

2SK1803

Silicon N-Channel Power F-MOS

■ Features

- Avalanche energy capability guaranteed : EAS > 60mJ
- $V_{GS} = \pm 30V$ guaranteed
- High-speed switching : $t_f = 80ns$
- No secondary breakdown

■ Applications

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

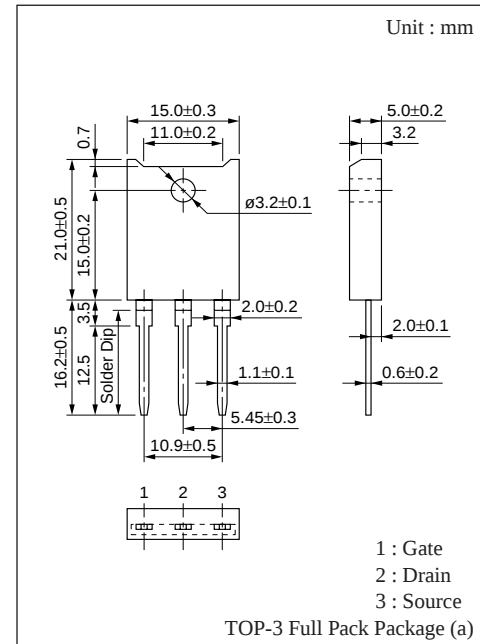
■ Absolute Maximum Ratings ($T_c = 25^\circ C$)

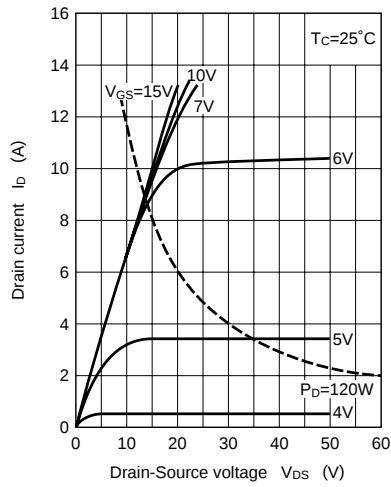
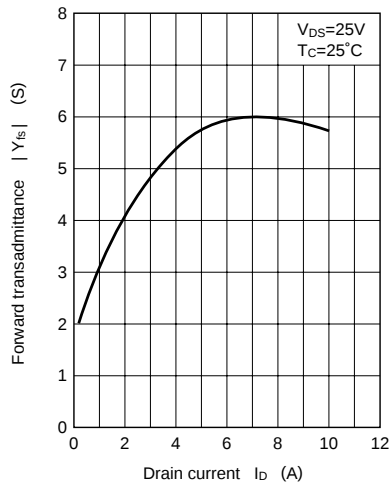
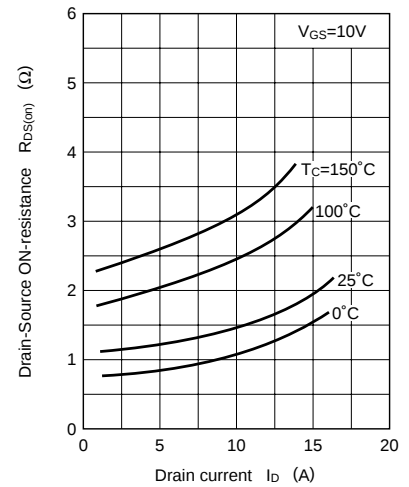
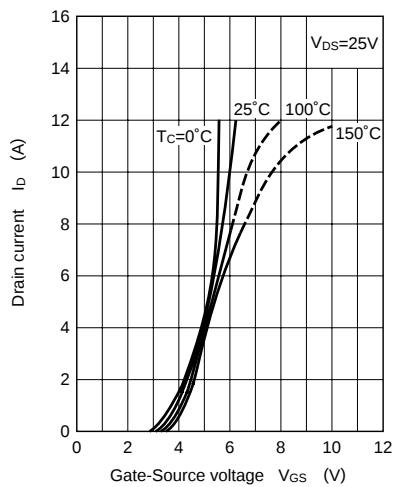
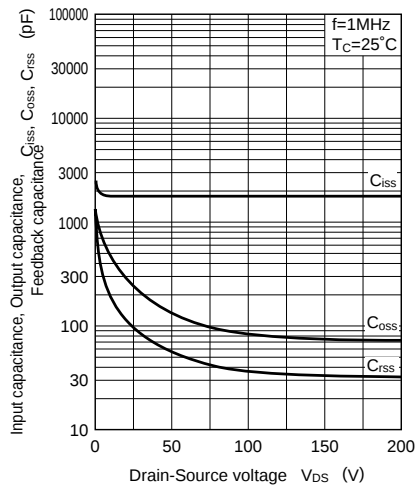
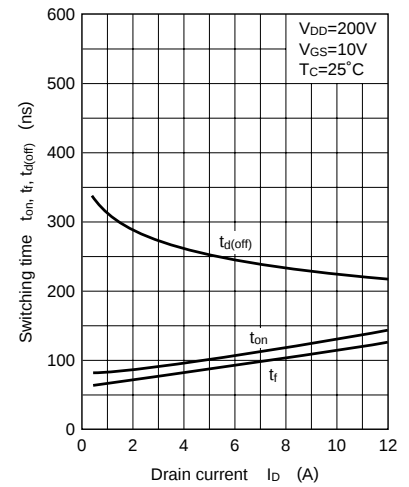
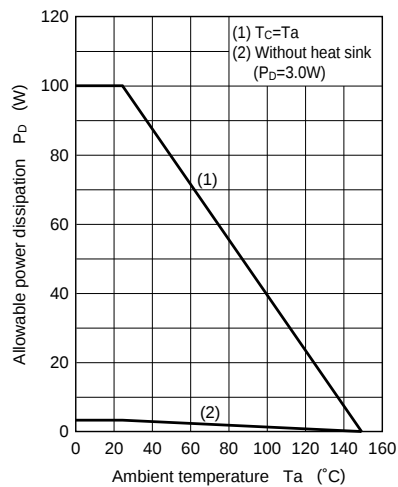
Parameter	Symbol	Rating	Unit
Drain-Source breakdown voltage	V_{DSS}	900	V
Gate-Source voltage	V_{GSS}	± 30	V
Drain current	DC	I_D	± 8 A
	Pulse	I_{DP}	± 16 A
Avalanche energy capability	EAS *	60	mJ
Allowable power dissipation	$T_c = 25^\circ C$	P_D	100 W
	$T_a = 25^\circ C$		3
Channel temperature	T_{ch}	150	$^\circ C$
Storage temperature	T_{stg}	-55 to +150	$^\circ C$

