



SANYO Semiconductors

DATA SHEET

An ON Semiconductor Company

2SK4087LS — N-Channel Silicon MOSFET — General-Purpose Switching Device Applications

Features

- ON-resistance $R_{DS(on)}=0.47\Omega$ (typ.)
- Input capacitance $C_{iss}=1200pF$ (typ.)
- 10V drive

Specifications

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

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_{Dc} *1	Limited only by maximum temperature $T_{ch}=150^\circ C$	14	A
	I_{Dpack} *2	$T_c=25^\circ C$ (SANYO's ideal heat dissipation condition)*3	9.2	A
Drain Current (Pulse)	I_{DP}	$PW \leq 10\mu s$, duty cycle $\leq 1\%$	52	A
Allowable Power Dissipation	P_D		2.0	W
		$T_c=25^\circ C$ (SANYO's ideal heat dissipation condition)*3	40	W
Channel Temperature	T_{ch}		150	$^\circ C$
Storage Temperature	T_{stg}		-55 to +150	$^\circ C$
Avalanche Energy (Single Pulse) *4	EAS		106	mJ
Avalanche Current *5	I_{AV}		14	A

*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.

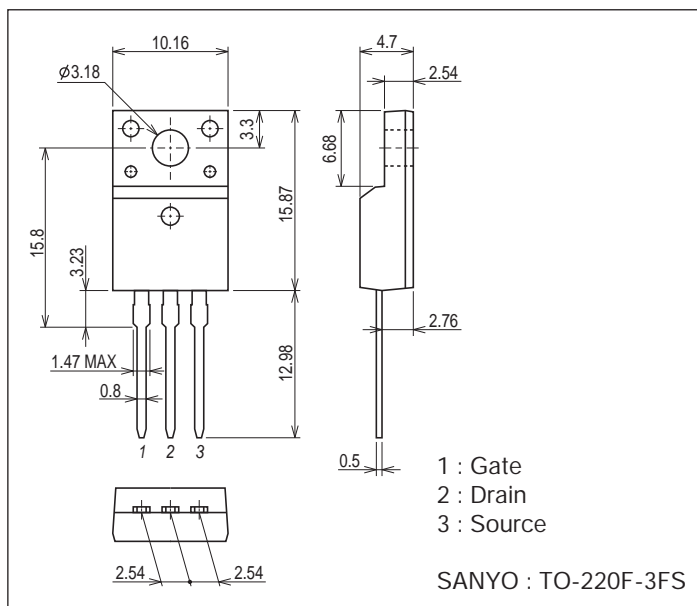
*4 $V_{DD}=50V$, $L=1mH$, $I_{AV}=14A$ (Fig.1)

*5 $L \leq 1mH$, Single pulse

Package Dimensions

unit : mm (typ)

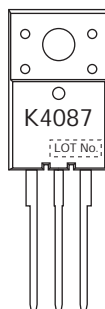
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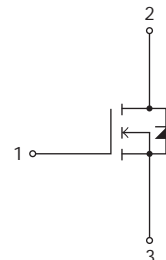
Product & Package Information

- Package : TO-220F-3FS
- JEITA, JEDEC : SC-67
- Minimum Packing Quantity : 50 pcs./magazine

Marking



Electrical Connection



SANYO Semiconductor Co., Ltd.

<http://semicon.sanyo.com/en/network>

2SK4087LS

Electrical Characteristics at $T_a=25^\circ\text{C}$

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	μA
Gate-to-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 30\text{V}, V_{DS}=0\text{V}$			± 100	nA
Cutoff Voltage	$V_{GS(off)}$	$V_{DS}=10\text{V}, I_D=1\text{mA}$	3		5	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS}=10\text{V}, I_D=7\text{A}$	4	8		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)}$	$I_D=7\text{A}, V_{GS}=10\text{V}$		0.47	0.61	Ω
Input Capacitance	C_{iss}	$V_{DS}=30\text{V}, f=1\text{MHz}$		1200		pF
Output Capacitance	C_{oss}			220		pF
Reverse Transfer Capacitance	C_{rss}			50		pF
Turn-ON Delay Time	$t_d(on)$			27		ns
Rise Time	t_r	See Fig.2		72		ns
Turn-OFF Delay Time	$t_d(off)$			144		ns
Fall Time	t_f			48		ns
Total Gate Charge	Q_g	$V_{DS}=200\text{V}, V_{GS}=10\text{V}, I_D=14\text{A}$		46		nC
Gate-to-Source Charge	Q_{gs}			8.6		nC
Gate-to-Drain "Miller" Charge	Q_{gd}			26.4		nC
Diode Forward Voltage	V_{SD}	$I_S=14\text{A}, V_{GS}=0\text{V}$		0.95	1.3	V

