



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 Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V _{DSS}		1500	V
Gate-to-Source Voltage	V _{GSS}		±20	V
Drain Current (DC)	I _D		2	A
Drain Current (Pulse)	I _{DP}	PW≤10μs, duty cycle≤1%	4	A
Allowable Power Dissipation	P _D		2.5	W
		T _c =25°C	110	W
Channel Temperature	T _{ch}		150	°C
Storage Temperature	T _{stg}		-55 to +150	°C
Avalanche Energy (Single Pulse) *1	E _{AS}		42	mJ
Avalanche Current *2	I _{AV}		2	A

*1 V_{DD}=99V, L=20mH, I_{AV}=2A

*2 L≤20mH, Single pulse

Electrical Characteristics at Ta=25°C

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

Marking : K3746

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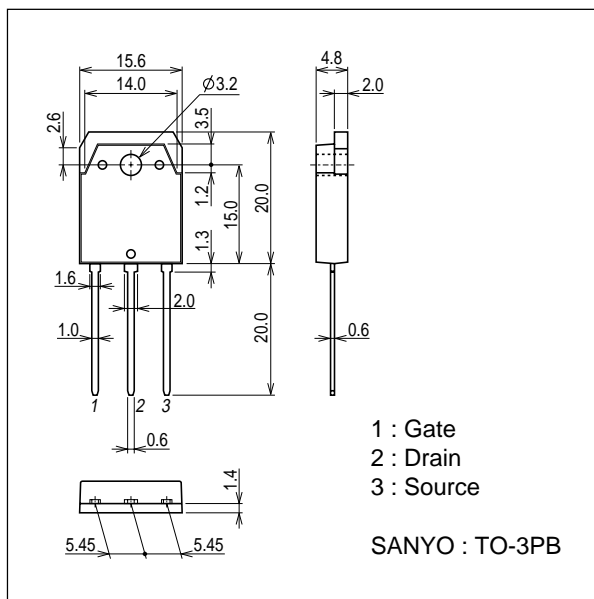
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Input Capacitance	Ciss	$V_{DS}=30V, f=1MHz$		380		pF
Output Capacitance	Coss	$V_{DS}=30V, f=1MHz$		70		pF
Reverse Transfer Capacitance	Crss	$V_{DS}=30V, f=1MHz$		40		pF
Turn-ON Delay Time	$t_d(on)$	See specified Test Circuit.		12		ns
Rise Time	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.

