= 30V, 1 pulse

■ Electrical Characteristics (T_c = 25°C)

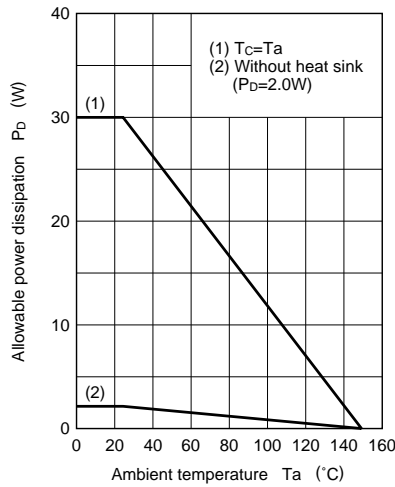
Parameter	Symbol	Condition	Min	Typ	Max	Unit	
Drain-Source cut-off current	I _{DSS}	V _{DS} = 200V, V _{GS} = 0			100	μA	
Gate-Source leakage current	I _{GS}	V _{GS} =±30V, V _{DS} = 0			±1	μA	
Drain-Source breakdown voltage	V _{DSS}	I _D =1mA, V _{GS} = 0	250			V	
Gate threshold voltage	V _{th}	V _{DS} =10V, I _D =1mA	1		5	V	
Drain-Source ON-resistance	R _{DS(on)}	V _{GS} =10V, I _D =1A		1.2	2	Ω	
Forward transadmittance	Y _{fs}	V _{DS} = 25V, I _D =1A	0.5	1		S	
Diode forward voltage	V _{DSF}	I _{DR} = 2A, V _{GS} = 0			-1.6	V	
Input capacitance	C _{iss}	V _{DS} =10V, V _{GS} = 0, f=1MHz		220		pF	
Output capacitance	C _{oss}				60		pF
Feedback capacitance	C _{rss}				20		pF
Turn-on time (delay time)	t _{d(on)}	V _{DD} = 200V, I _D = 2A V _{GS} =10V, R _L =100Ω		10		ns	
Rise time	t _r				20		ns
Fall time	t _f				45		ns
Turn-off time (delay time)	t _{d(off)}				90		ns
Channel-Case heat resistance	R _{th(ch-c)}					4.17	°C/W
Channel-Atmosphere heat resistance	R _{th(ch-a)}				62.5	°C/W	



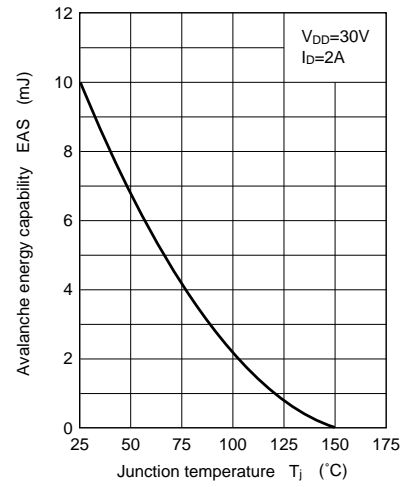
Area of safe operation (ASO)



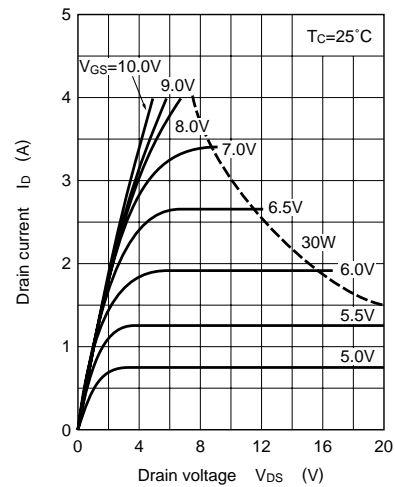
$P_D - T_a$



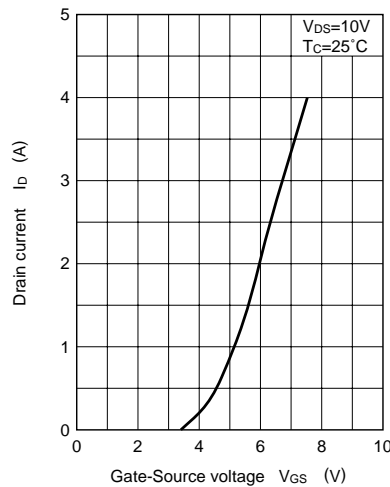
$EAS - T_j$



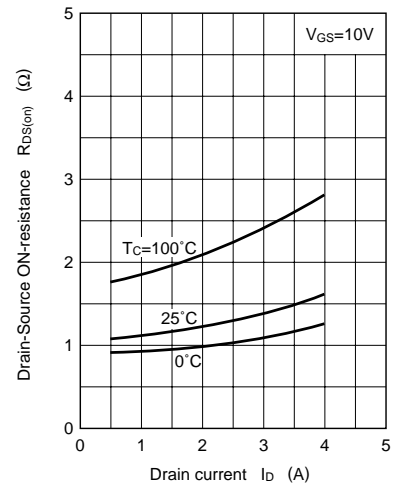
$I_D - V_{DS}$



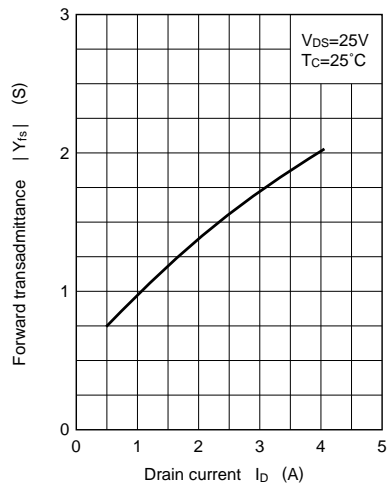
$I_D - V_{GS}$



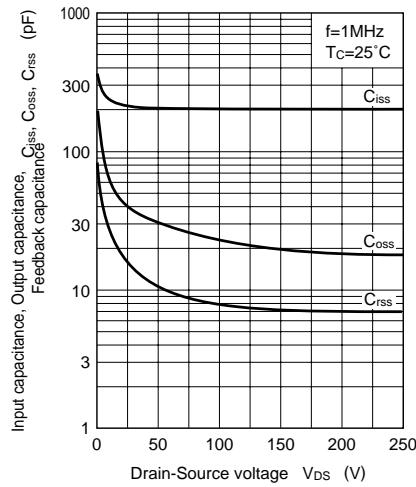
$R_{DS(on)} - I_D$



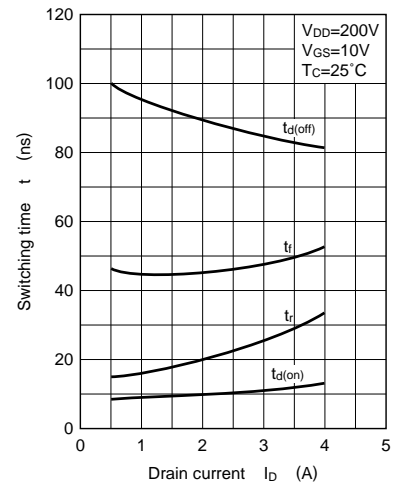
$|Y_{fs}| - I_D$



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



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



$R_{th} - t_p$