Fig.1 Avalanche Resistance Test Circuit

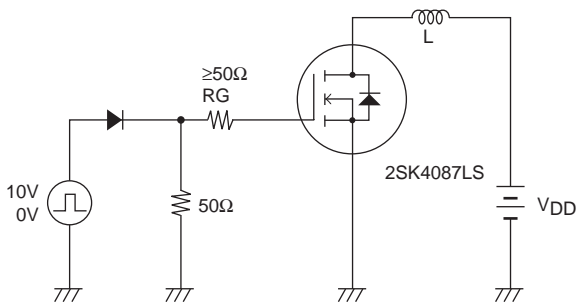
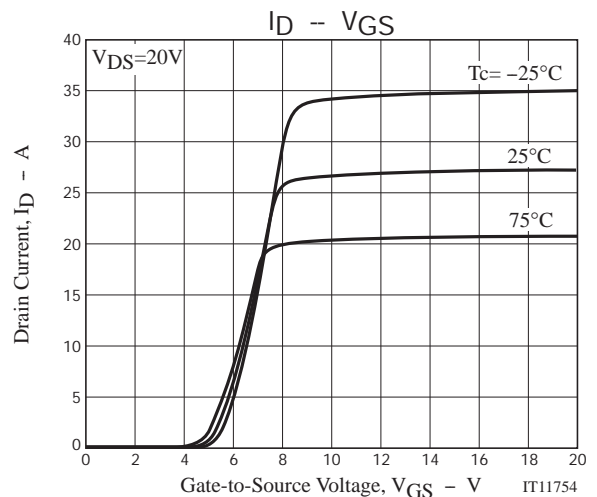
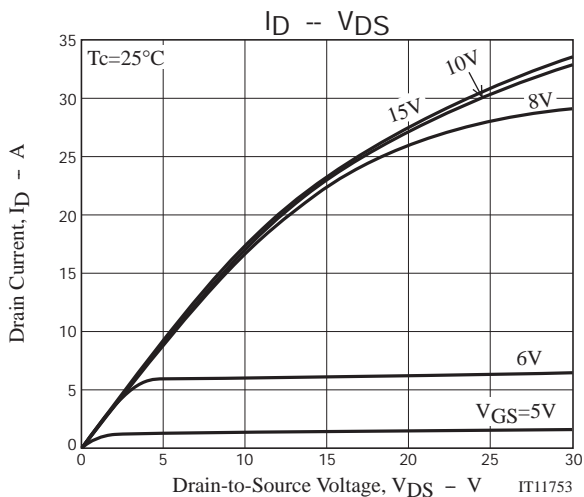
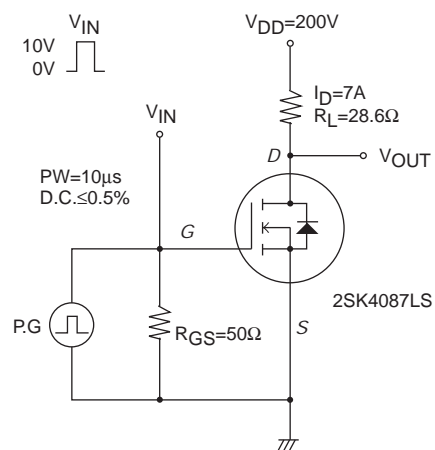
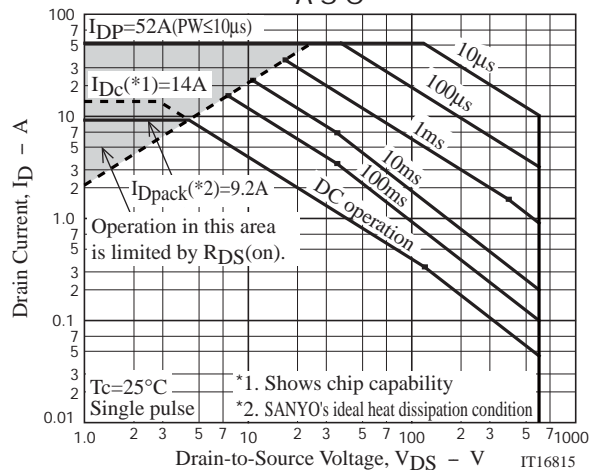
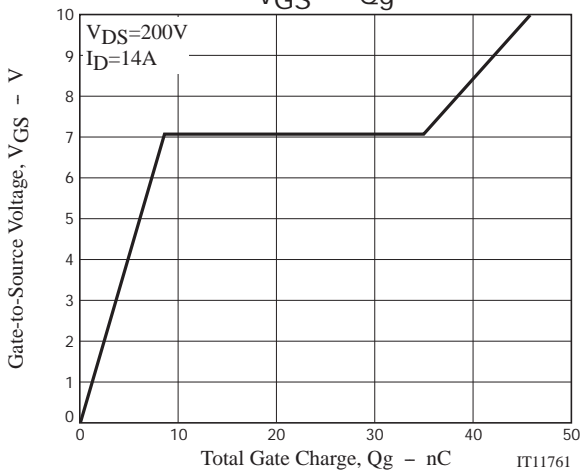
