

2SK1214

Silicon N-Channel Power F-MOS

■ Features

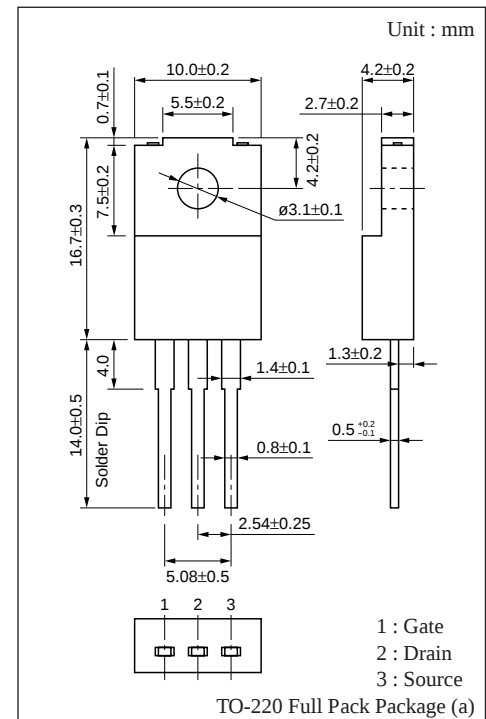
- Low ON-resistance $R_{DS(on)}$: $R_{DS(on)1} = 0.06\Omega$ (typ)
- High-speed switching : $t_f = 110\text{ns}$ (typ)
- No secondary breakdown
- Low-voltage drive

■ Applications

- DC-DC converter
- Non-contact relay
- Solenoid drive
- Motor drive

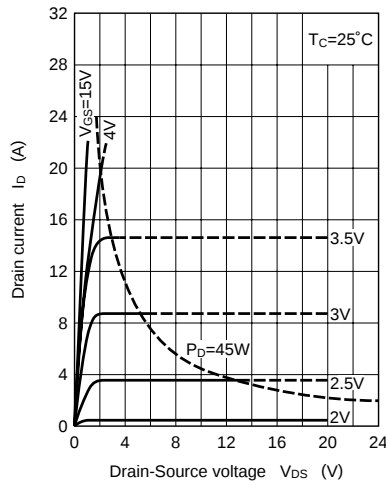
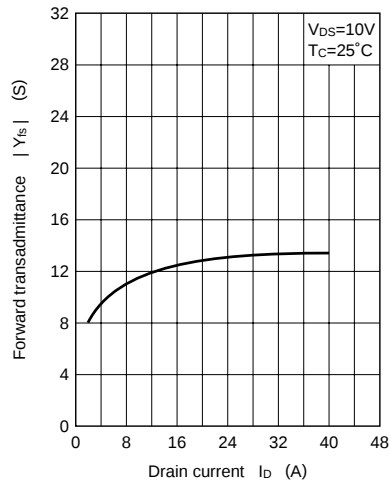
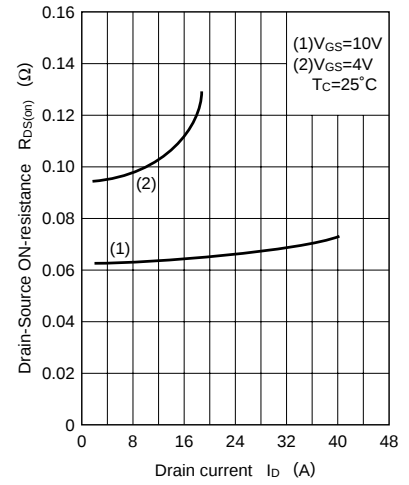
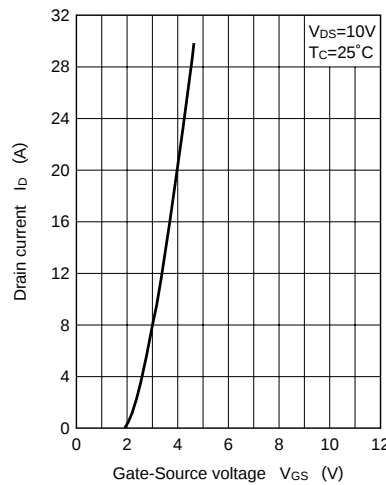
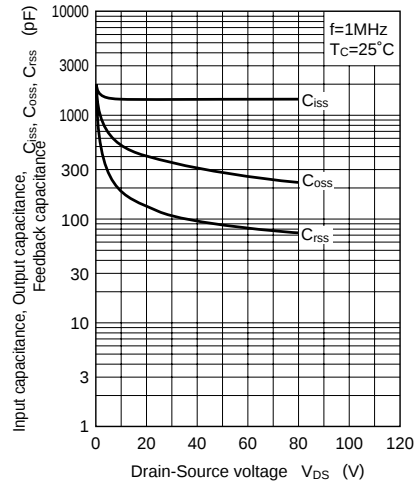
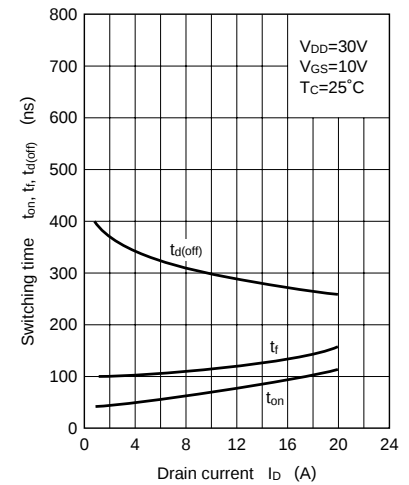
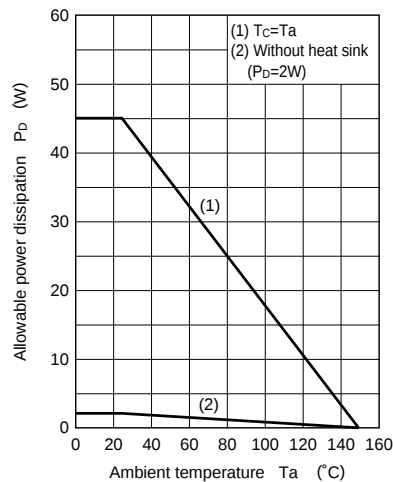
■ Absolute Maximum Ratings ($T_c = 25^\circ\text{C}$)

