



# 2SK4197FS

## N-Channel Power MOSFET 600V, 3.5A, 3.25Ω, TO-220F-3FS

ON Semiconductor®

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### Features

- High-speed switching.
- Avalanche resistance guarantee.
- 10V drive.

### Specifications

#### Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V <sub>DSS</sub>		600	V
Gate-to-Source Voltage	V <sub>GSS</sub>		±30	V
Drain Current (DC)	I <sub>Dc</sub> *1	Limited only by maximum temperature T <sub>ch</sub> =150°C	3.5	A
	I <sub>Dpack</sub> *2	T <sub>c</sub> =25°C (Our ideal heat dissipation condition)*3	3.3	A
Drain Current (Pulse)	I <sub>DP</sub>	PW≤10μs, duty cycle≤1%	13	A
Allowable Power Dissipation	P <sub>D</sub>		2.0	W
		T <sub>c</sub> =25°C (Our ideal heat dissipation condition)*3	28	W
Channel Temperature	T <sub>ch</sub>		150	°C
Storage Temperature	T <sub>stg</sub>		-55 to +150	°C
Avalanche Energy (Single Pulse) *4	E <sub>A</sub> S		29	mJ
Avalanche Current *5	I <sub>AV</sub>		3.3	A

Note : \*1 Shows chip capability.

\*2 Package limited.

\*3 Our condition is radiation from backside.

The method is applying silicone grease to the backside of the device and attaching the device to water-cooled radiator made of aluminium.

\*4 V<sub>DD</sub>=50V, L=5mH, I<sub>AV</sub>=3.3A

\*5 L≤5mH, Single pulse

Marking : K4197FS

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

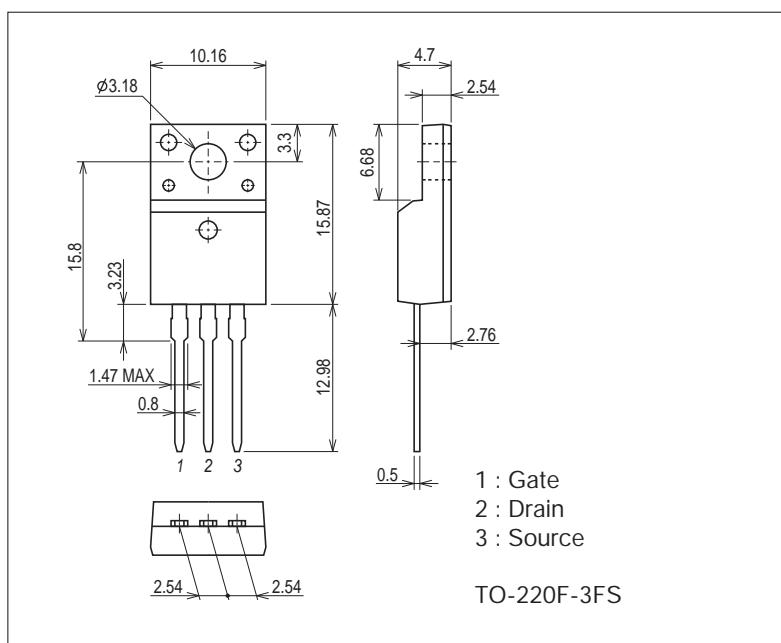
## Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D=10\text{mA}$ , $V_{GS}=0\text{V}$	600			V
