

2SK2377

Silicon N-Channel Power F-MOS

■ Features

- Avalanche energy capability guaranteed
- High-speed switching
- Low ON-resistance
- No secondary breakdown
- Low-voltage drive

■ Applications

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

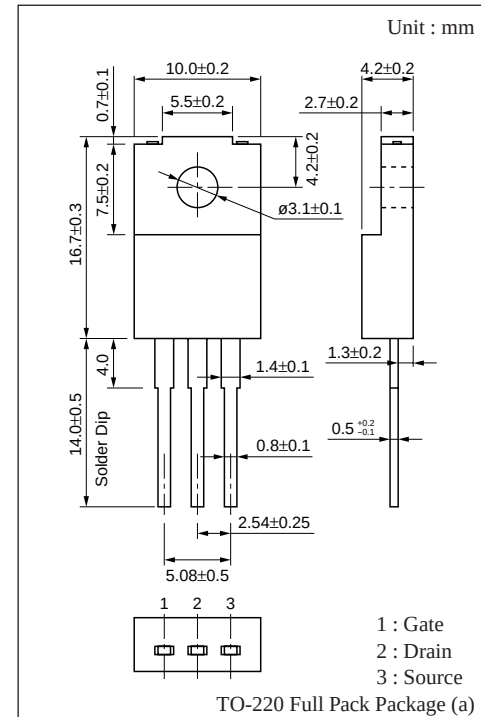
■ Absolute Maximum Ratings (T_c = 25°C)

Parameter		Symbol	Rating	Unit
Drain-Source breakdown voltage		V _{DSS}	170	V
Gate-Source voltage		V _{GSS}	±20	V
Drain current	DC	I _D	±20	A
	Pulse	I _{DP}	±40	A
Avalanche energy capability		EAS *	200	mJ
Allowable power dissipation	T _c = 25°C	P _D	50	W
	T _a = 25°C		2	
Channel temperature		T _{ch}	150	°C
Storage temperature		T _{stg}	−55 to +150	°C

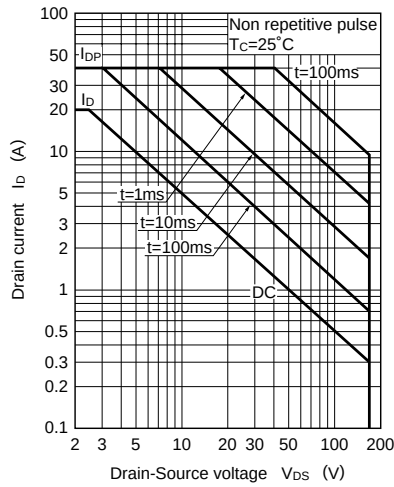
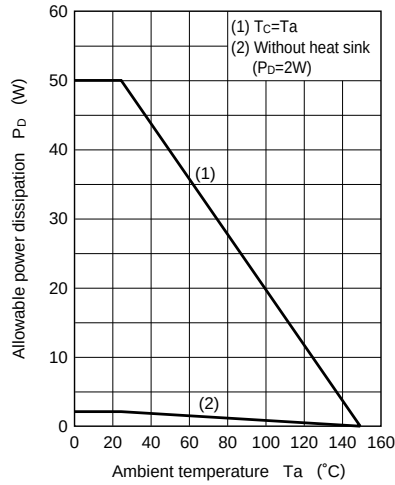
* L=1mH, I_L= 20A, 1 pulse

■ Electrical Characteristics (T_c = 25°C)

