

## 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	VDSS		600	V
Gate-to-Source Voltage	VGSS		±30	V
Drain Current (DC)	IDc*1	Limited only by maximum temperature	11.5	А
	I <sub>Dpack</sub> *2	Tc=25°C (SANYO's ideal heat dissipation condition)*3	7.9	А
Drain Current (Pulse)	I <sub>DP</sub>	PW≤10μs, duty cycle≤1%	43	А
Source-to-Drain Diode Forward Current (DC)	ISD		11.5	Α
Source-to-Drain Diode Forward Current (Pulse)	ISDP	PW≤10μs, duty cycle≤1%	43	Α
Allowable Power Dissipation	PD		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	EAS		79	mJ
Avalanche Current *5	IAV		11.5	Α

<sup>\*1</sup> Shows chip capability

The method is applying silicone grease to the backside of the device and attaching the device to water-cooled radiator made of aluminium.

Marking: K4086

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<sup>\*2</sup> Package limited

<sup>\*3</sup> SANYO's condition is radiation from backside.

<sup>\*4</sup> V<sub>DD</sub>=99V, L=1mH, I<sub>AV</sub>=11.5A

<sup>\*5</sup> L≤1mH, single pulse

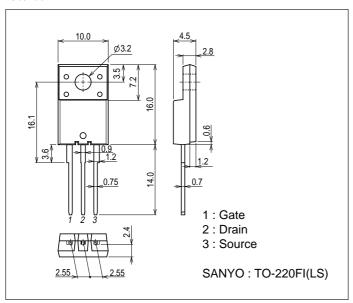
#### 2SK4086LS

#### Electrical Characteristics at Ta=25°C

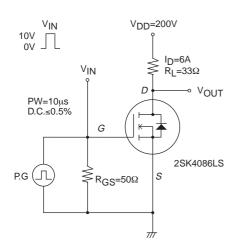
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	Offic
Drain-to-Source Breakdown Voltage	V(BR)DSS	ID=10mA, VGS=0V	600			V
Zero-Gate Voltage Drain Current	IDSS	V <sub>DS</sub> =480V, V <sub>GS</sub> =0V			100	μΑ
Gate-to-Source Leakage Current	IGSS	V <sub>GS</sub> =±30V, V <sub>DS</sub> =0V			±100	nA
Cutoff Voltage	VGS(off)	V <sub>DS</sub> =10V, I <sub>D</sub> =1mA	3		5	V
Forward Transfer Admittance	yfs	V <sub>DS</sub> =10V, I <sub>D</sub> =6A	3.5	7		S
Static Drain-to-Source On-State Resistance	R <sub>DS</sub> (on)	I <sub>D</sub> =6A, V <sub>GS</sub> =10V		0.58	0.75	Ω
Input Capacitance	Ciss	V <sub>DS</sub> =30V, f=1MHz		1000		pF
Output Capacitance	Coss	V <sub>DS</sub> =30V, f=1MHz		180		pF
Reverse Transfer Capacitance	Crss	V <sub>DS</sub> =30V, f=1MHz		40		pF
Turn-ON Delay Time	t <sub>d</sub> (on)	See specified Test Circuit.		22		ns
Rise Time	t <sub>r</sub>	See specified Test Circuit.		43		ns
Turn-OFF Delay Time	t <sub>d</sub> (off)	See specified Test Circuit.		120		ns
Fall Time	tf	See specified Test Circuit.		56		ns
Total Gate Charge	Qg	V <sub>DS</sub> =200V, V <sub>GS</sub> =10V, I <sub>D</sub> =11.5A		38.2		nC
Gate-to-Source Charge	Qgs	V <sub>DS</sub> =200V, V <sub>GS</sub> =10V, I <sub>D</sub> =11.5A		6.7		nC
Gate-to-Drain "Miller" Charge	Qgd	V <sub>DS</sub> =200V, V <sub>GS</sub> =10V, I <sub>D</sub> =11.5A		20		nC
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =11.5A, V <sub>GS</sub> =0V		0.9	1.2	V

