2SK2339

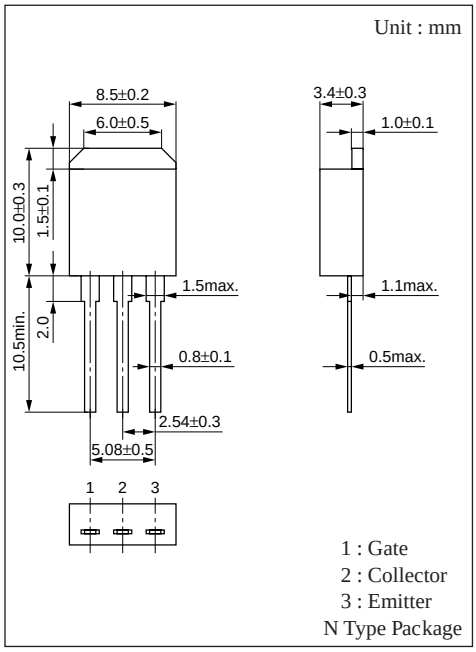
Silicon N-Channel Power F-MOS

■ Features

- Avalanche energy capability guaranteed
- Low ON-resistance
- No secondary breakdown
- Low-voltage drive

■ Applications

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

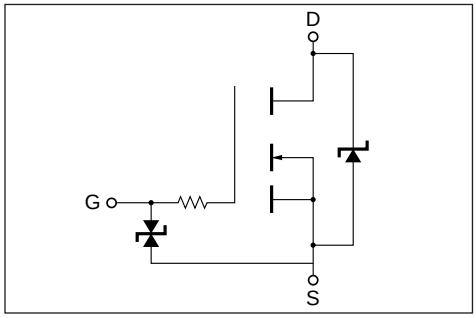


■ Absolute Maximum Ratings (Tc = 25˚C)

Parameter		Symbol	Rating	Unit
Drain-Source breakdown voltage		V_{DSS}	80±10	V
Gate-Source voltage		V_{GSS}	±15	V
Drain current	DC	I_D	±10	A
	Pulse	I_{DP}	±20	A
Avalanche energy capability		EAS *	62.5	mJ
Allowable power dissipation	T_C= 25˚C	P_D	30	W
	Ta= 25˚C		1.3	
Channel temperature		T_{ch}	150	˚C
Storage temperature		T_{stg}	–55 to +150	˚C

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

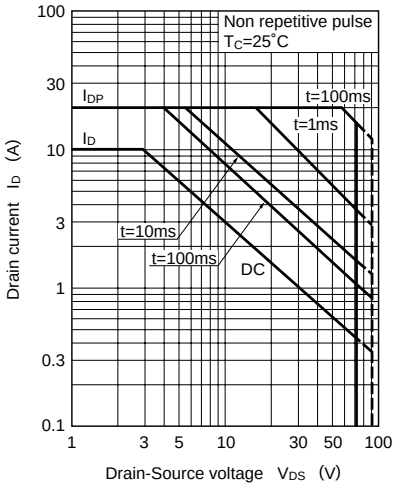
■ Equivalent Circuit



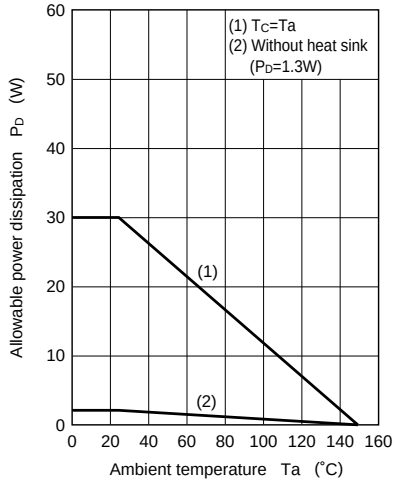
■ Electrical Characteristics (Tc = 25˚C)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Drain-Source cut-off current	I_{DSS}	V_{DS}= 70V, V_{GS}= 0			10	μ A
Gate-Source leakage current	I_{GSS}	V_{DS}= 0, V_{GS}=15V			±10	μ A
Drain-Source breakdown voltage	V_{DSS}	I_D=1mA, V_{GS}= 0	70		90	V
Gate threshold voltage	V_{th}	V_{DS}=10V, I_D=1mA	1		2.5	V
Drain-Source ON-resistance	$R_{DS(on)}1$	V_{GS}=10V, I_D= 5A		150	230	mΩ
	$R_{DS(on)}2$	V_{GS}= 4V, I_D= 5A		230	370	mΩ
Forward transadmittance	$\|Y_{fs}\|$	V_{DS}=10V, I_D= 5A	3	5.5		S
Diode forward voltage	V_{DSF}	I_{DR}=10A, V_{GS}= 0			–1.8	V
Reverse recovery time	t_{rr}	L=230μ H, V_{DD}= 30V, V_{GS}= 0		0.55		μ s
Reverse recovery charge	Q_{rr}	I_{DR}=10A, di/dt= 80A/μ s		2.2		μ s
Input capacitance	C_{iss}	V_{DS}=10V, V_{GS}= 0, f= 1MHz		85		pF
Output capacitance	C_{oss}			250		pF
Feedback capacitance	C_{rss}			20		pF
Turn-on time	t_{on}	V_{DD}= 30V, I_D= 5A V_{GS}=10V, R_L= 6Ω		0.5		μ s
Fall time	t_f			0.9		μ s
Turn-off time (delay time)	$t_{d(off)}$			1.9		μ s
Channel-Case heat resistance	$R_{th(ch-c)}$				4.2	˚C/W
Channel-Atmosphere heat resistance	$R_{th(ch-a)}$				96	˚C/W

