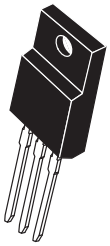
Ordering number : ENA1368B

2SK4197FS

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

ON Semiconductor®

http://onsemi.com



TO-220F-3FS

Features

- ON-reistance $R_{DS(on)}$=2.5Ω(typ.)
- Input capacitance Ciss=260pF(typ.)
- 10V drive

Specifications

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Drain to Source Voltage	V_{DSS}		600	V
Gate to Source Voltage	V_{GSS}		±30	V
Drain Current (DC)	I_D		3.5	A
Drain Current (DC) Limited by Package	I_{DL}		3.3	A
Drain Current (Pulse)	I_{DP}	PW≤10μs, duty cycle≤1%	13	A
Allowable Power Dissipation	P_D		2.0	W
		Tc=25°C	28	W
Channel Temperature	Tch		150	°C
Storage Temperature	Tstg		−55 to +150	°C
Avalanche Energy (Single Pulse) *1	E_{AS}		29	mJ
Avalanche Current *2	I_{AV}		3.3	A

Note :*1 V_{DD}=50V, L=5mH, I_{AV}=3.3A (Fig.1)
*2 L≤5mH, Single pulse

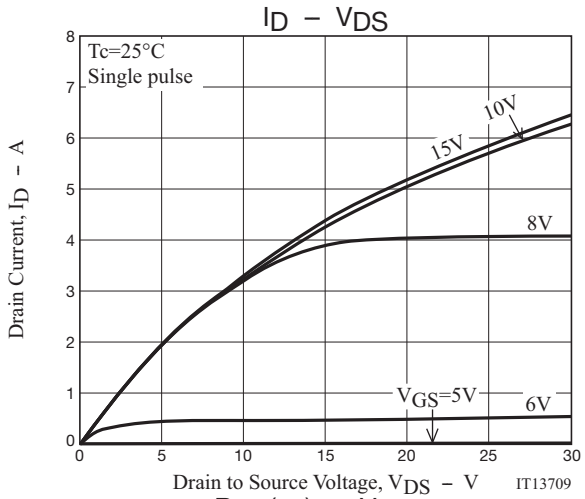
Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

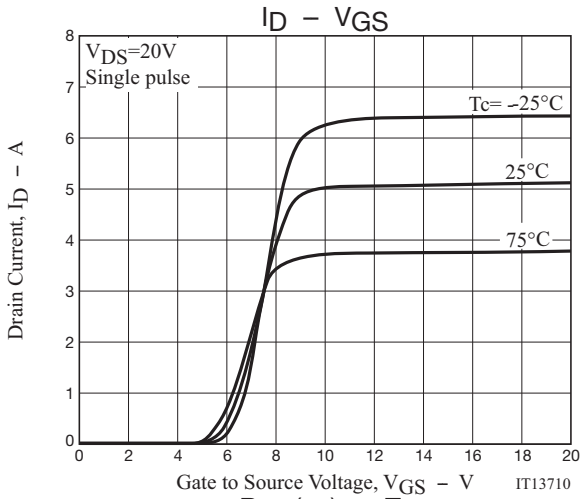
Electrical Characteristics at Ta=25°C

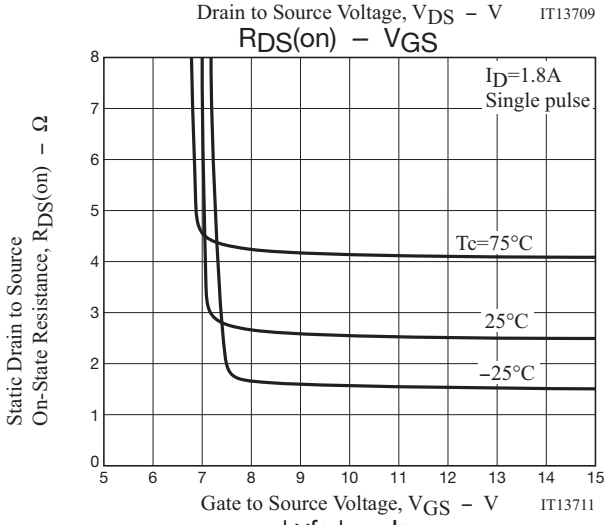
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain to Source Breakdown Voltage	$V_{(BR)DSS}$	I_D=10mA, V_{GS}=0V	600			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=480V, V_{GS}=0V			100	μA
Gate to Source Leakage Current	I_{GSS}	V_{GS}=±30V, V_{DS}=0V			±100	nA
Cutoff Voltage	$V_{GS(off)}$	V_{DS}=10V, I_D=1mA	3		5	V
Forward Transfer Admittance	| yfs |	V_{DS}=10V, I_D=1.8A	0.8	1.6		S
Static Drain to Source On-State Resistance	$R_{DS(on)}$	I_D=1.8A, V_{GS}=10V		2.5	3.25	Ω
Input Capacitance	Ciss	V_{DS}=30V, f=1MHz		260		pF
Output Capacitance	Coss			50		pF
Reverse Transfer Capacitance	Crss			9.7		pF
Turn-ON Delay Time	$t_{d(on)}$	Fig.2		12		ns
Rise Time	t_r			20		ns
Turn-OFF Delay Time	$t_{d(off)}$			28		ns
Fall Time	t_f			12		ns
Total Gate Charge	Qg	V_{DS}=200V, V_{GS}=10V, I_D=3.5A		11		nC
Gate to Source Charge	Qgs			2.6		nC
Gate to Drain “Miller” Charge	Qgd			5.8		nC
Diode Forward Voltage	V_{SD}	I_S=3.5A, V_{GS}=0V		0.9	1.2	V

