



SANYO Semiconductors

DATA SHEET

2SK3746 — N-Channel Silicon MOSFET

High-Voltage, High-Speed Switching Applications

Features

- Low ON-resistance, low input capacitance, ultrahigh-speed switching.
- High reliability (Adoption of HVP process).
- Avalanche resistance guarantee.

Specifications

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

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V_{DS}		1500	V
Gate-to-Source Voltage	V_{GS}		± 20	V
Drain Current (DC)	I_D		2	A
Drain Current (Pulse)	I_{DP}	$PW \leq 10\mu\text{s}$, duty cycle $\leq 1\%$	4	A
Allowable Power Dissipation	P_D		2.5	W
		$T_c=25^\circ\text{C}$	110	W
Channel Temperature	T_{ch}		150	$^\circ\text{C}$
Storage Temperature	T_{stg}		-55 to +150	$^\circ\text{C}$
Avalanche Energy (Single Pulse) *1	E_{AS}		42	mJ
Avalanche Current *2	I_{AV}		2	A

*1 $V_{DD}=99\text{V}$, $L=20\text{mH}$, $I_{AV}=2\text{A}$ *2 $L \leq 20\text{mH}$, Single pulseElectrical Characteristics at $T_a=25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D=1\text{mA}$, $V_{GS}=0\text{V}$	1500			V
Zero-Gate Voltage Drain Current	I_{DSS}	$V_{DS}=1200\text{V}$, $V_{GS}=0\text{V}$			100	μA
Gate-to-Source Leakage Current	I_{GSS}	$V_{GS} = \pm 16\text{V}$, $V_{DS}=0\text{V}$			± 10	μA
Cutoff Voltage	$V_{GS(off)}$	$V_{DS}=10\text{V}$, $I_D=1\text{mA}$	2.5		3.5	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS}=20\text{V}$, $I_D=1\text{A}$	0.7	1.4		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)}$	$I_D=1\text{A}$, $V_{GS}=10\text{V}$		10	13	Ω

Marking : K3746

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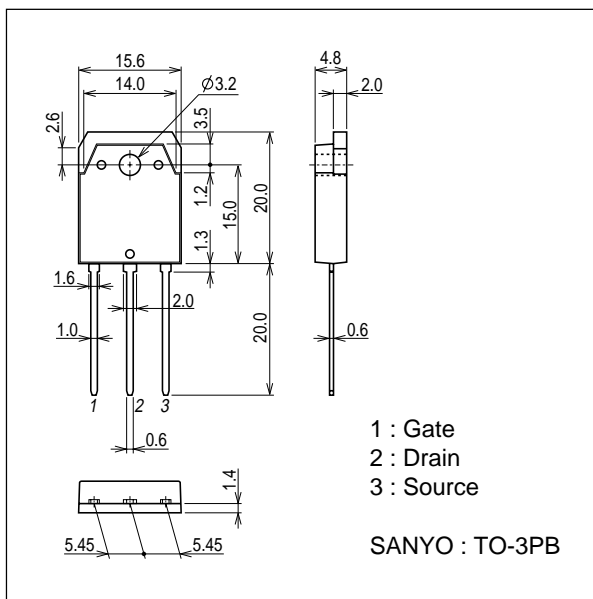
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Input Capacitance	Ciss	$V_{DS}=30V, f=1MHz$		380		pF
Output Capacitance	Coss	$V_{DS}=30V, f=1MHz$		70		pF
Reverse Transfer Capacitance	Crss	$V_{DS}=30V, f=1MHz$		40		pF
Turn-ON Delay Time	$t_d(on)$	See specified Test Circuit.		12		ns
Rise Time	t_r	See specified Test Circuit.		37		ns
Turn-OFF Delay Time	$t_d(off)$	See specified Test Circuit.		152		ns
Fall Time	t_f	See specified Test Circuit.		59		ns
Total Gate Charge	Qg	$V_{DS}=200V, V_{GS}=10V, I_D=2A$		37.5		nC
Gate-to-Source Charge	Qgs	$V_{DS}=200V, V_{GS}=10V, I_D=2A$		2.7		nC
Gate-to-Drain "Miller" Charge	Qgd	$V_{DS}=200V, V_{GS}=10V, I_D=2A$		20		nC
Diode Forward Voltage	V_{SD}	$I_S=2A, V_{GS}=0V$		0.88	1.2	V

Note) Although the protection diode is contained between gate and source, be careful of handling enough.

