



SANYO Semiconductors

DATA SHEET

2SK4101FG — N-Channel Silicon MOSFET

General-Purpose Switching Device Applications

Features

- Low ON-resistance, low input capacitance, ultrahigh-speed switching.
- Adoption of high reliability HVP process.
- Attachment workability is good by Mica-less package.
- Avalanche resistance guarantee.

Specifications

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

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V_{DSS}		650	V
Gate-to-Source Voltage	V_{GSS}		± 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	6.4	A
Drain Current (Pulse)	I_{DP}	$PW \leq 10\mu\text{s}$, duty cycle $\leq 1\%$	28	A
Allowable Power Dissipation	P_D		2.0	W
		$T_c=25^\circ\text{C}$ (SANYO's ideal heat dissipation condition)*3	35	W
Channel Temperature	T_{ch}		150	$^\circ\text{C}$
Storage Temperature	T_{stg}		-55 to +150	$^\circ\text{C}$
Avalanche Energy (Single Pulse) *4	E_{AS}		194	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 $V_{DD}=50\text{V}$, $L=10\text{mH}$, $I_{AV}=6\text{A}$

*5 $L \leq 10\text{mH}$, Single pulse

Marking : K4101

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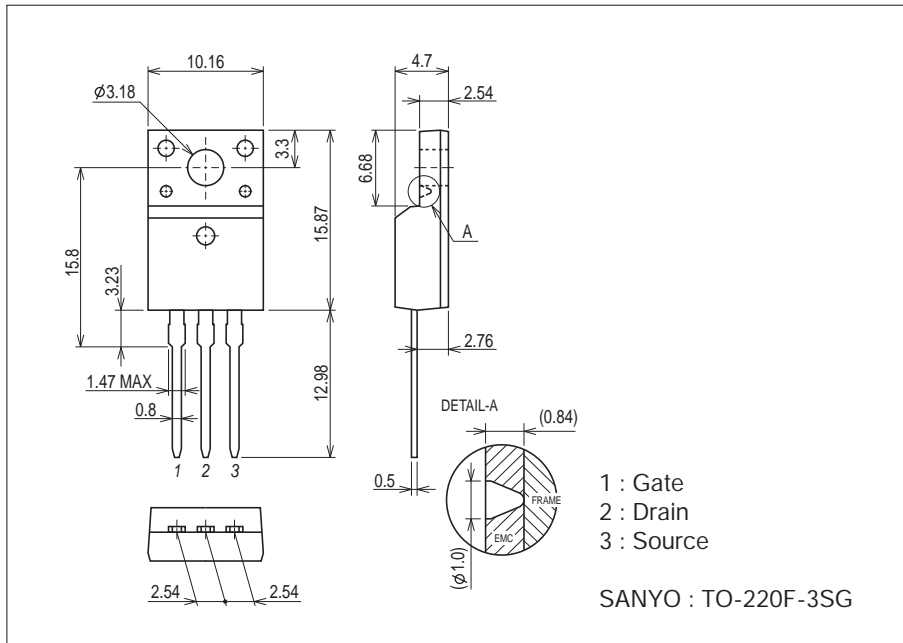
Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D=10mA, V_{GS}=0V$	650			V
Zero-Gate Voltage Drain Current	I_{DSS}	$V_{DS}=520V, V_{GS}=0V$			100	μA
Gate-to-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 30V, V_{DS}=0V$			± 100	nA
Cutoff Voltage	$V_{GS(off)}$	$V_{DS}=10V, I_D=1mA$	3		5	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS}=10V, I_D=3.5A$	2.3	4.6		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)}$	$I_D=3.5A, V_{GS}=10V$		0.85	1.1	Ω
Input Capacitance	C_{iss}	$V_{DS}=30V, f=1MHz$		750		pF
Output Capacitance	C_{oss}	$V_{DS}=30V, f=1MHz$		136		pF
Reverse Transfer Capacitance	C_{rss}	$V_{DS}=30V, f=1MHz$		28		pF
Turn-ON Delay Time	$t_{d(on)}$	See specified Test Circuit.		21		ns
Rise Time	t_r	See specified Test Circuit.		40		ns
Turn-OFF Delay Time	$t_{d(off)}$	See specified Test Circuit.		89		ns
Fall Time	t_f	See specified Test Circuit.		31		ns
Total Gate Charge	Q_g	$V_{DS}=200V, V_{GS}=10V, I_D=7A$		28.5		nC
Gate-to-Source Charge	Q_{gs}	$V_{DS}=200V, V_{GS}=10V, I_D=7A$		5.2		nC
Gate-to-Drain "Miller" Charge	Q_{gd}	$V_{DS}=200V, V_{GS}=10V, I_D=7A$		16		nC
Diode Forward Voltage	V_{SD}	$I_S=7A, V_{GS}=0V$		0.9	1.2	V

