



2SK3977 — N-Channel Silicon MOSFET

General-Purpose Switching Device Applications

Features

- Low ON-resistance.
- Ultrahigh-speed switching.
- 4.5V drive

Specifications

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V _{DSS}		100	V
Gate-to-Source Voltage	V _{GSS}		±20	V
Drain Current (DC)	I _D		10	A
Drain Current (Pulse)	I _{DP}	PW≤10μs, duty cycle≤1%	40	A
Allowable Power Dissipation	P _D		1	W
		T _c =25°C	20	W
Channel Temperature	T _{ch}		150	°C
Storage Temperature	T _{stg}		-55 to +150	°C

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	100			V
Zero-Gate Voltage Drain Current	I _{DSS}	V _{DS} =100V, V _{GS} =0V			1	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	1.2		2.6	V
Forward Transfer Admittance	y _{fs}	V _{DS} =10V, I _D =6A	6	10		S
Static Drain-to-Source On-State Resistance	R _{DS(on)1}	I _D =6A, V _{GS} =10V		70	92	mΩ
	R _{DS(on)2}	I _D =6A, V _{GS} =4.5V		85	120	mΩ
Input Capacitance	C _{iss}	V _{DS} =20V, f=1MHz		1560		pF
Output Capacitance	C _{oss}	V _{DS} =20V, f=1MHz		130		pF
Reverse Transfer Capacitance	C _{rss}	V _{DS} =20V, f=1MHz		83		pF
Turn-ON Delay Time	t _{d(on)}	See specified Test Circuit.		16		ns
Rise Time	t _r	See specified Test Circuit.		55		ns
Turn-OFF Delay Time	t _{d(off)}	See specified Test Circuit.		120		ns
Fall Time	t _f	See specified Test Circuit.		80		ns

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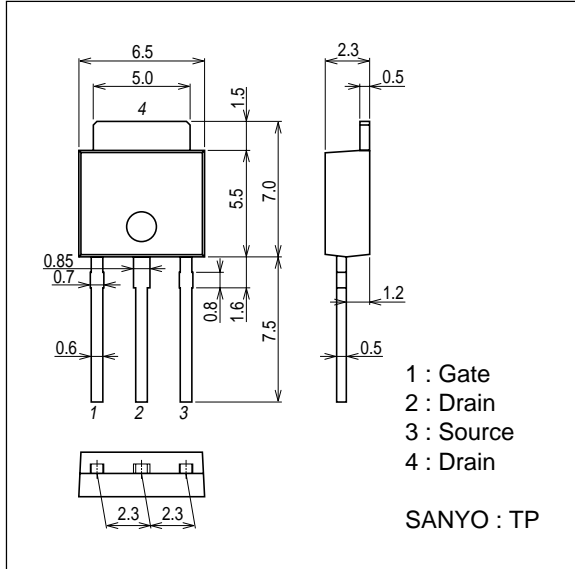
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Total Gate Charge	Qg	V _{DS} =50V, V _{GS} =10V, I _D =10A		34		nC
Gate-to-Source Charge	Qgs	V _{DS} =50V, V _{GS} =10V, I _D =10A		5.5		nC
Gate-to-Drain "Miller" Charge	Qgd	V _{DS} =50V, V _{GS} =10V, I _D =10A		6		nC
Diode Forward Voltage	V _{SD}	I _S =10A, V _{GS} =0V		0.95	1.2	V

