



# 2SK3745LS — 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).
- Micaless package facilitating mounting.
- Avalanche resistance guarantee.

### Specifications

#### Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V <sub>DSS</sub>		1500	V
Gate-to-Source Voltage	V <sub>GSS</sub>		±20	V
Drain Current (DC)	I <sub>D</sub> *		2	A
Drain Current (Pulse)	I <sub>DP</sub>		4	A
Allowable Power Dissipation	P <sub>D</sub>		2.0	W
		T <sub>c</sub> =25°C	35	W
Channel Temperature	T <sub>ch</sub>		150	°C
Storage Temperature	T <sub>stg</sub>		-55 to +150	°C
Avalanche Energy (Single Pulse) *1	E <sub>AS</sub>		42	mJ
Avalanche Current *2	I <sub>AV</sub>		2	A

\*Shows chip capability

\*1 V<sub>DD</sub>=99V, L=20mH, I<sub>AV</sub>=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 <sub>(BR)DSS</sub>	I <sub>D</sub> =1mA, V <sub>GS</sub> =0V	1500			V
Zero-Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =1200V, V <sub>GS</sub> =0V			100	μA
Gate-to-Source Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> = ±16V, V <sub>DS</sub> =0V			±10	μA
Cutoff Voltage	V <sub>GS(off)</sub>	V <sub>DS</sub> =10V, I <sub>D</sub> =1mA	2.5		3.5	V
Forward Transfer Admittance	y <sub>fs</sub>	V <sub>DS</sub> =20V, I <sub>D</sub> =1A	0.7	1.4		S
Static Drain-to-Source On-State Resistance	R <sub>DS(on)</sub>	I <sub>D</sub> =1A, V <sub>GS</sub> =10V		10	13	Ω

Marking : K3745

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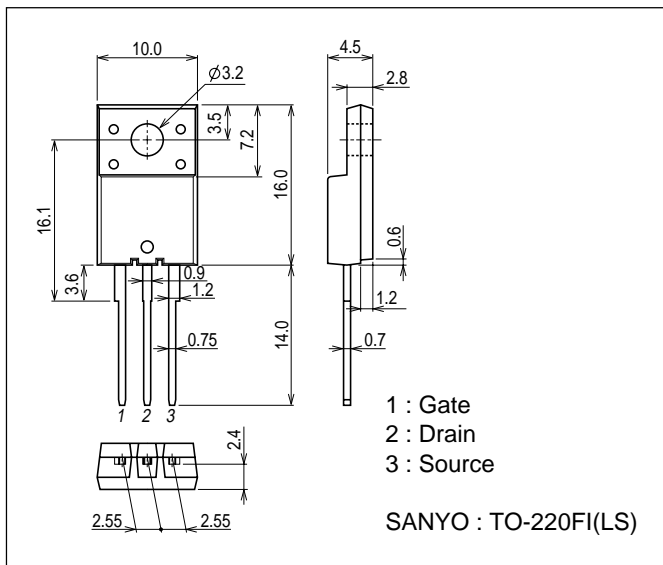
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Input Capacitance	Ciss	$V_{DS}=30V, f=1MHz$		380		pF
Output Capacitance	Coss	$V_{DS}=30V, f=1MHz$		70		pF
Reverse Transfer Capacitance	Crss	$V_{DS}=30V, f=1MHz$		40		pF
Turn-ON Delay Time	$t_d(on)$	See specified Test Circuit.		12		ns
Rise Time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

