2SK1033

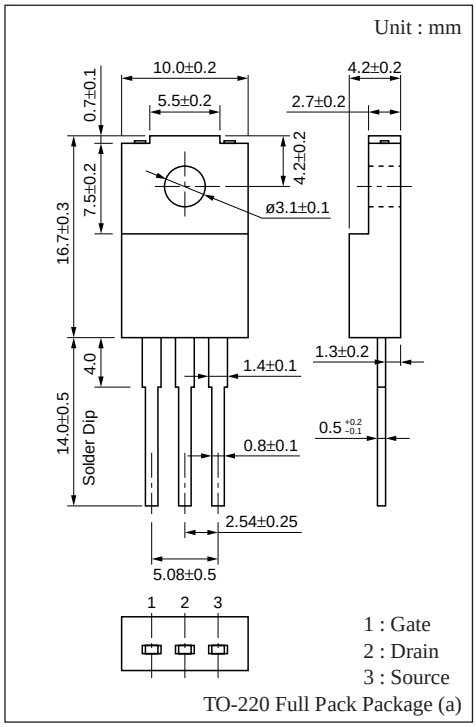
Silicon N-Channel Power F-MOS

■ Features

- Low ON-resistance $R_{DS(on)}$: $R_{DS(on)}$ = 0.45Ω(typ)
- High-speed switching : t_f =180ns(typ)
- No secondary breakdown
- Low-voltage drive

■ Applications

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



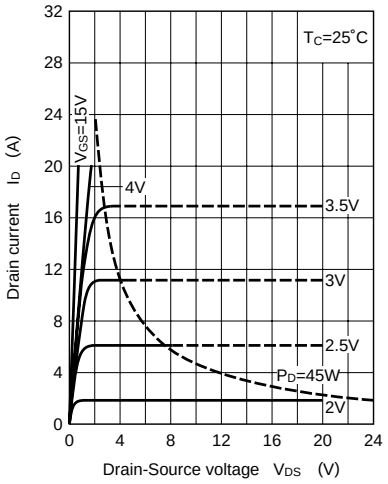
■ Absolute Maximum Ratings (Tc = 25˚C)

Parameter		Symbol	Rating	Unit
Drain-Source breakdown voltage		V_{DSS}	60	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
	Ta=25˚C		2	
Channel temperature		T_{ch}	150	˚C
Storage temperature		T_{stg}	–55 to +150	˚C

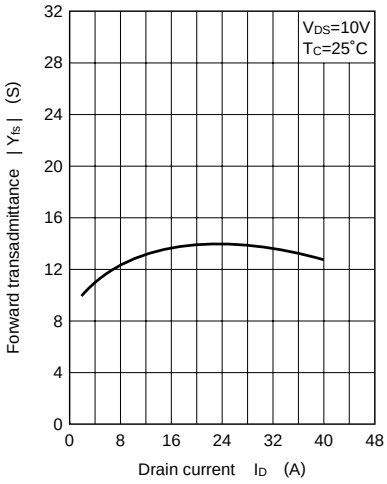
■ Electrical Characteristics (Tc = 25˚C)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Drain-Source cut-off current	I_{DSS}	V_{DS}= 40V, V_{GS}= 0			10	μA
Gate-Source leakage current	I_{GSS}	V_{GS}= ±20V, V_{DS}= 0			±1	A
Drain-Source breakdown voltage	V_{DSS}	I_D=1mA, V_{GS}= 0	60			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		0.045	0.07	Ω
	$R_{DS\ (on)}$ 2	V_{GS}= 4V, I_D= 6A		0.065	0.1	Ω
Forward transadmittance	$\|Y_{fs}\|$	V_{DS}=10V, I_D=10A	8	13		S
Input capacitance	C_{iss}	V_{DS}=10V, V_{GS}= 0, f=1MHz		1550		pF
Output capacitance	C_{oss}			680		pF
Feedback capacitance	C_{rss}			300		pF
Turn-on time	t_{on}	V_{GS}=10V, I_D=10A V_{DD}≒30V, R_L= 3Ω		90		ns
Fall time	t_f			180		ns
Turn-off time (delay time)	$t_{d\ (off)}$			360		ns