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

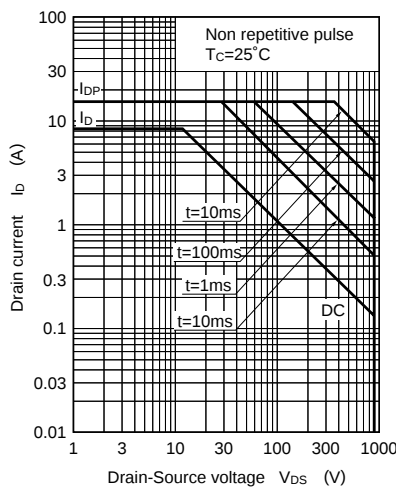
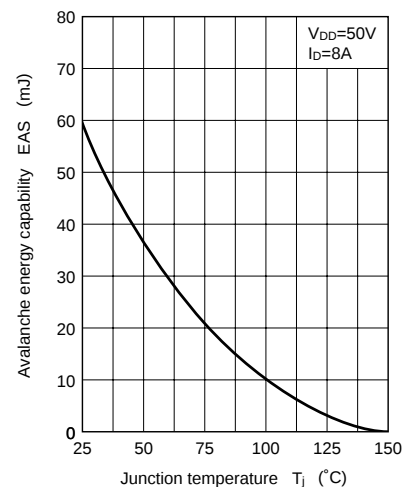
■ Electrical Characteristics ($T_c = 25^\circ C$)

