Ordering number : ENN8283

SANYO Semiconductors

DATA SHEET

An ON Semiconductor Company

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
		Tc=25°C	110	W
Channel Temperature	Tch		150	°C
Storage Temperature	Tstg		–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	$\lvert yfs \rvert$	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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Continued from preceding page.

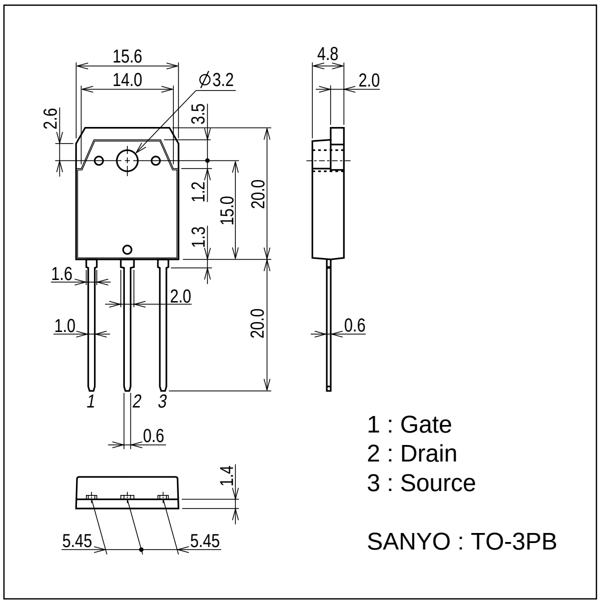
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Input Capacitance	Ciss	V_{DS}=30V, f=1MHz		380		pF
Output Capacitance	Coss	V_{DS}=30V, f=1MHz		70		pF
Reverse Transfer Capacitance	Crss	V_{DS}=30V, f=1MHz		40		pF
Turn-ON Delay Time	t_d(on)	See specified Test Circuit.		12		ns
Rise Time	t_r	See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

