

RoHS Compliant Product
A suffix of "-C" specifies halogen free

DESCRIPTION

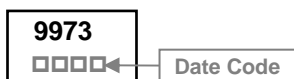
The SSD9973-C is the highest performance trench N-ch MOSFETs with extreme high cell density, which provide excellent R_{DS(ON)} and gate charge for most of the synchronous buck converter applications.

The SSD9973-C meet the RoHS and Green Product requirement with full function reliability approved.

FEATURES

- Advanced high cell density Trench technology
- Super Low Gate Charge
- Green Device Available

MARKING



PACKAGE INFORMATION

Package	MPQ	Leader Size
TO-252	2.5K	13 inch

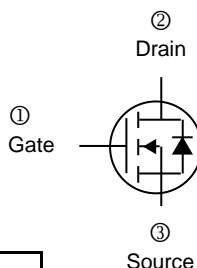
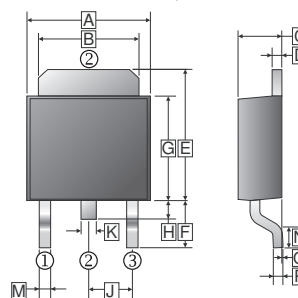
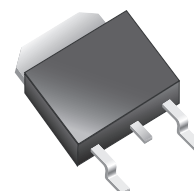
ORDER INFORMATION

Part Number	Type
SSD9973-C	Lead (Pb)-free and Halogen-free

ABSOLUTE MAXIMUM RATINGS (T_A=25°C unless otherwise specified)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V _{DS}	60	V
Gate-Source Voltage	V _{GS}	±20	V
Drain Current @ V _{GS} =10V ¹	T _C =25°C	10	A
	T _C =100°C	7	
	T _A =25°C	3.4	
	T _A =70°C	2.7	
Pulsed Drain Current ³	I _{DM}	20	A
Total Power Dissipation	T _C =25°C P _D	20.8	W
Operating Junction and Storage Temperature Range	T _J , T _{STG}	-55~150	°C
Thermal Resistance Rating			
Thermal Resistance from Junction to Ambient ¹	R _{θJA}	62.5	°C / W
Thermal Resistance from Junction to Ambient ²		110	
Thermal Resistance from Junction to Case	R _{θJC}	6	

TO-252(D-Pack)



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	6.35	6.9	J	2.3	REF.
B	4.95	5.53	K	0.89	REF.
C	2.1	2.5	M	0.45	1.14
D	0.41	0.9	N	1.55	Typ.
E	6	7.5	O	0	0.13
F	2.90	REF.	P	0.58	REF.
G	5.4	6.4			
H	0.6	1.2			

ELECTRICAL CHARACTERISTICS (T_J=25°C unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Drain-Source Breakdown Voltage	B _{VDS}	60	-	-	V	V _{GS} =0V, I _D =250μA
Breakdown Voltage Temperature Coefficient	ΔB _{VDS} / ΔT _J	-	0.054	-	V/°C	Reference to 25°C, I _D =1mA
Gate-Threshold Voltage	V _{GS(th)}	1	-	2.5	V	V _{DS} =V _{GS} , I _D =250μA
Drain-Source Leakage Current	I _{DSS}	-	-	1	μA	V _{DS} =48V, V _{GS} =0V, T _J =25°C
		-	-	5		V _{DS} =48V, V _{GS} =0V, T _J =55°C
Gate-Source Leakage Current	I _{GSS}	-	-	±100	nA	V _{GS} = ±20V, V _{DS} = 0V
Forward Transfer conductance	g _{fs}	-	7.6	-	S	V _{DS} =5V, I _D =10A
Static Drain-Source On-Resistance ⁴	R _{DS(ON)}	-	-	100	mΩ	V _{GS} =10V, I _D =10A
		-	-	110		V _{GS} =4.5V, I _D =8A
Total Gate Charge	Q _g	-	4.9	-	nC	V _{DS} =48V V _{GS} =4.5V I _D =10A
Gate-Source Charge	Q _{gs}	-	1.8	-		
Gate-Drain ("Miller") Charge	Q _{gd}	-	2.2	-		
Turn-on Delay Time	T _{d(on)}	-	1.6	-	nS	V _{DS} =30V I _D =10A V _{GS} =10V R _G =3.3Ω
Turn-on Rise Time	T _r	-	7.4	-		
Turn-off Delay Time	T _{d(off)}	-	17.6	-		
Turn-off Fall Time	T _f	-	4	-		
Input Capacitance	C _{iss}	-	511	-	pF	V _{DS} =15V V _{GS} =0V f=1MHz
Output Capacitance	C _{oss}	-	38	-		
Reverse Transfer Capacitance	C _{rss}	-	25	-		
Source-Drain Diode						
Diode Forward Voltage ⁴	V _{SD}	-	-	1.2	V	I _S =1A, V _{GS} =0
Continuous Source Current ¹	I _S	-	-	10	A	
Pulsed Source Current ³	I _{SM}	-	-	20		
Reverse Recovery Time	T _{rr}	-	9.7	-	nS	I _S =10A, V _{GS} =0V, di/dt=100A/μs
Reverse Recovery Charge	Q _{rr}	-	6.1	-	nC	

