

# 2SK1610

## Silicon N-Channel Power F-MOS FET

### ■ Features

- High avalanche energy capacity
- $V_{GS}$ : 30V guaranteed
- Low  $R_{DS(on)}$ , high-speed switching characteristic

### ■ Applications

- High-speed switching (switching power supply)
- For high-frequency power amplification

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

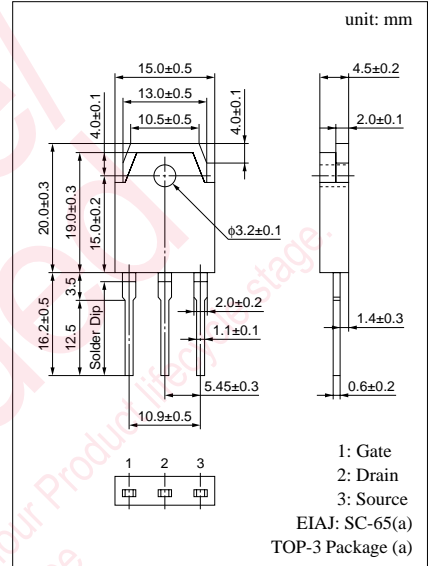
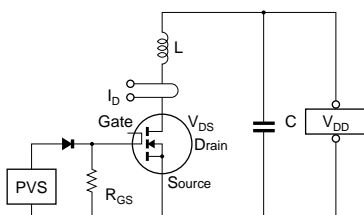
Parameter	Symbol	Rated	Unit
Drain to Source breakdown voltage	$V_{DSS}$	500	V
Gate to Source voltage	$V_{GSS}$	$\pm 30$	V
Drain current	DC	$I_D$	$\pm 13$ A
	Pulse	$I_{DP}$	$\pm 26$ A
Avalanche energy capacity	EAS*	170	mJ
Allowable power dissipation	$T_C = 25^\circ\text{C}$	$P_D$	120 W
	$T_a = 25^\circ\text{C}$		2.5 W
Channel temperature	$T_{ch}$	150	$^\circ\text{C}$
Storage temperature	$T_{stg}$	-55 to +150	$^\circ\text{C}$

