

# 2SK2128

## Silicon N-Channel Power F-MOS

### ■ Features

- Avalanche energy capability guaranteed : EAS >15mJ
- $V_{GS}=\pm 20V$  guaranteed
- High-speed switching :  $t_f=35ns$
- No secondary breakdown

### ■ Applications

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

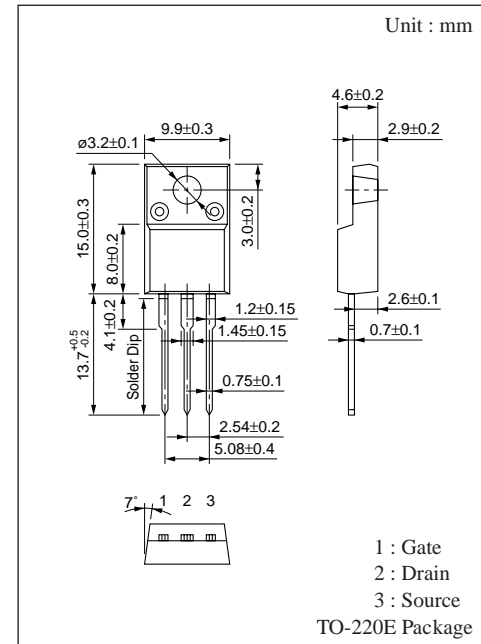
### ■ Absolute Maximum Ratings ( $T_c = 25^\circ C$ )

Parameter	Symbol	Rating	Unit
Drain-Source breakdown voltage	$V_{DSS}$	800	V
Gate-Source voltage	$V_{GSS}$	$\pm 30$	V
Drain current	DC	$I_D$	A
	Pulse	$I_{DP}$	A
Avalanche energy capability	EAS *	15	mJ
Allowable power dissipation	$T_C = 25^\circ C$	$P_D$	40
	$T_a = 25^\circ C$		2
Channel temperature	$T_{ch}$	150	$^\circ C$
Storage temperature	$T_{stg}$	-55 to +150	$^\circ C$

