



SANYO Semiconductors

## DATA SHEET

# 2SK4098FS — N-Channel Silicon MOSFET

## General-Purpose Switching Device Applications

### Features

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

### Specifications

**Absolute Maximum Ratings** at  $T_a=25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	$V_{DSS}$		600	V
Gate-to-Source Voltage	$V_{GSS}$		$\pm 30$	V
Drain Current (DC)	$I_{DC}$ *1	Limited only by maximum temperature $T_{ch}=150^\circ\text{C}$	7	A
	$I_{Dpack}$ *2	$T_c=25^\circ\text{C}$ (SANYO's ideal heat dissipation condition)*3	6	A
Drain Current (Pulse)	$I_{DP}$	$PW \leq 10\mu\text{s}$ , duty cycle $\leq 1\%$	28	A
Allowable Power Dissipation	PD		2.0	W
		$T_c=25^\circ\text{C}$ (SANYO's ideal heat dissipation condition)*3	33	W
Channel Temperature	$T_{ch}$		150	$^\circ\text{C}$
Storage Temperature	$T_{stg}$		-55 to +150	$^\circ\text{C}$
Avalanche Energy (Single Pulse) *4	EAS		98	mJ
Avalanche Current *5	$I_{AV}$		6	A

Note : \*1 Shows chip capability.

\*2 Package limited.

\*3 SANYO's 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  $V_{DD}=50\text{V}$ ,  $L=5\text{mH}$ ,  $I_{AV}=6\text{A}$

\*5  $L \leq 5\text{mH}$ , Single pulse

Marking : K4098FS

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# 2SK4098FS

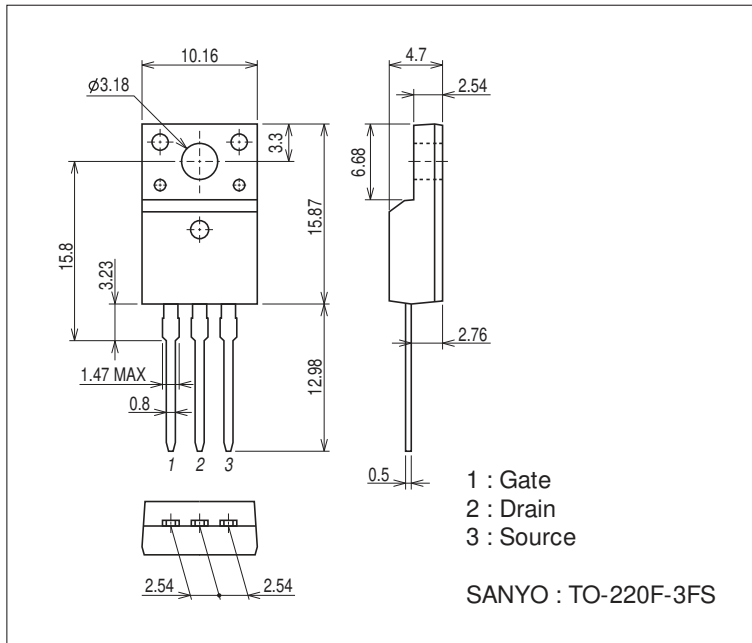
## Electrical Characteristics at Ta=25°C

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	$\mu A$
Gate-to-Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 30V, V_{DS}=0V$			$\pm 100$	nA
Cutoff Voltage	$V_{GS(off)}$	$V_{DS}=10V, I_D=1mA$	3		5	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS}=10V, I_D=3.5A$	2.1	4.2		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)}$	$I_D=3.5A, V_{GS}=10V$		0.9	1.1	$\Omega$
Input Capacitance	$C_{iss}$	$V_{DS}=30V, f=1MHz$		600		pF
Output Capacitance	$C_{oss}$	$V_{DS}=30V, f=1MHz$		120		pF
Reverse Transfer Capacitance	$C_{rss}$	$V_{DS}=30V, f=1MHz$		25		pF
Turn-ON Delay Time	$t_d(on)$	See specified Test Circuit.		17		ns
Rise Time	$t_r$	See specified Test Circuit.		34		ns
Turn-OFF Delay Time	$t_d(off)$	See specified Test Circuit.		80		ns
Fall Time	$t_f$	See specified Test Circuit.		30		ns
Total Gate Charge	$Q_g$	$V_{DS}=200V, V_{GS}=10V, I_D=7A$		23.5		nC
Gate-to-Source Charge	$Q_{gs}$	$V_{DS}=200V, V_{GS}=10V, I_D=7A$		4.5		nC
Gate-to-Drain "Miller" Charge	$Q_{gd}$	$V_{DS}=200V, V_{GS}=10V, I_D=7A$		13.5		nC
Diode Forward Voltage	$V_{SD}$	$I_S=7A, V_{GS}=0V$		0.9	1.2	V