Zero-Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=480\text{V}$ , $V_{GS}=0\text{V}$			100	$\mu\text{A}$
Gate-to-Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 30\text{V}$ , $V_{DS}=0\text{V}$			$\pm 100$	nA
Cutoff Voltage	$V_{GS(\text{off})}$	$V_{DS}=10\text{V}$ , $I_D=1\text{mA}$	3		5	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS}=10\text{V}$ , $I_D=1.8\text{A}$	0.8	1.6		S
Static Drain-to-Source On-State Resistance	$R_{DS(\text{on})}$	$I_D=1.8\text{A}$ , $V_{GS}=10\text{V}$		2.5	3.25	$\Omega$
Input Capacitance	$C_{iss}$	$V_{DS}=30\text{V}$ , $f=1\text{MHz}$		260		pF
Output Capacitance	$C_{oss}$	$V_{DS}=30\text{V}$ , $f=1\text{MHz}$		50		pF
Reverse Transfer Capacitance	$C_{rss}$	$V_{DS}=30\text{V}$ , $f=1\text{MHz}$		9.7		pF
Turn-ON Delay Time	$t_{d(\text{on})}$	See specified Test Circuit.		12		ns
Rise Time	$t_r$	See specified Test Circuit.		20		ns
Turn-OFF Delay Time	$t_{d(\text{off})}$	See specified Test Circuit.		28		ns
Fall Time	$t_f$	See specified Test Circuit.		12		ns
Total Gate Charge	$Q_g$	$V_{DS}=200\text{V}$ , $V_{GS}=10\text{V}$ , $I_D=3.5\text{A}$		11		nC
Gate-to-Source Charge	$Q_{gs}$	$V_{DS}=200\text{V}$ , $V_{GS}=10\text{V}$ , $I_D=3.5\text{A}$		2.6		nC
Gate-to-Drain "Miller" Charge	$Q_{gd}$	$V_{DS}=200\text{V}$ , $V_{GS}=10\text{V}$ , $I_D=3.5\text{A}$		5.8		nC
Diode Forward Voltage	$V_{SD}$	$I_S=3.5\text{A}$ , $V_{GS}=0\text{V}$		0.9	1.2	V