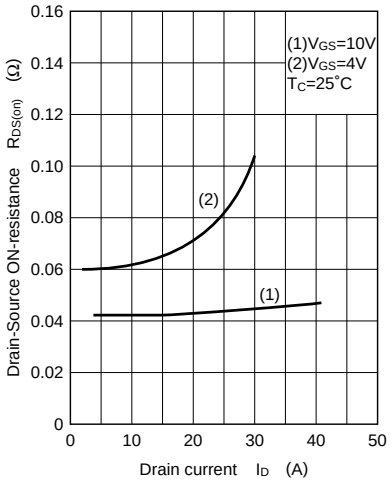
$I_D - V_{DS}$



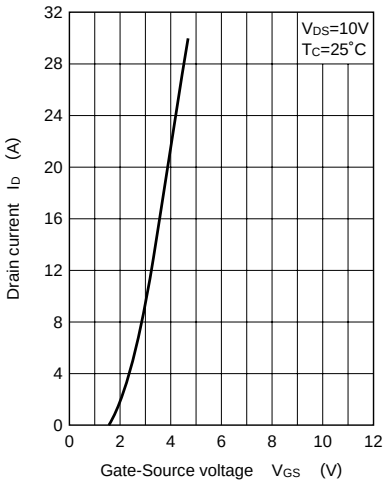
$|Y_{fs}| - I_D$



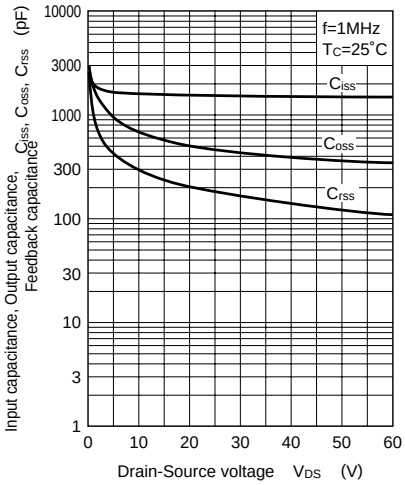
$R_{DS\ (on)} - I_D$



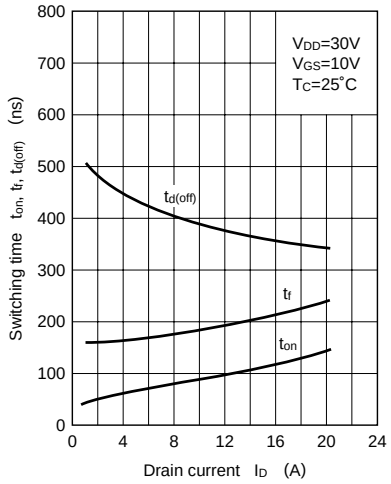
$I_D - V_{GS}$



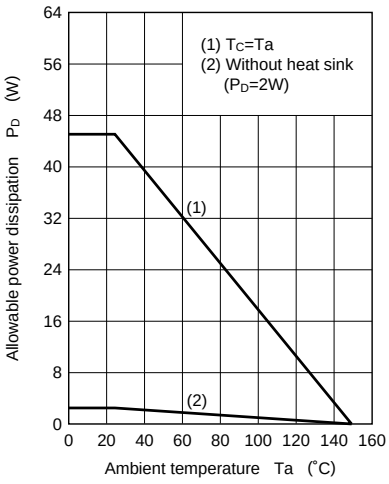
$C_{iss}, C_{oss}, C_{rss} - V_{DS}$



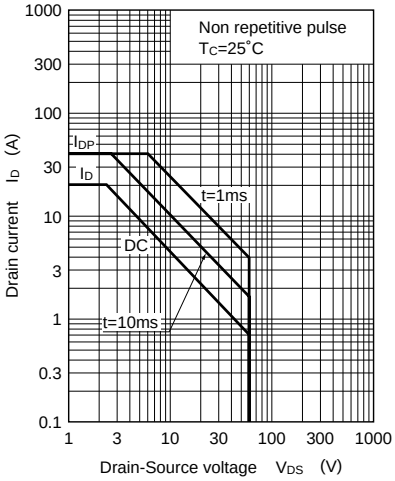
$t_{on}, t_f, t_{d\ (off)} - I_D$



$P_D - Ta$



Area of safe operation (ASO)



$R_{DS\ (on)} - I_D$