

2SK758

Silicon N-Channel Power F-MOS

■ Features

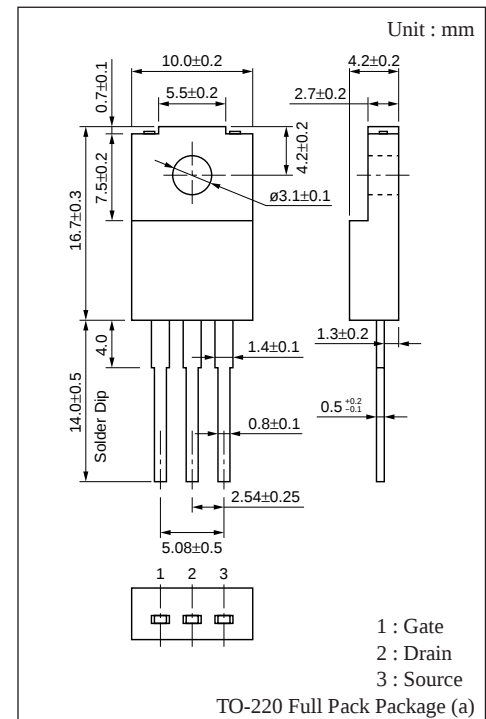
- Low ON-resistance $R_{DS(on)}$: $R_{DS(on)} = 0.45\Omega(\text{typ})$
- High-speed switching : $t_f = 45\text{ns}(\text{typ})$
- No secondary breakdown

■ Applications

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

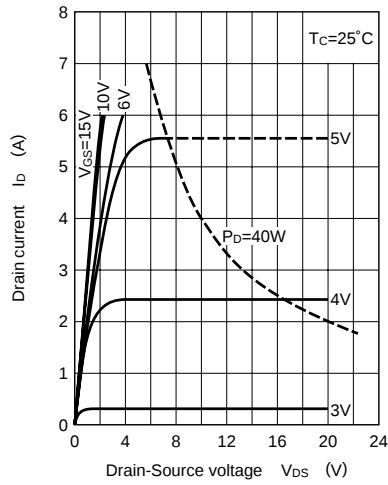
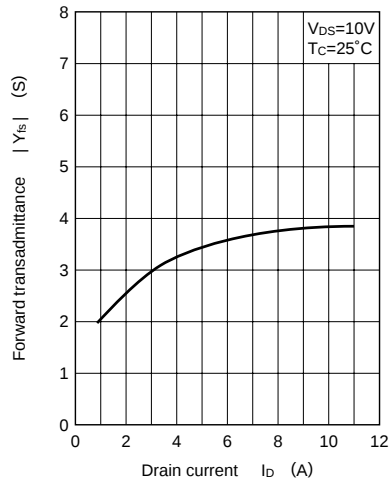
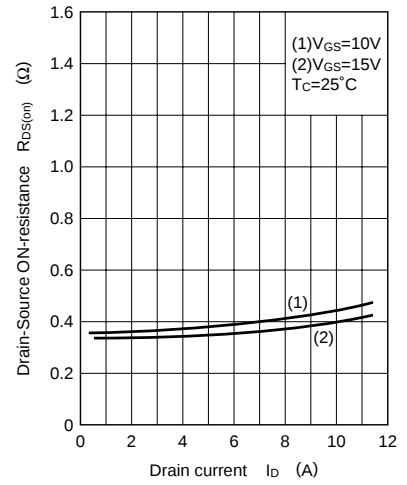
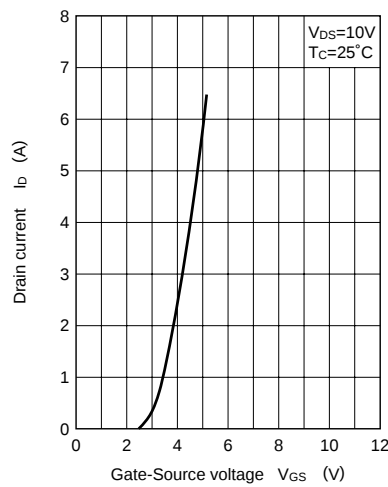
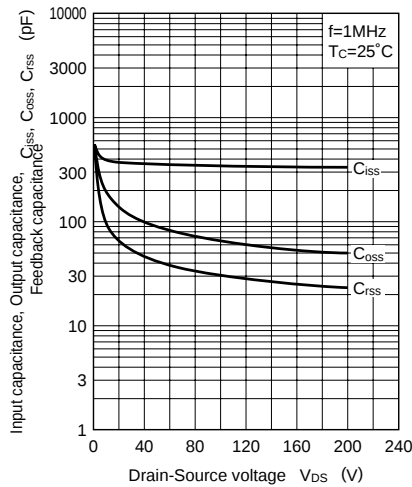
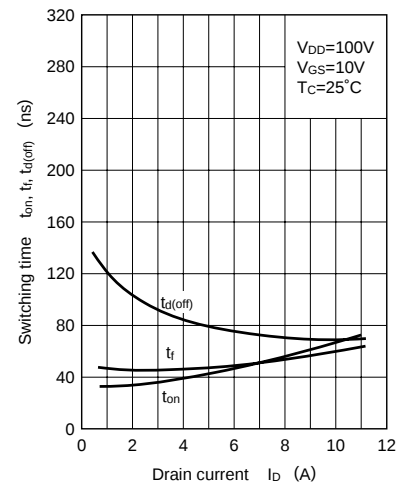
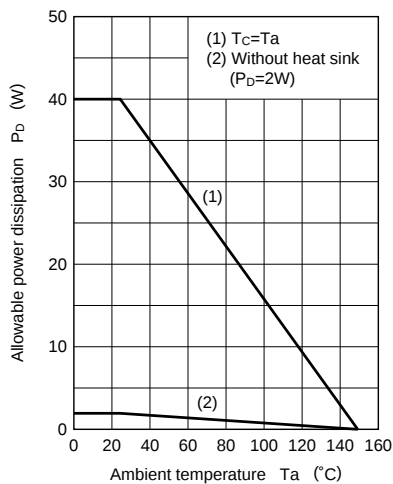
■ Absolute Maximum Ratings ($T_c = 25^\circ\text{C}$)

Parameter		Symbol	Rating	Unit
Drain-Source breakdown voltage		V_{DSS}	250	V
Gate-Source voltage		V_{GSS}	± 20	V
Drain current	DC	I_D	± 5	A
	Pulse	I_{DP}	± 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 $+150$	$^\circ\text{C}$

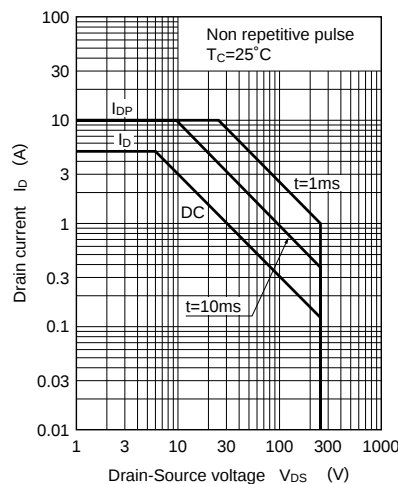


■ Electrical Characteristics ($T_c = 25^\circ\text{C}$)

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}	$V_{GS} = \pm 20\text{V}, V_{DS} = 0$			± 1	μA
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	Ω
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}	$V_{GS} = 10\text{V}, I_D = 3\text{A}$ $V_{DD} = 100\text{V}, R_L = 33\Omega$		30		ns
Fall time	t_f			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)

 $R_{DS(on)} - I_D$ 