

# 2SK1834

## Silicon N-Channel Power F-MOS

### ■ Features

- Avalanche energy capability guaranteed : EAS > 15mJ
- $V_{GS}=\pm 30V$  guaranteed
- High-speed switching :  $t_f = 25ns$
- No secondary breakdown

### ■ Applications

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

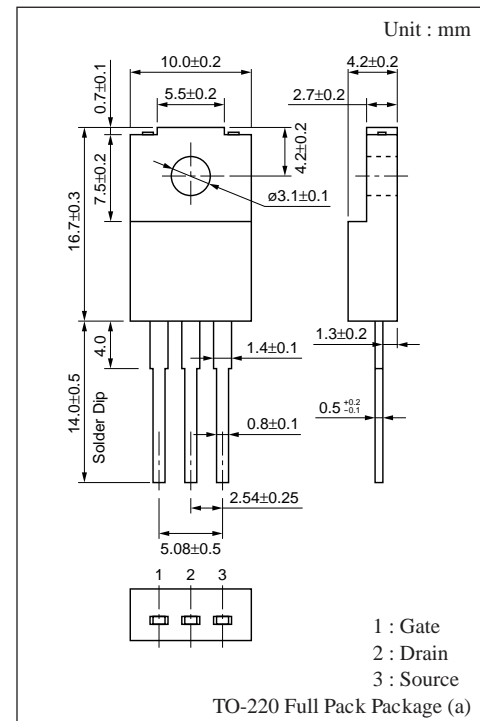
### ■ Absolute Maximum Ratings ( $T_c = 25^\circ C$ )

Parameter	Symbol	Rating	Unit	
Drain-Source breakdown voltage	$V_{DSS}$	800	V	
Gate-Source voltage	$V_{GSS}$	$\pm 30$	V	
Drain current	DC	$I_D$	$\pm 2$	A
	Pulse	$I_{DP}$	$\pm 4$	A
Avalanche energy capability	EAS *	15	mJ	
Allowable power dissipation	$T_c = 25^\circ C$	$P_D$	40	W
	$T_a = 25^\circ C$		2	
Channel temperature	$T_{ch}$	150	$^\circ C$	
Storage temperature	$T_{stg}$	-55 to +150	$^\circ C$	

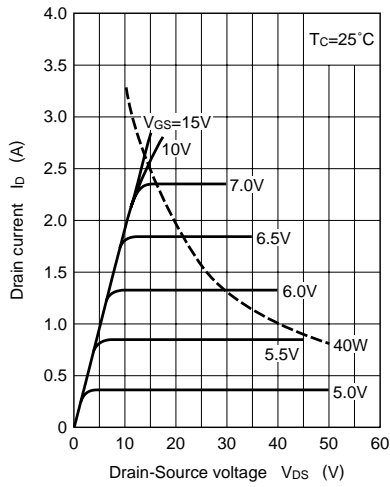
\*  $L = 7.5mH$ ,  $I_L = 2A$ ,  $V_{DD} = 50V$ , 1 pulse

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

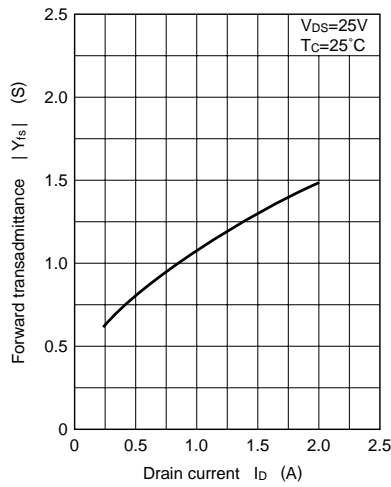
Parameter	Symbol	Condition	Min	Typ	Max	Unit	
Drain-Source cut-off current	$I_{DSS}$	$V_{DS} = 640V$ , $V_{GS} = 0$			0.1	mA	
Gate-Source leakage current	$I_{GSS}$	$V_{GS} = \pm 30V$ , $V_{DS} = 0$			$\pm 1$	$\mu A$	
Drain-Source breakdown voltage	$V_{DSS}$	$I_D = 1mA$ , $V_{GS} = 0$	800			V	
Gate threshold 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	$t_{on}$	$V_{GS} = 10V$ , $I_D = 1A$ $V_{DD} = 200V$ , $R_L = 200\Omega$		35		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	$^\circ C/W$	