### **Package Dimensions**

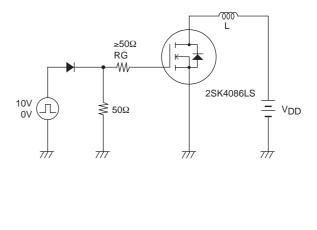
unit : mm (typ) 7509-002



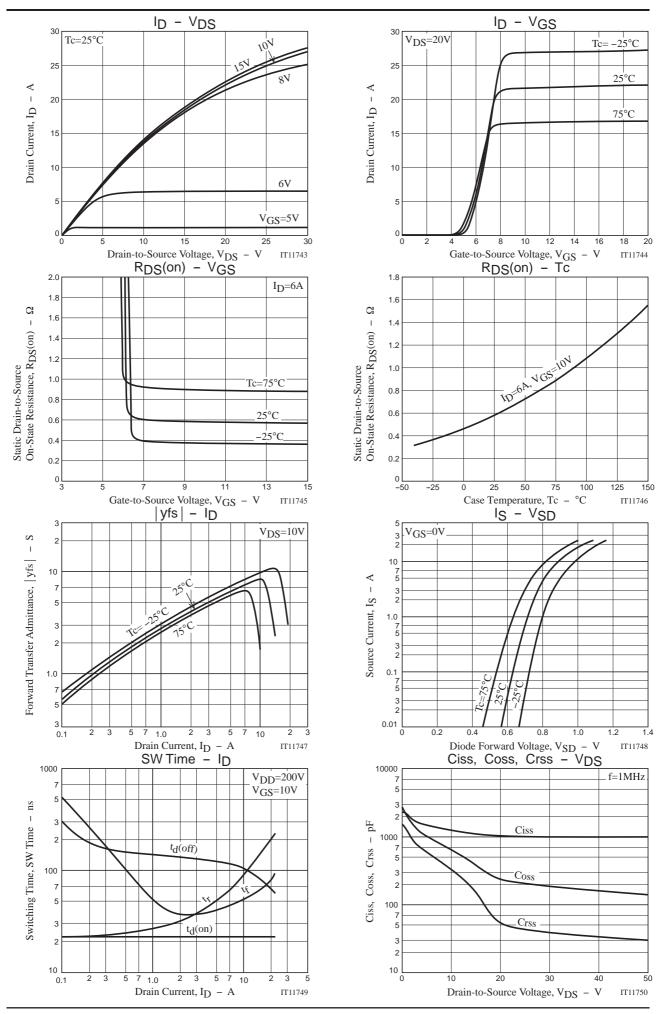
#### **Switching Time Test Circuit**



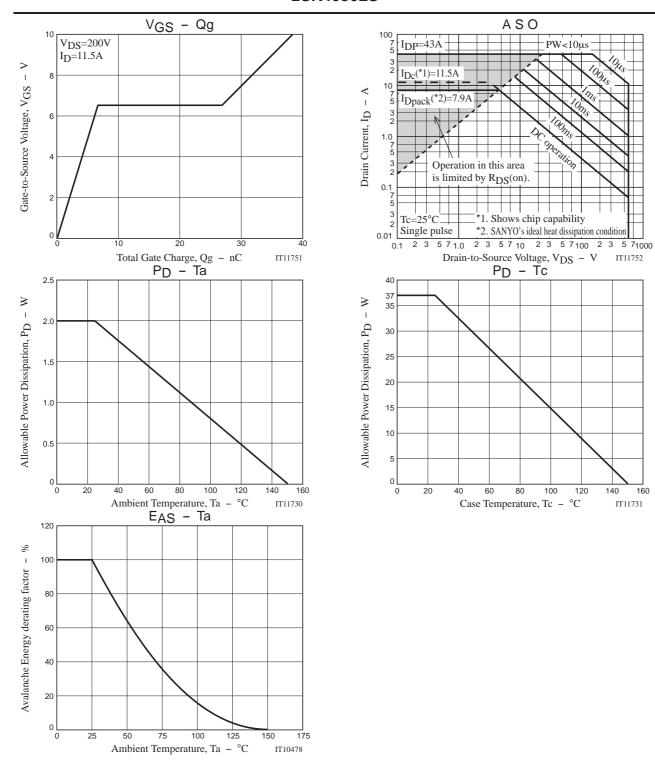
#### **Avalanche Resistance Test Circuit**



#### 2SK4086LS



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

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