

# 2SK758

## Silicon N-Channel Power F-MOS

### ■ Features

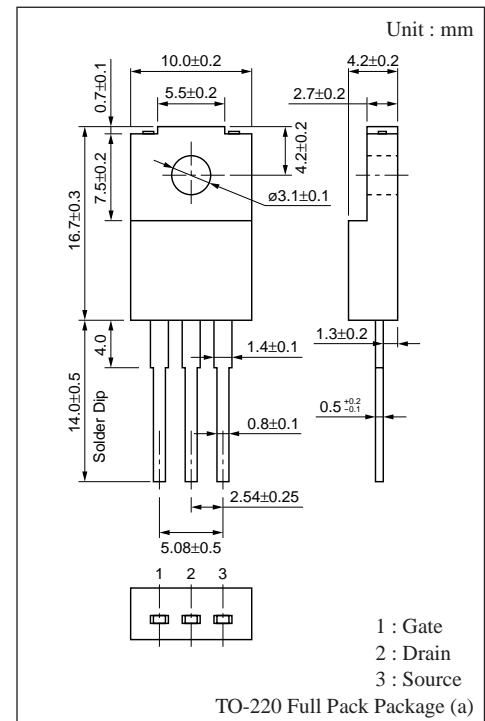
- Low ON-resistance  $R_{DS(on)}$  :  $R_{DS(on)} = 0.45\Omega(\text{typ})$
- High-speed switching :  $t_f = 45\text{ns}(\text{typ})$
- No secondary breakdown

### ■ Applications

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

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

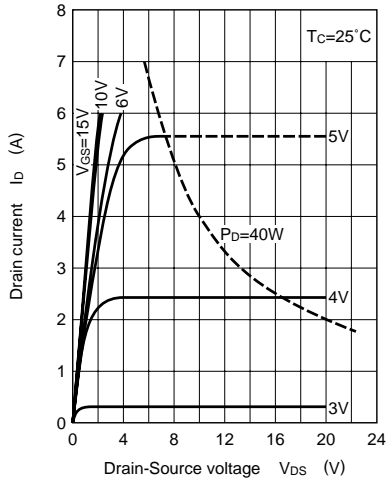
Parameter	Symbol	Rating	Unit	
Drain-Source breakdown voltage	$V_{DSS}$	250	V	
Gate-Source voltage	$V_{GSS}$	$\pm 20$	V	
Drain current	DC	$I_D$	$\pm 5$	A
	Pulse	$I_{DP}$	$\pm 10$	A
Allowable power dissipation	$T_c = 25^\circ\text{C}$	$P_D$	40	W
	$T_a = 25^\circ\text{C}$		2	
Channel temperature	$T_{ch}$	150	$^\circ\text{C}$	
Storage temperature	$T_{stg}$	-55 to +150	$^\circ\text{C}$	



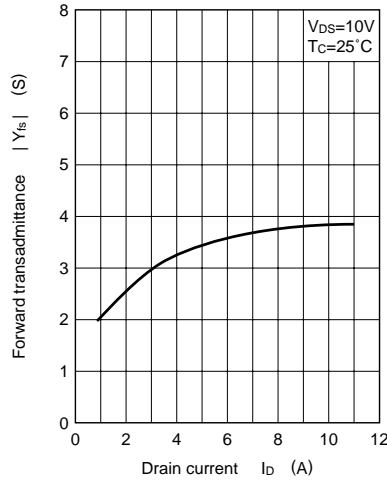
### ■ Electrical Characteristics ( $T_c = 25^\circ\text{C}$ )

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Drain-Source cut-off current	$I_{DSS}$	$V_{DS} = 200\text{V}, V_{GS} = 0$			0.1	mA
Gate-Source leakage current	$I_{GSS}$	$V_{GS} = \pm 20\text{V}, V_{DS} = 0$			$\pm 1$	$\mu\text{A}$
Drain-Source breakdown voltage	$V_{DSS}$	$I_D = 1\text{mA}, V_{GS} = 0$	250			V
Gate threshold voltage	$V_{th}$	$V_{DS} = 10\text{V}, I_D = 1\text{mA}$	1		5	V
Drain-Source ON-resistance	$R_{DS(on)}$	$V_{GS} = 10\text{V}, I_D = 3\text{A}$		0.45	0.7	$\Omega$
Forward transadmittance	$ Y_{fs} $	$V_{DS} = 10\text{V}, I_D = 3\text{A}$	1.8	3		S
Input capacitance	$C_{iss}$	$V_{DS} = 10\text{V}, V_{GS} = 0, f = 1\text{MHz}$		390		pF
Output capacitance	$C_{oss}$			160		pF
Feedback capacitance	$C_{rss}$			80		pF
Turn-on time	$t_{on}$		$V_{GS} = 10\text{V}, I_D = 3\text{A}$		30	
Fall time	$t_f$	$V_{DD} = 100\text{V}, R_L = 33\Omega$		45		ns
Turn-off time (delay time)	$t_d(\text{off})$			90		ns