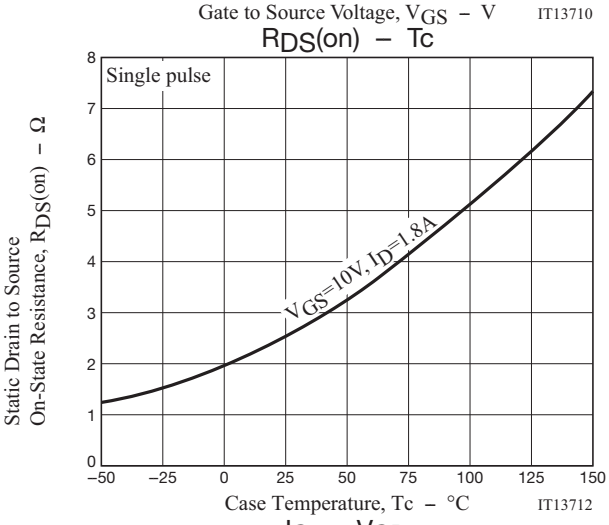
ORDERING INFORMATION

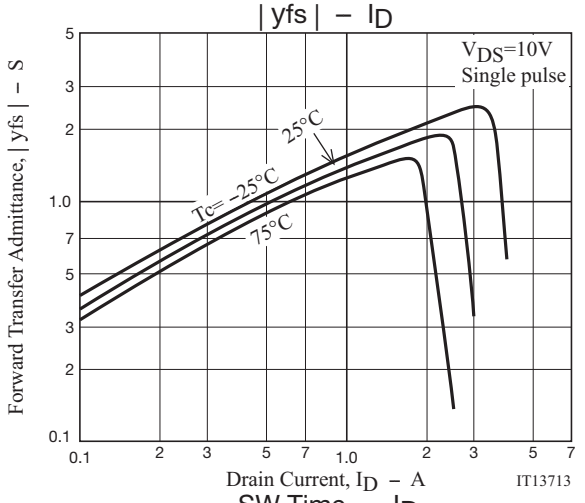
See detailed ordering and shipping information on page 4 of this data sheet.

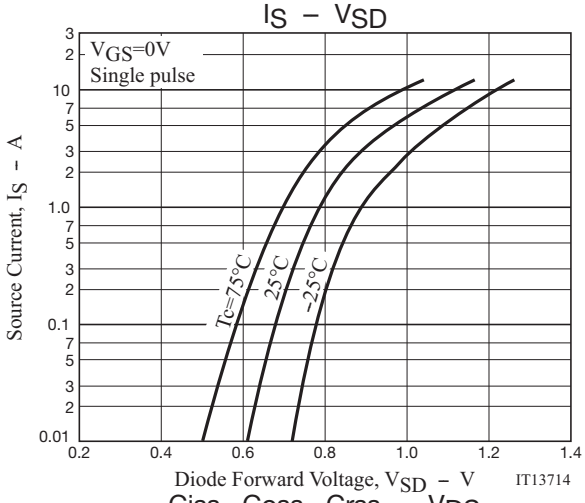

ID – VDS
Tc=25°C
Single pulse
10V
15V
8V
VGS=5V
6V
Drain Current, ID – A
Drain to Source Voltage, VDS – V
IT13709