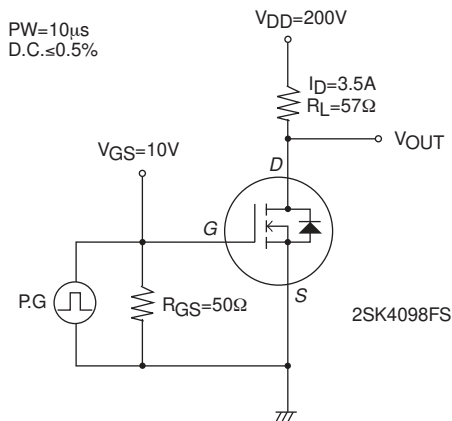
## Package Dimensions

unit : mm (typ)

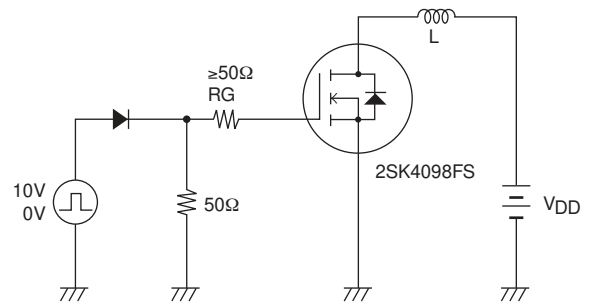
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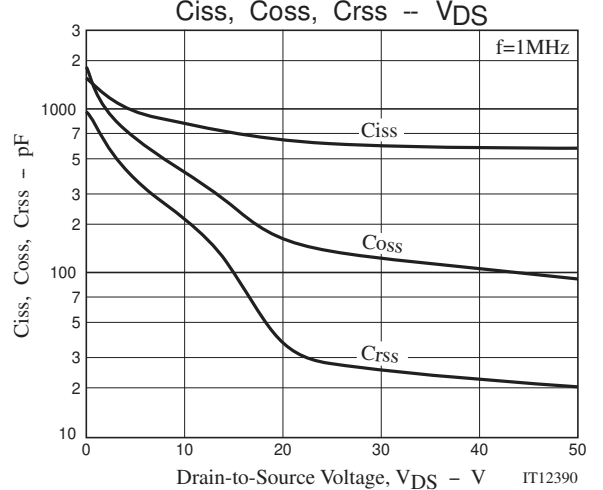
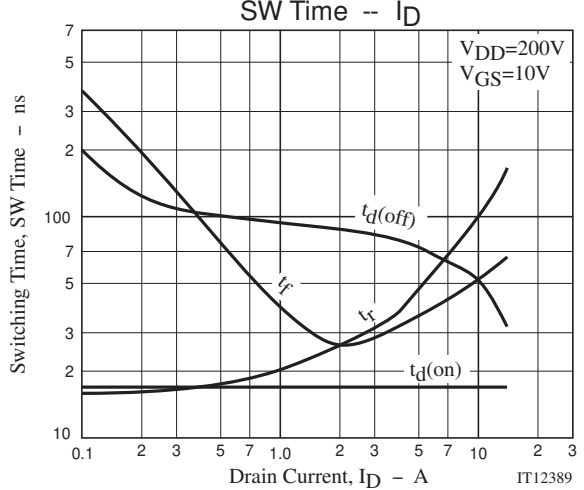