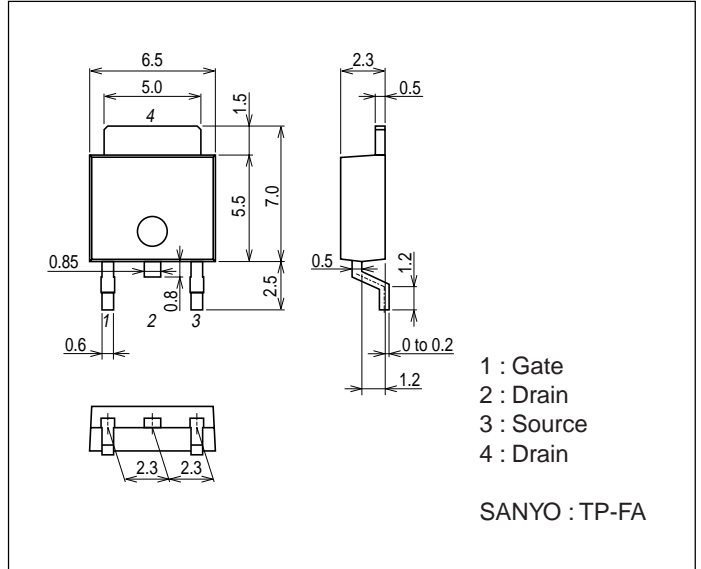
Package Dimensions

unit : mm (typ)
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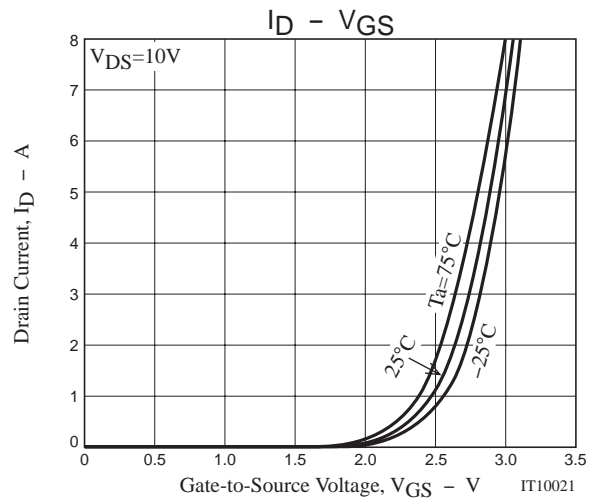
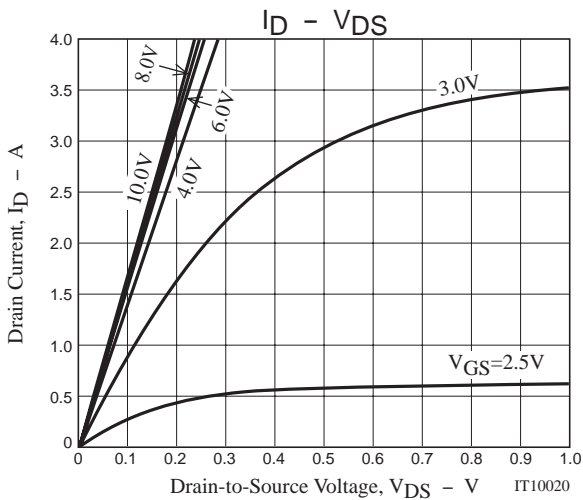
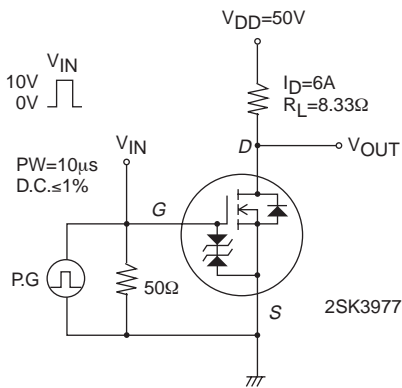


