



SANYO Semiconductors

DATA SHEET

An ON Semiconductor Company

2SK4085LS — General-Purpose Switching Device Applications

N-Channel Silicon MOSFET

Features

- ON-resistance $R_{DS(on)}=0.33\Omega$ (typ.)
- Input capacitance $C_{iss}=1200\text{pF}$ (typ.)
- 10V drive

Specifications

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

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V_{DSS}		500	V
Gate-to-Source Voltage	V_{GSS}		± 30	V
Drain Current (DC)	I_{DC} *1	Limited only by maximum temperature $T_{ch}=150^\circ\text{C}$	16	A
	I_{Dpack} *2	$T_c=25^\circ\text{C}$ (SANYO's ideal heat dissipation condition)*3	11	A
Drain Current (Pulse)	I_{DP}	$PW \leq 10\mu\text{s}$, duty cycle $\leq 1\%$	60	A
Allowable Power Dissipation	P_D		2.0	W
		$T_c=25^\circ\text{C}$ (SANYO's ideal heat dissipation condition)*3	40	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		141	mJ
Avalanche Current *5	I_{AV}		16	A

*1 Shows chip capability.

*2 Package limited.

*3 SANYO's condition is radiation from backside.

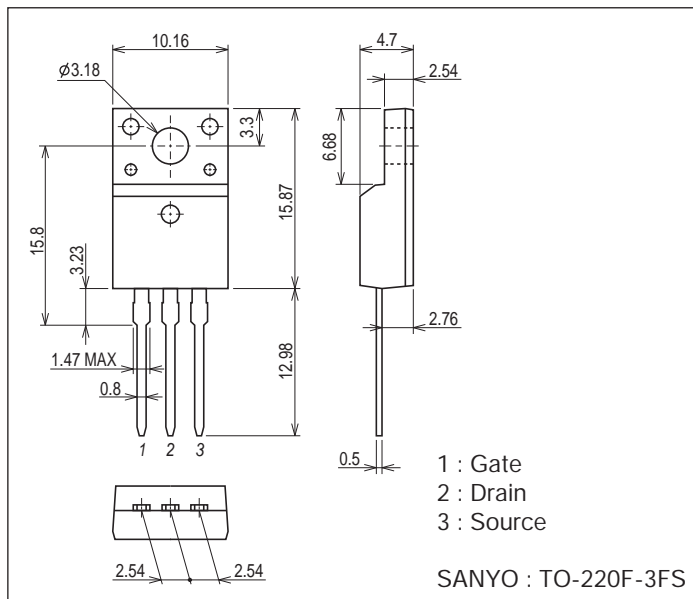
The method is applying silicone grease to the backside of the device and attaching the device to water-cooled radiator made of aluminium.

*4 $V_{DD}=50\text{V}$, $L=1\text{mH}$, $I_{AV}=16\text{A}$ (Fig.1)*5 $L \leq 1\text{mH}$, Single pulse

Package Dimensions

unit : mm (typ)

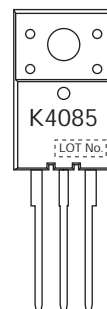
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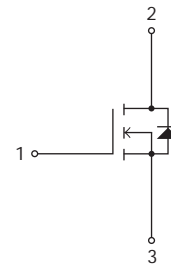
Product & Package Information

- 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>

2SK4085LS

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

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D=10\text{mA}, V_{GS}=0\text{V}$	500			V
Zero-Gate Voltage Drain Current	I_{DSS}	$V_{DS}=400\text{V}, V_{GS}=0\text{V}$			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} $	$V_{DS}=10\text{V}, I_D=8\text{A}$	4.5	9		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)}$	$I_D=8\text{A}, V_{GS}=10\text{V}$		0.33	0.43	Ω
Input Capacitance	C_{iss}	$V_{DS}=30\text{V}, f=1\text{MHz}$		1200		pF
Output Capacitance	C_{oss}			250		pF
Reverse Transfer Capacitance	C_{rss}			55		pF
Turn-ON Delay Time	$t_d(on)$		See Fig.2		26.5	
Rise Time	t_r			78		ns
Turn-OFF Delay Time	$t_d(off)$			146		ns
Fall Time	t_f			57		ns
Total Gate Charge	Q_g	$V_{DS}=200\text{V}, V_{GS}=10\text{V}, I_D=16\text{A}$			46.6	
Gate-to-Source Charge	Q_{gs}			8.2		nC
Gate-to-Drain "Miller" Charge	Q_{gd}			27.4		nC
Diode Forward Voltage	V_{SD}	$I_S=16\text{A}, V_{GS}=0\text{V}$		0.95	1.3	V

