Elektronische Bauelemente

SSM9973A

5 A, 60V

N-Channel Enhancement Mode Power MOSFET

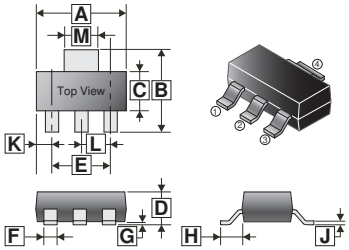
RoHS Compliant Product

A Suffix of "-C" specifies halogen & lead-free

SOT-223

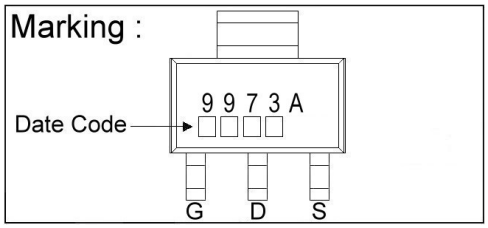
DESCRIPTION

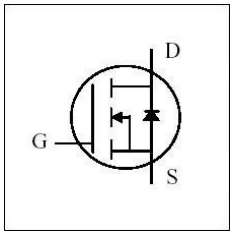
The SSM9973A provide the designer with the best combination of fast switching, ruggedized design, low on-resistance and cost effectiveness.
The SOT-223 package is universally preferred for all commercial-industrial surface mount applications and suited for low voltage applications such as DC/DC converters.



FEATURES

- Simply drive requirement
- Super high density cell design for extremely low $R_{DS(ON)}$





REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	6.20	6.70	G	-	0.10
B	6.70	7.30	H	-	-
C	3.30	3.70	J	0.25	0.35
D	1.42	1.90	K	-	-
E	4.50	4.70	L	2.30 REF.	
F	0.60	0.82	M	2.90	3.10

MAXIMUM RATINGS (T_A = 25℃ unless otherwise specified)

PARAMETER		SYMBOL	RATING	UNIT
Drain – Source Voltage		V_{DS}	60	V
Gate – Source Voltage		V_{GS}	±20	V
Continuous Drain Current[3], V_{GS}@10V	T_A = 25℃	I_D	5.0	A
	T_A = 70℃		4.0	A
Pulsed Drain Current[1,2]		I_{DM}	10	A
Total Power Dissipation, T_A = 25℃		P_D	2.7	W
Maximum Junction – Ambient[3]		$R_{\theta JA}$	45	℃/W
Linear Derating Factor			0.02	W/℃
Operating Junction & Storage Temperature Range		T_J, T_{STG}	150, -55~150	℃

ELECTRICAL CHARACTERISTICS (T_A = 25℃ unless otherwise specified)

PARAMETER		SYMBOL	MIN	TYP	MAX	UNIT	TEST CONDITION
Drain-Source Breakdown Voltage		BV_{DSS}	60	-	-	V	V_{GS}=0V, I_D=250μA
Gate Threshold Voltage		$V_{GS(TH)}$	0.5	-	1.5	V	V_{DS}= V_{GS}, I_D=250μA
Forward Transconductance		g_{FS}	-	12	-	S	V_{DS}=15V, I_D=4A
Gate-Source Leakage Current		I_{GSS}	-	-	±100	nA	V_{GS}=±20V
Drain-Source Leakage Current	T_A = 25℃	I_{DSS}	-	-	1	μA	V_{DS}=60V, V_{GS}=0V
	T_A = 70℃		-	-	10		V_{DS}=60V, V_{GS}=0V
Drain-Source On Resistance		$R_{DS(ON)}$	-	-	115	mΩ	V_{GS}=10V, I_D=5A
			-	-	125		V_{GS}=4.5V, I_D=4.5A
Total Gate Charge[2]		Q_g	-	4.0	-	nC	V_{GS}=4.5V
Gate-Source Charge		Q_{gs}	-	1.2	-		V_{DS}=30V
Gate-Drain Charge		Q_{gd}	-	1.0	-		I_D=4A
Turn-on Delay Time[2]		$T_{d(ON)}$	-	6	-	nS	V_{DD}=30V
Rise Time		T_r	-	12	-		V_{GS}=10V
Turn-off Delay Time		$T_{d(OFF)}$	-	18	-		I_D=2.5A
Fall Time		T_f	-	10	-		R_G=6Ω, R_L=12Ω
Input Capacitance		C_{ISS}	-	320	-	pF	V_{DS}=30V
Output Capacitance		C_{OSS}	-	42	-		V_{GS}=0V
Reverse Transfer Capacitance		C_{RSS}	-	20	-		f=1MHz
SOURCE-DRAIN DIODE CHARACTERISTICS							
Forward On Voltage[2]		V_{SD}	-	-	1.2	V	V_{GS}=0V, I_S=2.5A