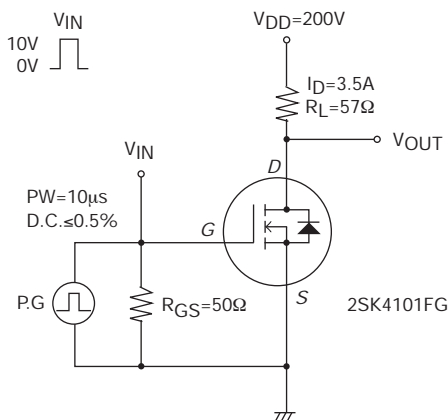
Package Dimensions

unit : mm (typ)

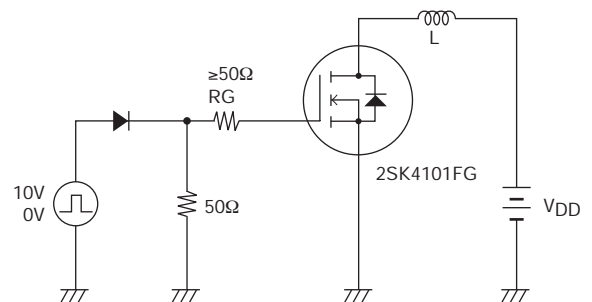
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Switching Time Test Circuit



Avalanche Resistance Test Circuit



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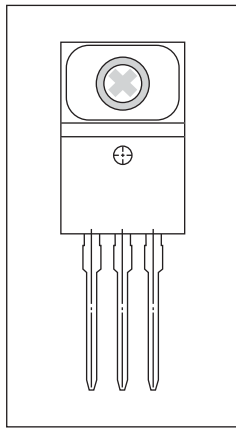
For this package, a part of inner electrode is exposed. Please refer to the package outline for the detailed structure.
 So when mounting the device, please pay enough attention to the isolation with the heatsink.
 According to the device mounting method, sometimes the insulation voltage may be decreased.
 (refer to the below insulation characteristics)

Insulation / Ta=25°C / RH75%

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Lead & resin insulation *	VISO1	Metal spacer Refer to Fig.1		1600		Vrms
	VISO2	Washer 5.8mm Refer to Fig.2		2100		Vrms
	VISO3	Insulation screw, Insulated washer		3900		Vrms

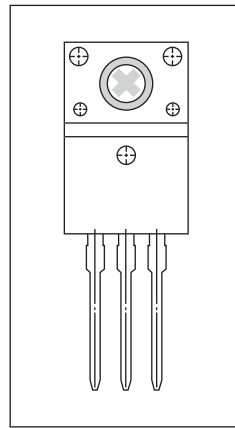
* : AC voltage measurement

Fig.1



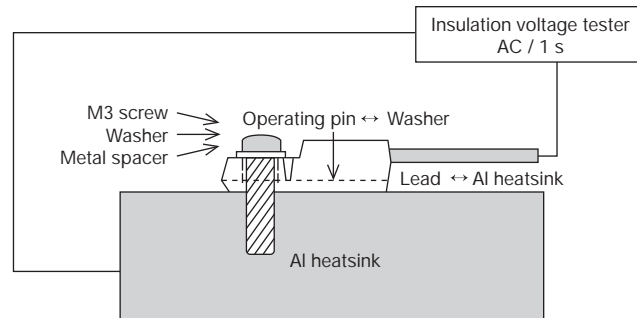
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Fig.2