Fig.1 Avalanche Resistance Test Circuit

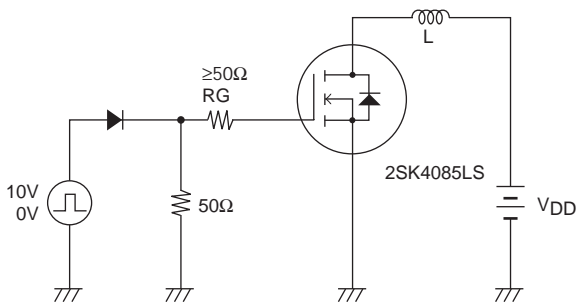
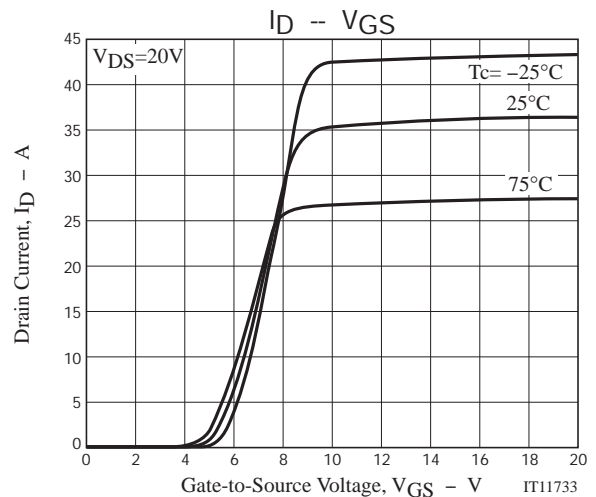
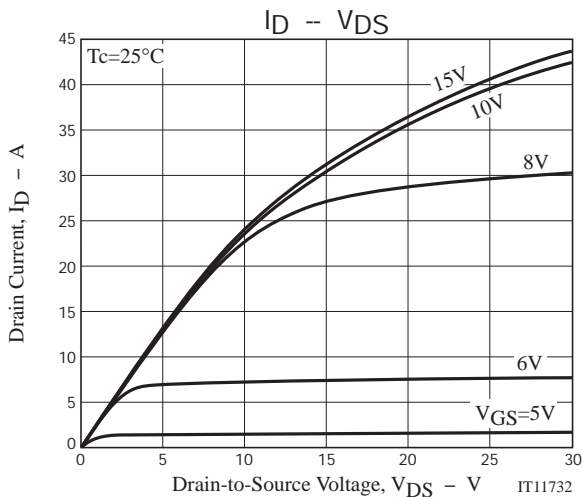
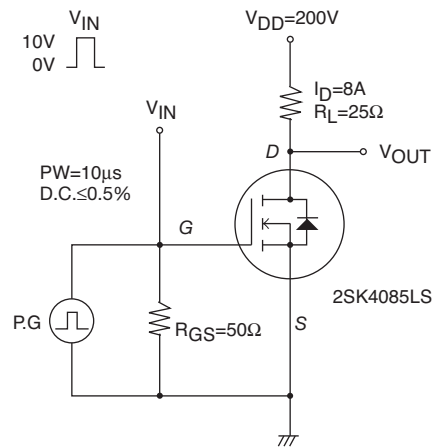
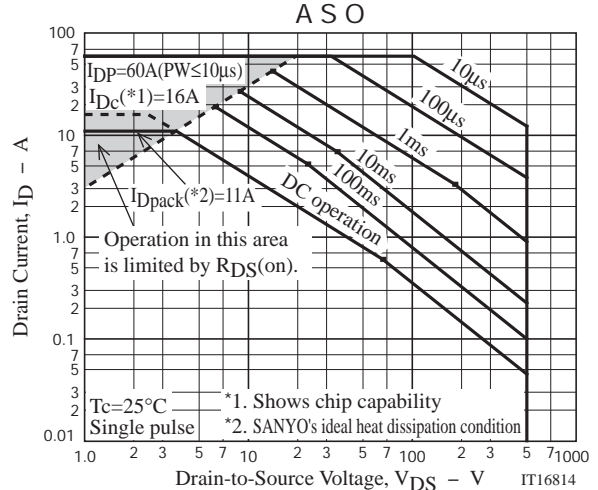
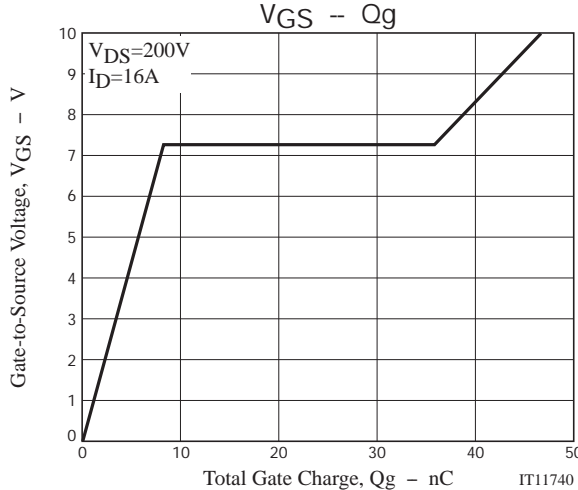