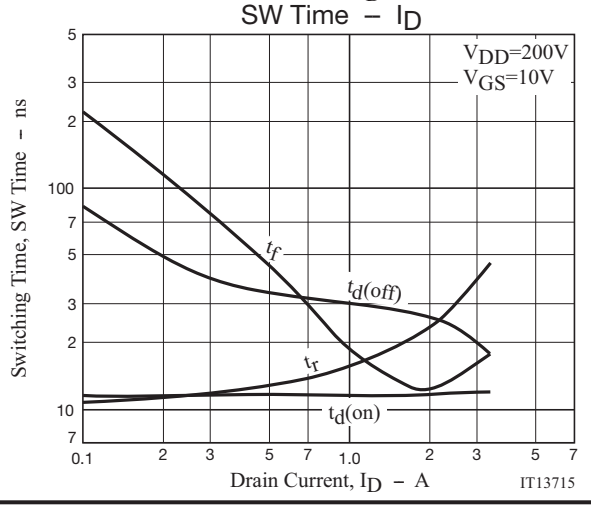

ID – VGS
VDS=20V
Single pulse
Tc= –25°C
25°C
75°C
Drain Current, ID – A
Gate to Source Voltage, VGS – V
IT13710

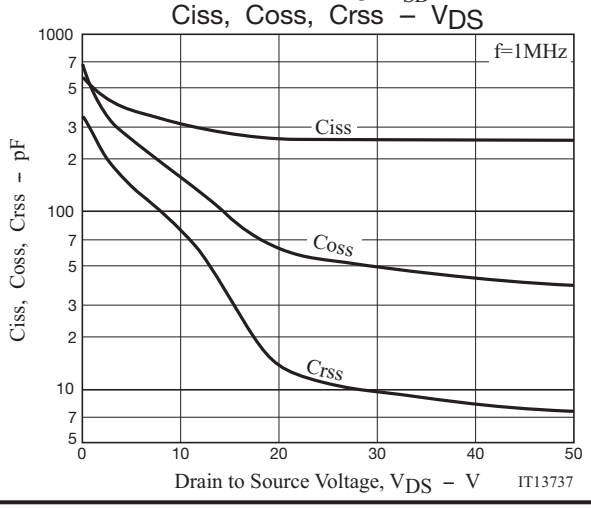

RDS(on) – VGS
ID=1.8A
Single pulse
Tc=75°C
25°C
–25°C
Static Drain to Source
On-State Resistance, RDS(on) – Ω
Gate to Source Voltage, VGS – V
IT13711

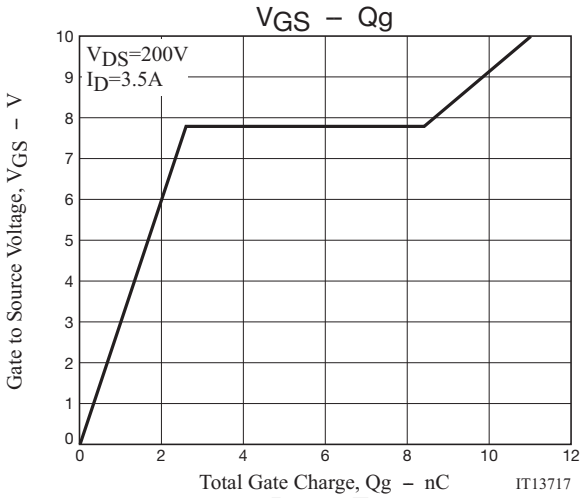

RDS(on) – Tc
Single pulse
VGS=10V, ID=1.8A
Static Drain to Source
On-State Resistance, RDS(on) – Ω
Case Temperature, Tc – °C
IT13712

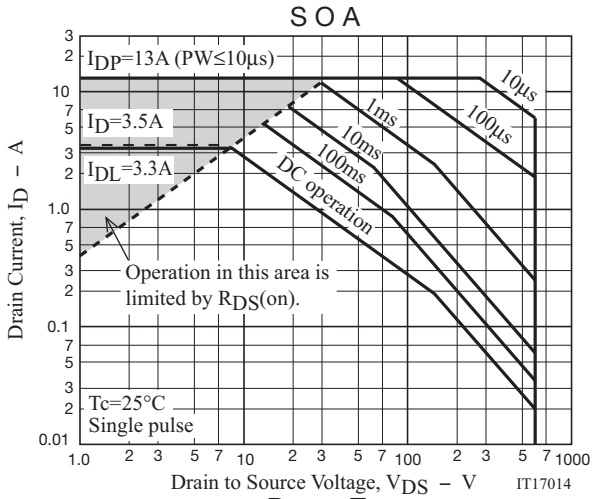

| yfs | – ID
VDS=10V
Single pulse
25°C
Tc= –25°C
75°C
Forward Transfer Admittance, | yfs | – S
Drain Current, ID – A
IT13713

