SeCoS
Elektronische Bauelemente

SSG9975

7.6A, 60V, $R_{DS(ON)}$ 21mΩ

N-Channel Enhancement Mode Power Mos.FET

SOP-8

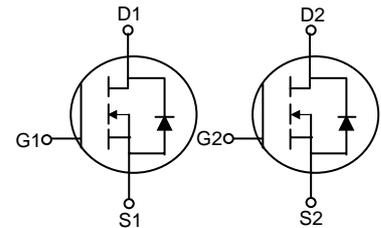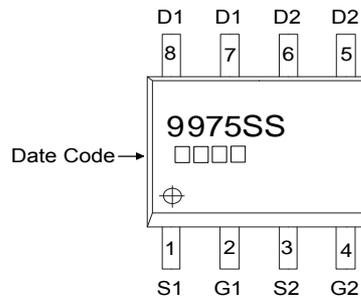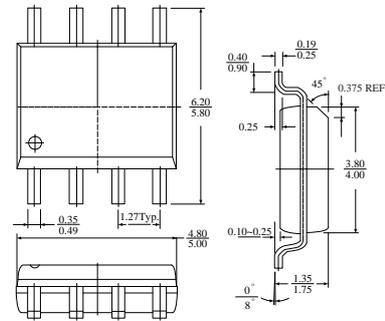## Description

The SSG9975 provide the designer with the best combination of fast switching, ruggedized device design, low on-resistance and cost-effectiveness.

Dimensions in millimeters

Features

* RoHS Compliant
* Lower On-Resistance
* High Breakdown Voltage

Absolute Maximum Ratings

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	±25	V
Continuous Drain Current,[3] V_{GS}@10V	I_D@T_A=25°C	7.6	A
Continuous Drain Current,[3] V_{GS}@10V	I_D@T_A=70°C	6.1	A
Pulsed Drain Current [1]	I_{DM}	30	A
Total Power Dissipation	P_D@T_A=25°C	2	W
Linear Derating Factor		0.016	W/$^{\circ}$C
Operating Junction and Storage Temperature Range	Tj, Tstg	-55~+150	$^{\circ}$C

Thermal Data

Parameter		Symbol	Ratings	Unit
Thermal Resistance Junction-ambient[3]	Max.	Rthj-a	62.5	$^{\circ}$C/W

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Electrical Characteristics(Tj=25°C Unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Drain-Source Breakdown Voltage	BV_{DSS}	60	–	–	V	V_{GS}=0V, I_D=250uA
Breakdown Voltage Temp. Coefficient	$\triangle BV_{DS}/\triangle Tj$	–	0.06	–	V/$^\circ$C	Reference to 25°C, I_D=1mA
Gate Threshold Voltage	$V_{GS(th)}$	1.0	–	3.0	V	V_{DS}=V_{GS}, I_D=250uA
Gate-Source Leakage Current	I_{GSS}	–	–	±100	nA	V_{GS}=± 25V
Drain-Source Leakage Current (Tj=25°C)	I_{DSS}	–	–	1	uA	V_{DS}=60V,V_{GS}=0
Drain-Source Leakage Current (Tj=70°C)		–	–	25	uA	V_{DS}=48V,V_{GS}=0
Static Drain-Source On-Resistance[2]	$R_{DS(ON)}$	–	–	21	mΩ	V_{GS}=10V, I_D=7A
		–	–	27		V_{GS}=4.5V, I_D=5A
Total Gate Charge[2]	Qg	–	26	40	nC	I_D=7A V_{DS}=48V V_{GS}=4.5V
Gate-Source Charge	Qgs	–	6	–		
Gate-Drain ("Miller") Charge	Qgd	–	14	–		
Turn-on Delay Time[2]	Td(ON)	–	14	–	nS	V_{DD}=30V I_D=1A V_{GS}=10V R_G=3.3Ω R_D=30Ω
Rise Time	Tr	–	7	–		
Turn-off Delay Time	Td(Off)	–	40	–		
Fall Time	T_f	–	13	–		
Input Capacitance	Ciss	–	2320	3700	pF	V_{GS}=0V V_{DS}= 25V f=1.0MHz
Output Capacitance	Coss	–	200	–		
Reverse Transfer Capacitance	Crss	–	170	–		
Forward Transconductance	Gfs	–	12	–	S	V_{DS}=10V, I_D=7A