\* Single pulse

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

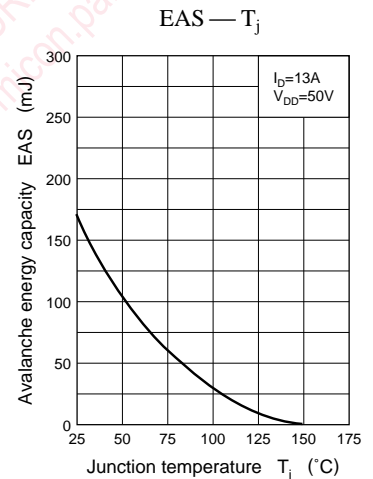
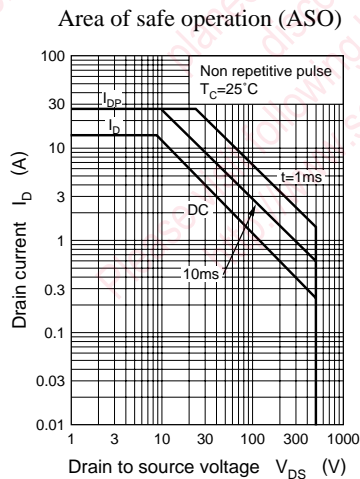
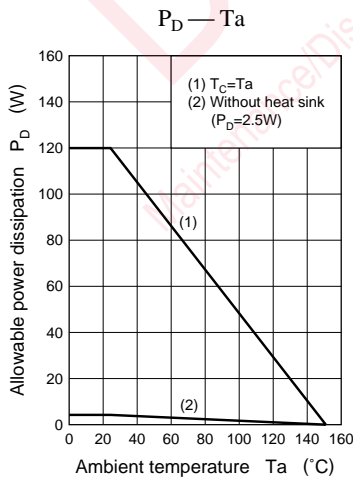
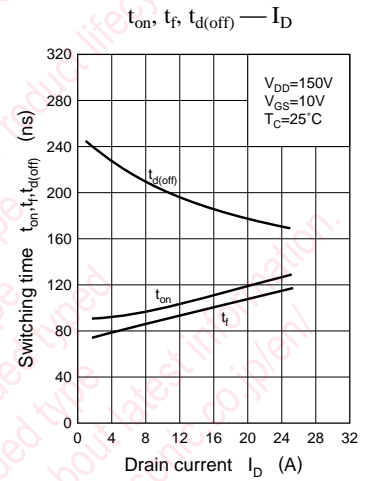
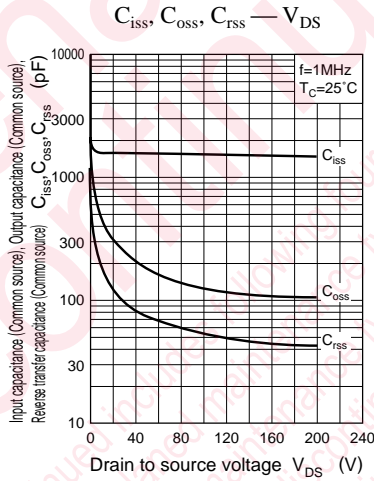
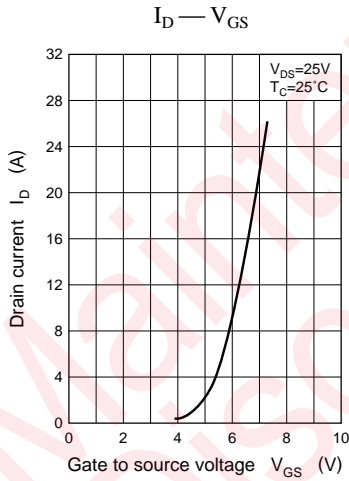
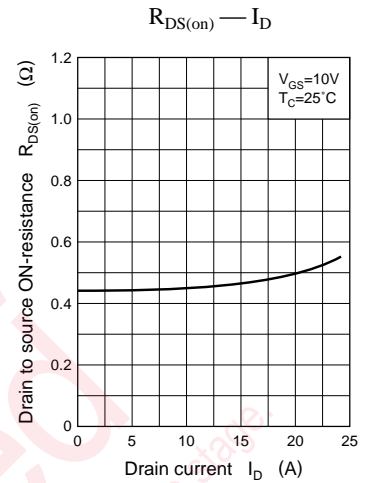
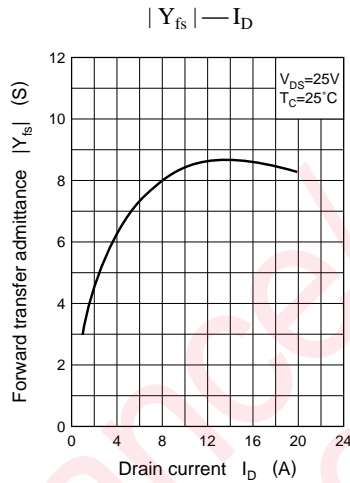
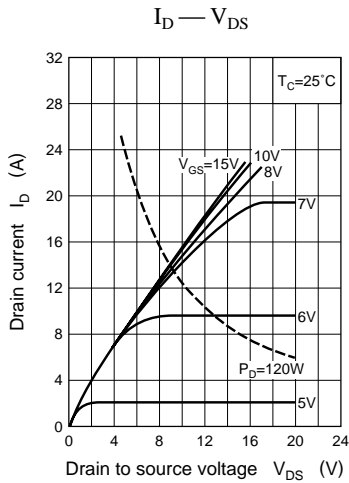
Parameter	Symbol	Conditions	min	typ	max	Unit	
Drain to Source cut-off current	$I_{DSS}$	$V_{DS} = 400\text{V}, V_{GS} = 0$			0.1	mA	
Gate to Source leakage current	$I_{GSS}$	$V_{GS} = \pm 30\text{V}, V_{DS} = 0$			$\pm 1$	$\mu\text{A}$	
Drain to Source breakdown voltage	$V_{DSS}$	$I_D = 1\text{mA}, V_{GS} = 0$	500			V	
Avalanche energy capacity	EAS*	$L = 2\text{mH}, I_D = 13\text{A}, V_{DD} = 50\text{V}$	170			mJ	
Gate threshold voltage	$V_{th}$	$V_{DS} = 25\text{V}, I_D = 1\text{mA}$	1		5	V	
Drain to Source ON-resistance	$R_{DS(on)}$	$V_{GS} = 10\text{V}, I_D = 7\text{A}$		0.45	0.6	$\Omega$	
Forward transfer admittance	$ Y_{fs} $	$V_{DS} = 25\text{V}, I_D = 7\text{A}$	5	8		S	
Input capacitance (Common Source)	$C_{iss}$	$V_{DS} = 20\text{V}, V_{GS} = 0, f = 1\text{MHz}$		1700		pF	
Output capacitance (Common Source)	$C_{oss}$				300		pF
Reverse transfer capacitance (Common Source)	$C_{rss}$				120		pF
Turn-on time	$t_{on}$	$V_{GS} = 10\text{V}, I_D = 7\text{A}$ $V_{DD} = 150\text{V}, R_L = 21.4\Omega$		100		ns	
Fall time	$t_f$				90		ns
Turn-off time (delay time)	$t_{d(off)}$				210		ns

\* Avalanche energy capacity test circuit



1: Gate  
2: Drain  
3: Source

EIAJ: SC-65(a)  
TOP-3 Package (a)



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