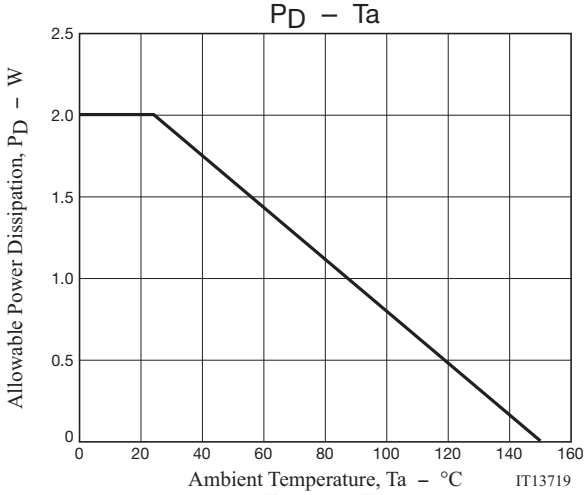

IS – VSD
VGS=0V
Single pulse
Tc=75°C
25°C
–25°C
Source Current, IS – A
Diode Forward Voltage, VSD – V
IT13714

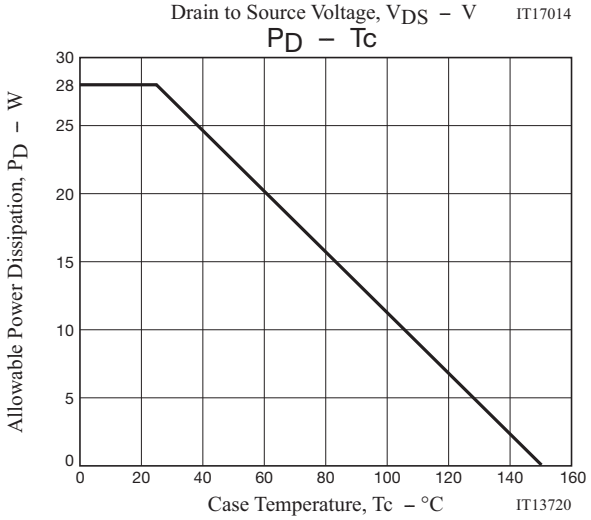

SW Time – ID
VDD=200V
VGS=10V
tf
td(off)
tr
td(on)
Switching Time, SW Time – ns
Drain Current, ID – A
IT13715

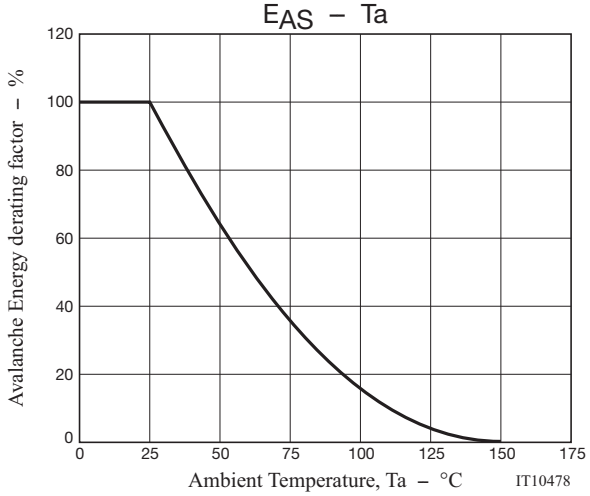

Ciss, Coss, Crss – VDS
f=1MHz
Ciss
Coss
Crss
Ciss, Coss, Crss – pF
Drain to Source Voltage, VDS – V
IT13737


VGS – Qg
VDS=200V
ID=3.5A
Gate to Source Voltage, VGS – V
Total Gate Charge, Qg – nC
IT13717


S O A
IDP=13A (PW≤10μs)
ID=3.5A
IDL=3.3A
10μs
100μs
1ms
10ms
100ms
DC operation
Operation in this area is limited by RDS(on).
Tc=25°C
Single pulse
Drain Current, ID – A
Drain to Source Voltage, VDS – V
IT17014