Source-Drain Diode

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Forward On Voltage[2]	VSD	–	–	1.2	V	I_S=1.7A, V_{GS}=0V.
Reverse Recovery Time[2]	Trr	–	34	–	nS	I_S=7A, V_{GS}=0V dl/dt=100A/us
Reverse Recovery Charge	Qrr	–	48	–	nC	

Notes: 1.Pulse width limited by Max. junction temperature.
　　　　2.Pulse width≦300us, dutycycle≦2%.
　　　　3.Surface mounted on 1 inch2 copper pad of FR4 board;135°C/W when mounted on min. copper pad.

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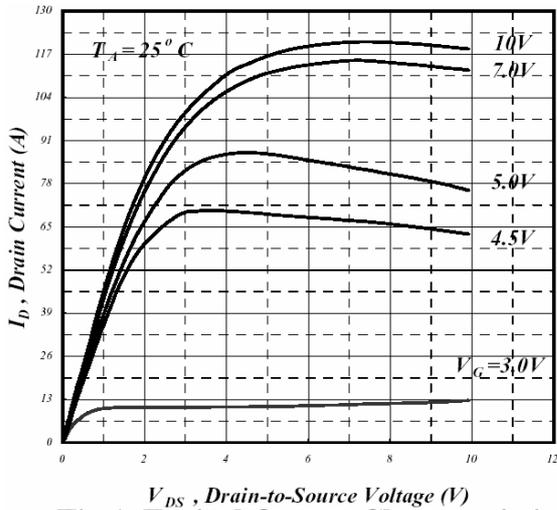
Characteristics Curve

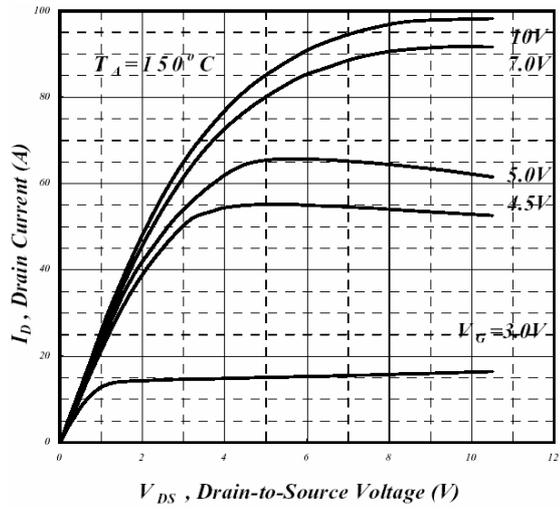**Fig 1. Typical Output Characteristics**
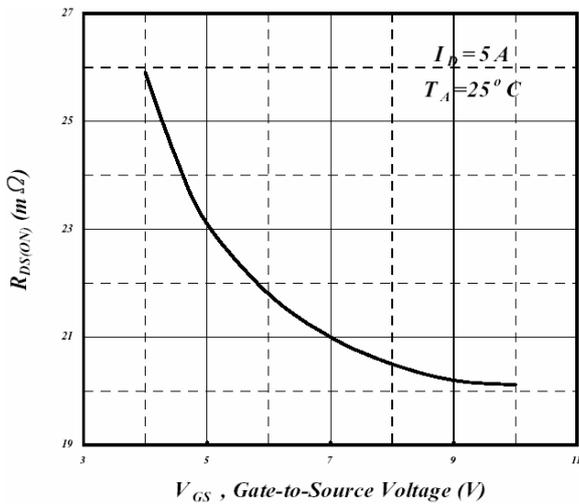