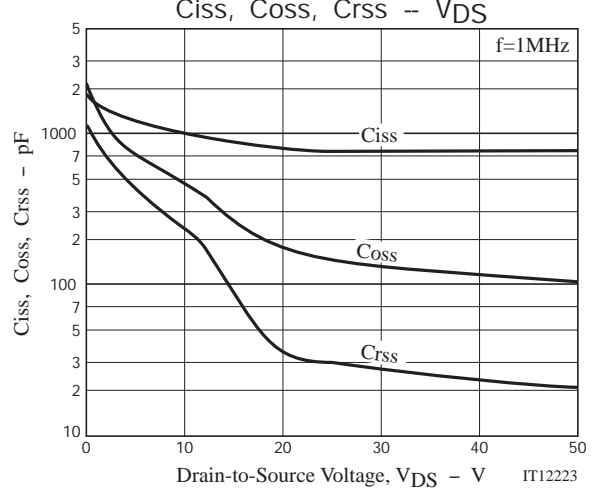
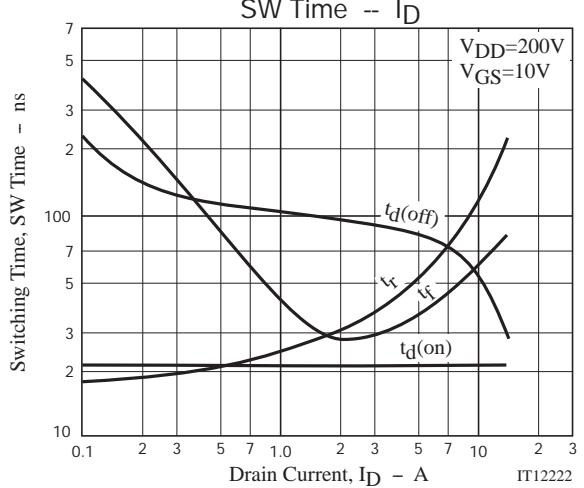
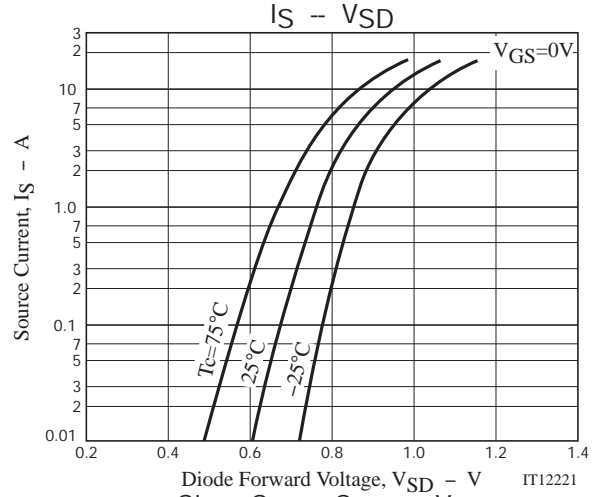
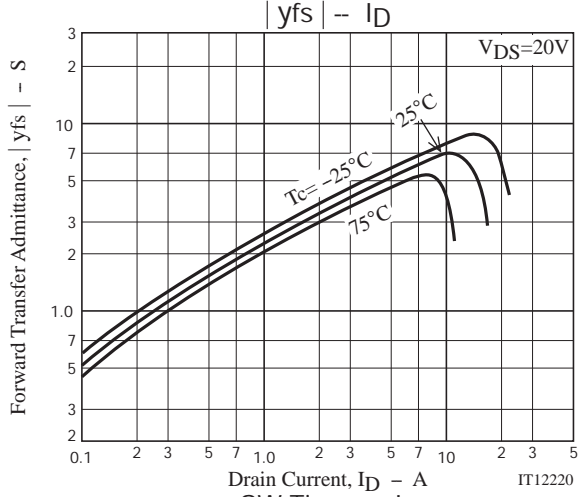
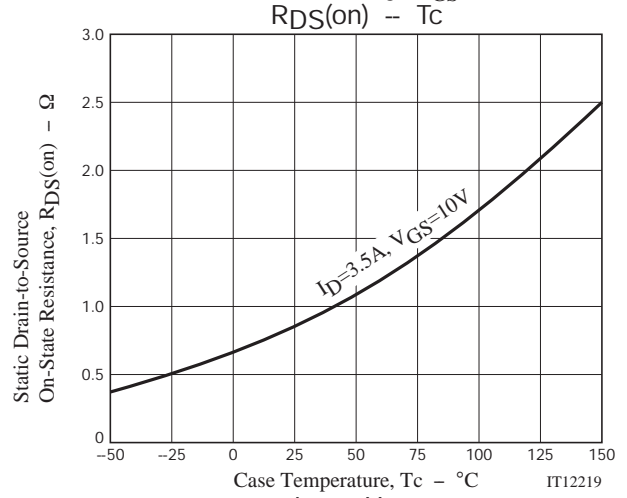