PD – Ta
Allowable Power Dissipation, PD – W
Ambient Temperature, Ta – °C
IT13719


PD – Tc
Allowable Power Dissipation, PD – W
Case Temperature, Tc – °C
IT13720

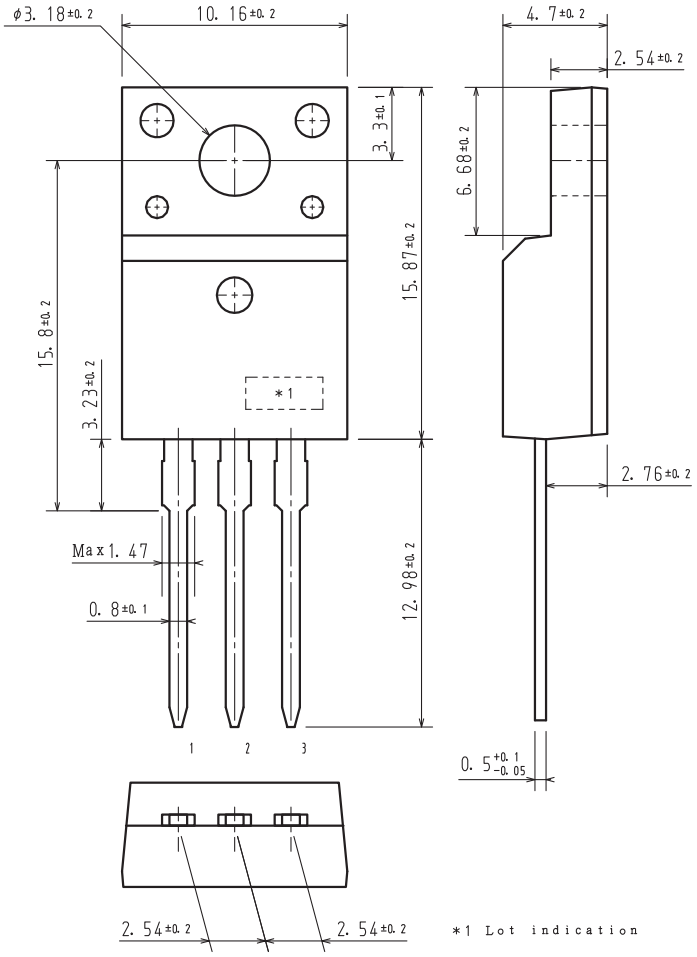

EAS – Ta
Avalanche Energy derating factor – %
Ambient Temperature, Ta – °C
IT10478

Package Dimensions

2SK4197FS

TO-220F-3FS
CASE 221AM
ISSUE O
Unit : mm

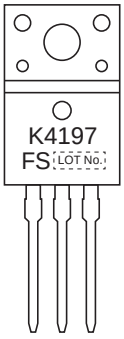
1: Gate
2: Drain
3: Source



Ordering & Package Information

Device	Package	Shipping	memo
2SK4197FS	TO-220F-3FS SC-67	50 pcs./tube	Pb-Free

Marking



Electrical Connection

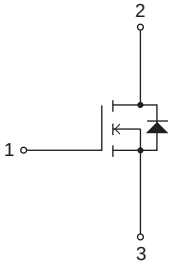


Fig.1 Unclamped Inductive Switching Test Circuit

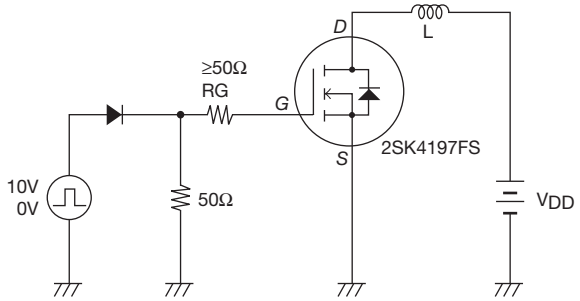
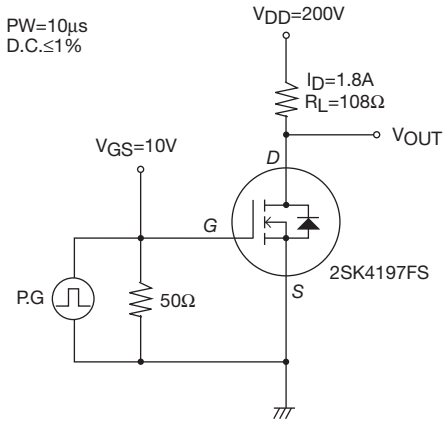


Fig.2 Switching Time Test Circuit



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