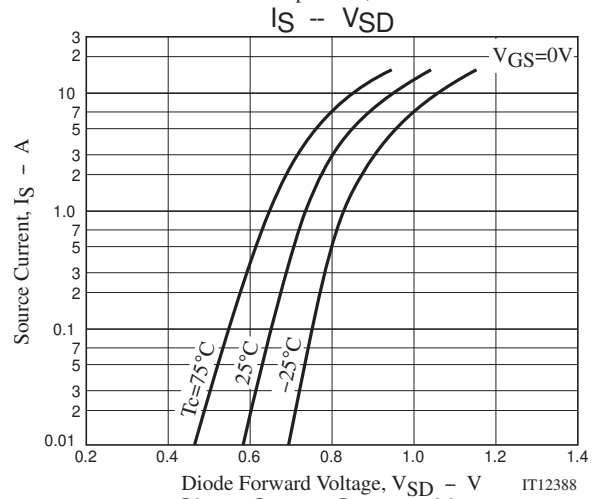
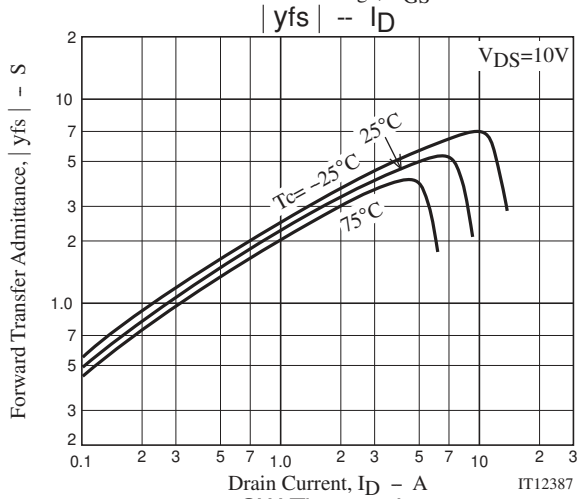
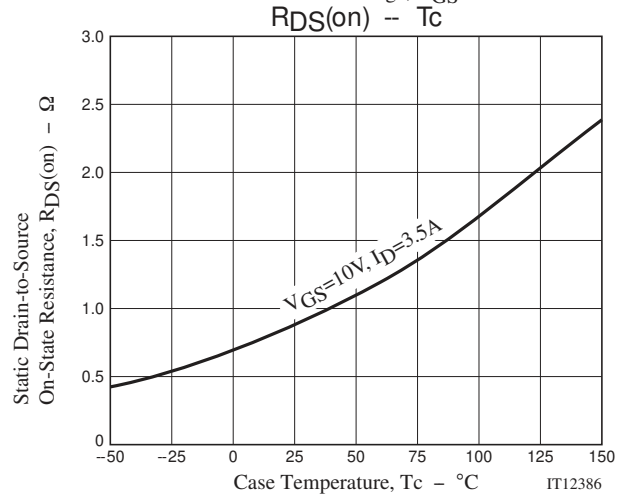
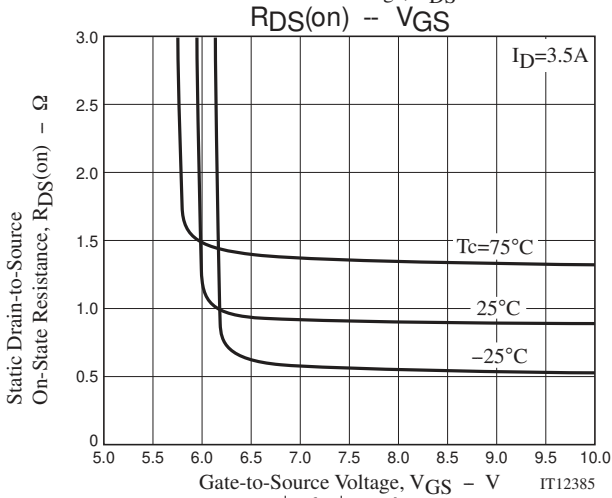
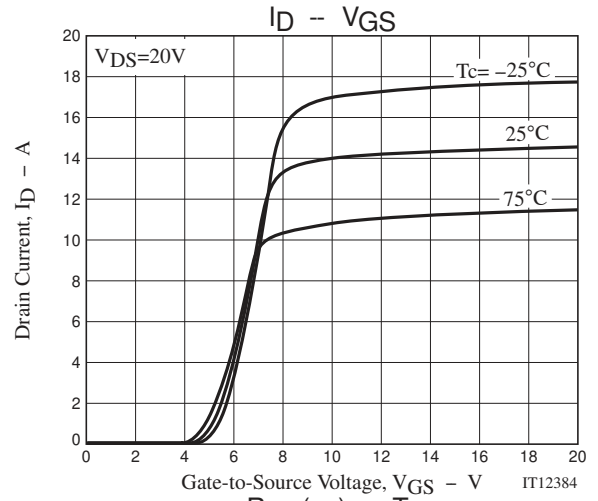
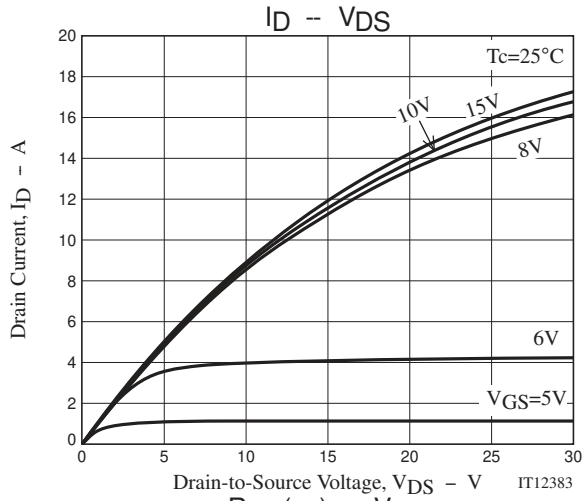
## Switching Time Test Circuit