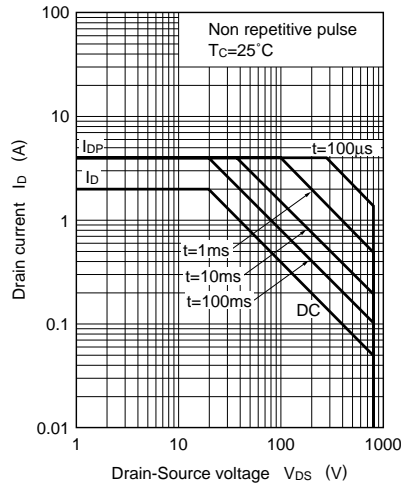
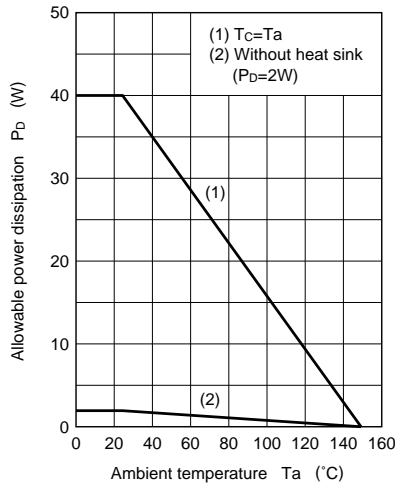
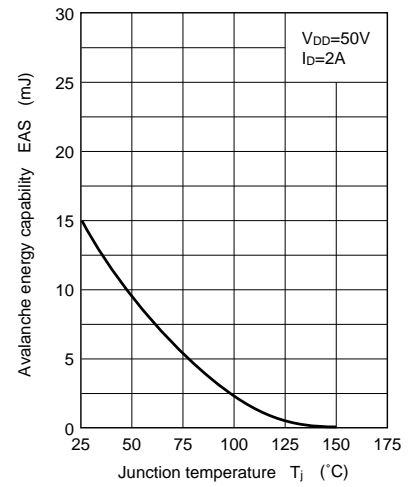
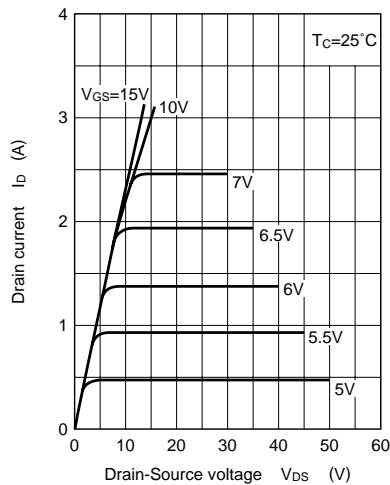
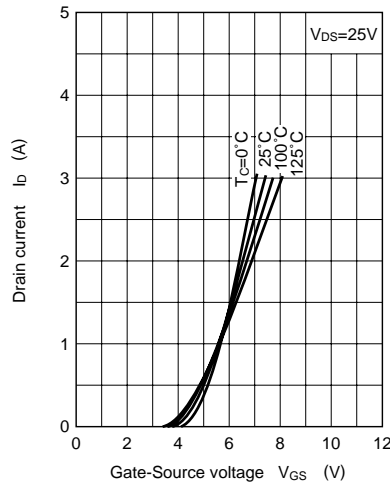
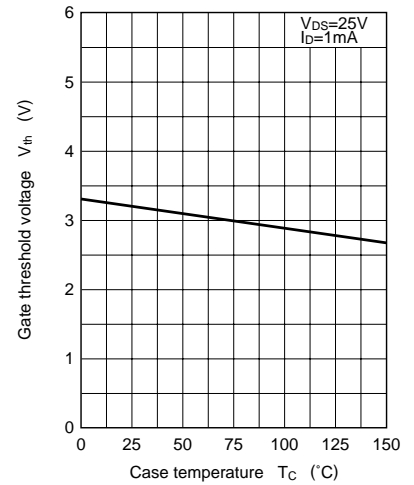
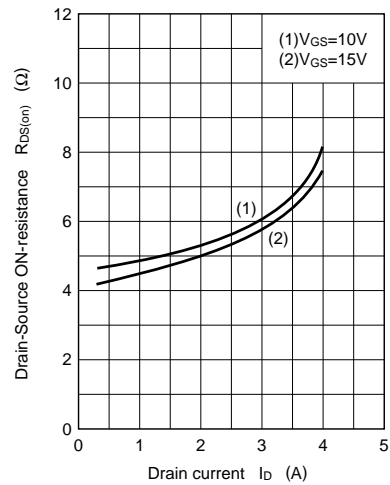
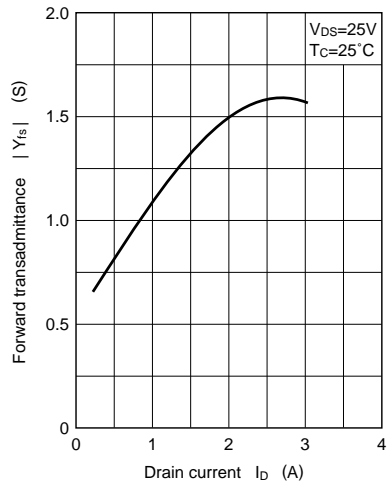
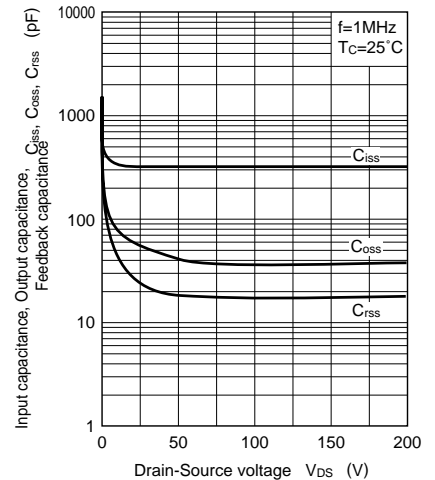
\*  $L=5mH$ ,  $I_L=2.45A$ ,  $V_{DD}=50V$ , 1 pulse