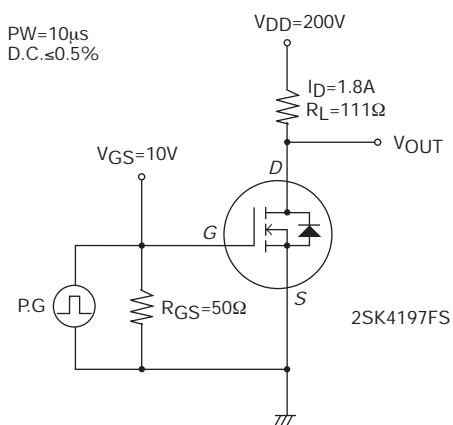
## Package Dimensions

unit : mm (typ)

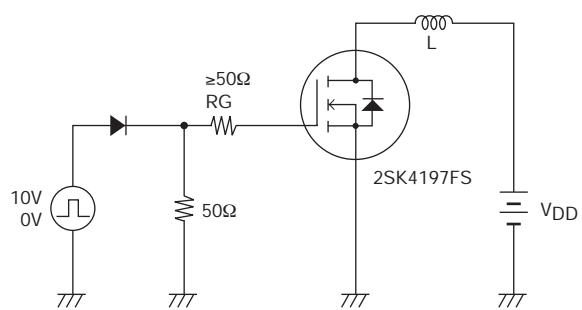
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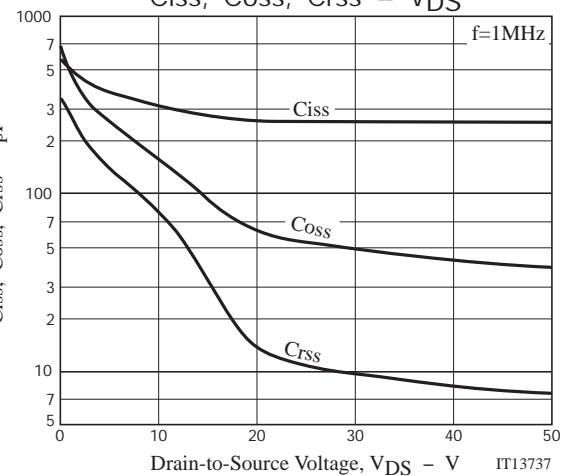
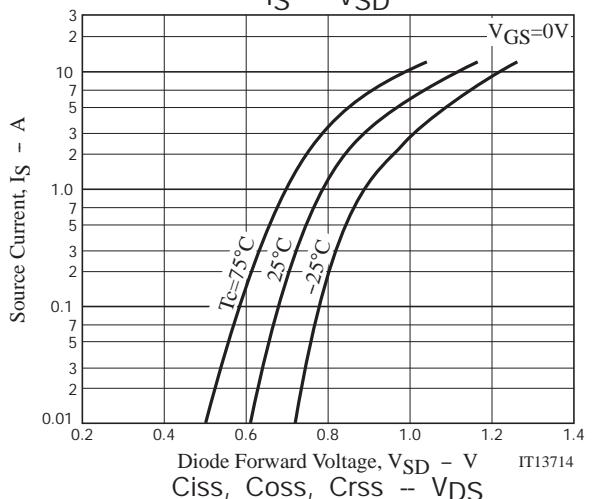
