Ordering number : ENA0554D

SANYO Semiconductors

DATA SHEET

An ON Semiconductor Company

N-Channel Silicon MOSFET

2SK4086LS — General-Purpose Switching Device Applications

Features

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

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_{Dc}*1	Limited only by maximum temperature	11.5	A
	I_{Dpack}*2	Tc=25°C (SANYO's ideal heat dissipation condition)*3	7.9	A
Drain Current (Pulse)	I_{DP}	PW≤10μs, duty cycle≤1%	43	A
Source-to-Drain Diode Forward Current (DC)	I_{SD}		11.5	A
Source-to-Drain Diode Forward Current (Pulse)	I_{SDP}	PW≤10μs, duty cycle≤1%	43	A
Allowable Power Dissipation	P_D		2.0	W
		Tc=25°C (SANYO's ideal heat dissipation condition)*3	37	W
Channel Temperature	Tch		150	°C
Storage Temperature	Tstg		−55 to +150	°C
Avalanche Energy (Single Pulse) *4	E_{AS}		79	mJ
Avalanche Current *5	I_{AV}		11.5	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}=99V, L=1mH, I_{AV}=11.5A

*5 L≤1mH, single pulse

Marking : K4086

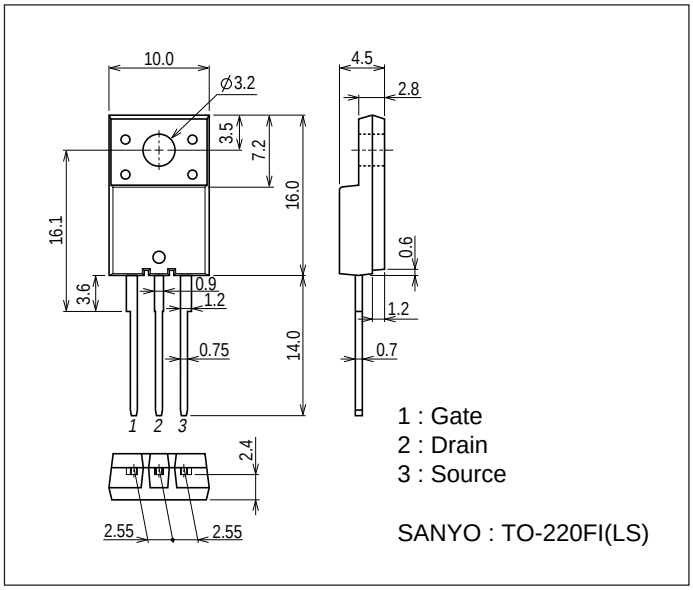
Electrical Characteristics at Ta=25°C

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=6A	3.5	7		S
Static Drain-to-Source On-State Resistance	$R_{DS}(on)$	I_D=6A, V_{GS}=10V		0.58	0.75	Ω
Input Capacitance	Ciss	V_{DS}=30V, f=1MHz		1000		pF
Output Capacitance	Coss	V_{DS}=30V, f=1MHz		180		pF
Reverse Transfer Capacitance	Crss	V_{DS}=30V, f=1MHz		40		pF
Turn-ON Delay Time	$t_d(on)$	See specified Test Circuit.		22		ns
Rise Time	t_r	See specified Test Circuit.		43		ns
Turn-OFF Delay Time	$t_d(off)$	See specified Test Circuit.		120		ns
Fall Time	t_f	See specified Test Circuit.		56		ns
Total Gate Charge	Qg	V_{DS}=200V, V_{GS}=10V, I_D=11.5A		38.2		nC
Gate-to-Source Charge	Qgs	V_{DS}=200V, V_{GS}=10V, I_D=11.5A		6.7		nC
Gate-to-Drain “Miller” Charge	Qgd	V_{DS}=200V, V_{GS}=10V, I_D=11.5A		20		nC
Diode Forward Voltage	V_{SD}	I_S=11.5A, V_{GS}=0V		0.9	1.2	V

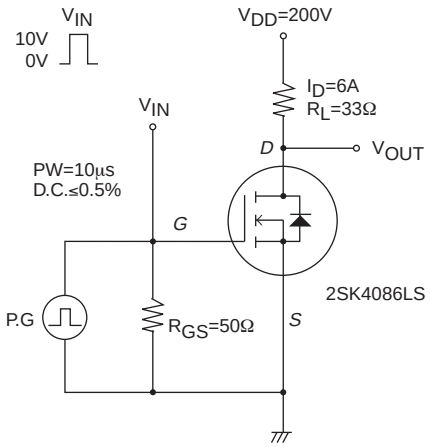
Package Dimensions

unit : mm (typ)