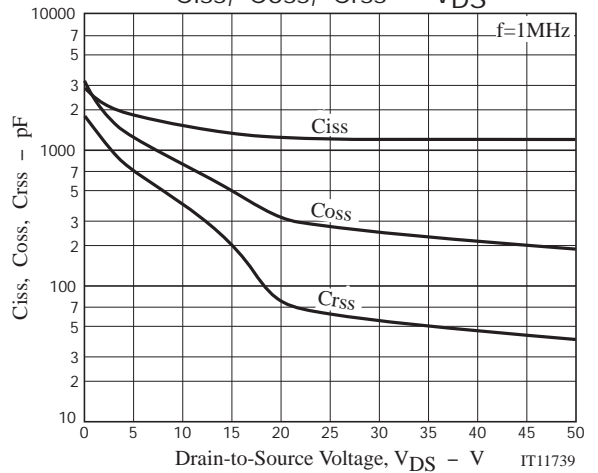
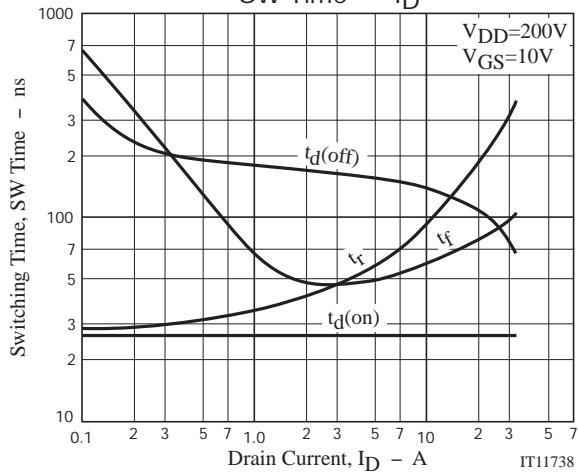
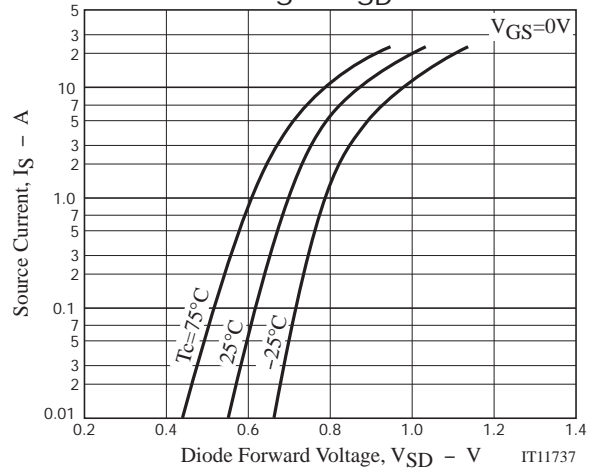
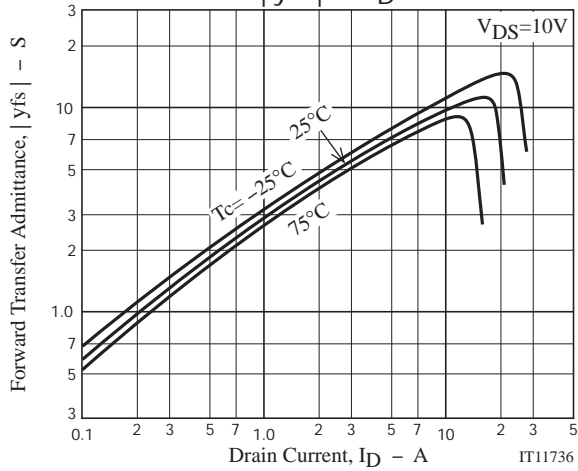
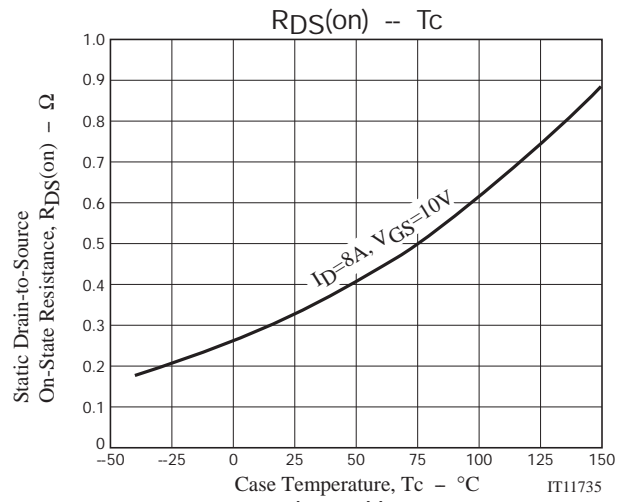
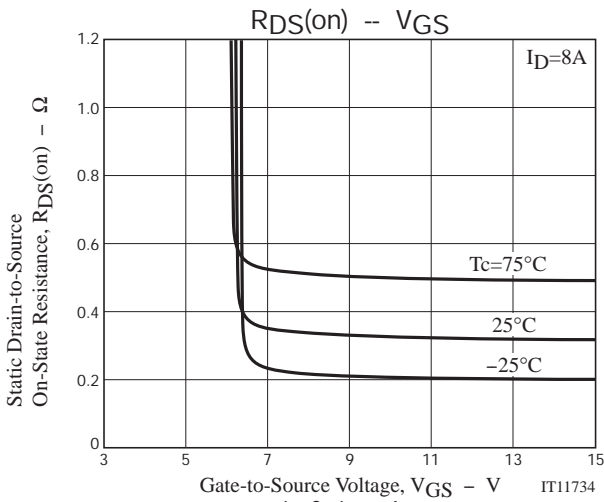


