2SK1803

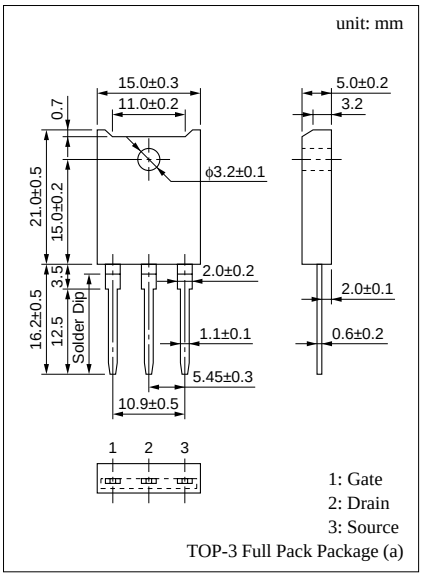
Silicon N-Channel Power F-MOS FET

■ Features

- Avalanche capacity guaranteed: EAS > 60mJ
- V_{GSS} = ±30V guaranteed
- High-speed switching: t_f = 80ns
- 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°C)

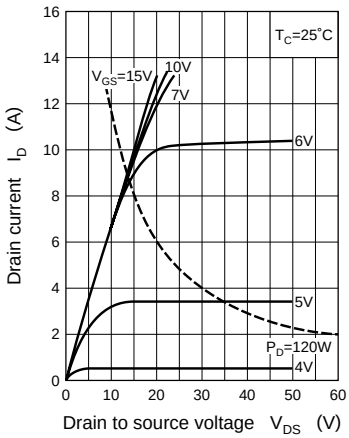
Parameter		Symbol	Ratings	Unit
Drain to Source breakdown voltage		V_{DSS}	900	V
Gate to Source voltage		V_{GSS}	±30	V
Drain current	DC	I_D	±8	A
	Pulse	I_{DP}	±16	A
Avalanche energy capacity		EAS*	60	mJ
Allowable power dissipation	T_C = 25°C	P_D	100	W
	Ta = 25°C		3	
Channel temperature		T_{ch}	150	°C
Storage temperature		T_{stg}	–55 to +150	°C

* L = 1.9mH, I_L = 8A, V_{DD} = 50V, 1 pulse

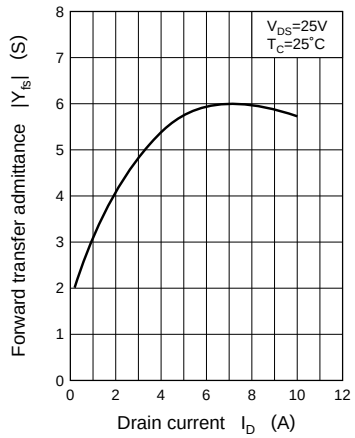
■ Electrical Characteristics (T_C = 25°C)

Parameter	Symbol	Conditions	min	typ	max	Unit
Drain to Source cut-off current	I_{DSS}	V_{DS} = 720V, V_{GS} = 0			0.1	mA
Gate to Source leakage current	I_{GSS}	V_{GS} = ±30V, V_{DS} = 0			±1	µA
Drain to Source breakdown voltage	V_{DSS}	I_D = 1mA, V_{GS} = 0	900			V
Gate threshold voltage	V_{th}	V_{DS} = 25V, I_D = 1mA	1		5	V
Drain to Source ON-resistance	$R_{DS(on)}$	V_{GS} = 10V, I_D = 4A		1.3	1.7	Ω
Forward transfer admittance	$\|Y_{fs}\|$	V_{DS} = 25V, I_D = 4A	3	5.5		S
Diode forward voltage	V_{DSF}	I_{DR} = 8A, V_{GS} = 0			–1.6	V
Input capacitance (Common Source)	C_{iss}	V_{DS} = 20V, V_{GS} = 0, f = 1MHz		1800		pF
Output capacitance (Common Source)	C_{oss}			200		pF
Reverse transfer capacitance (Common Source)	C_{rss}			90		pF
Turn-on time	t_{on}	V_{GS} = 10V, I_D = 4A V_{DD} = 200V, R_L = 50Ω		100		ns
Fall time	t_f			80		ns
Turn-off time (delay time)	$t_{d(off)}$			250		ns
Thermal resistance between channel and case	$R_{th(ch-c)}$				1.25	°C/W