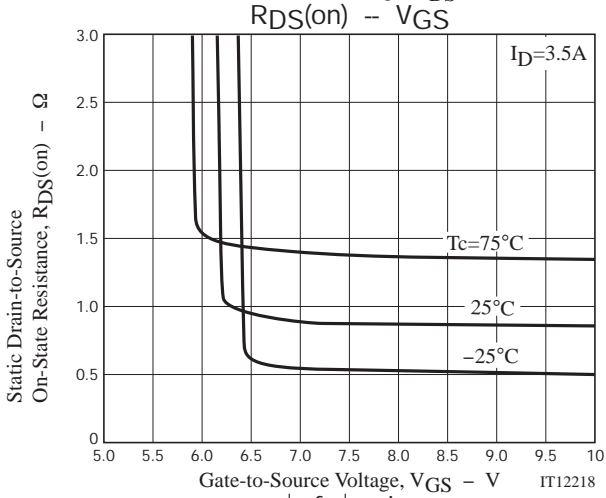
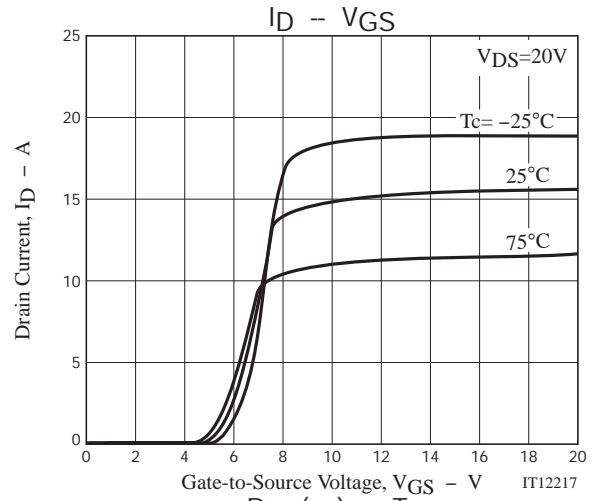
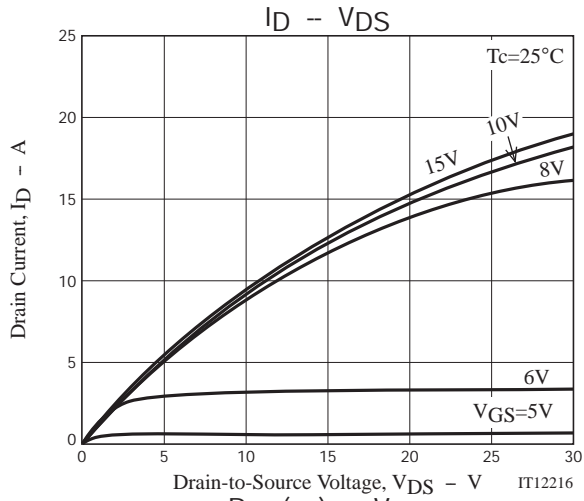
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Insulation Measuring Diagram

