

2SK1846

Silicon N-Channel Power F-MOS

■ Features

- Avalanche energy capability guaranteed : EAS > 20mJ
- $V_{GS}=\pm 30V$ guaranteed
- High-speed switching : $t_f= 35ns$
- No secondary breakdown

■ Features

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

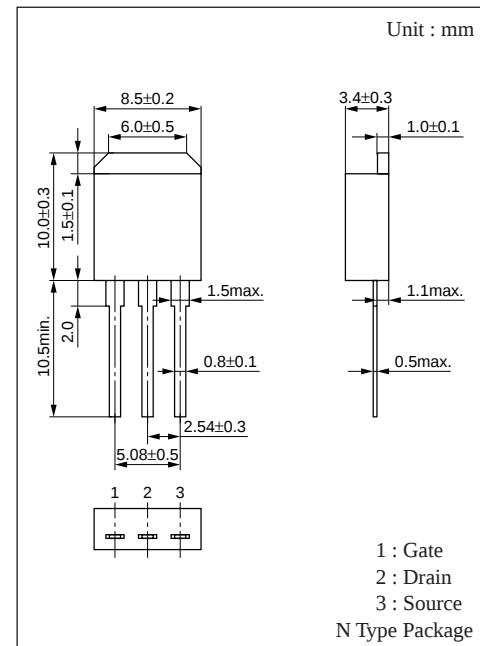
■ Absolute Maximum Ratings ($T_c = 25^\circ C$)

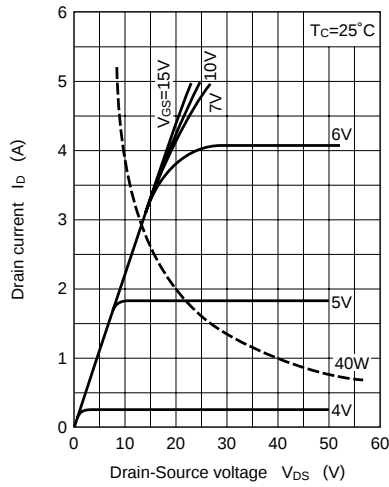
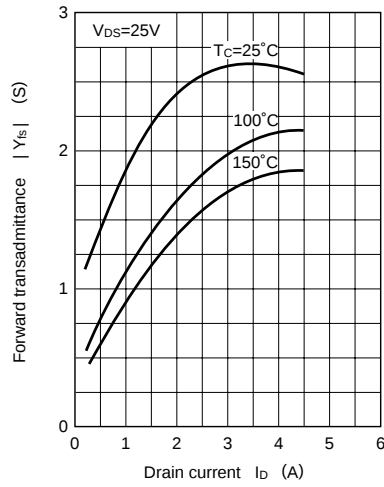
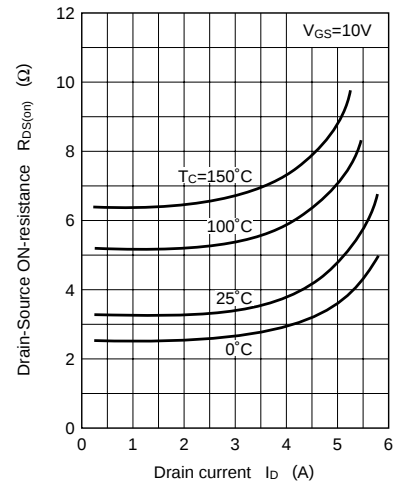
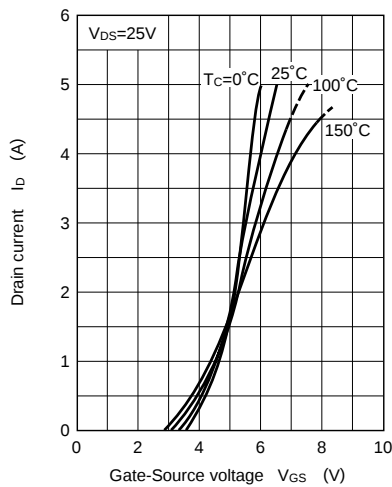
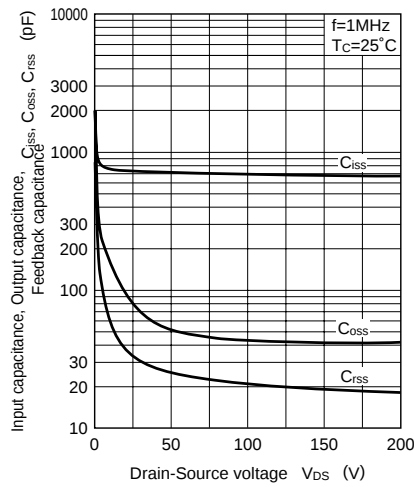
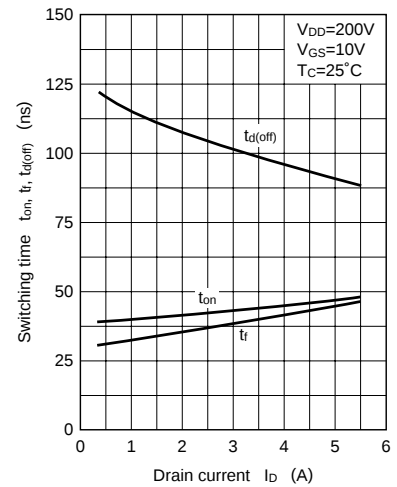
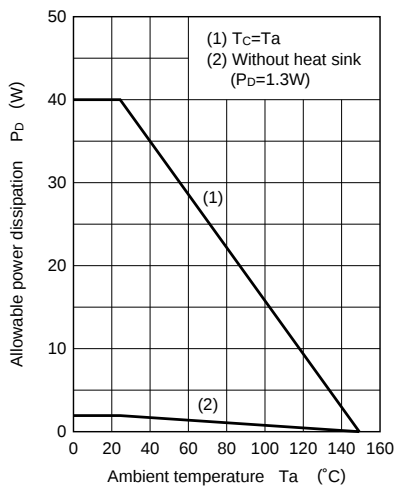
Parameter	Symbol	Rating	Unit
Drain-Source breakdown voltage	V_{DSS}	800	V
Gate-Source voltage	V_{GSS}	± 30	V
Drain current	DC	I_D	± 3 A
	Pulse	I_{DP}	± 6 A
Avalanche energy capability	EAS *	20	mJ
Allowable power dissipation	$T_C = 25^\circ C$	P_D	40 W
	$T_a = 25^\circ C$		1.3
Channel temperature	T_{ch}	150	$^\circ C$
Storage temperature	T_{stg}	-55 to +150	$^\circ C$