Parameter		Symbol	Rating	Unit
Drain-Source breakdown voltage		V _{DSS}	80	V
Gate-Source voltage		V _{GSS}	±20	V
Drain current	at 4V drive	I _D	±12	A
	DC	I _D	±20	
	Pulse	I _{DP}	±40	A
Allowable power dissipation	T _C =25°C	P _D	45	W
	T _a =25°C		2	
Channel temperature		T _{ch}	150	°C
Storage temperature		T _{stg}	−55 to +150	°C

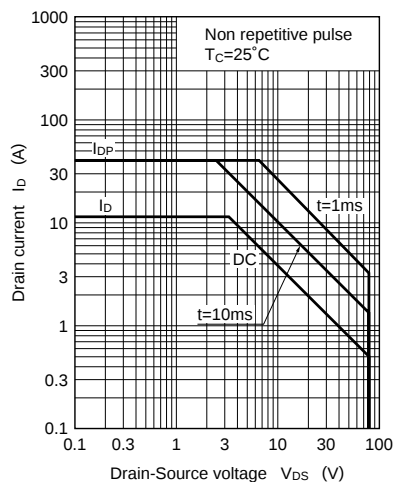


■ Electrical Characteristics ($T_c = 25^\circ\text{C}$)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Drain-Source cut-off current	I_{DSS}	$V_{DS} = 65\text{V}, V_{GS} = 0$			10	μA
Gate-Source leakage current	I_{GSS}	$V_{GS} = \pm 20\text{V}, V_{DS} = 0$			± 1	μA
Drain-Source breakdown voltage	V_{DSS}	$I_D = 1\text{mA}, V_{GS} = 0$	80			V
Gate threshold voltage	V_{th}	$V_{DS} = 10\text{V}, I_D = 1\text{mA}$	1		2.5	V
Drain-Source ON-resistance	$R_{DS(on)1}$	$V_{GS} = 10\text{V}, I_D = 6\text{A}$		0.06	0.09	Ω
	$R_{DS(on)2}$	$V_{GS} = 4\text{V}, I_D = 6\text{A}$		0.09	0.135	Ω
Forward transadmittance	$ Y_{fs} $	$V_{DS} = 10\text{V}, I_D = 6\text{A}$	6	10		S
Input capacitance	C_{iss}	$V_{DS} = 10\text{V}, V_{GS} = 0, f = 1\text{MHz}$		1450		pF
Output capacitance	C_{oss}			550		pF
Feedback capacitance	C_{rss}			190		pF
Turn-on time	t_{on}	$V_{GS} = 10\text{V}, I_D = 6\text{A}$ $V_{DD} \approx 30\text{V}, R_L = 5\Omega$		60		ns
Fall time	t_f			110		ns
Turn-off time (delay time)	$t_{d(off)}$			330		ns

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

Area of safe operation (ASO)

 $R_{DS(on)} - I_D$ 