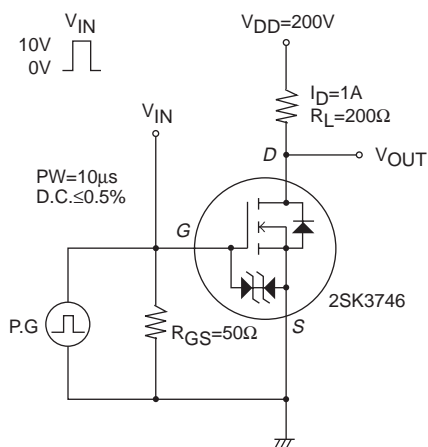
Package Dimensions

unit : mm

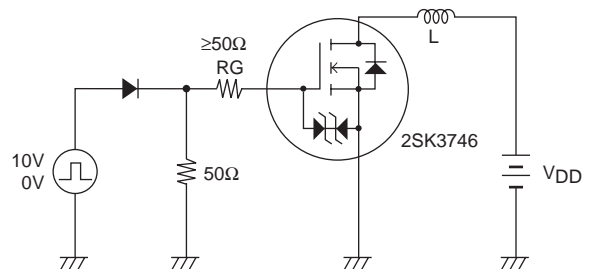
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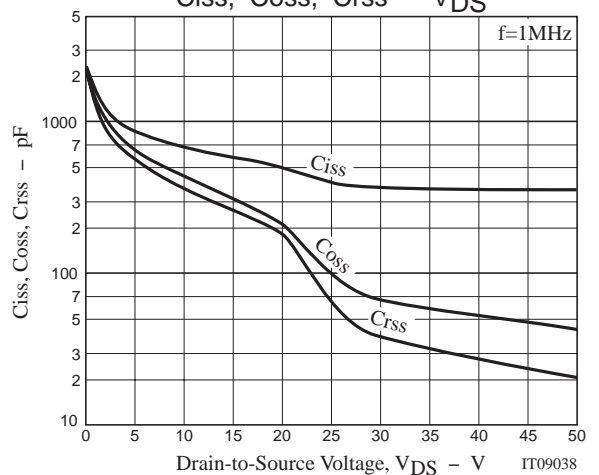
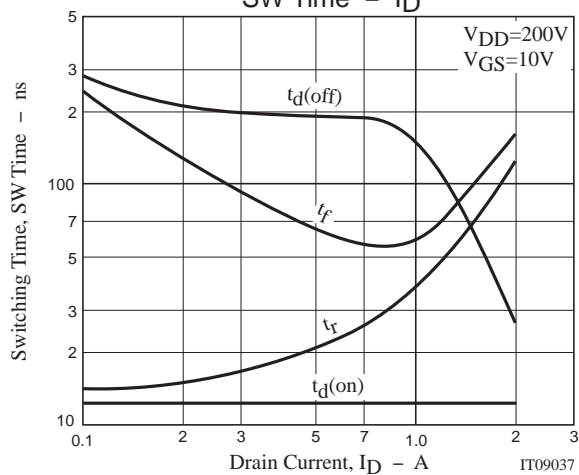