* $L= 4.5mH$, $I_L= 3A$, $V_{DD}= 50V$, 1 pulse

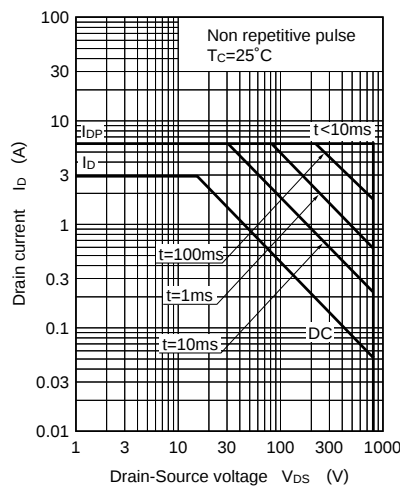
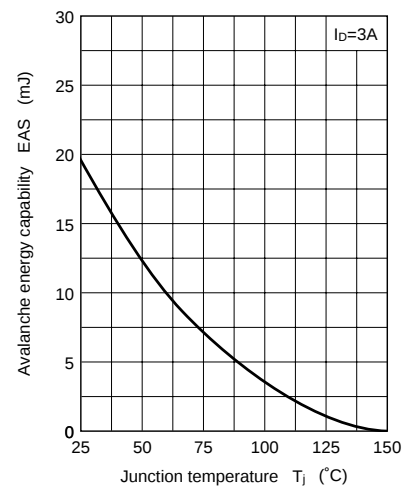
■ Electrical Characteristics ($T_c = 25^\circ C$)