Fig 2. Typical Output Characteristics
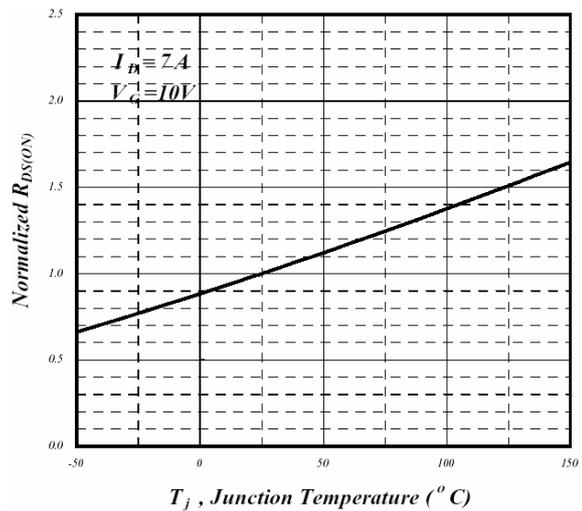

Fig 3. On-Resistance v.s. Gate Voltage

Fig 4. Normalized On-Resistance v.s. Junction Temperature
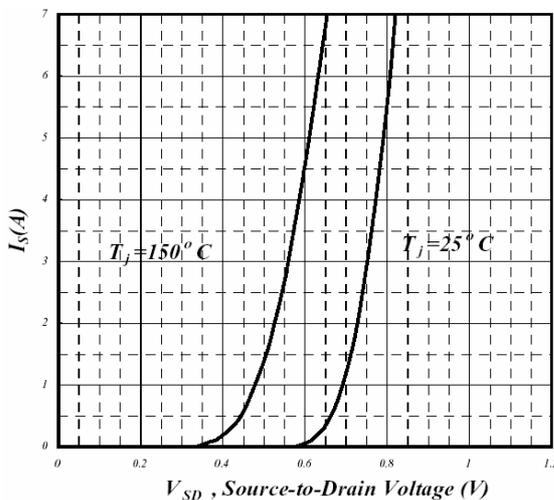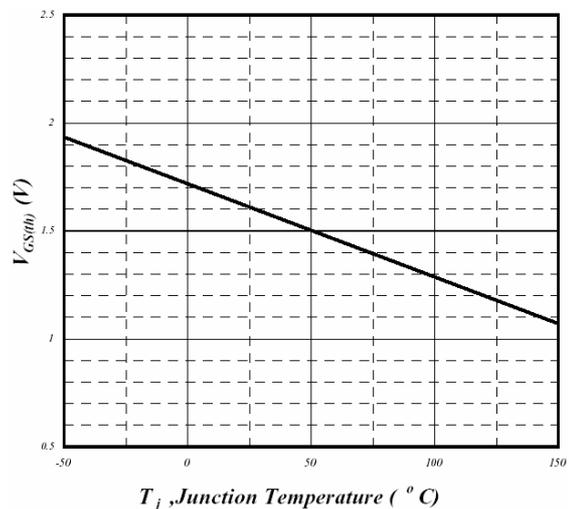

Fig 5. Forward Characteristics of Reverse Diode

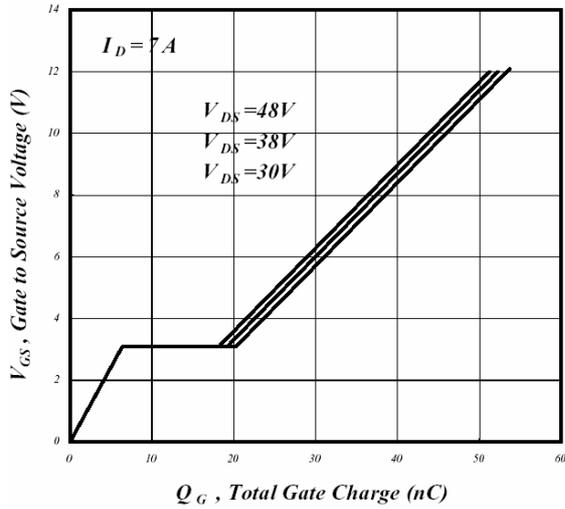**Fig 6. Gate Threshold Voltage v.s. Junction Temperature**

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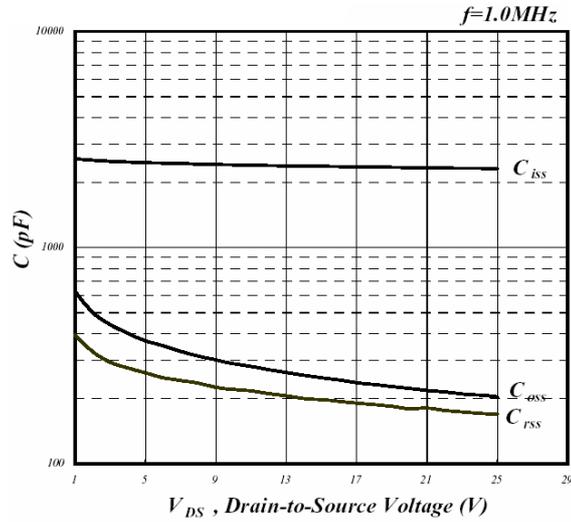**Fig 7. Gate Charge Characteristics**