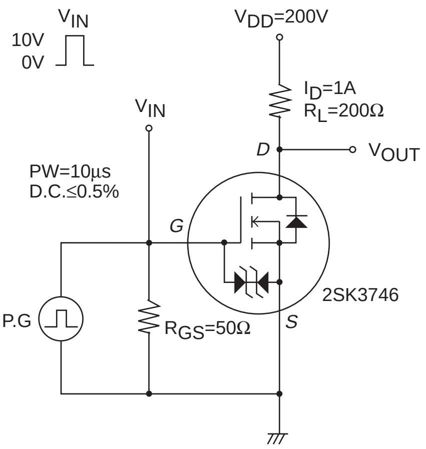
Package Dimensions

unit : mm

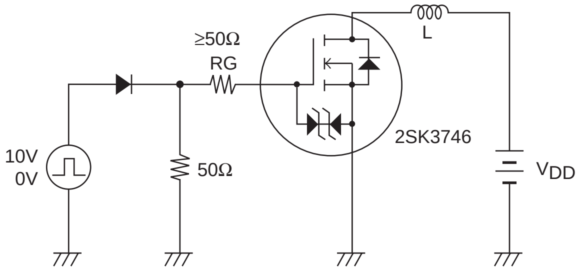
7503-004



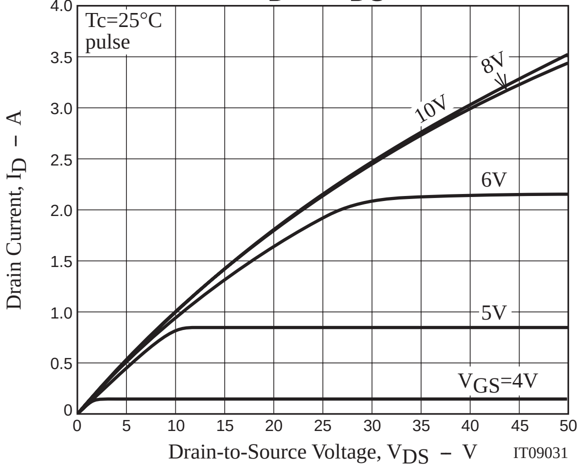
Switching Time Test Circuit



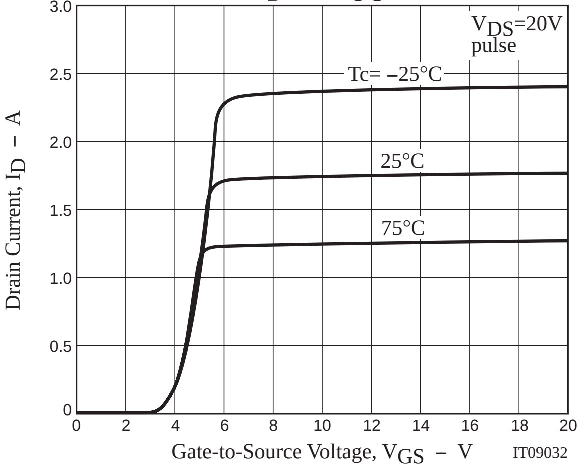
Avalanche Resistance Test Circuit



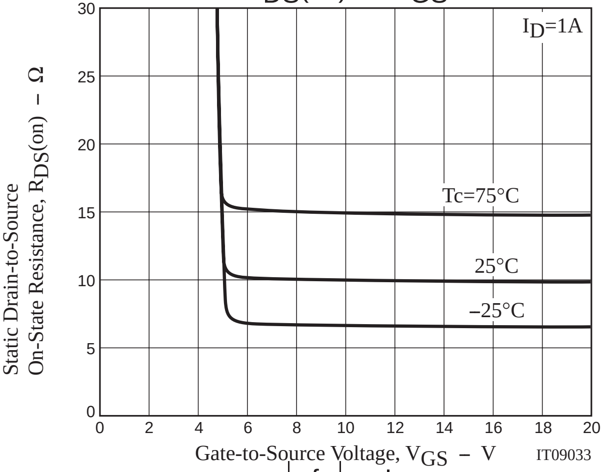
I_D – V_{DS}



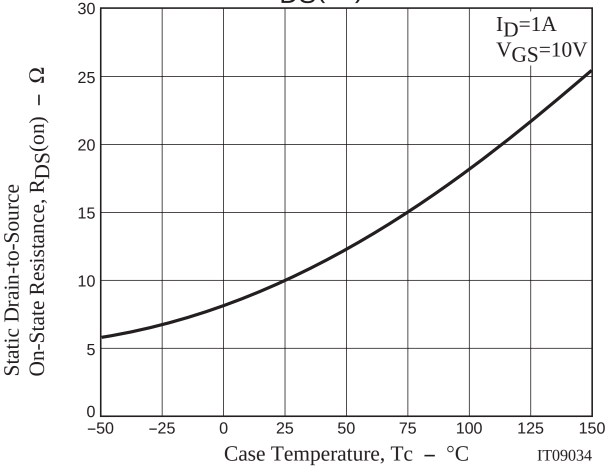
I_D – V_{GS}



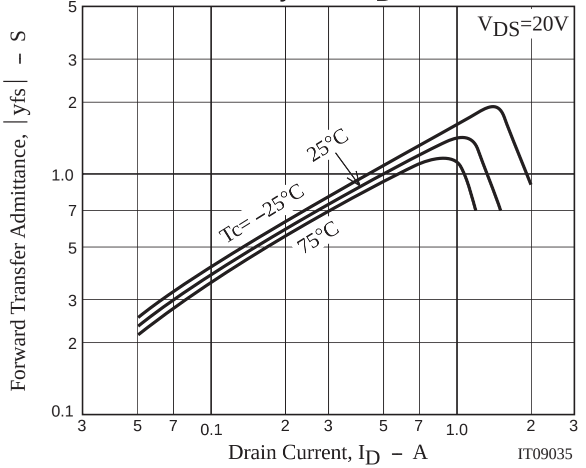
R_{DS}(on) – V_{GS}



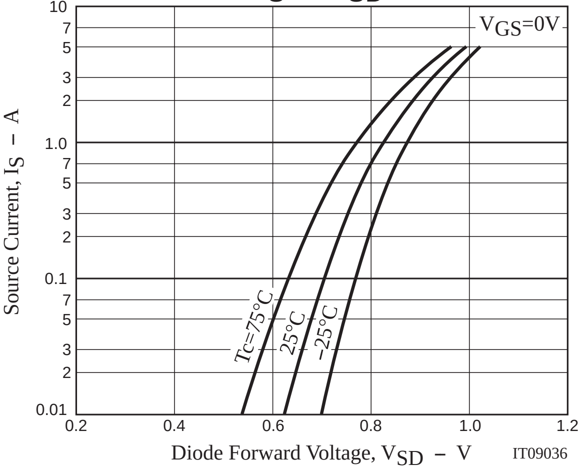