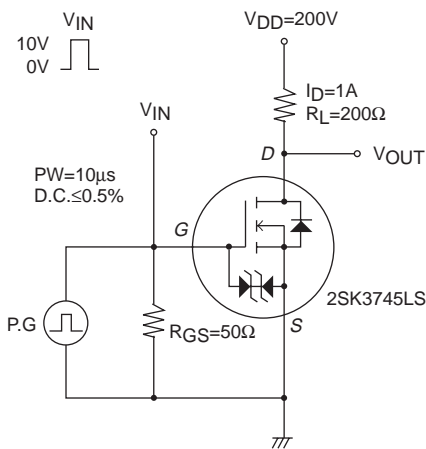
## Package Dimensions

unit : mm

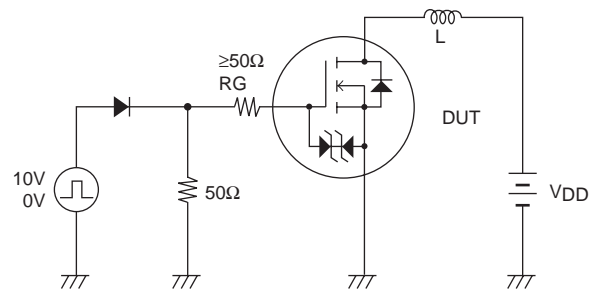
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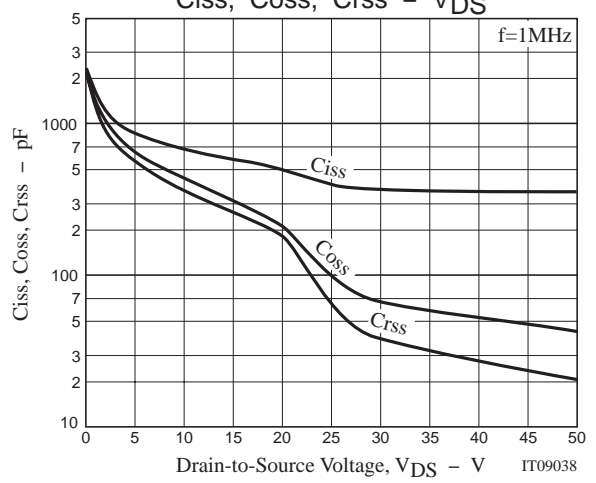
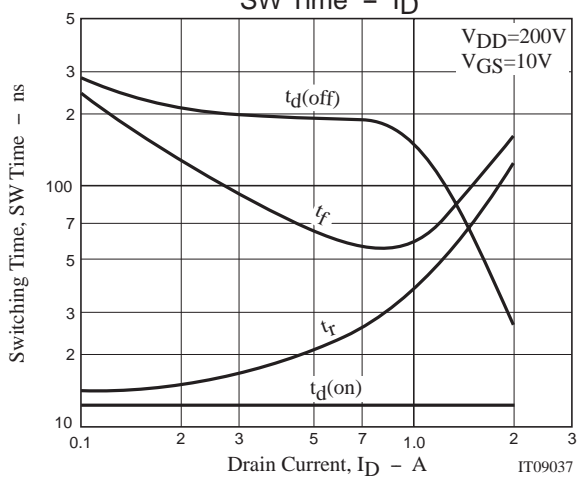