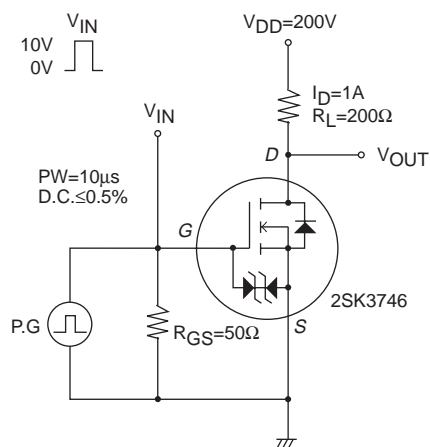
Package Dimensions

unit : mm

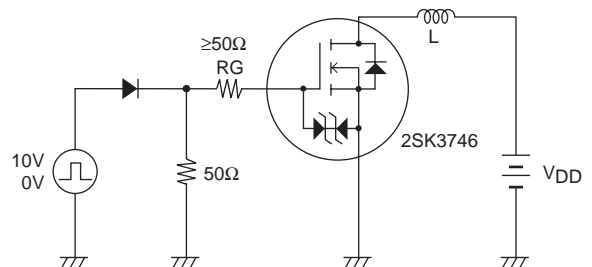
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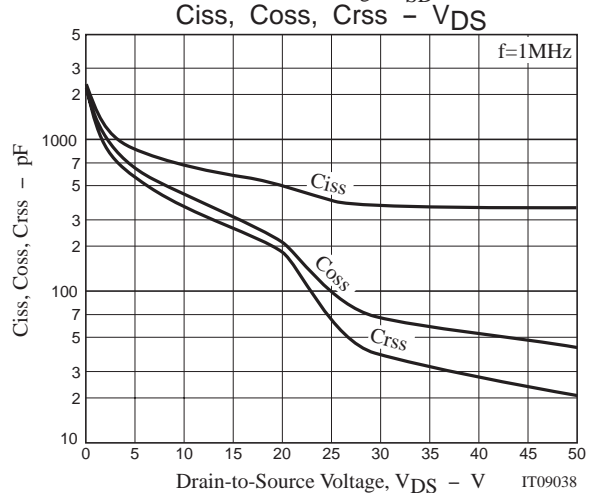
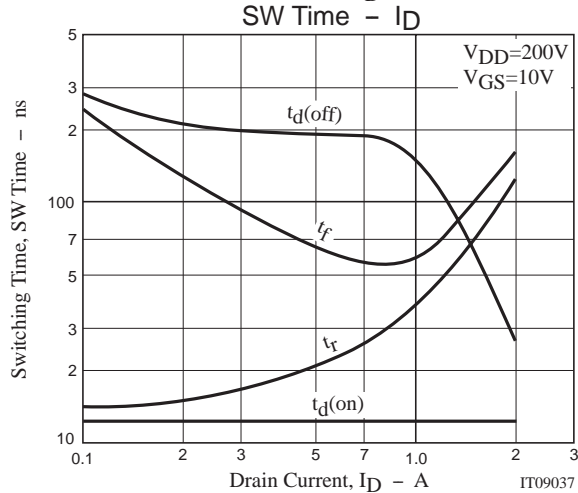
