2SK1980

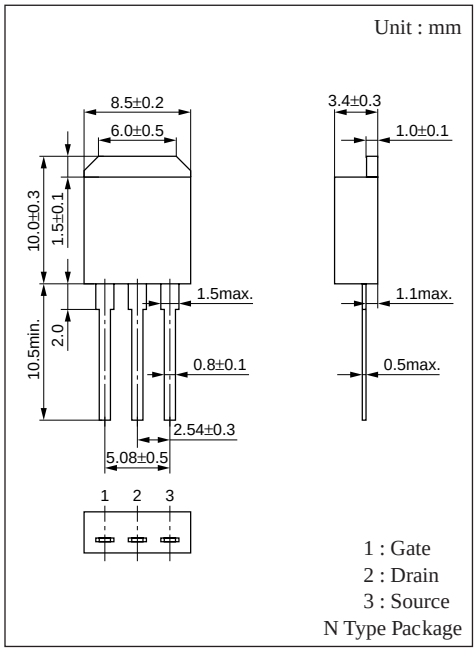
Silicon N-Channel Power F-MOS

■ Features

- Avalanche energy capability guaranteed : EAS > 15mJ
- V_{GSS}=±30V guaranteed
- High-speed switching : t_f= 25ns
- No secondary breakdown

■ Applications

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



■ Absolute Maximum Ratings (Tc = 25˚C)

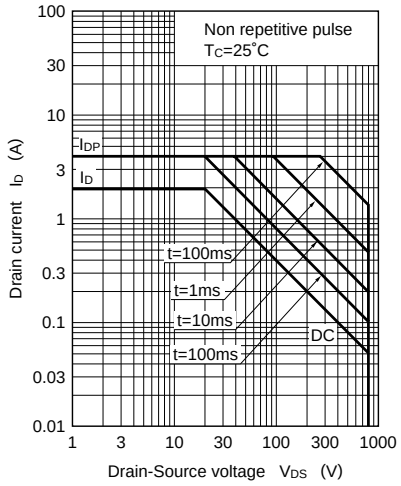
Parameter		Symbol	Rating	Unit
Drain-Source breakdown voltage		V_{DSS}	800	V
Gate-Source voltage		V_{GSS}	±30	V
Drain current	DC	I_D	±2	A
	Pulse	I_{DP}	±4	A
Avalanche energy capability		EAS *	15	mJ
Allowable power dissipation	T_C= 25˚C	P_D	40	W
	Ta= 25˚C		1.3	
Channel temperature		T_{ch}	150	˚C
Storage temperature		T_{stg}	–55 to +150	˚C

* L= 5mH, I_L= 2.45A, V_{DD}= 50V, 1 pulse

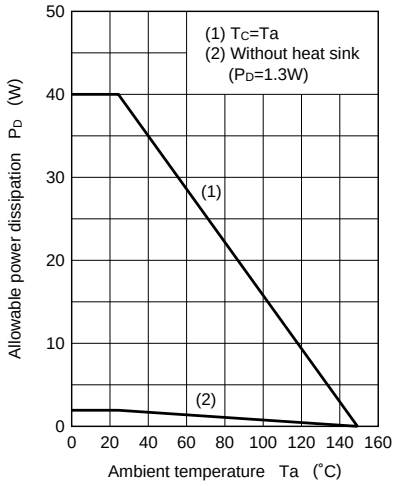
■ Electrical Characteristics (Tc = 25˚C)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Drain-Source cut-off current	I_{DSS}	V_{DS}= 640V, V_{GS}= 0			0.1	mA
Gate-Source leakage current	I_{GSS}	V_{GS}=±30V, V_{DS}= 0			±1	μ A
Drain-Source breakdown voltage	V_{DSS}	I_D=1mA, V_{GS}= 0	800			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=1A		4.8	7	Ω
Forward transadmittance	$\|Y_{fs}\|$	V_{DS}= 25V, I_D=1A	0.7	1.1		S
Diode forward voltage	V_{DSF}	I_{DR}= 2A, V_{GS}= 0			–1.3	V
Input capacitance	C_{iss}	V_{DS}= 20V, V_{GS}= 0, f= 1MHz		350		pF
Output capacitance	C_{oss}			60		pF
Feedback capacitance	C_{rss}			25		pF
Turn-on time (delay time)	$t_{d(on)}$	V_{GS}=10V, I_D=1A V_{DD}= 200V, R_L= 200Ω		15		ns
Rise time	t_r			20		ns
Fall time	t_f			25		ns
Turn-off time (delay time)	$t_{d(off)}$			60		ns
Channel-Case heat resistance	$R_{th(ch-c)}$				3.125	˚C/W

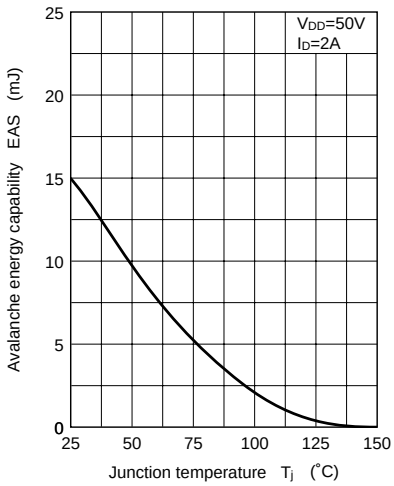
Area of safe operation (ASO)