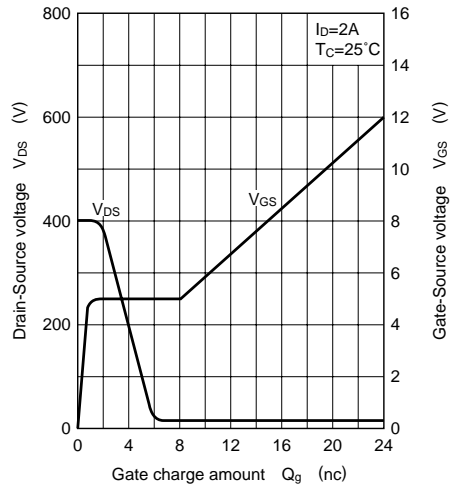
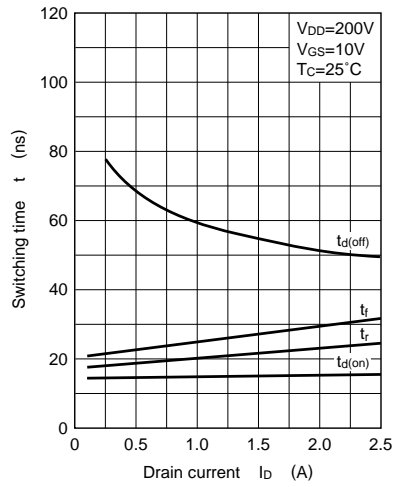
### ■ Electrical Characteristics ( $T_c = 25^\circ C$ )

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Drain-Source cut-off current	$I_{DSS}$	$V_{DS}=640V$ , $V_{GS}=0$			0.1	mA
Gate-Source leakage current	$I_{GSS}$	$V_{GS}=\pm 30V$ , $V_{DS}=0$			$\pm 1$	$\mu A$
Drain-Source breakdown voltage	$V_{DSS}$	$I_D=1mA$ , $V_{GS}=0$	800			V
Gate threshold voltage	$V_{th}$	$V_{DS}=25V$ , $I_D=1mA$	2		5	V
Drain-Source ON-resistance	$R_{DS(on)}$	$V_{GS}=10V$ , $I_D=1A$		4.8	7	$\Omega$
Forward transadmittance	$ Y_{fs} $	$V_{DS}=25V$ , $I_D=1A$	0.7	1.1		S
Diode forward voltage	$V_{DSF}$	$I_{DR}=2A$ , $V_{GS}=0$			-1.3	V
Input capacitance	$C_{iss}$	$V_{DS}=20V$ , $V_{GS}=0$ , $f=1MHz$		350		pF
Output capacitance	$C_{oss}$			60		pF
Feedback capacitance	$C_{rss}$			25		pF
Turn-on time (delay time)	$t_{d(on)}$	$V_{GS}=10V$ , $I_D=1A$ $V_{DD}=200V$ , $R_L=200\Omega$		15		ns
Rise time	$t_r$			20		ns
Fall time	$t_f$			25		ns
Turn-off time (delay time)	$t_{d(off)}$			60		ns
Channel-Case heat resistance	$R_{th(ch-c)}$				3.125	$^\circ C/W$



Area of safe operation (ASO)

 $P_D - T_a$  $EAS - T_j$  $I_D - V_{DS}$  $I_D - V_{GS}$  $V_{th} - T_C$  $R_{DS(on)} - I_D$  $|Y_{fs}| - I_D$  $C_{iss}, C_{oss}, C_{rss} - V_{DS}$ 

$V_{DS}, V_{GS} - Q_g$  $t_{d(on)}, t_r, t_f, t_{d(off)} - I_D$  $R_{th} - t_p$ 