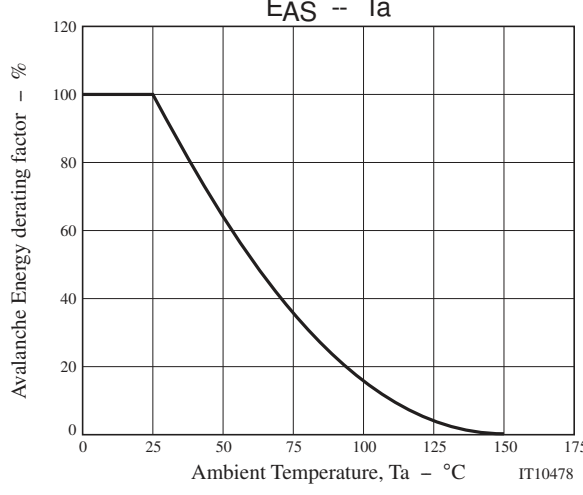
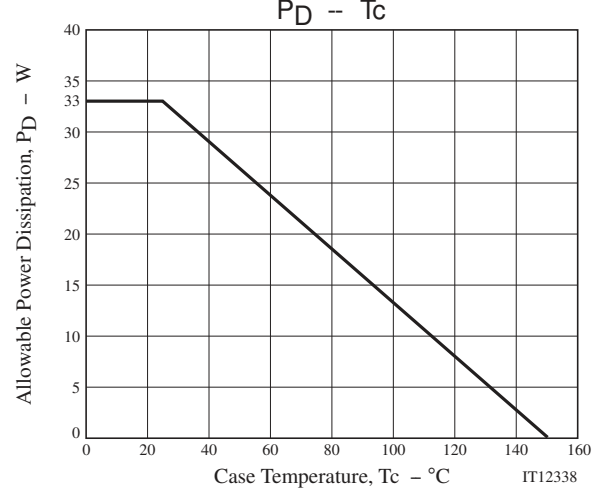
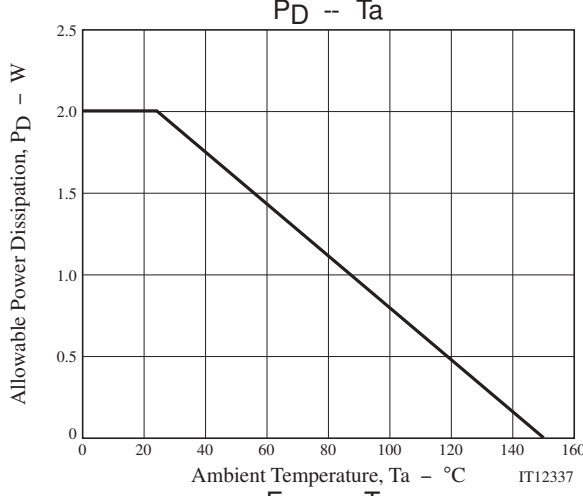
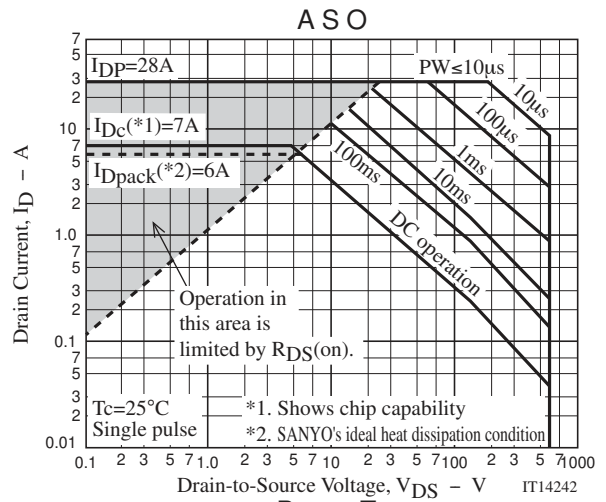
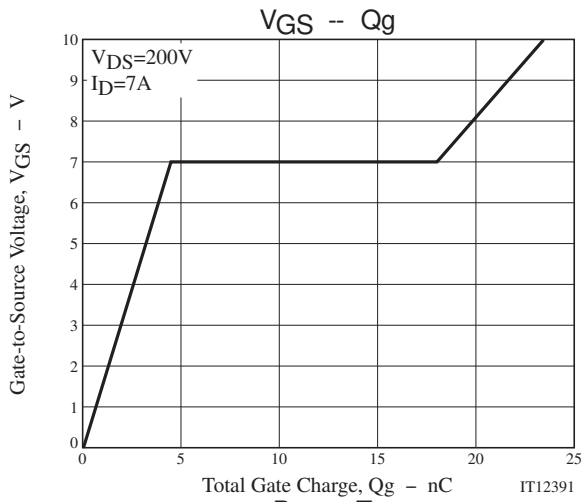
## Avalanche Resistance Test Circuit



# 2SK4098FS



# 2SK4098FS



Note on usage : Since the 2SK4098FS is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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