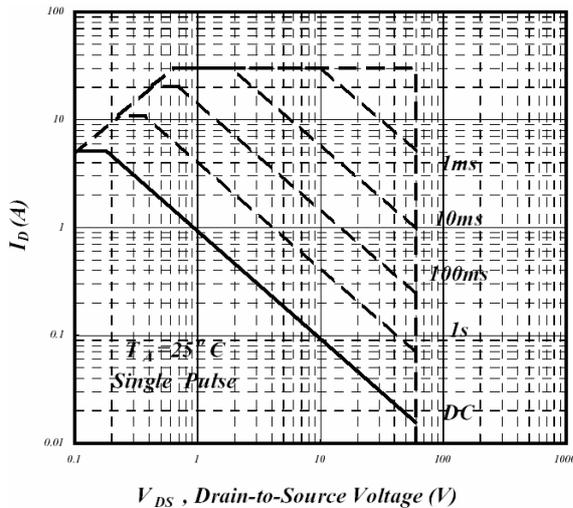**Fig 8. Typical Capacitance Characteristics**

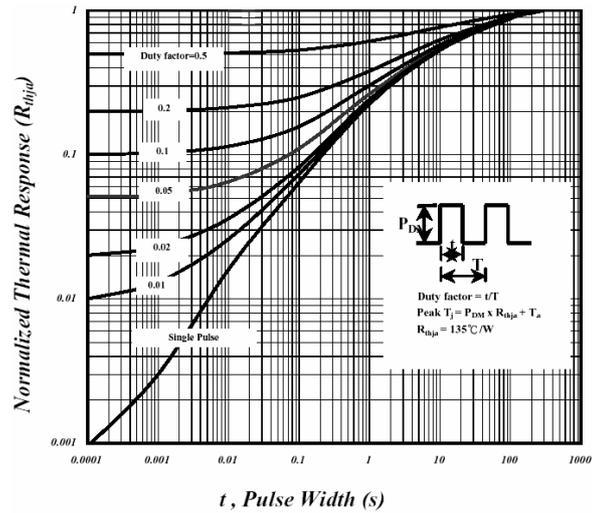**Fig 9. Maximum Safe Operating Area**
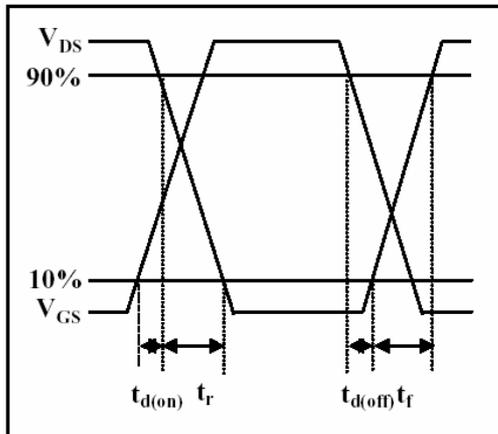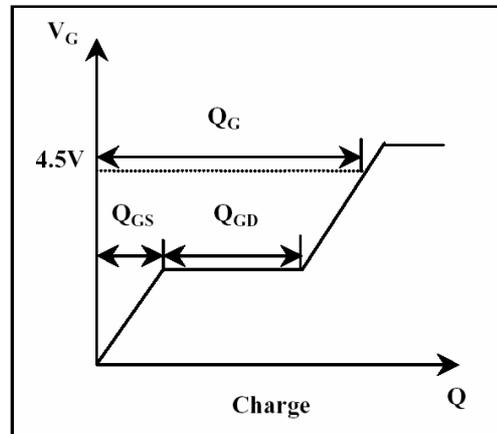

Fig 10. Effective Transient Thermal Impedance

Fig 11. Switching Time Waveform

Fig 12. Gate Charge Waveform