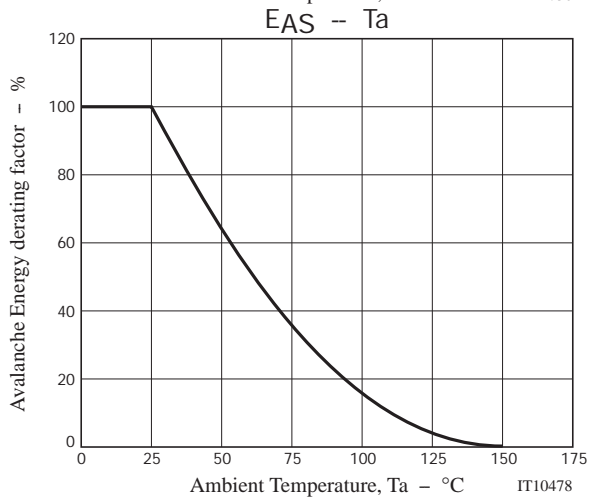
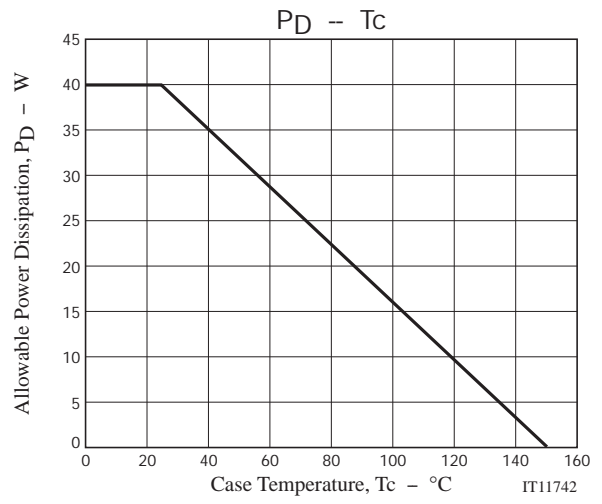
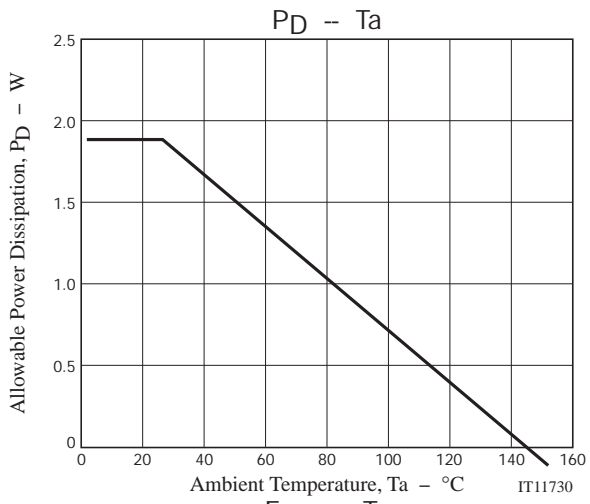
Fig.2 Switching Time Test Circuit



2SK4085LS



2SK4085LS



Note on usage : Since the 2SK4085LS is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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