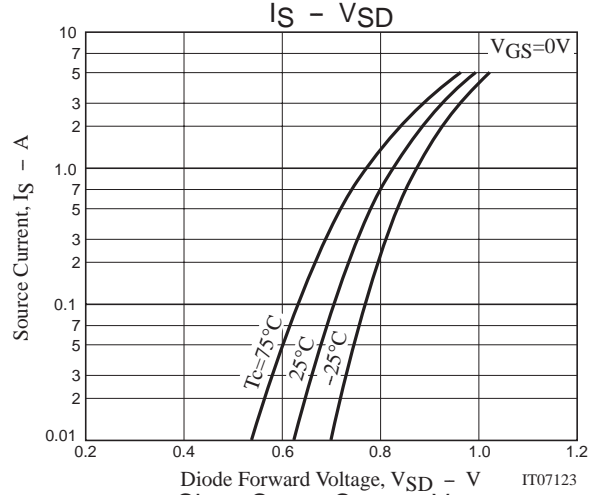
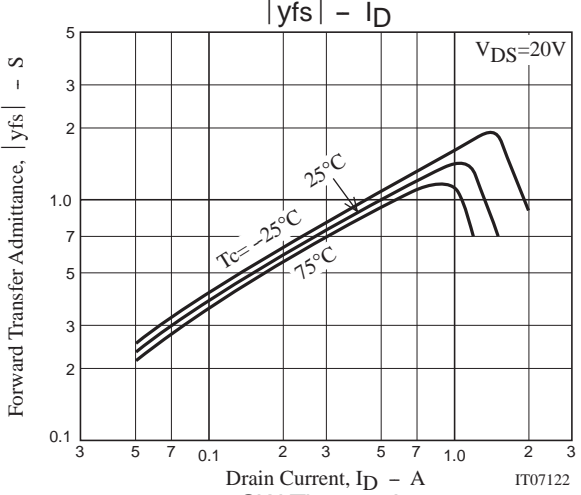
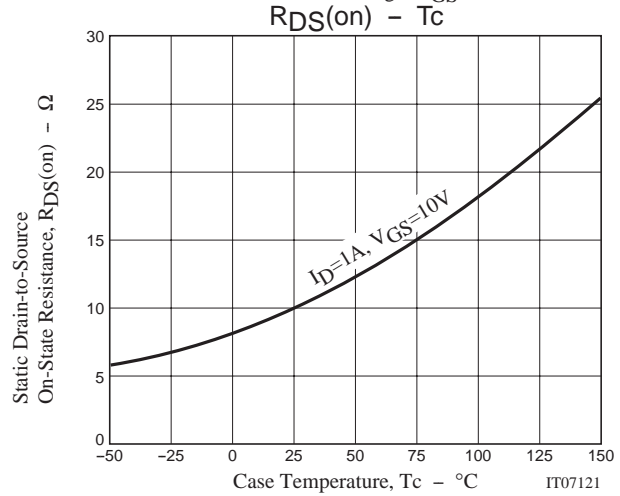
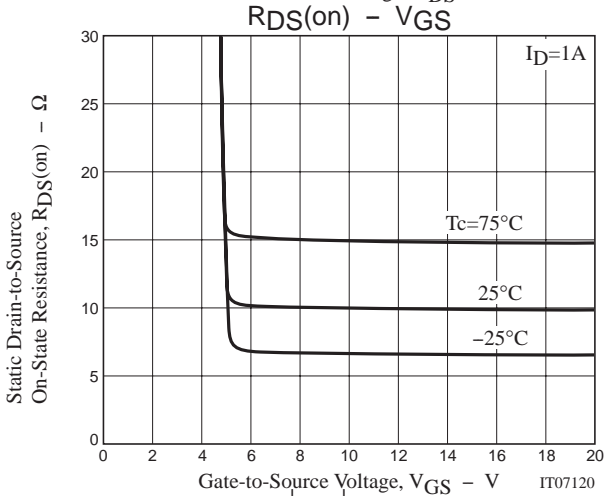
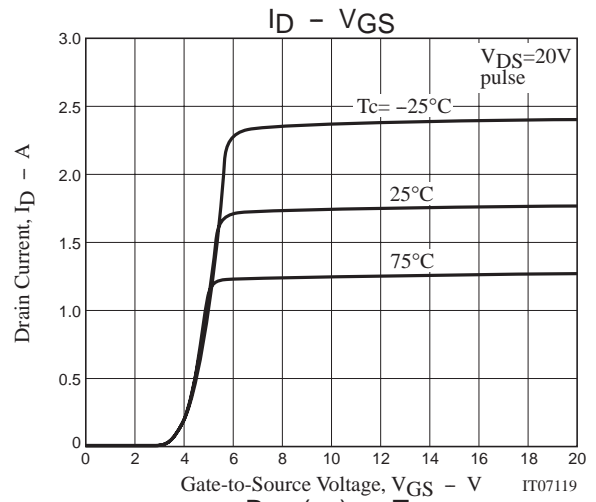
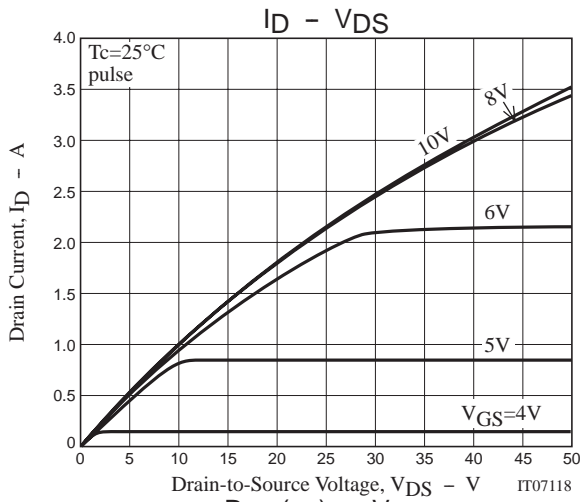
## Switching Time Test Circuit