Note: 1. Pulse width limited by Maximum junction temperature. 2. Pulse width≦300μS, Duty cycle≦2%
3. Surface mounted on 1 in^2 copper pad of FR4 board; 120℃/W when mounted on m in, copper pad.

CHARACTERISTIC CURVES

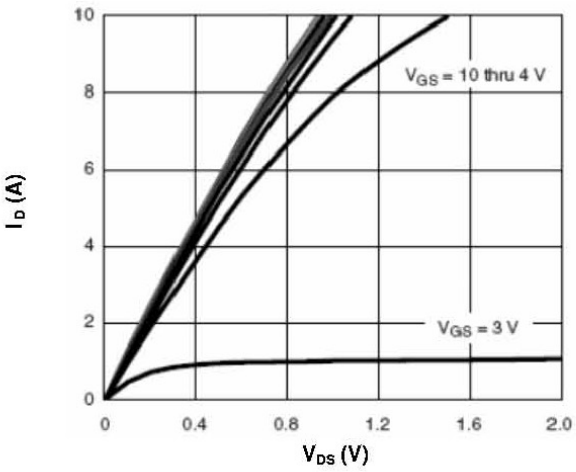


Fig 1. Typical Output Characteristics

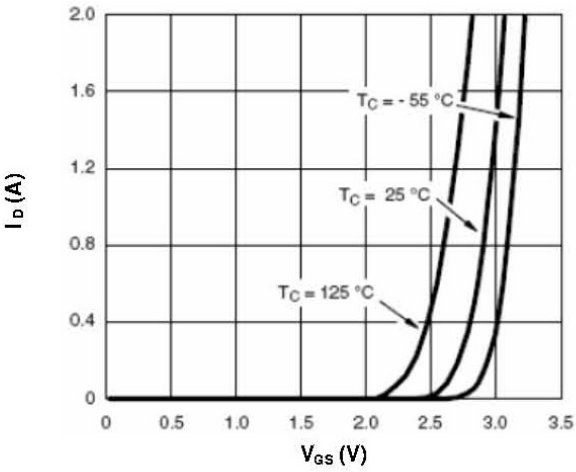


Fig 2. Transfer Characteristics

