

2SK1980

Silicon N-Channel Power F-MOS FET

■ Features

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

■ Applications

- Contactless relay
- Diving circuit for a solenoid
- Driving circuit for a motor
- Control equipment
- Switching power supply

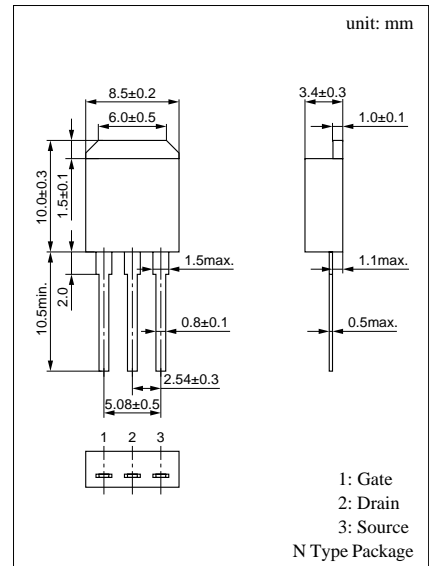
■ Absolute Maximum Ratings ($T_C = 25^\circ C$)

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

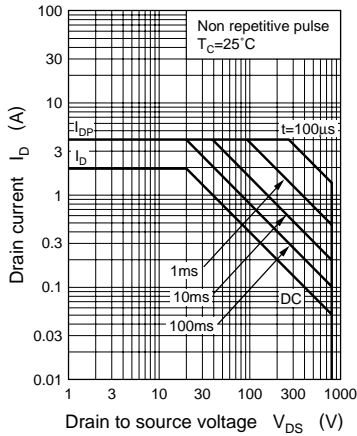
* $L = 5mH$, $I_L = 2.45A$, $V_{DD} = 50V$, 1 pulse

■ Electrical Characteristics ($T_C = 25^\circ C$)

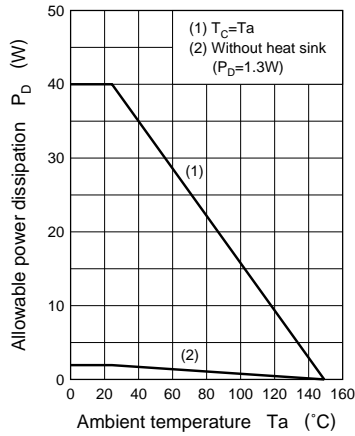
Parameter	Symbol	Conditions	min	typ	max	Unit	
Drain to Source cut-off current	I_{DSS}	$V_{DS} = 640V$, $V_{GS} = 0$			0.1	mA	
Gate to Source leakage current	I_{GSS}	$V_{GS} = \pm 30V$, $V_{DS} = 0$			± 1	μA	
Drain to Source breakdown voltage	V_{DSS}	$I_D = 1mA$, $V_{GS} = 0$	800			V	
Gate threshold voltage	V_{th}	$V_{DS} = 25V$, $I_D = 1mA$	2		5	V	
Drain to Source ON-resistance	$R_{DS(on)}$	$V_{GS} = 10V$, $I_D = 1A$		4.8	7	Ω	
Forward transfer admittance	$ 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 (Common Source)	C_{iss}	$V_{DS} = 20V$, $V_{GS} = 0$, $f = 1MHz$		350		pF	
Output capacitance (Common Source)	C_{oss}				60		pF
Reverse transfer capacitance (Common Source)	C_{rss}				25		pF
Turn-on time	$t_{d(on)}$	$V_{GS} = 10V$, $I_D = 1A$ $V_{DD} = 200V$, $R_L = 200\Omega$		15		ns	
Rise time	t_r				20		ns
Fall time	t_f				25		ns
Turn-off time (delay time)	$t_{d(off)}$				60		ns
Thermal resistance between channel and case	$R_{th(ch-c)}$					3.125	$^\circ C/W$



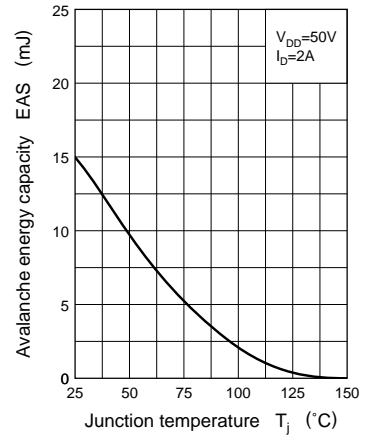
Area of safe operation (ASO)