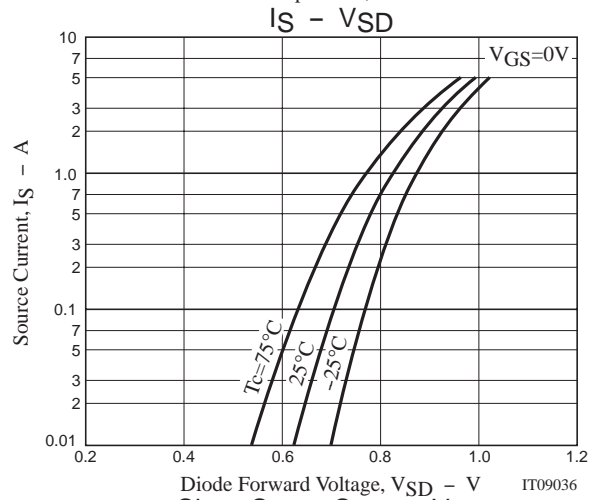
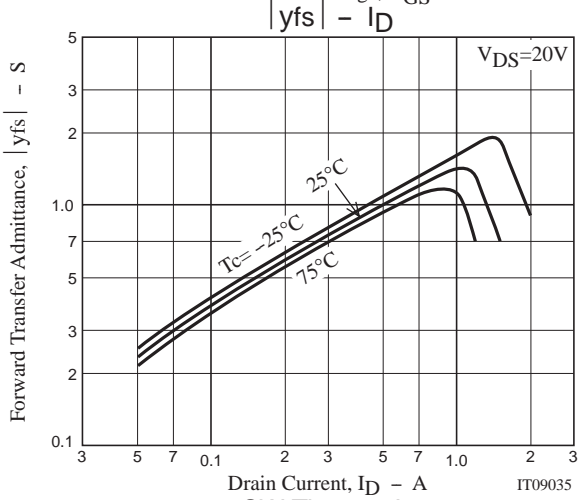
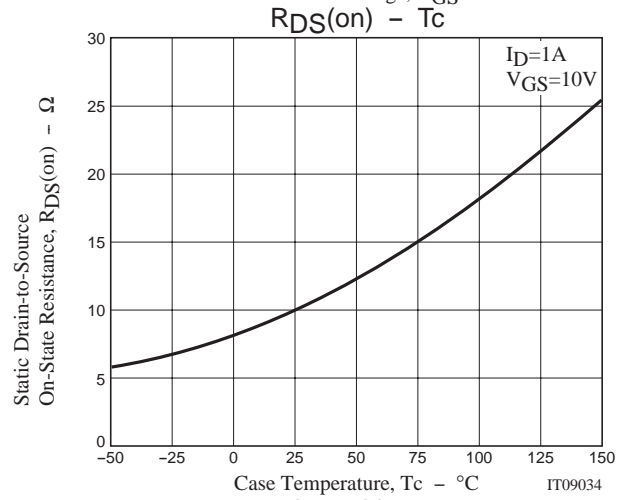
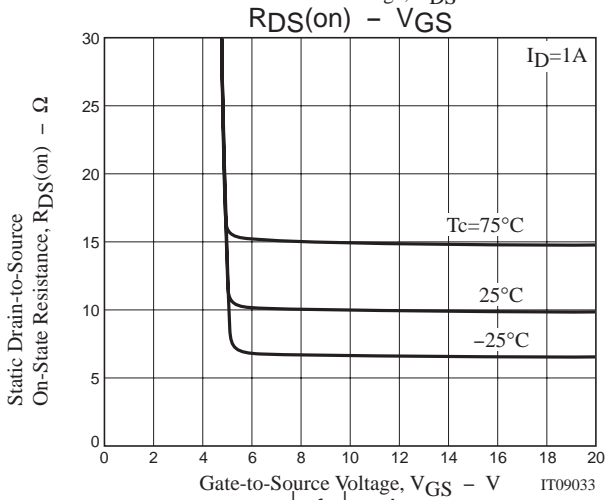
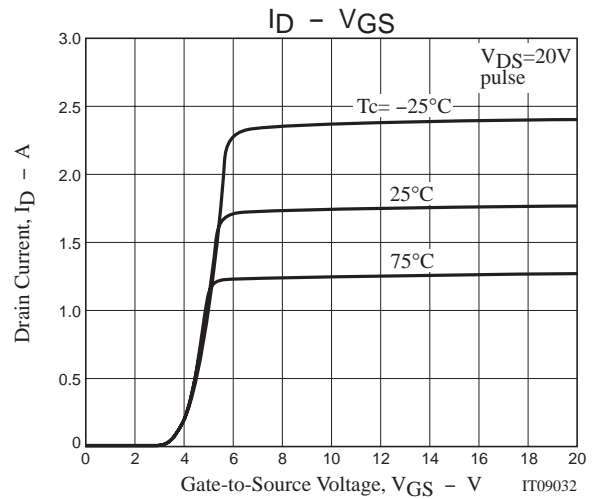
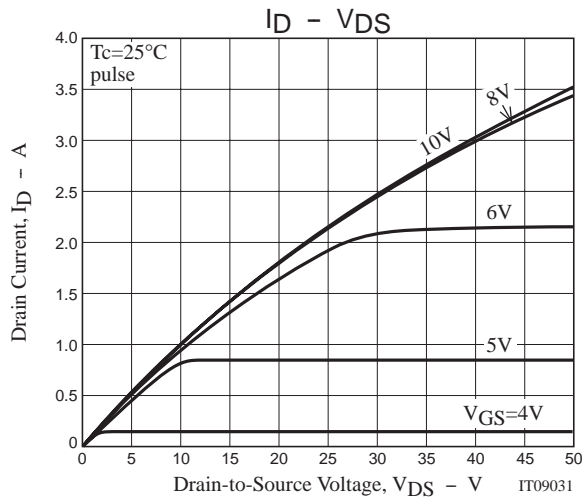