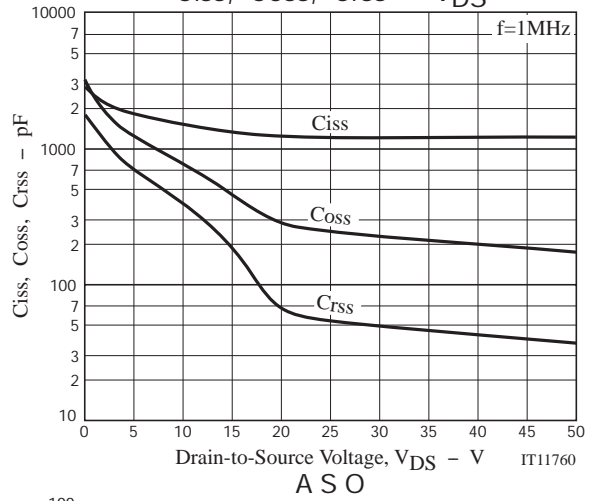
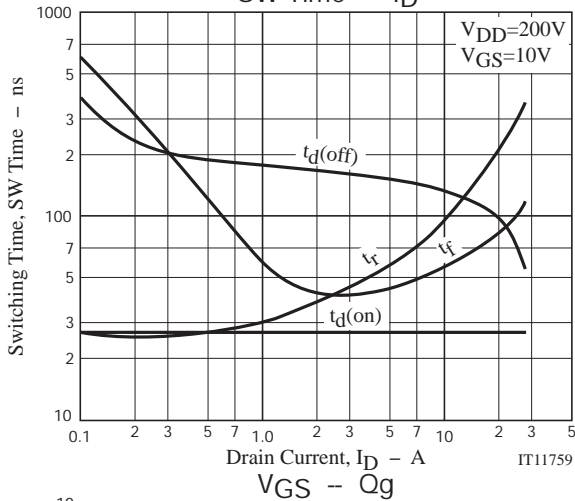
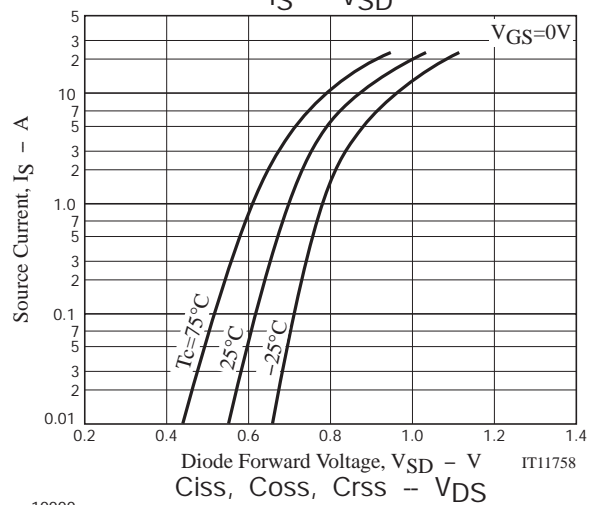
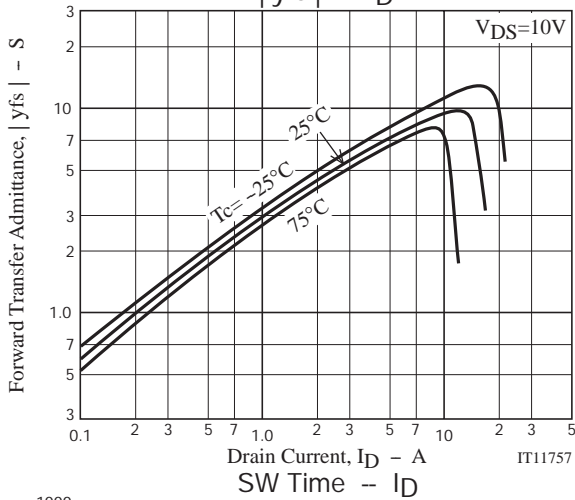
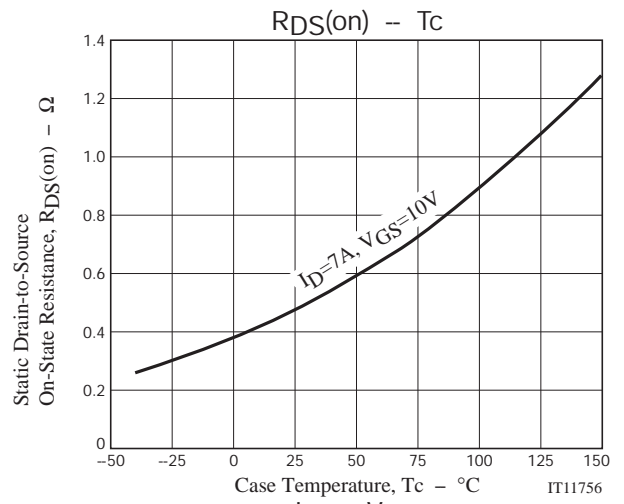
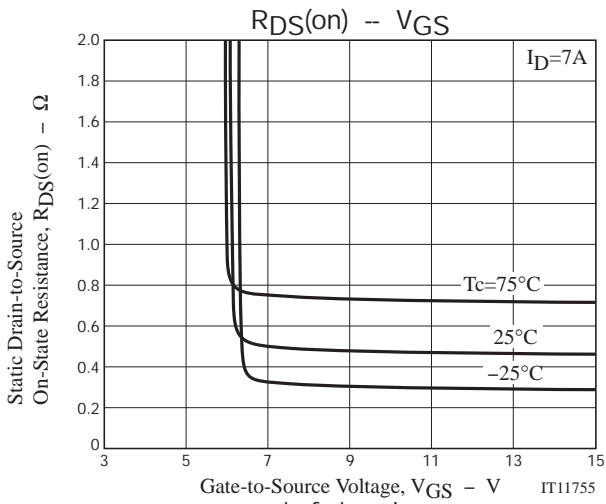