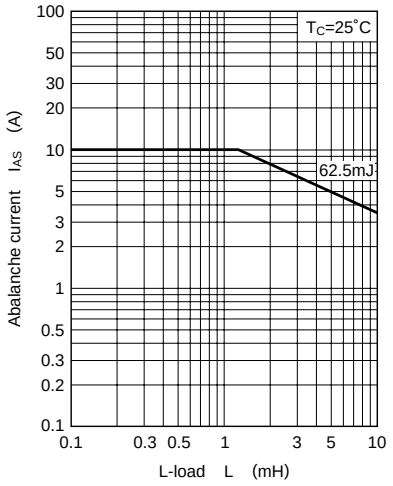
Area of safe operation (ASO)



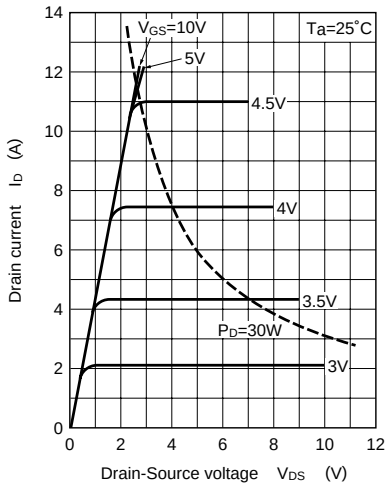
P_D – Ta



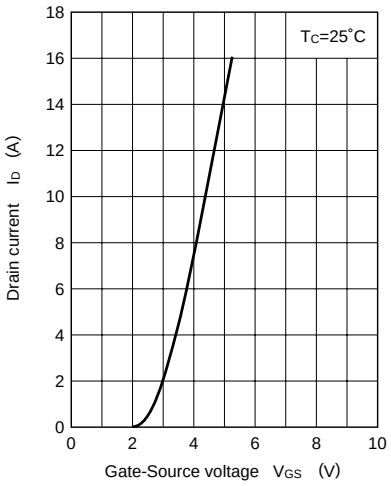
IAS – L-load



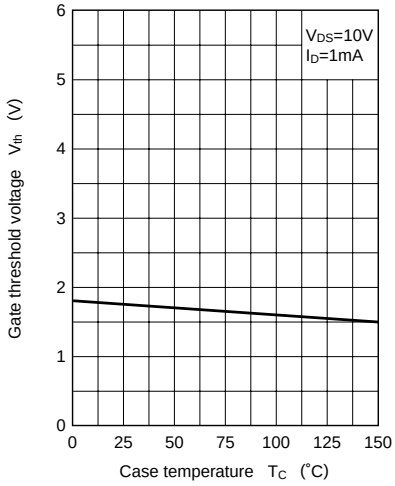
I_D – V_{DS}



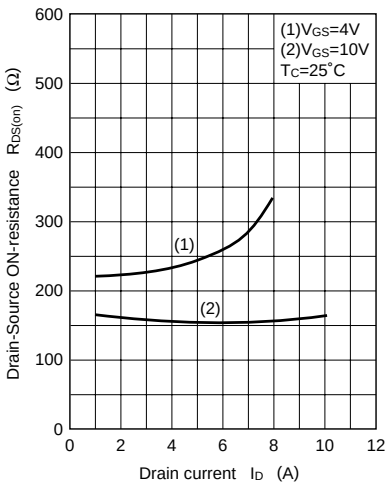
I_D – V_{GS}



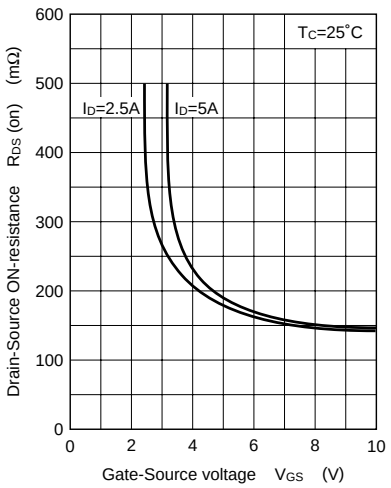
V_{th} – T_C



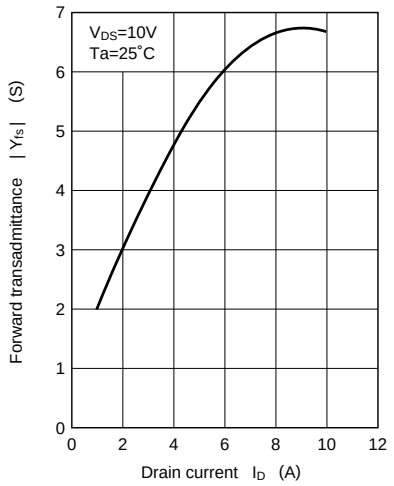