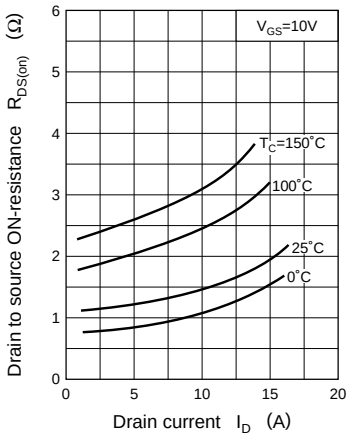
I_D — V_{DS}



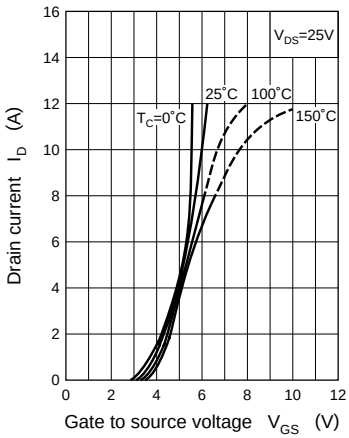
$|Y_{fs}|$ — I_D



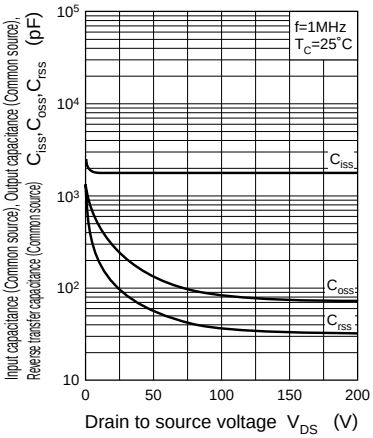
$R_{DS(on)}$ — I_D



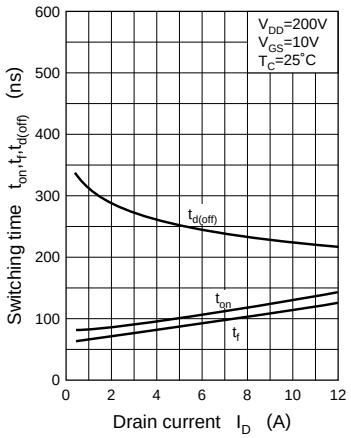
I_D — V_{GS}



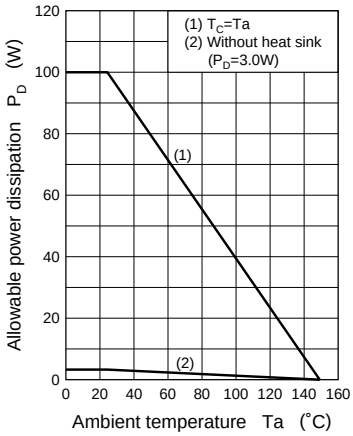
C_{iss}, C_{oss}, C_{rss} — V_{DS}



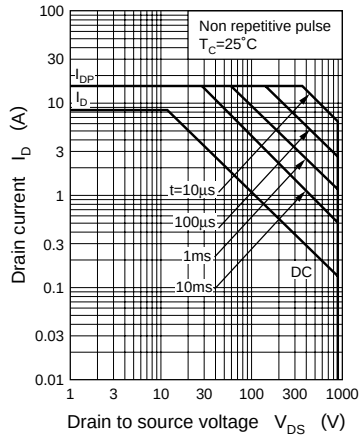
t_{on}, t_f, $t_{d(off)}$ — I_D



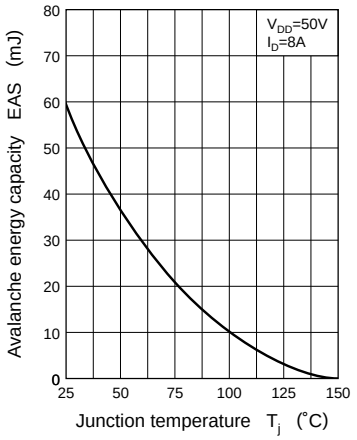