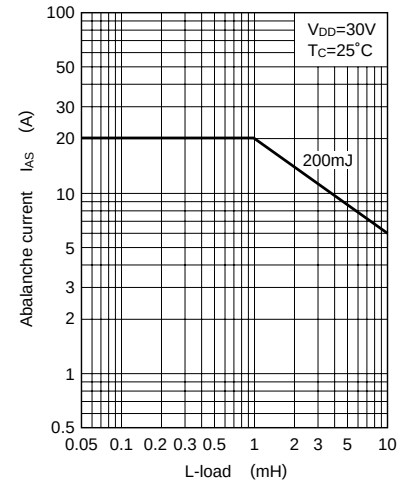
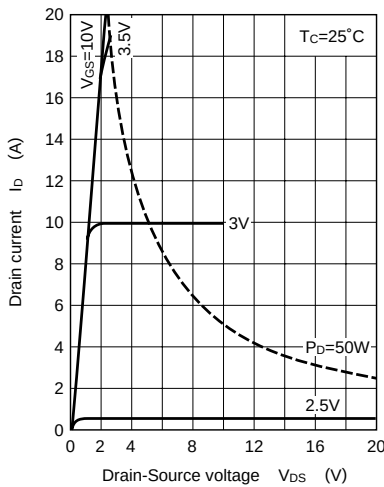
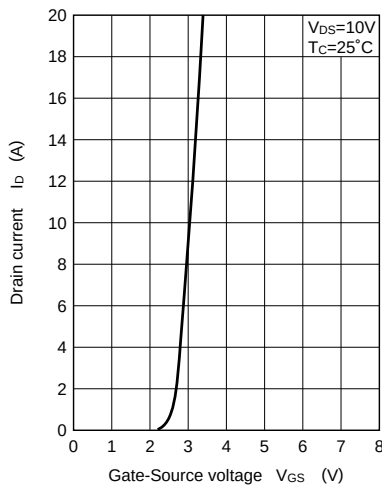
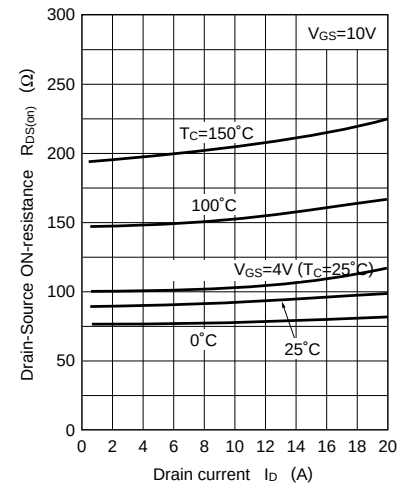
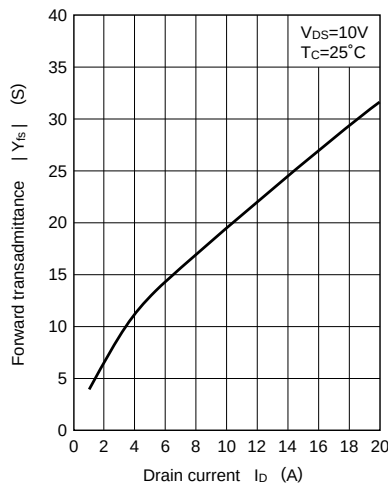
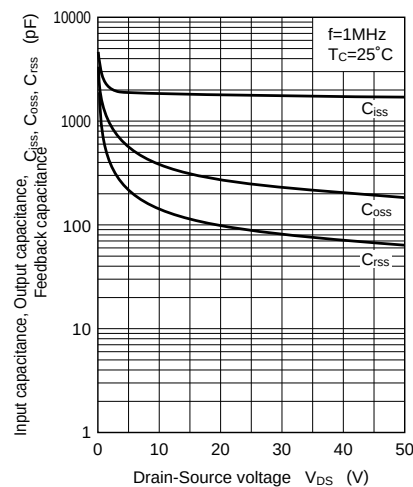
Parameter	Symbol	Condition	Min	Typ	Max	Unit
Drain-Source cut-off current	I _{DSS}	V _{DS} =140V, V _{GS} = 0			10	μA
Gate-Source leakage current	I _{GSS}	V _{GS} =±20V, V _{DS} = 0			±1	μA
Drain-Source breakdown voltage	V _{DSS}	I _D =1mA, V _{GS} = 0	170			V
Gate threshold voltage	V _{th}	V _{DS} =10V, I _D =1mA	1		2.5	V
Drain-Source ON-resistance	R _{DS(on) 1}	V _{GS} =10V, I _D =10A		95	145	mΩ
	R _{DS(on) 2}	V _{GS} = 4V, I _D =10A		105	160	mΩ
Forward transadmittance	Y _{fs}	V _{DS} =10V, I _D =10A	10	17		S
Diode forward voltage	V _{DSF}	I _{DR} =20A, V _{GS} = 0			−1.6	V
Input capacitance	C _{iss}	V _{DS} =10V, V _{GS} = 0, f=1MHz		1650		pF
Output capacitance	C _{oss}			400		pF
Feedback capacitance	C _{rss}			130		pF
Turn-on time (delay time)	t _{d(on)}			10		ns
Rise time	t _r	V _{DD} =100V, I _D =10A V _{GS} =10V, R _L =10Ω		60		ns
Fall time	t _f			280		ns
Turn-off time (delay time)	t _{d(off)}			1500		ns
Channel-Case heat resistance	R _{th(ch-c)}				2.5	°C/W
Channel-Atmosphere heat resistance	R _{th(ch-a)}				62.5	°C/W



Area of safe operation (ASO)

 $P_D - T_a$ 

IAS – L-load

 $I_D - V_{DS}$  $I_D - V_{GS}$  $R_{DS(on)} - I_D$  $|Y_{fs}| - I_D$  $C - V_{DS}$  $I_{GSS} - T_a$ 