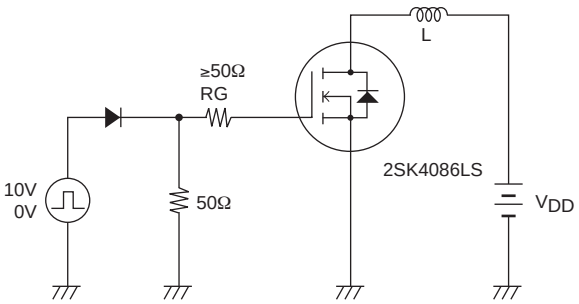
7509-002

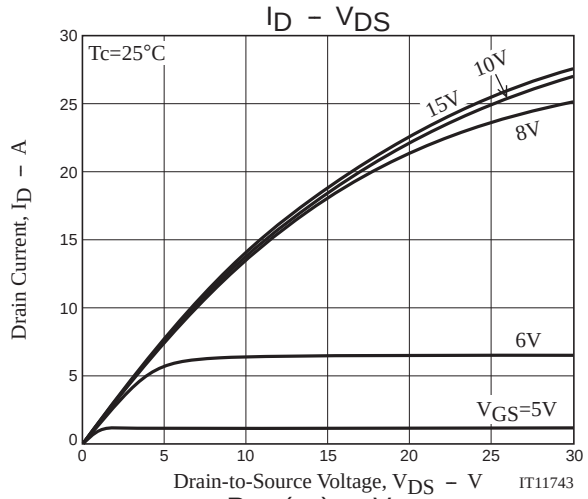


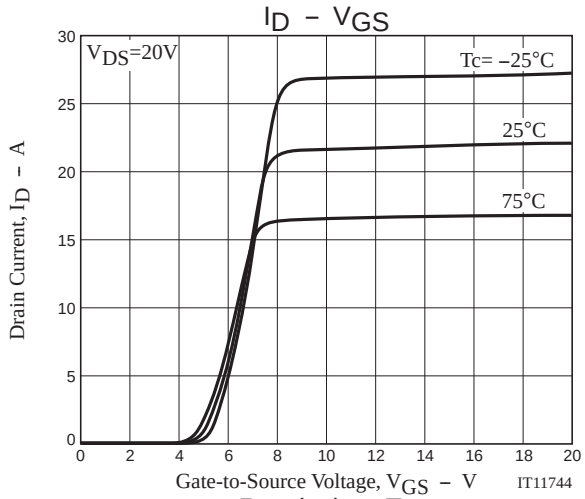
Switching Time Test Circuit

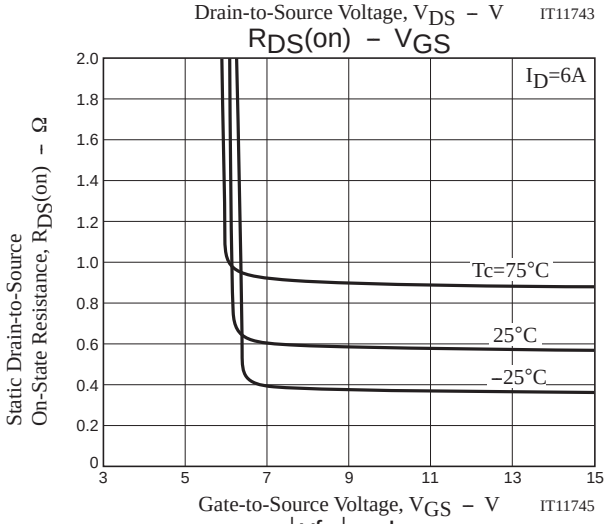


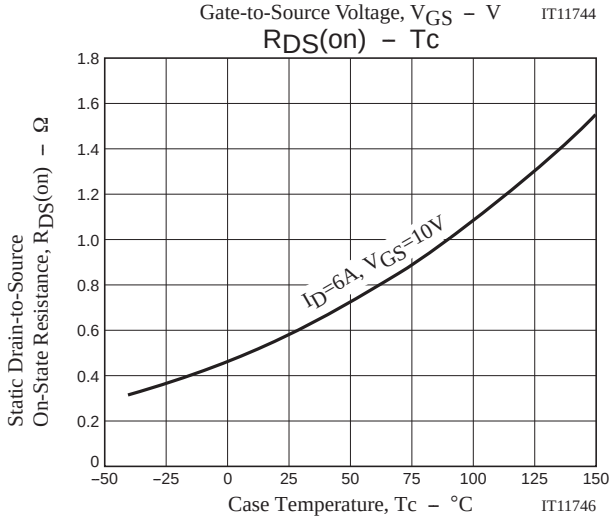
Avalanche Resistance Test Circuit