R_{DS}(on) – Tc



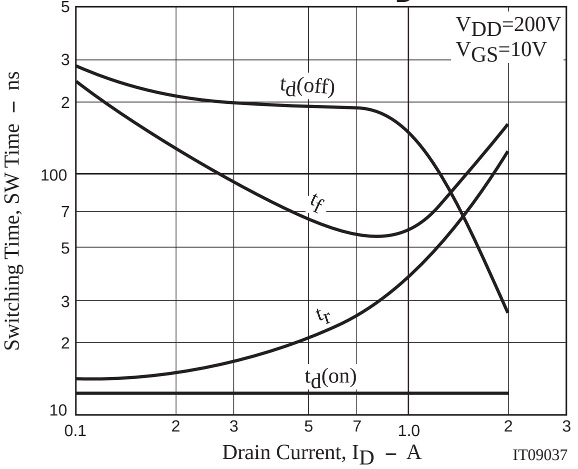
|yfs| – I_D



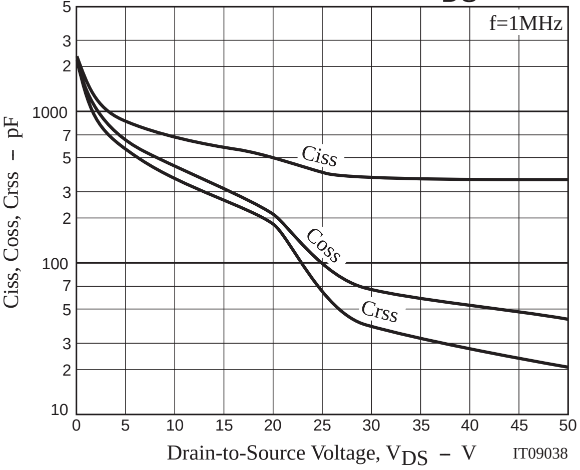
I_S – V_{SD}



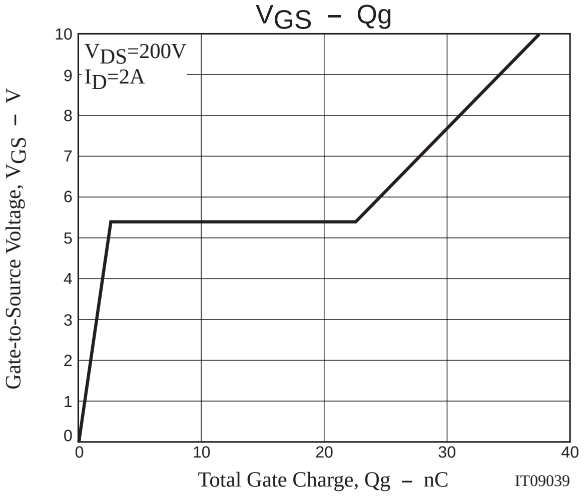
SW Time – I_D



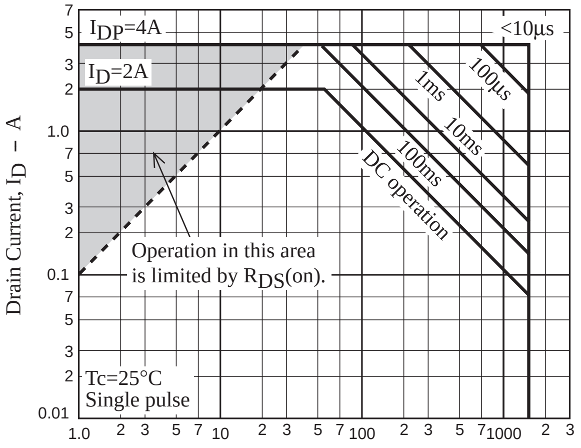
Ciss, Coss, Crss – V_{DS}



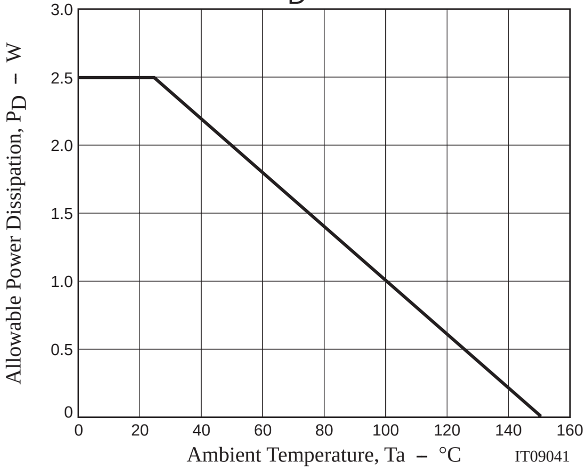
V_{GS} – Qg



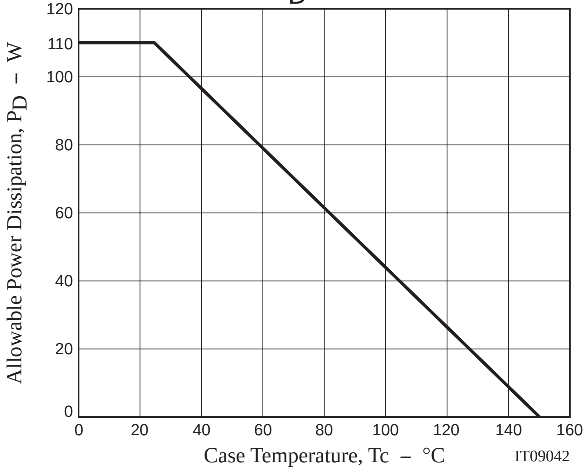
A S O



P_D – Ta



P_D – Tc



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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