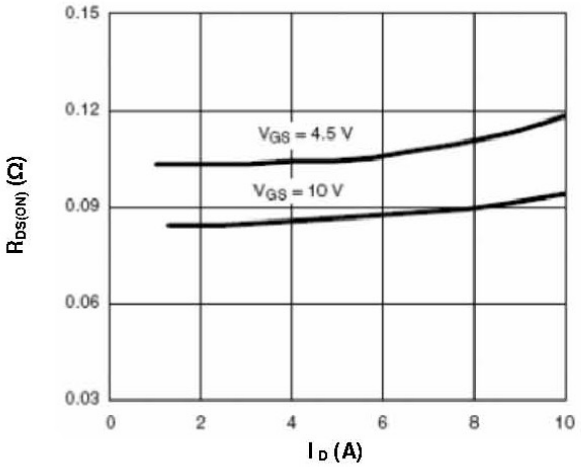


Fig 3. On-Resistance vs. Drain Current and Gate Voltage

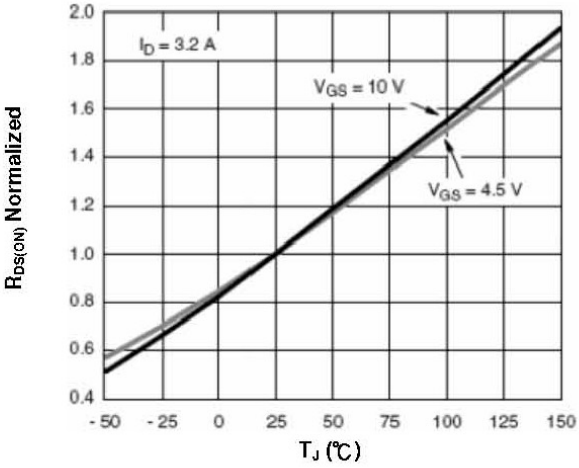


Fig 4. On-Resistance vs. Junction Temperature

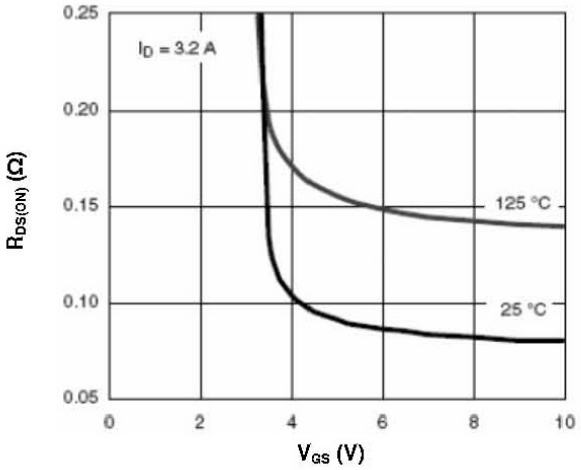


Fig 5. On-Resistance vs. Gate-Source Voltage

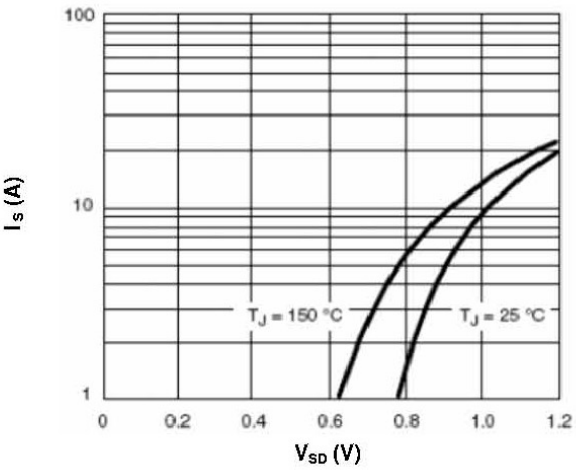


Fig 6. Body Diode Characteristics

CHARACTERISTIC CURVES

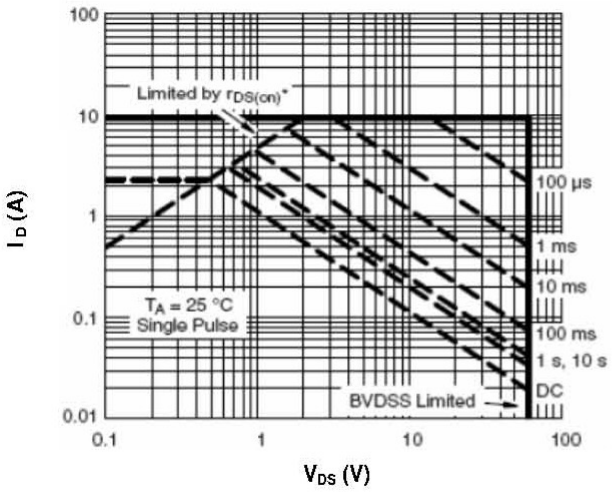