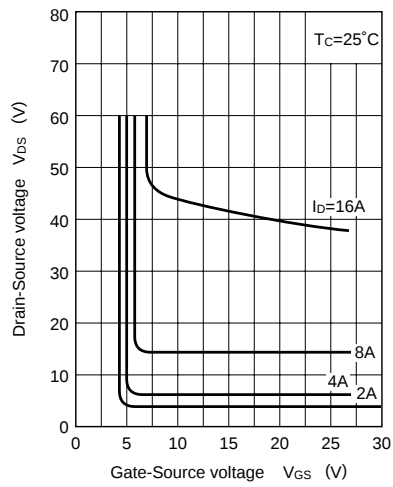
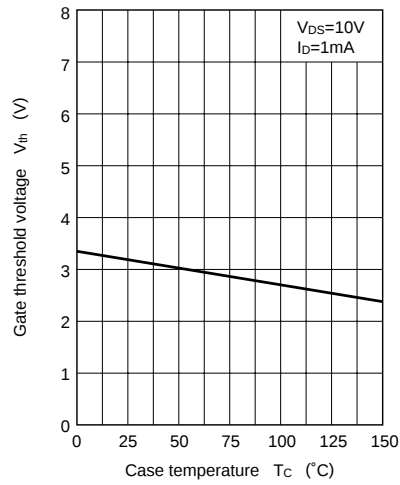
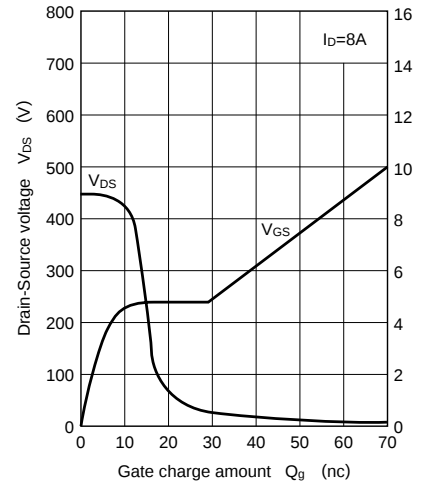
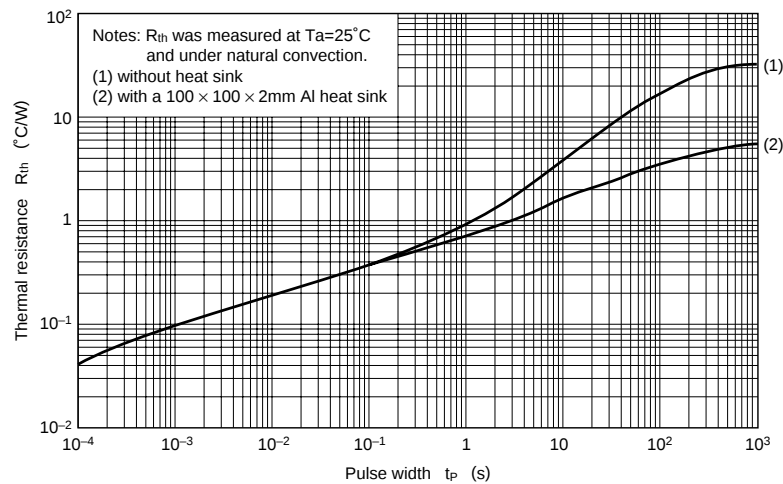
Parameter	Symbol	Condition	Min	Typ	Max	Unit
Drain-Source cut-off current	I_{DSS}	$V_{DS} = 720V$, $V_{GS} = 0$			0.1	mA
Gate-Source leakage current	I_{GSS}	$V_{GS} = \pm 30V$, $V_{DS} = 0$			± 1	μA
Drain-Source breakdown voltage	V_{DSS}	$I_D = 1mA$, $V_{GS} = 0$	900			V
Gate threshold voltage	V_{th}	$V_{DS} = 25V$, $I_D = 1mA$	1		5	V
Drain-Source ON-resistance	$R_{DS(on)}$	$V_{GS} = 10V$, $I_D = 4A$		1.3	1.7	Ω
Forward transadmittance	$ 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	C_{iss}	$V_{DS} = 20V$, $V_{GS} = 0$, $f = 1MHz$		1800		pF
Output capacitance	C_{oss}			200		pF
Feedback capacitance	C_{rss}			90		pF
Turn-on time	t_{on}	$V_{GS} = 10V$, $I_D = 4A$ $V_{DD} = 200V$, $R_L = 50\Omega$		100		ns
Fall time	t_f			80		ns
Turn-off time (delay time)	$t_{d(off)}$			250		ns
Channel-Case heat resistance	$R_{th(ch-c)}$				1.25	$^\circ C/W$



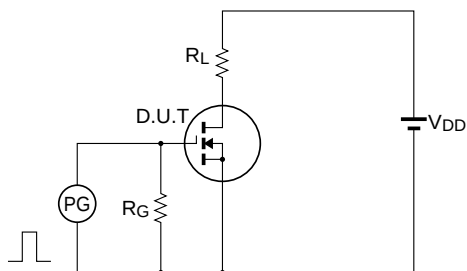
$I_D - V_{DS}$  $|Y_{fs}| - I_D$  $R_{DS(on)} - I_D$  $I_D - V_{GS}$  $C_{iss}, C_{oss}, C_{rss} - V_{DS}$  $t_{on}, t_f, t_d(off) - I_D$  $P_D - T_a$ 

Area of safe operation (ASO)

 $EAS - T_j$ 

$V_{DS}-V_{GS}$  $V_{th}-T_C$  $V_{DS}, V_{GS}-Q_g$  $R_{th}-t_p$ 

Switching measurement circuit



Avalanche capability test circuit