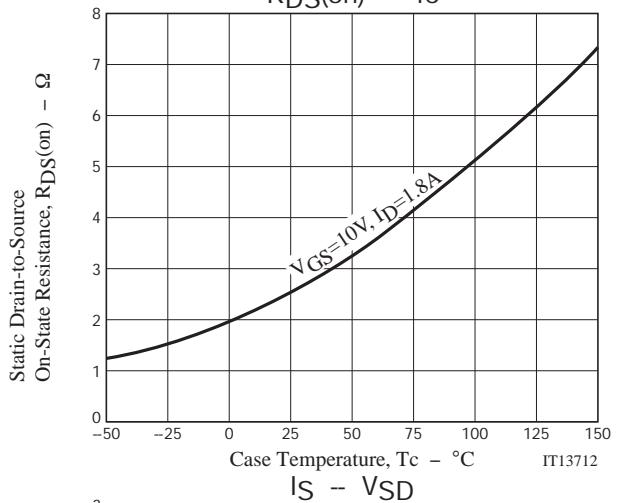
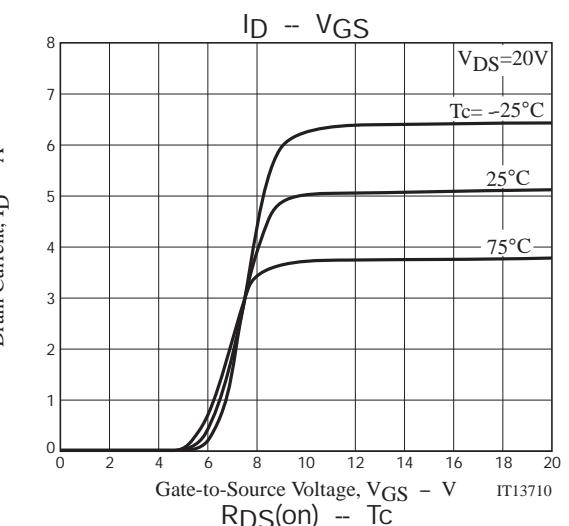
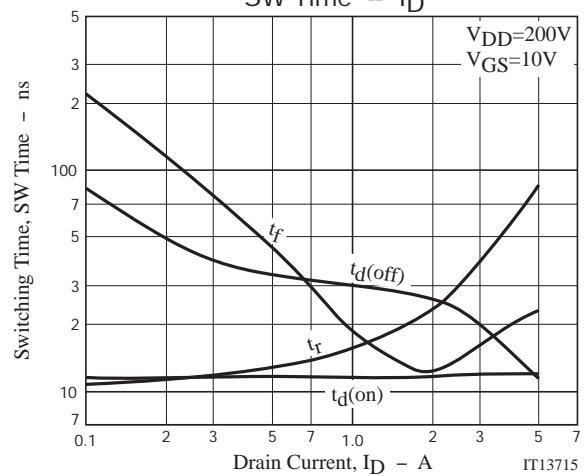
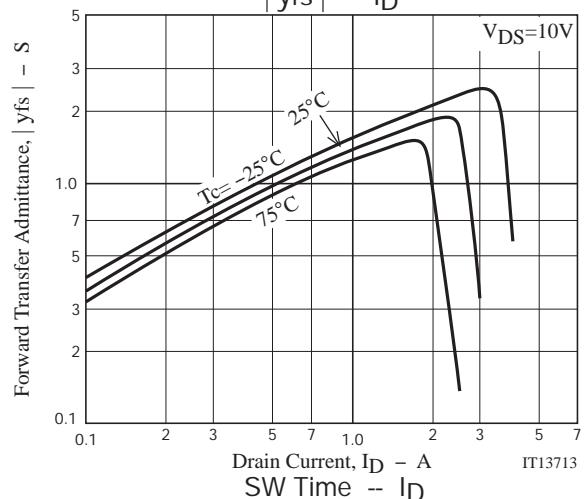
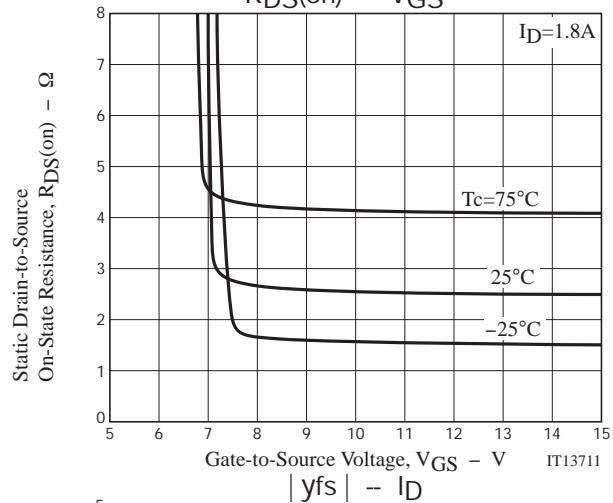
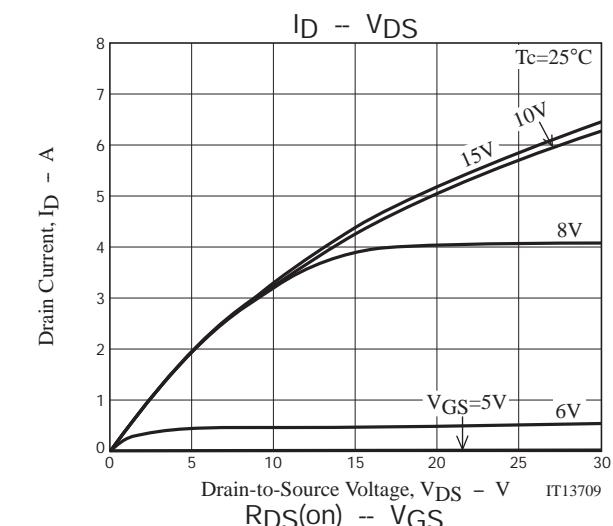