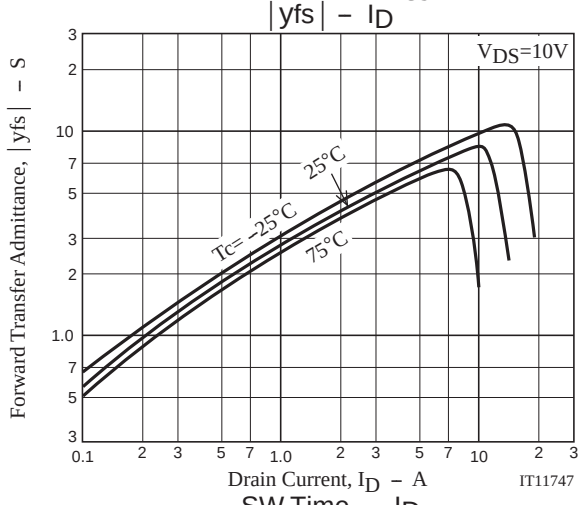


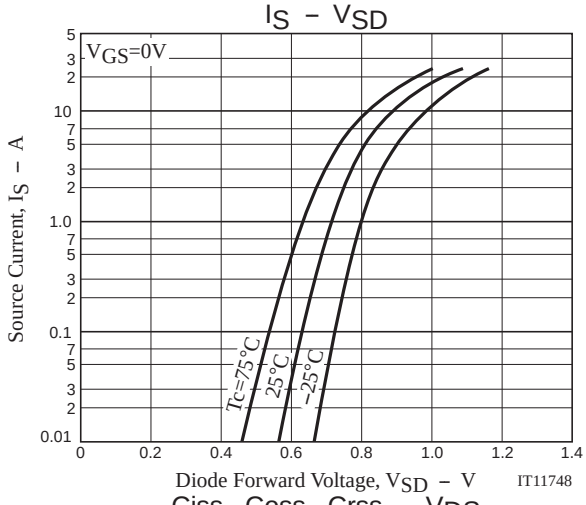


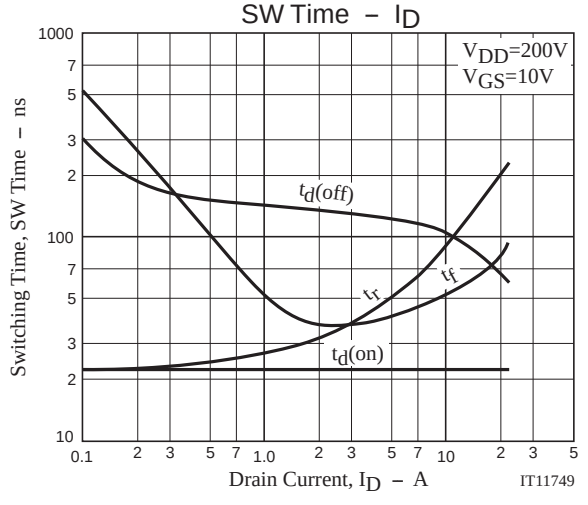


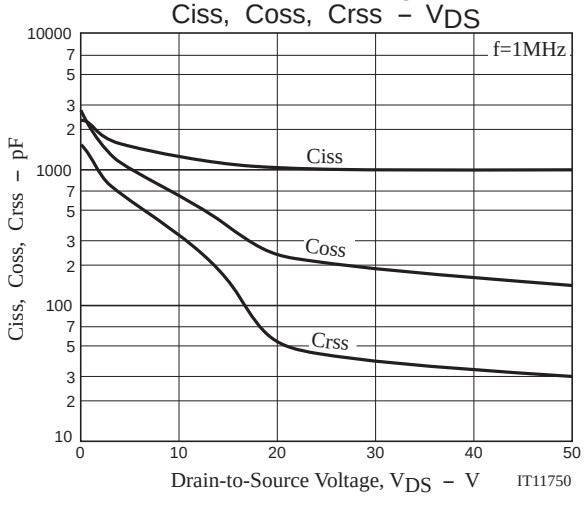


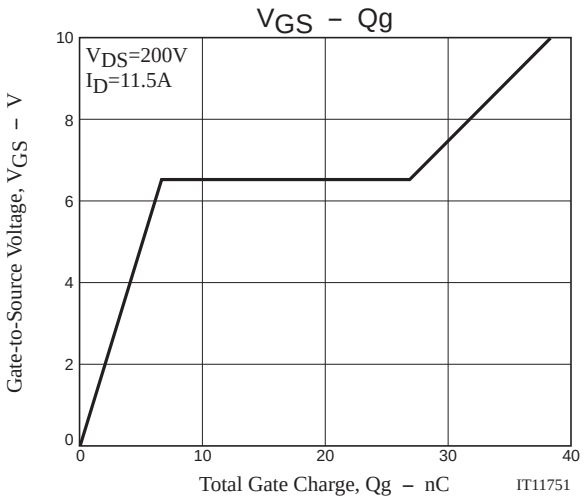


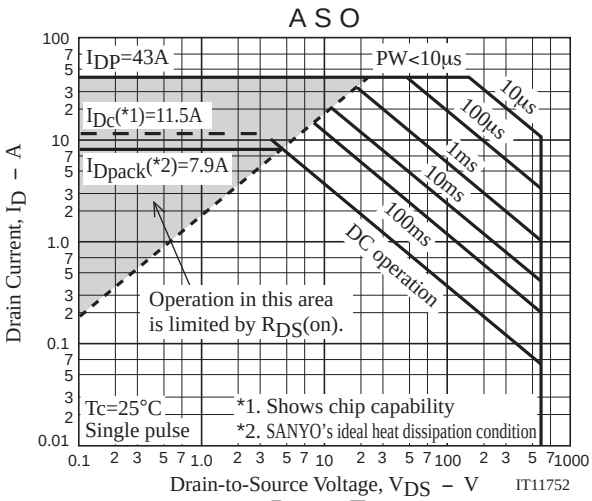


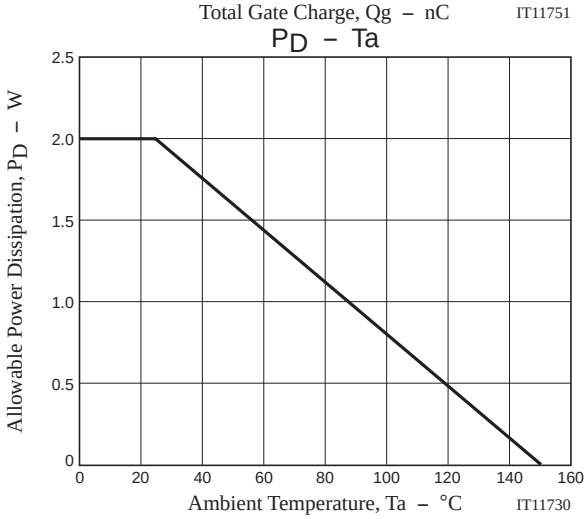