Notes:

- Surface mounted on a 1 inch² FR4 board with 2OZ copper
- When mounted on Min. copper pad.
- Pulse width limited by maximum junction temperature, P_w ≤ 300μs, Duty cycle ≤2%
- The data tested by pulsed, pulse width ≤ 300us, duty cycle ≤ 2%

CHARACTERISTIC CURVES

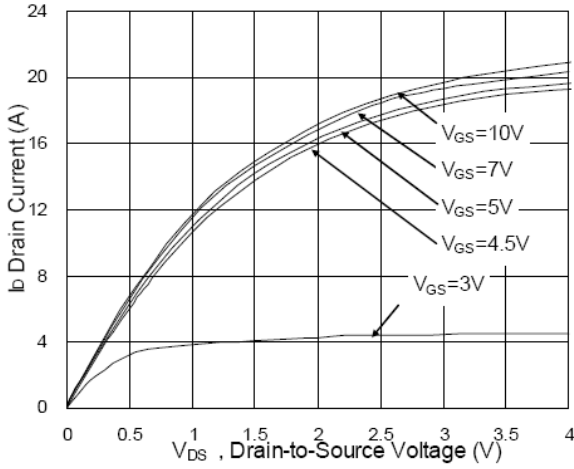


Fig.1 Typical Output Characteristics