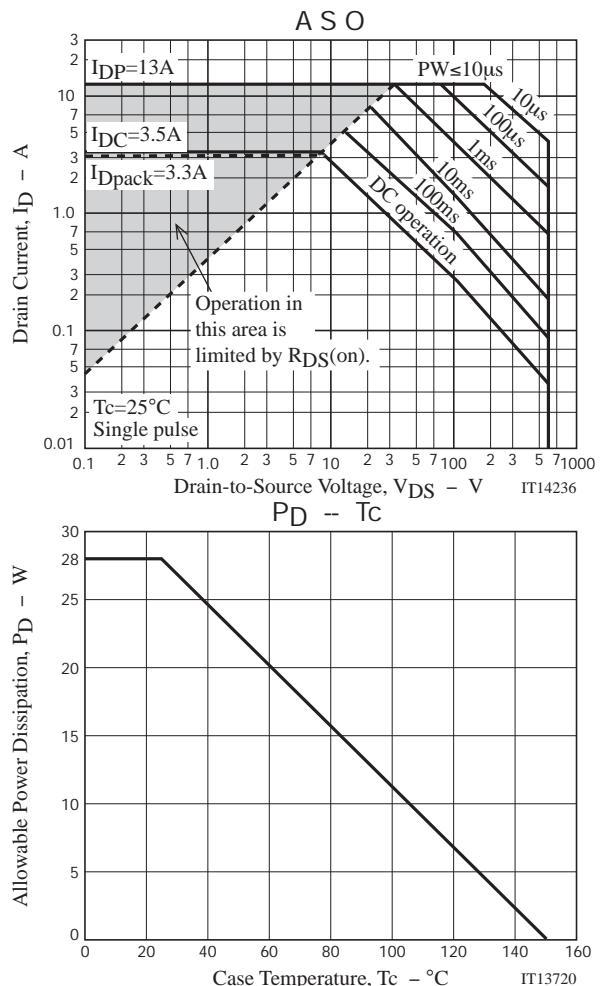
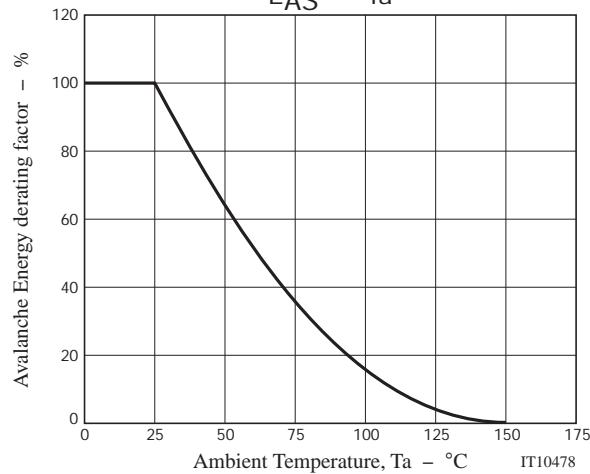
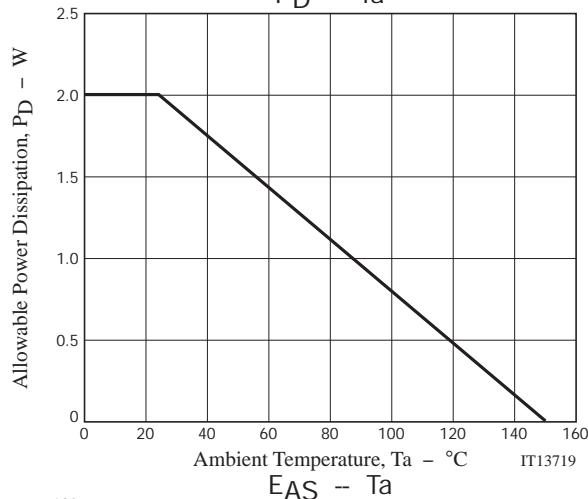
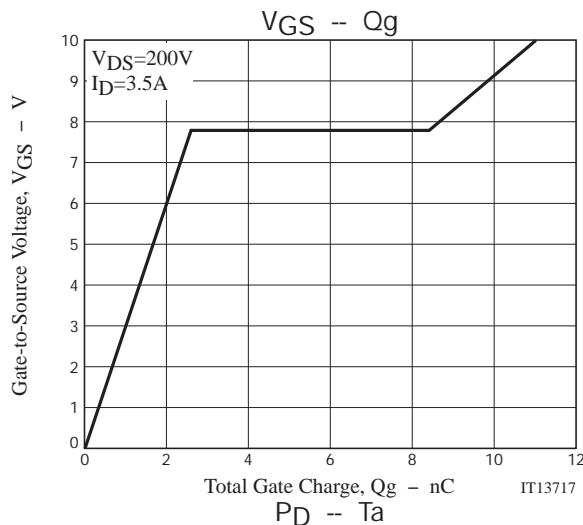
## Switching Time Test Circuit



## Avalanche Resistance Test Circuit







**Note on usage :** Since the 2SK4197FS is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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