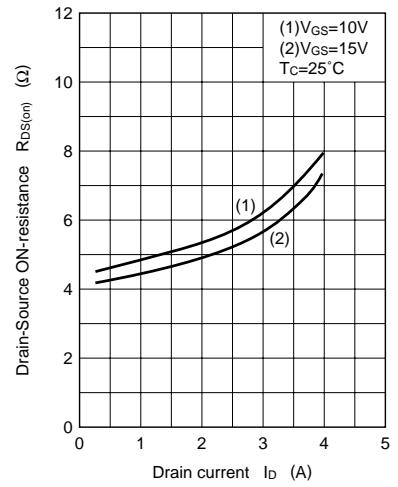
$I_D - V_{DS}$



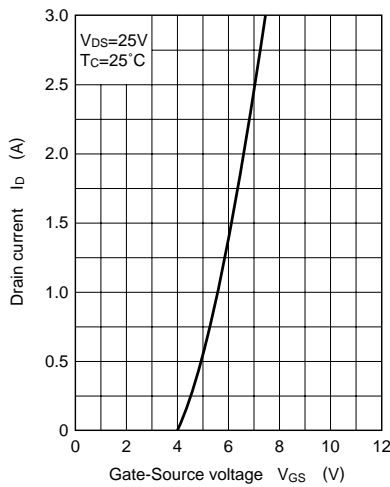
$|Y_{fs}| - I_D$



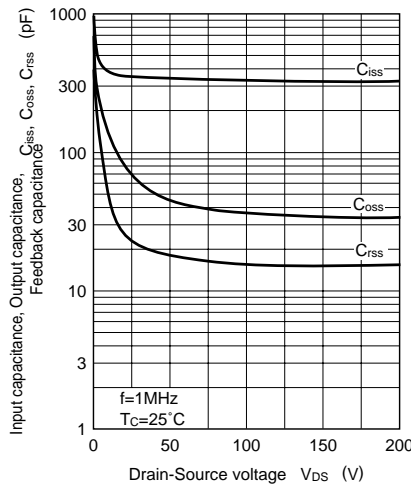
$R_{DS(on)} - I_D$



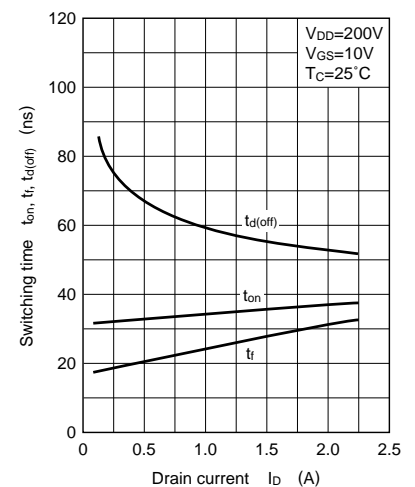
$I_D - V_{GS}$



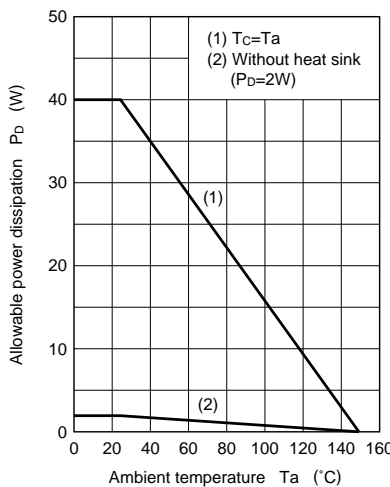
$C_{iss}, C_{oss}, C_{rss} - V_{DS}$



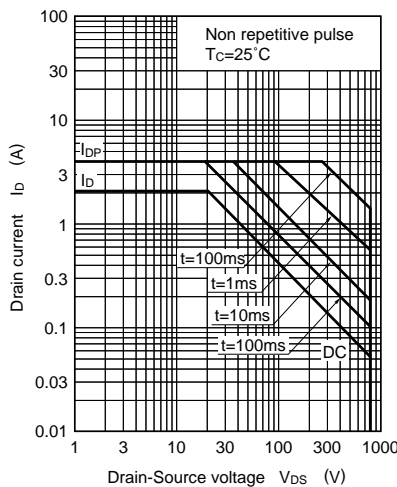
$t_{on}, t_f, t_d(off) - I_D$



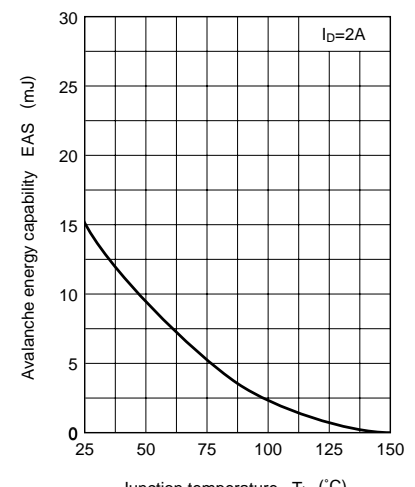
$P_D - T_a$

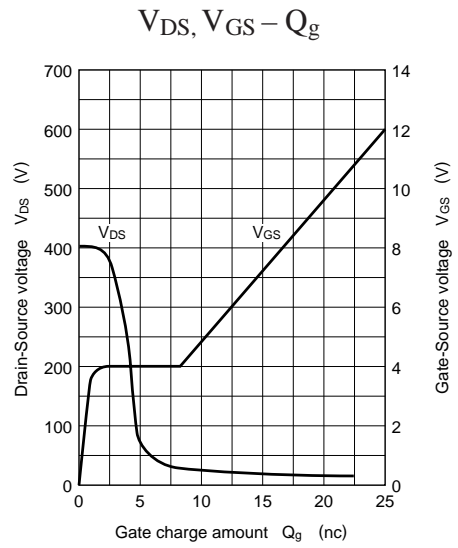


Area of safe operation (ASO)

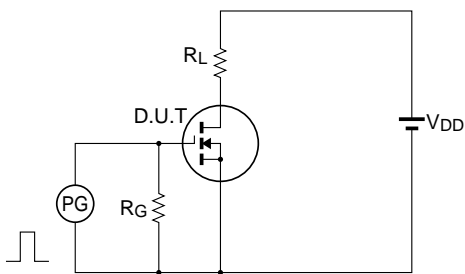


$EAS - T_j$





Switching measurement circuit



Avalanche capability test circuit