Fig 7. Maximum Safe Operating Area

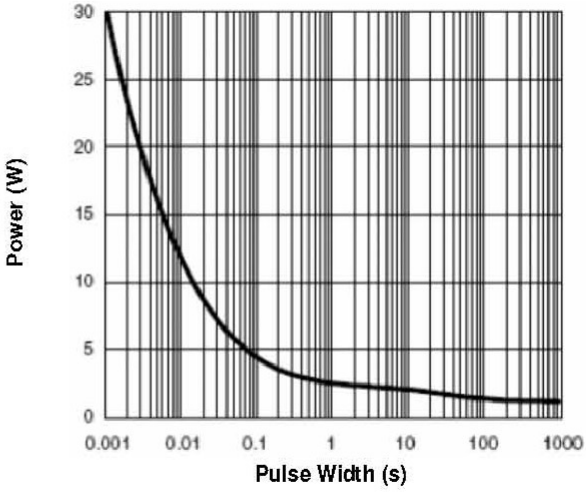


Fig 8. Single Pulse Maximum Power Dissipation

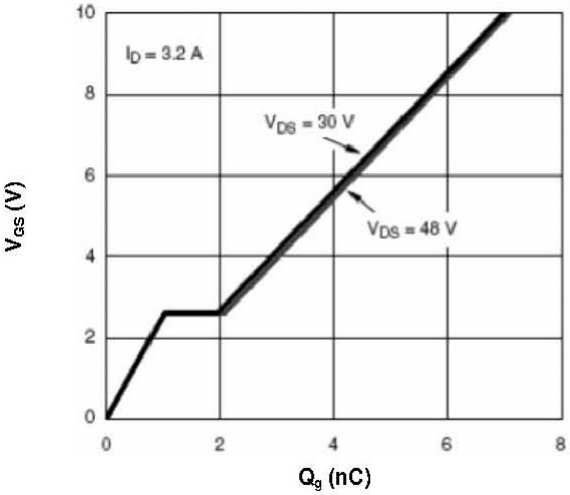


Fig 9. Gate Charge Characteristics

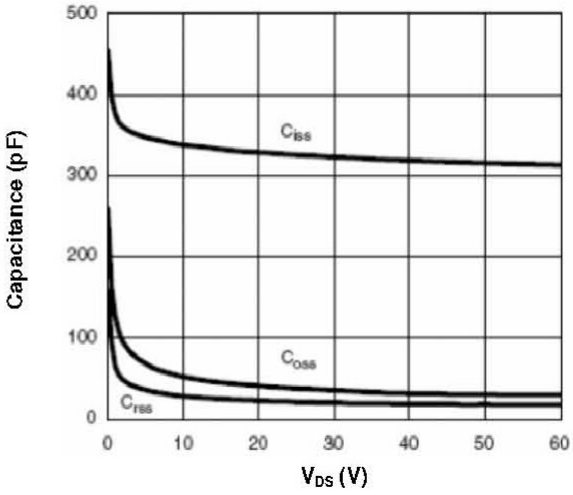


Fig 10. Typical Capacitance Characteristics

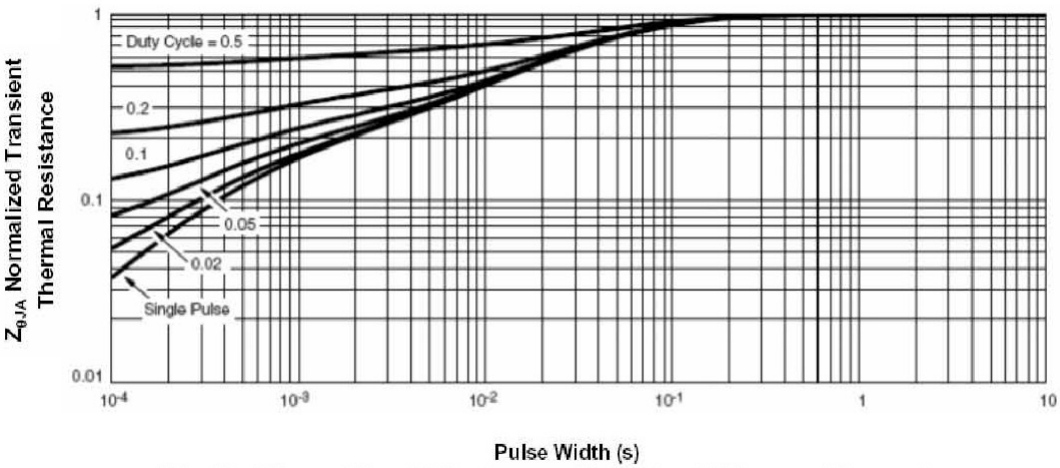


Fig 11. Normalized Maximum Transient Thermal Impedance