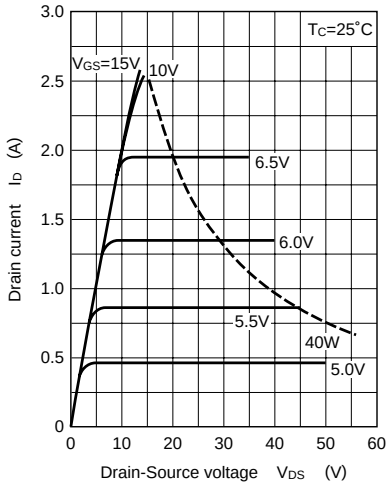
P_D – Ta



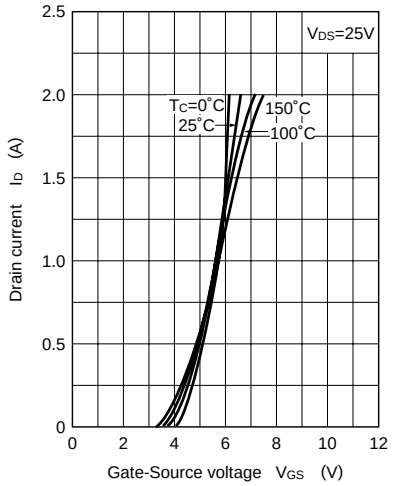
EAS – T_j



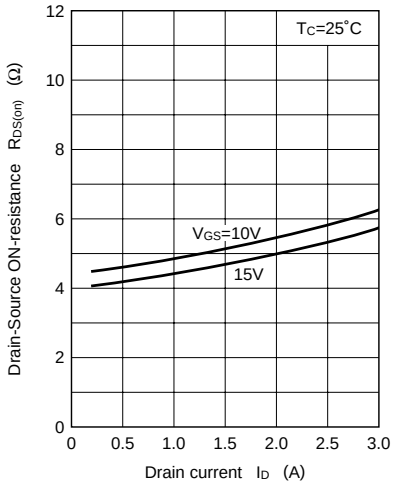
I_D – V_{DS}



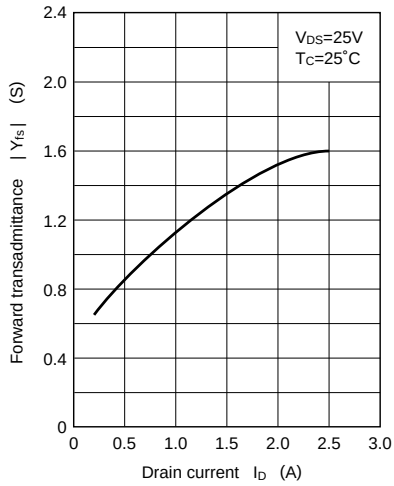
I_D – V_{GS}



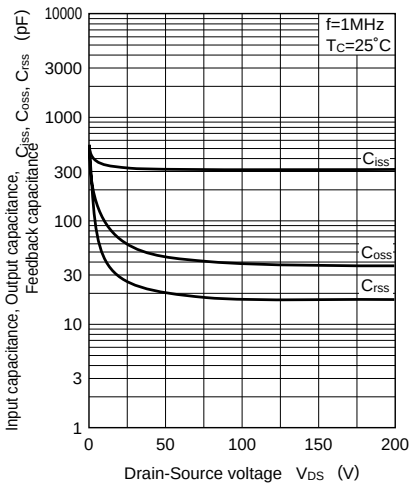
$R_{DS(on)}$ – I_D



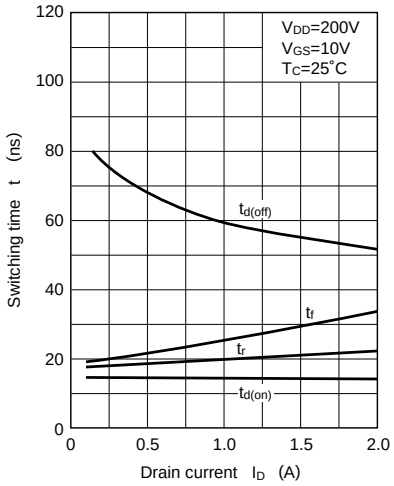
$|Y_{fs}|$ – I_D



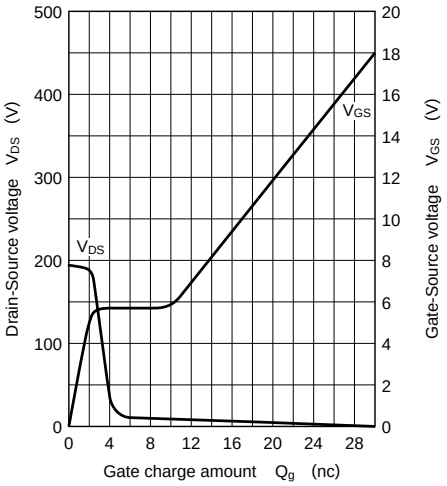
C_{iss}, C_{oss}, C_{rss} – V_{DS}



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



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



$R_{th} - t_P$