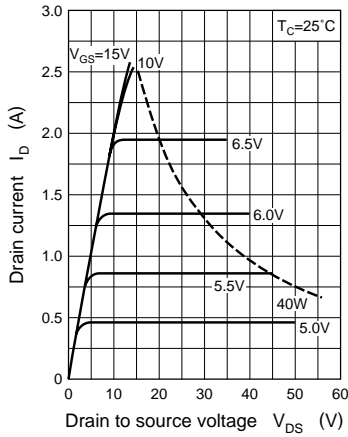
$P_D - T_a$



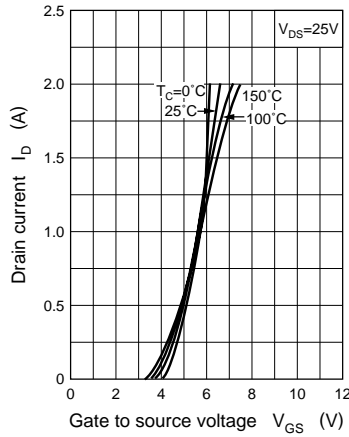
EAS — T_j



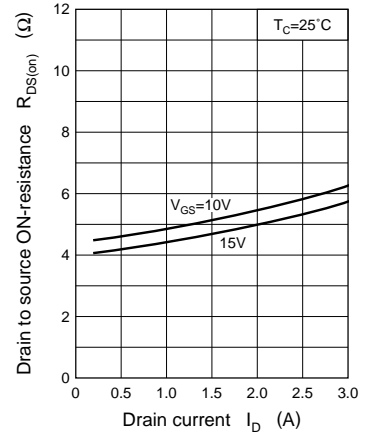
$I_D - V_{DS}$



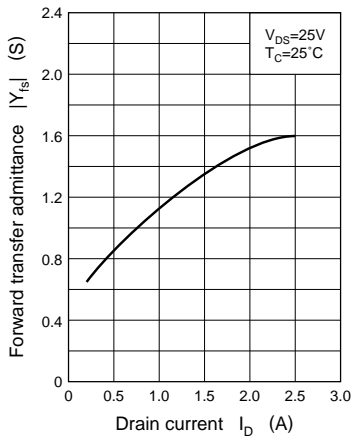
$I_D - V_{GS}$



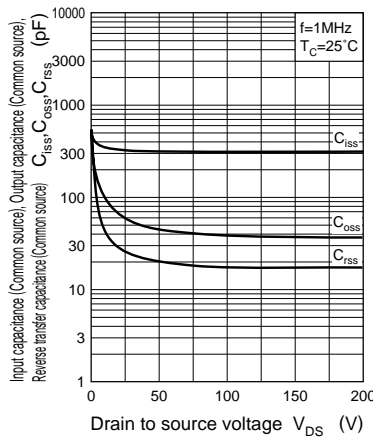
$R_{DS(on)} - I_D$



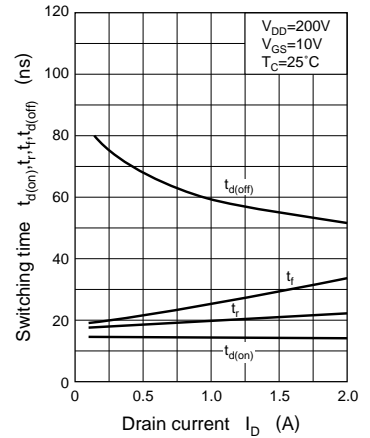
$|Y_{fs}| - I_D$



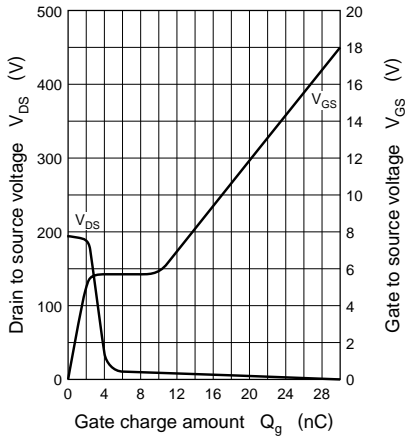
$C_{iss}, C_{oss}, C_{rss} - V_{DS}$



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



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



$R_{th(t)} - t$