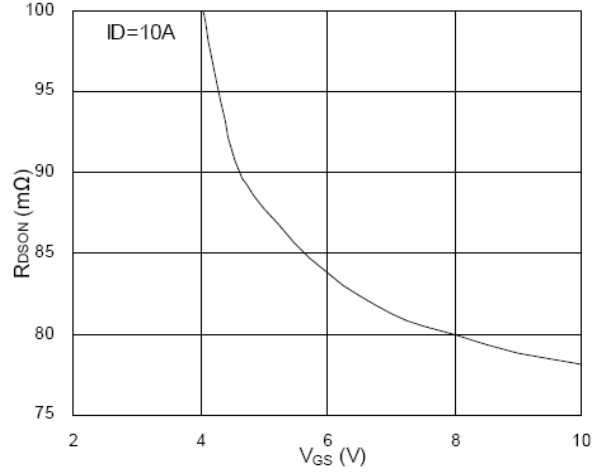


Fig.2 On-Resistance v.s Gate-Source

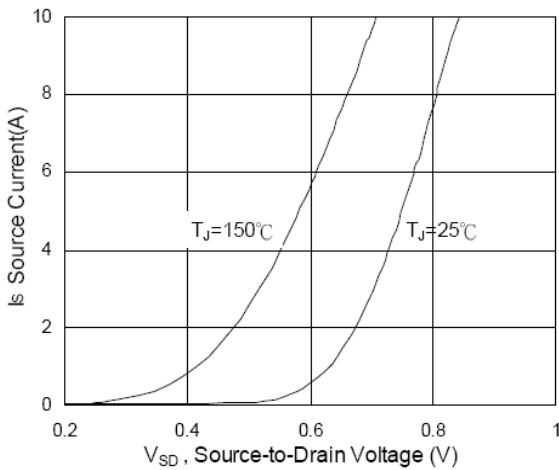


Fig.3 Forward Characteristics of Reverse

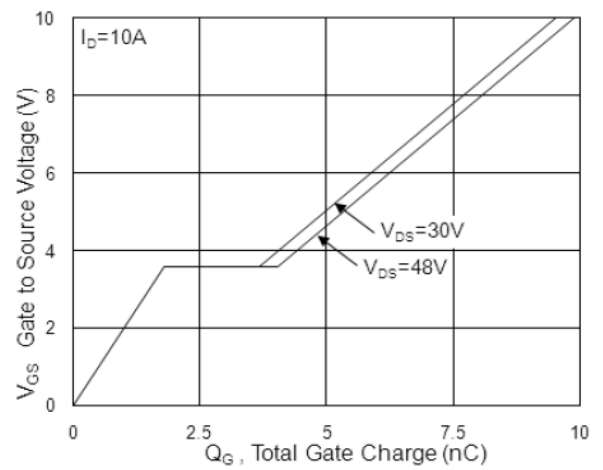


Fig.4 Gate-Charge Characteristics

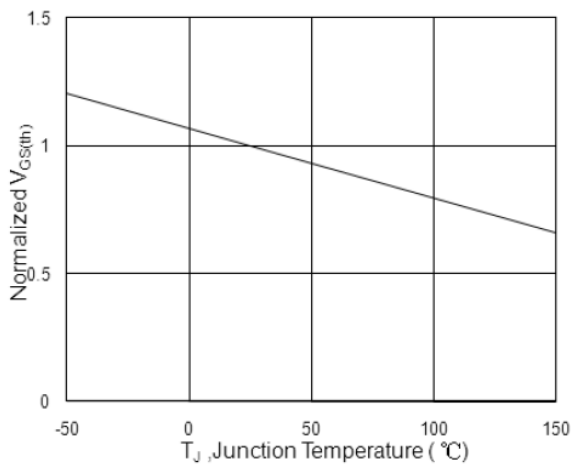


Fig.5 Normalized V_{GS(th)} v.s T_J

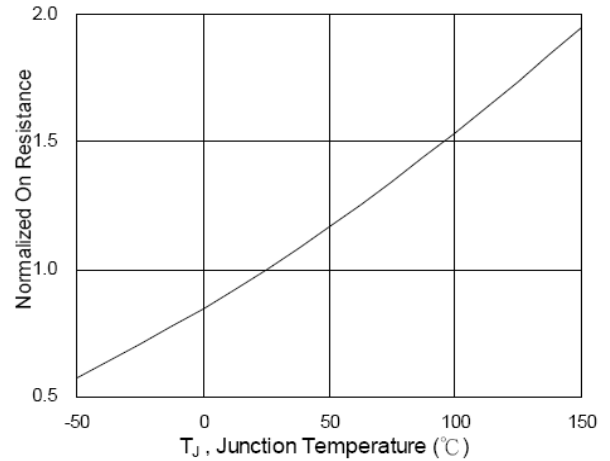