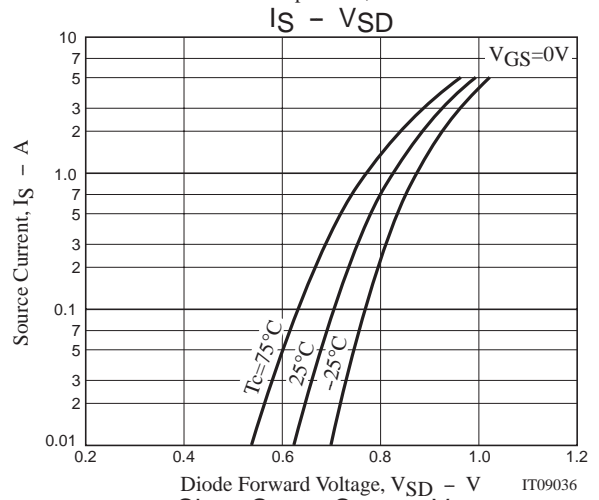
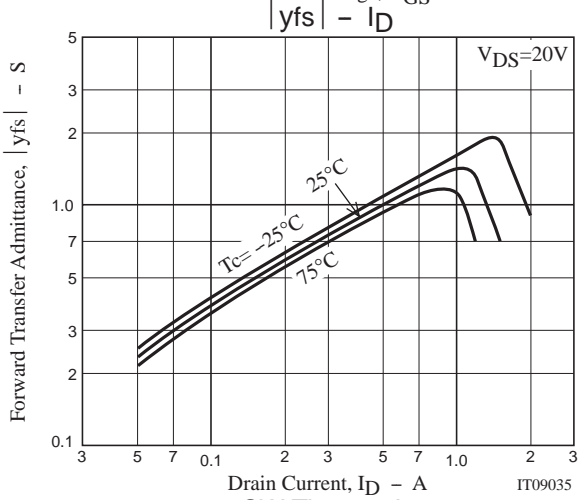
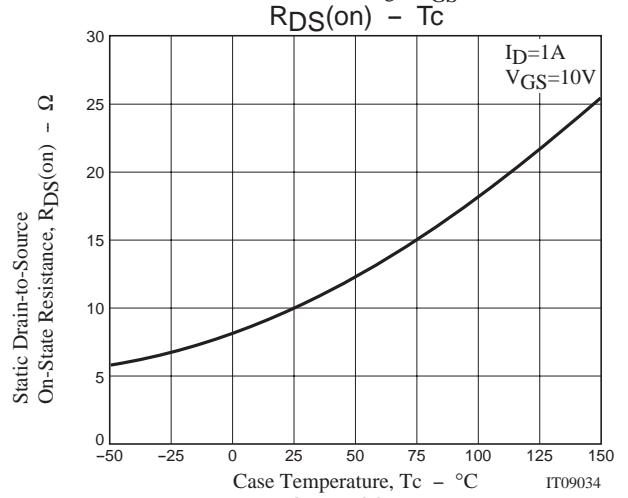
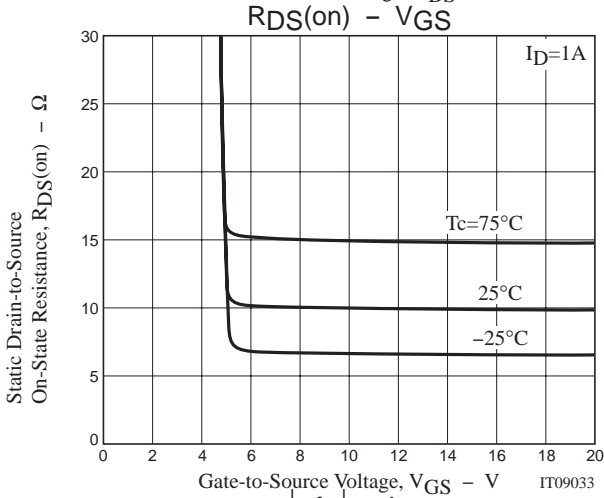
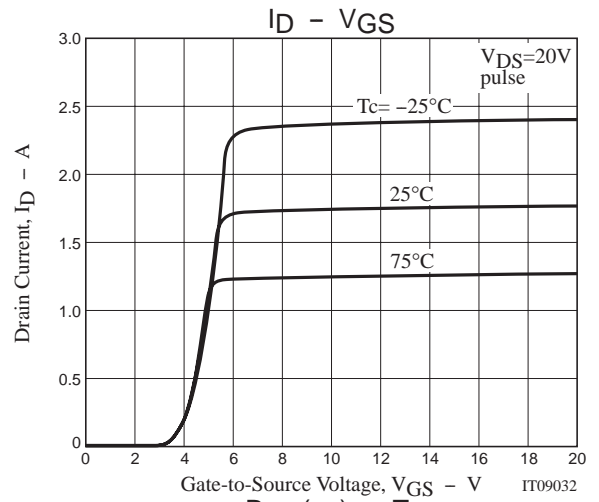
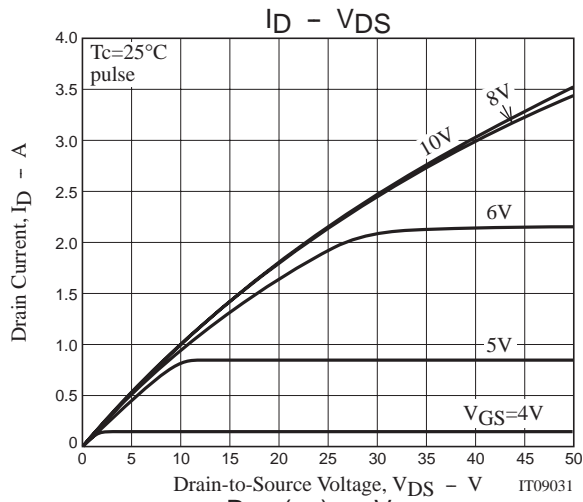
Switching Time Test Circuit