Package Dimensions

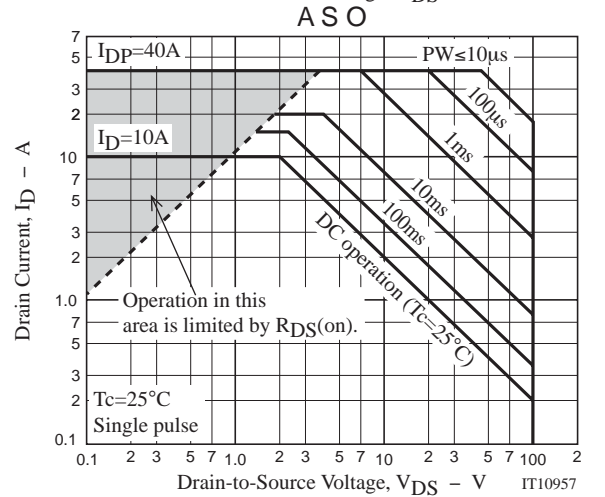
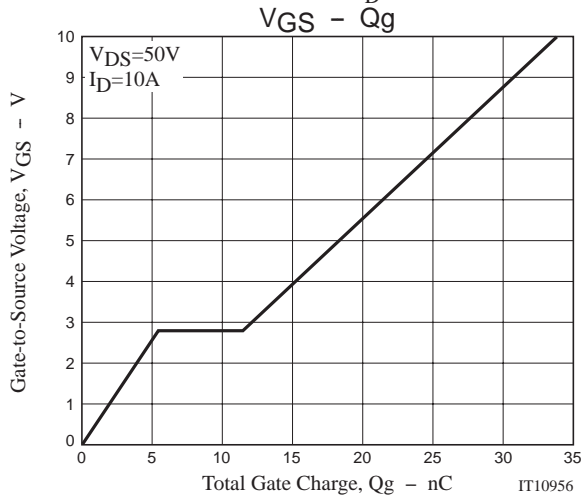
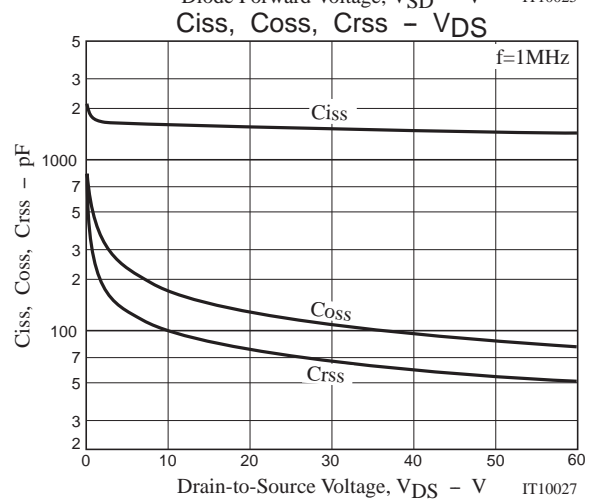
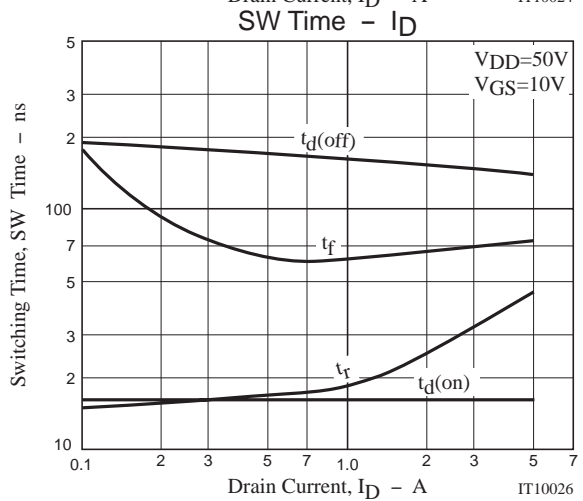
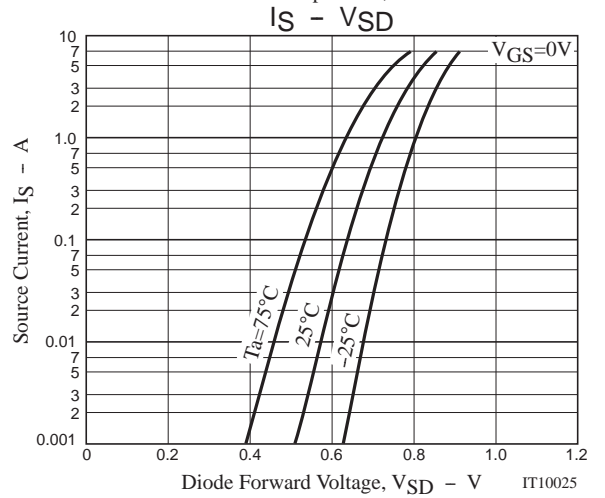
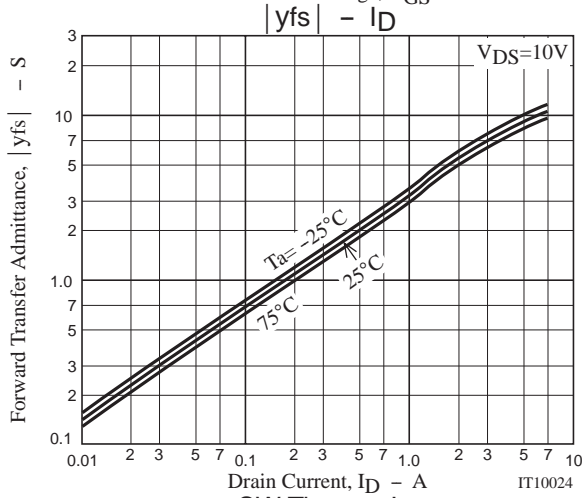
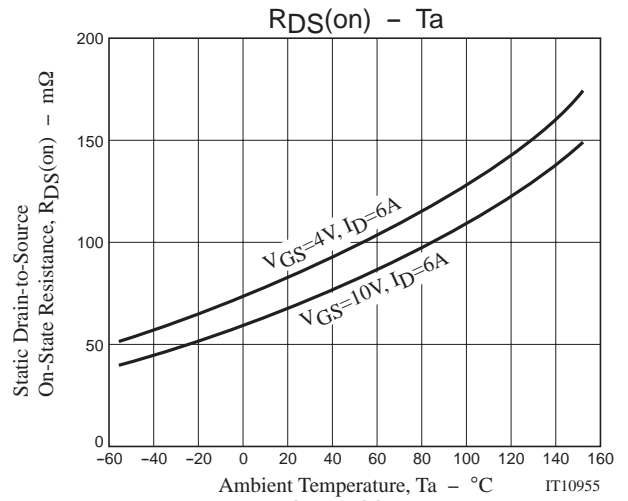
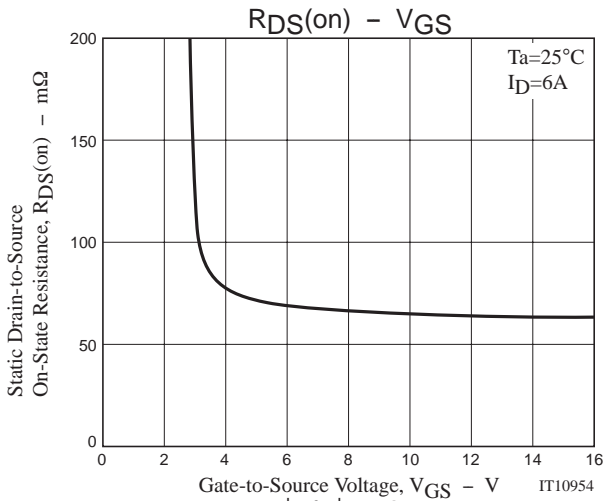