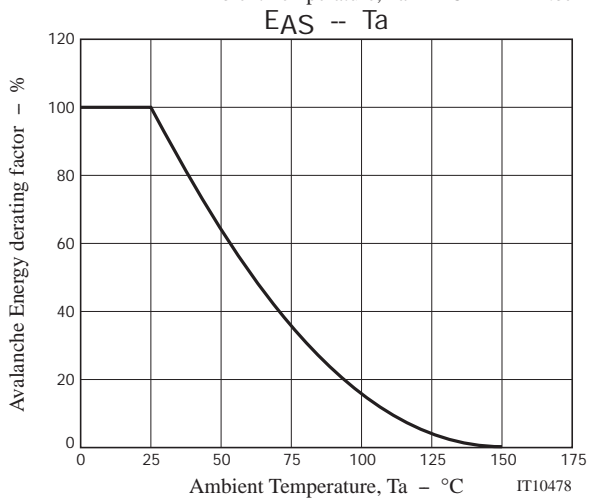
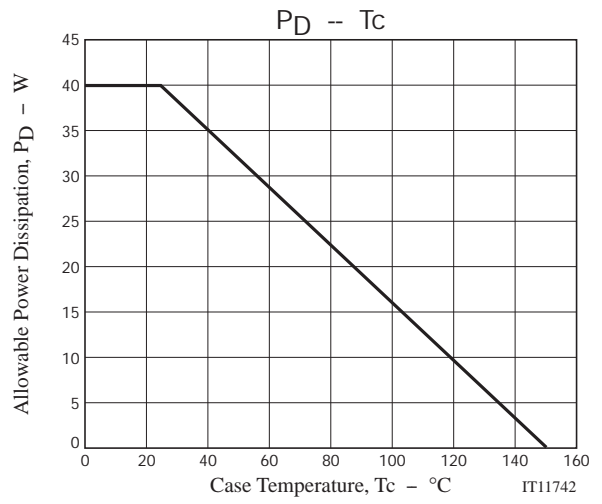
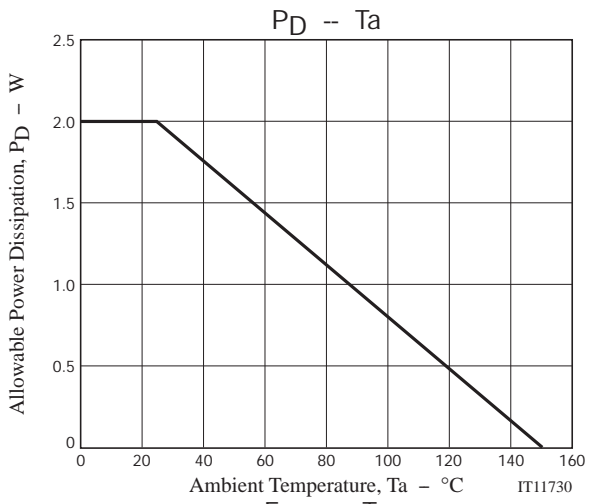
Fig.2 Switching Time Test Circuit



2SK4087LS



2SK4087LS



Note on usage : Since the 2SK4087LS is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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