$R_{DS(on)}$ – I_D



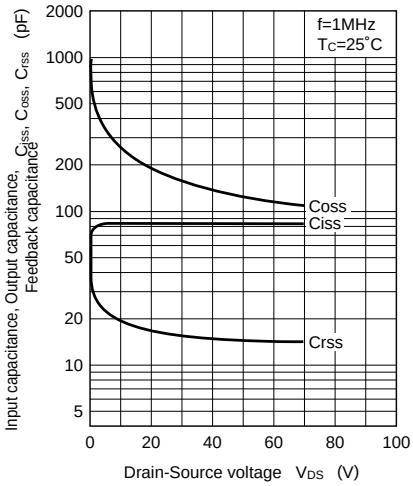
$R_{DS(on)}$ – V_{GS}



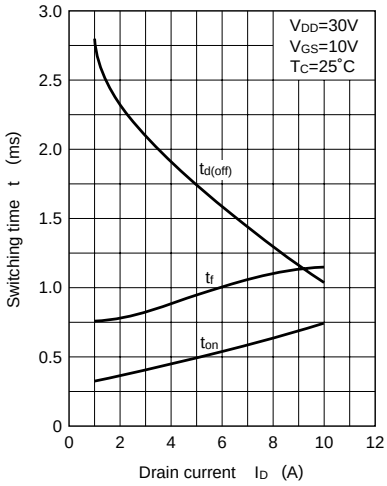
$|Y_{fs}|$ – I_D



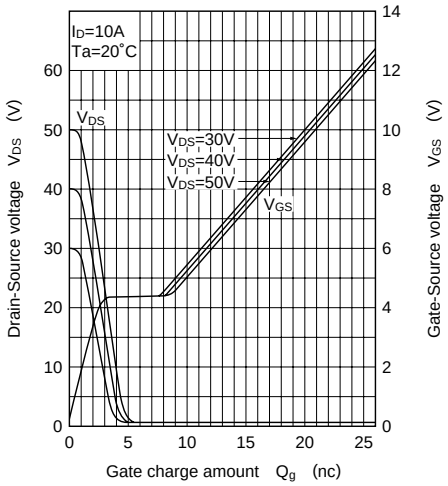
$C_{iss}, C_{oss}, C_{rss} - V_{DS}$



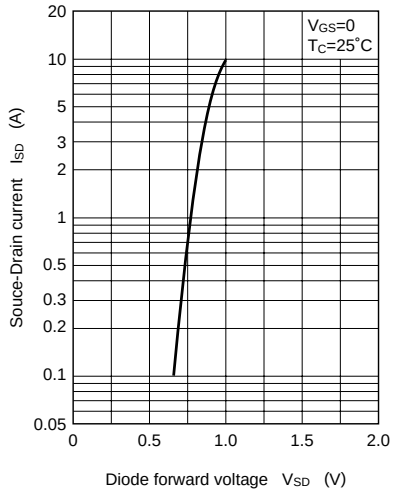
$t_{d(off)}, t_r, t_{on} - I_D$



$V_{DS}, V_{GS} - Q_g$



$I_{SD} - V_{SD}$



$R_{th} - t_P$