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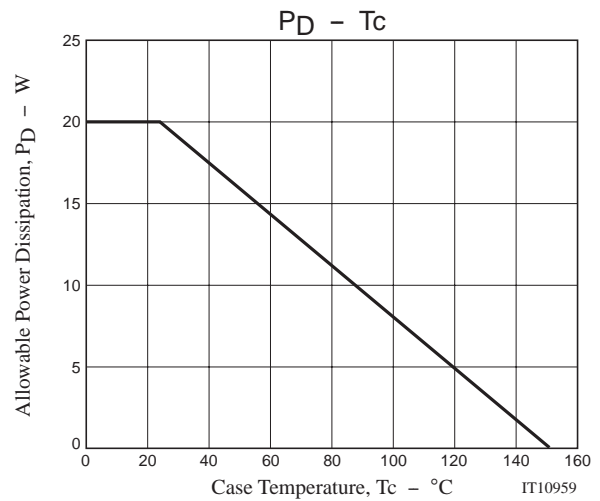
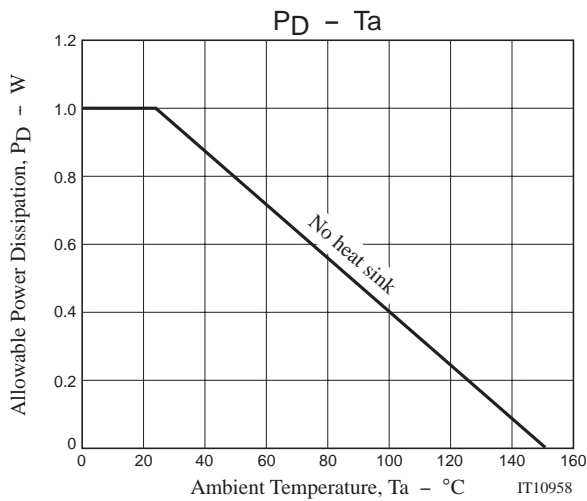


Switching Time Test Circuit



2SK3977





Note on usage : Since the 2SK3977 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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