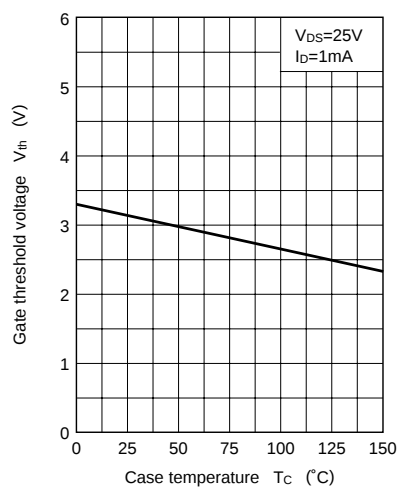
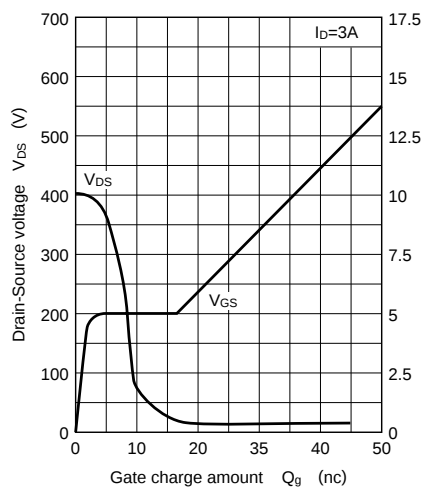
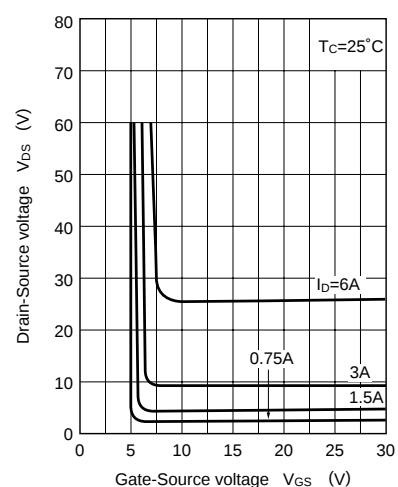
Parameter	Symbol	Condition	Min	Typ	Max	Unit
Drain-Source cut-off current	I_{DSS}	$V_{DS}= 640V$, $V_{GS}= 0$			0.1	mA
Gate-Source leakage current	I_{GSS}	$V_{GS}=\pm 30V$, $V_{DS}= 0$			± 1	μA
Drain-Source breakdown voltage	V_{DSS}	$I_D= 1mA$, $V_{GS}= 0$	800			V
Gate threshold voltage	V_{th}	$V_{DS}= 25V$, $I_D= 1mA$	1		5	V
Drain-Source ON-resistance	$R_{DS(on)}$	$V_{GS}= 10V$, $I_D= 2A$		3.2	4	Ω
Forward transadmittance	$ Y_{fs} $	$V_{DS}= 25V$, $I_D= 2A$	1.5	2.4		S
Diode forward voltage	V_{DSF}	$I_{DR}= 3A$, $V_{GS}= 0$			-1.6	V
Input capacitance	C_{iss}	$V_{DS}= 20V$, $V_{GS}= 0$, $f= 1MHz$		730		pF
Output capacitance	C_{oss}			90		pF
Feedback capacitance	C_{rss}			40		pF
Turn-on time	t_{on}	$V_{GS}= 10V$, $I_D= 2A$ $V_{DD}= 200V$, $R_L= 100\Omega$		40		ns
Fall time	t_f			35		ns
Turn-off time (delay time)	$t_{d(off)}$			105		ns
Channel-Case heat resistance	$R_{th(ch-c)}$				3.125	$^\circ C/W$



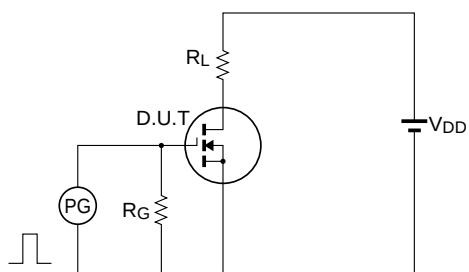
$I_D - V_{DS}$  $|Y_{fs}| - I_D$  $R_{DS(on)} - I_D$  $I_D - V_{GS}$  $C_{iss}, C_{oss}, C_{rss} - V_{DS}$  $t_{on}, t_f, t_d(off) - I_D$  $P_D - T_a$ 

Area of safe operation (ASO)

 $EAS - T_j$ 

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

Switching measurement circuit



Avalanche capability test circuit