P_D — Ta



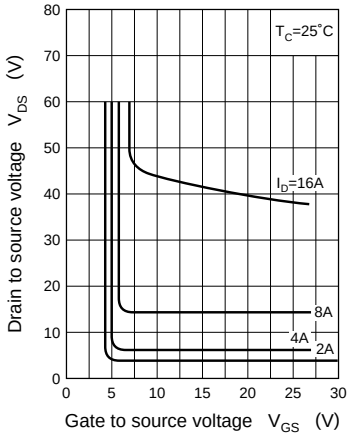
Area of safe operation (ASO)



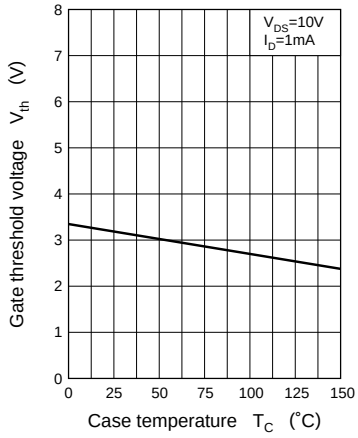
EAS — T_j



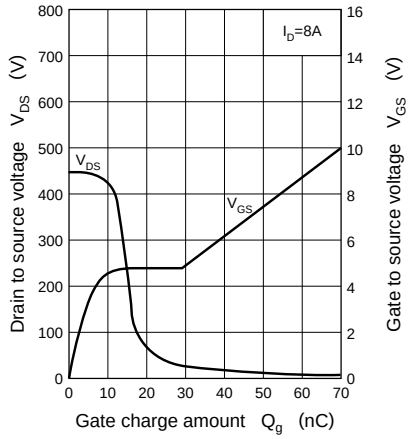
V_{DS} — V_{GS}



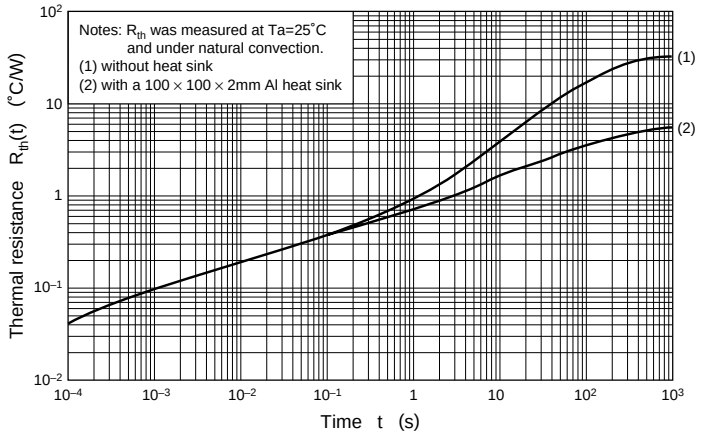
V_{th} — T_C



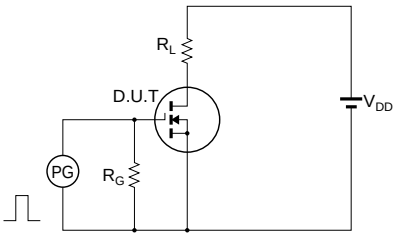
V_{DS}, V_{GS} — Q_g



$R_{th(t)}$ — t



Switching measurement circuit



Avalanche energy capacity test circuit