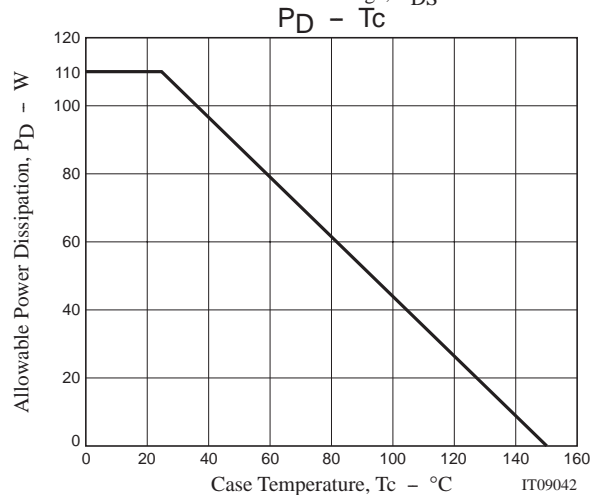
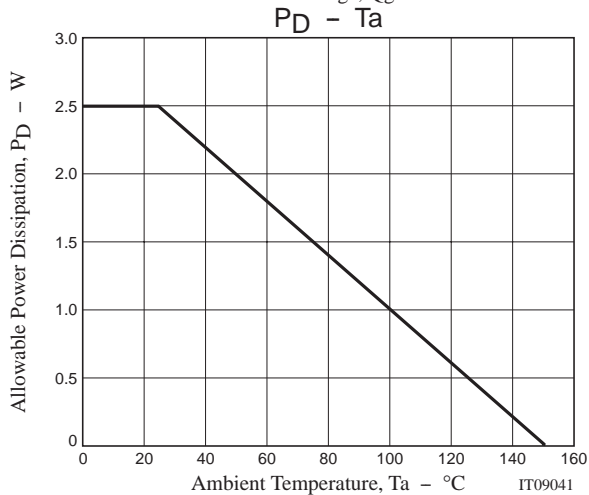
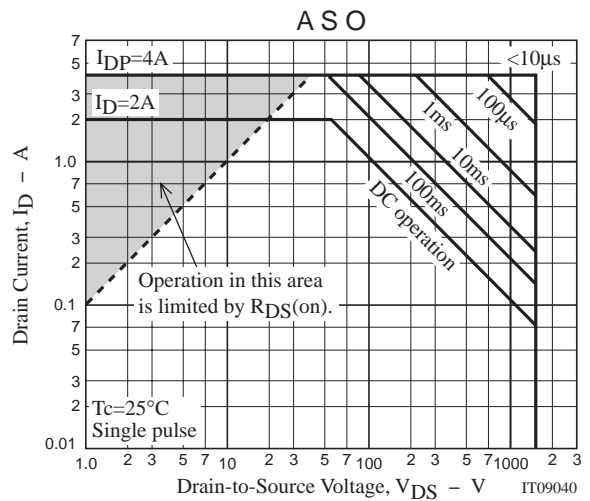
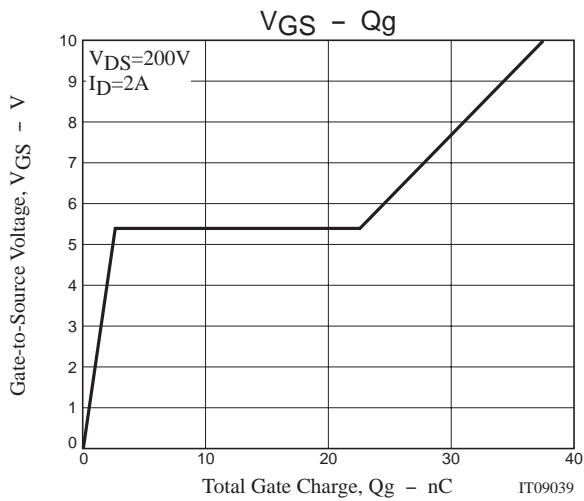


Avalanche Resistance Test Circuit



2SK3746





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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