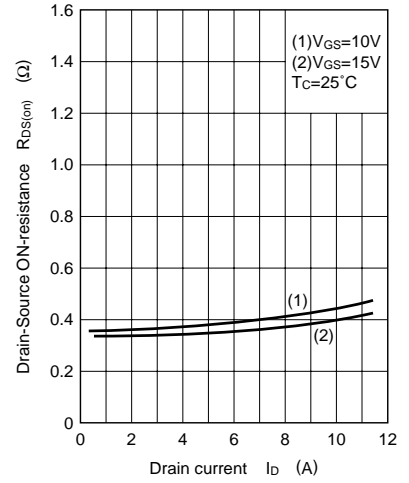
$I_D - V_{DS}$



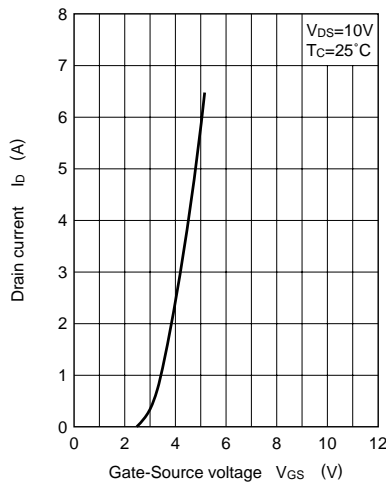
$|Y_{fs}| - I_D$



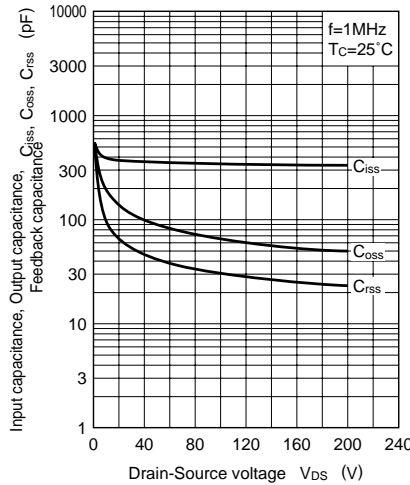
$R_{DS(on)} - I_D$



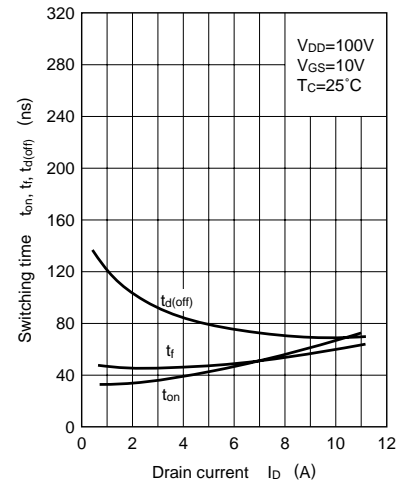
$I_D - V_{GS}$



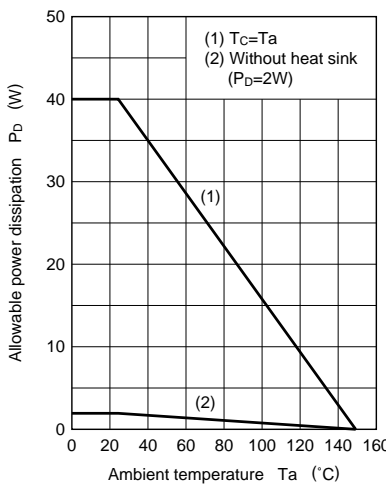
$C_{iss}, C_{oss}, C_{rss} - V_{DS}$



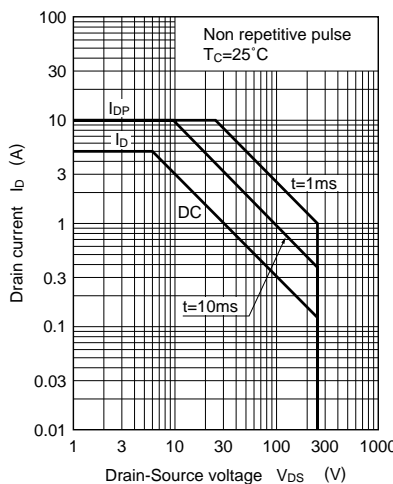
$t_{on}, t_f, t_d(off) - I_D$



$P_D - T_a$



Area of safe operation (ASO)



$R_{DS(on)} - I_D$