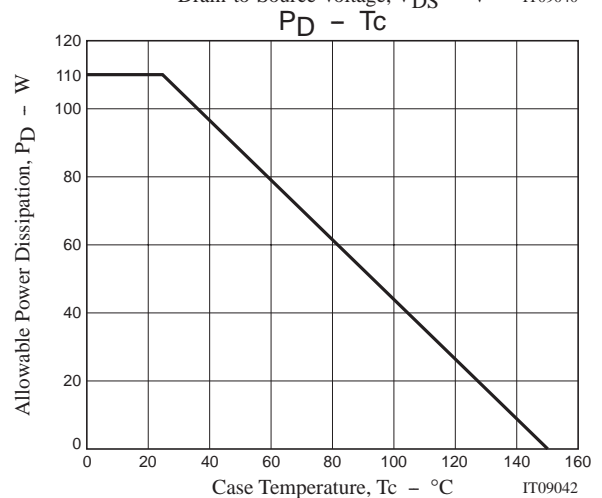
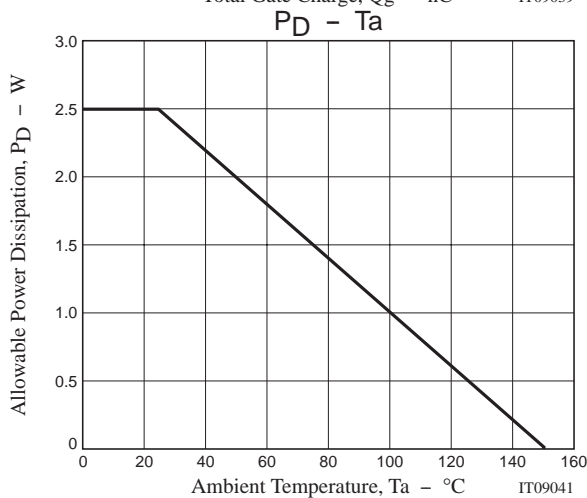
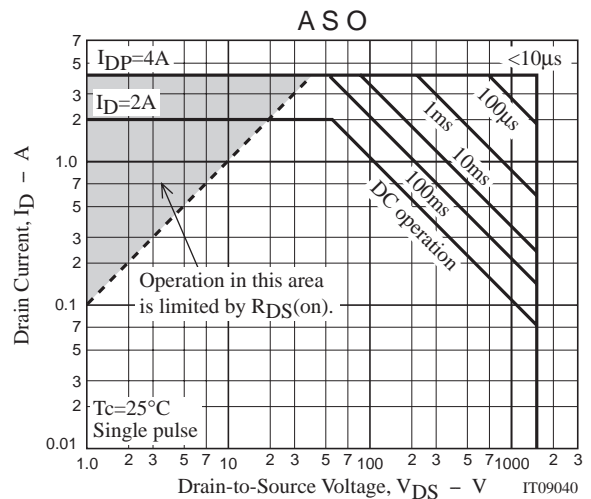
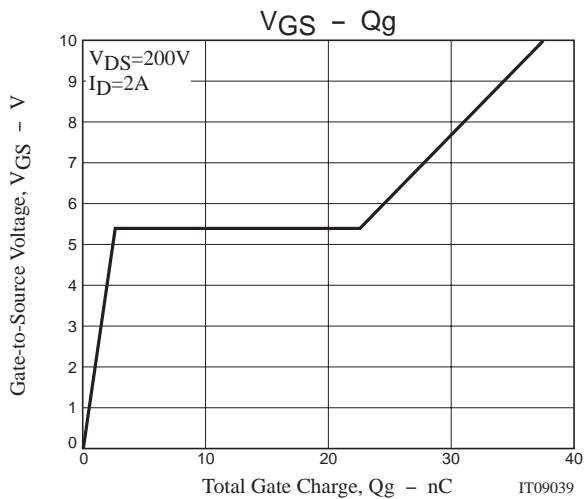
Switching Time Test Circuit



Avalanche Resistance Test Circuit







Note on usage : Since the 2SK3746 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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