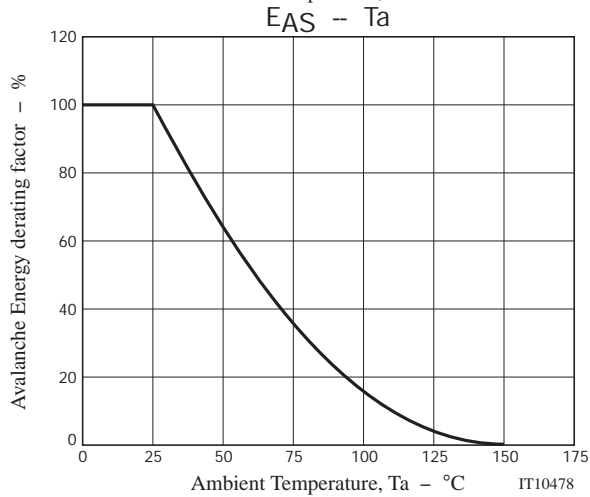
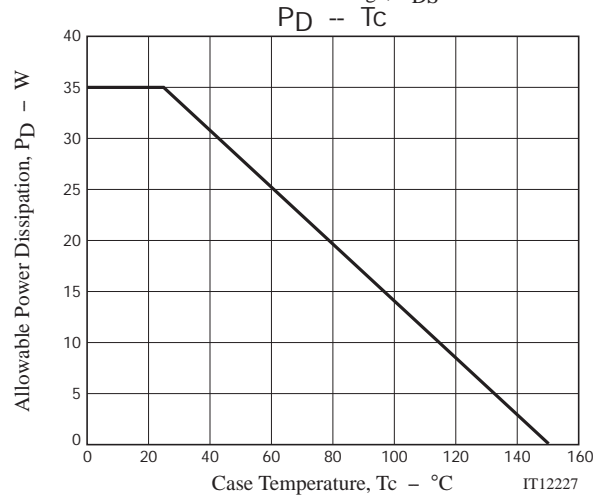
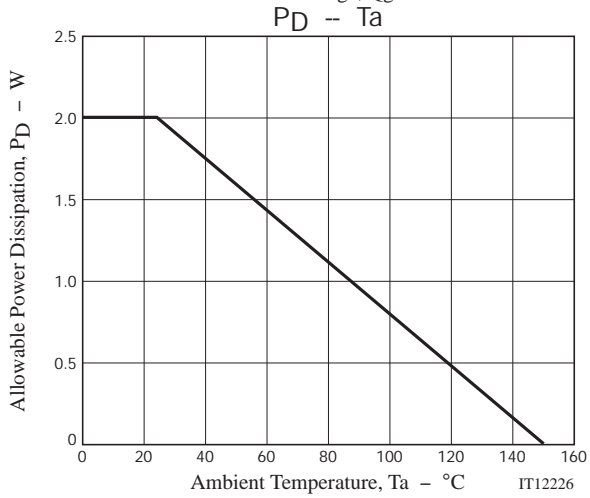
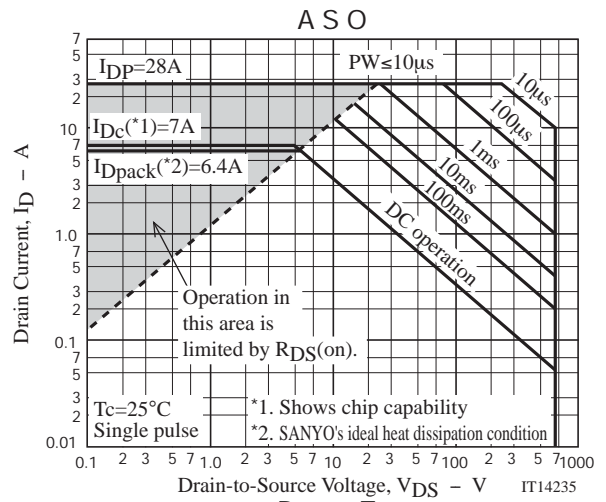
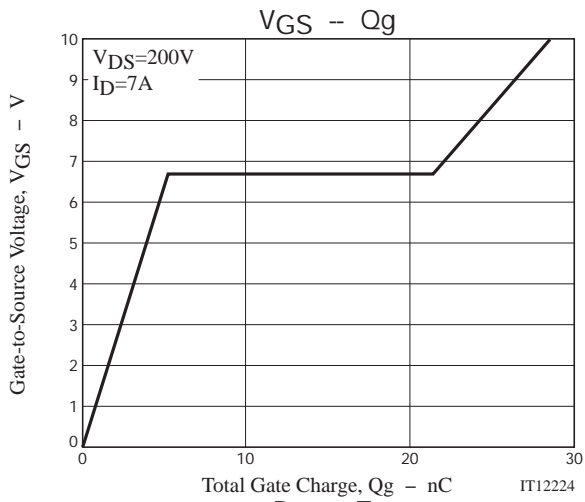


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2SK4101FG



2SK4101FG



Note on usage : Since the 2SK4101FG is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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