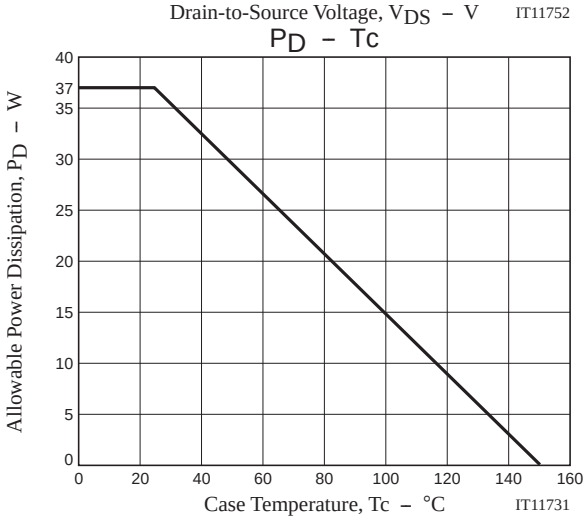


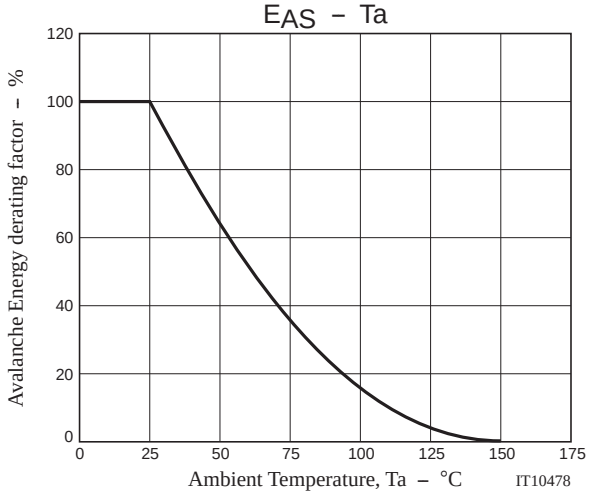












Note on usage : Since the 2SK4086LS is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

This catalog provides information as of October, 2008. Specifications and information herein are subject to change without notice.