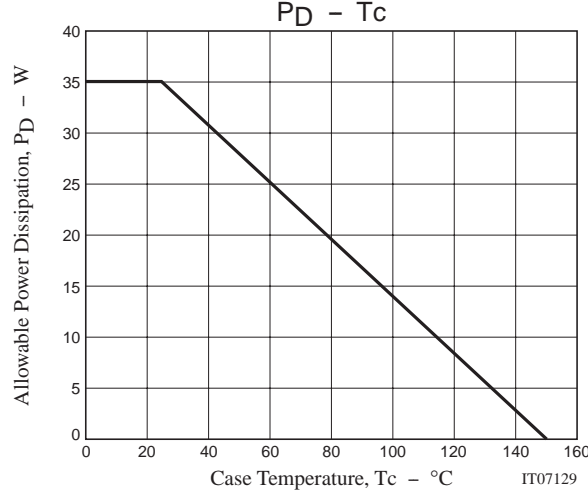
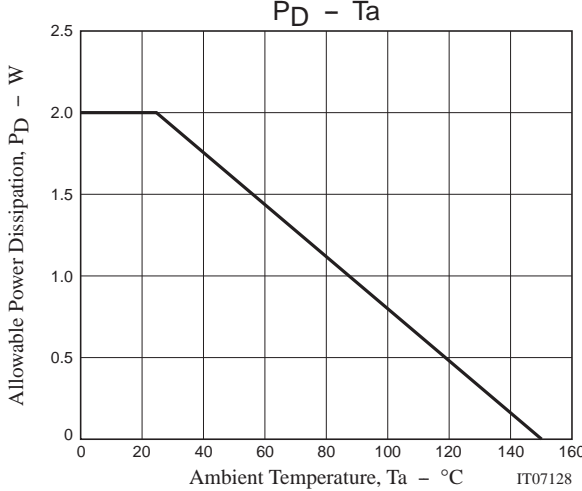
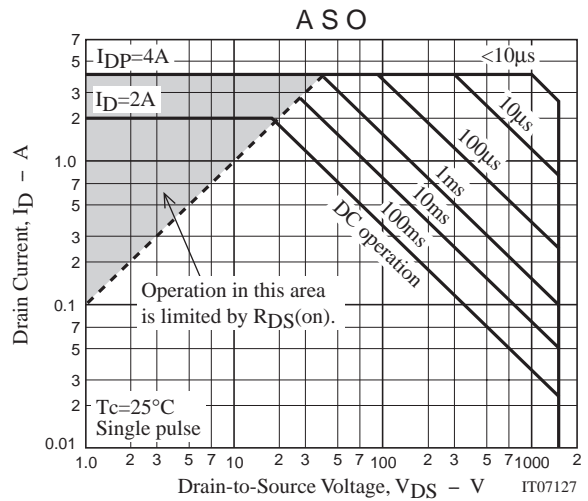
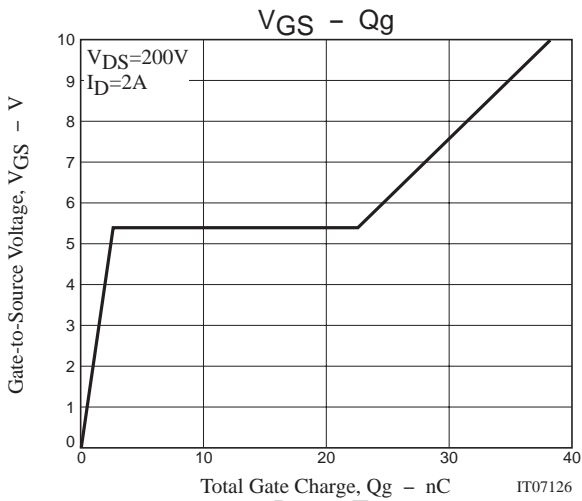
## Avalanche Resistance Test Circuit



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