Fig.6 Normalized R_{DS(ON)} v.s T_J

CHARACTERISTIC CURVES

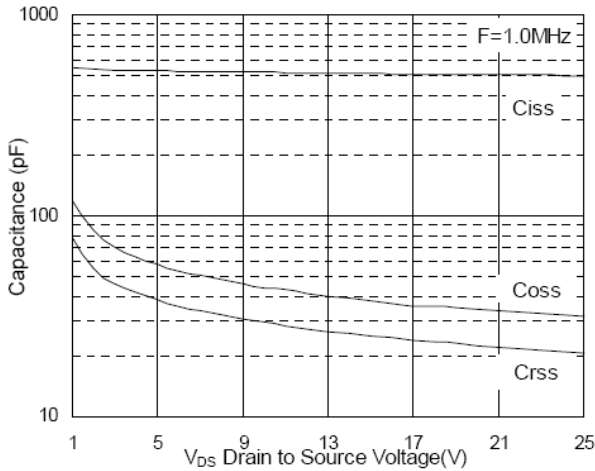


Fig.7 Capacitance

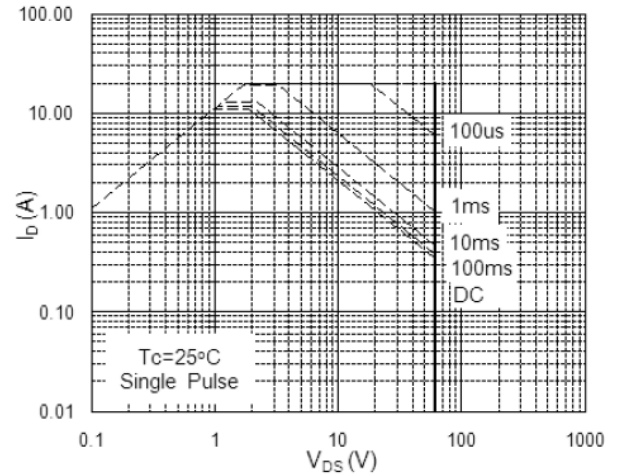


Fig.8 Safe Operating Area

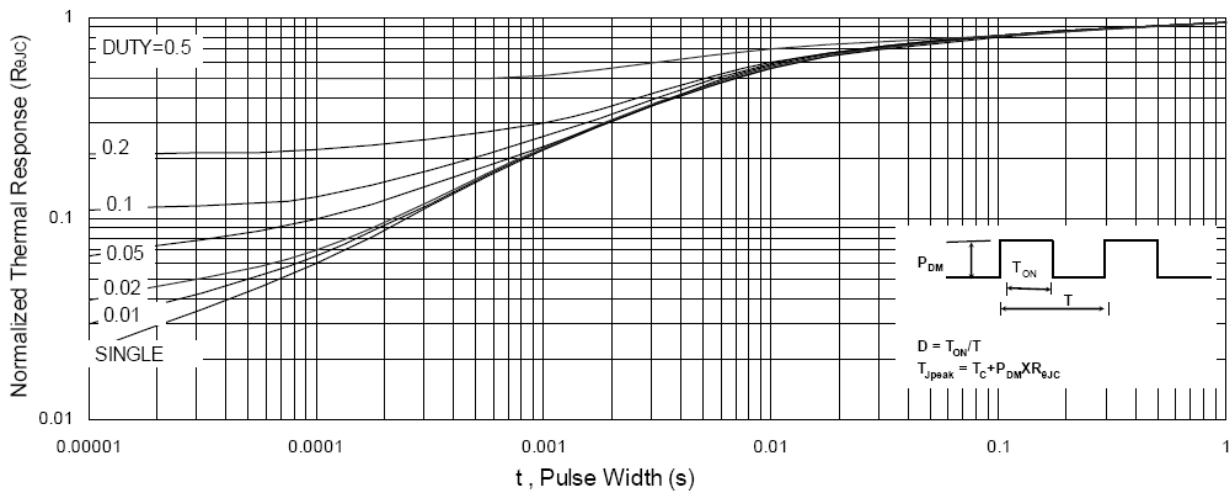


Fig.9 Normalized Maximum Transient Thermal Impedance

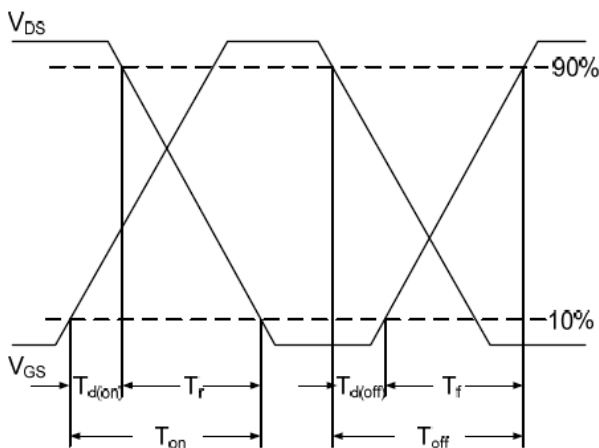


Fig.10 Switching Time Waveform

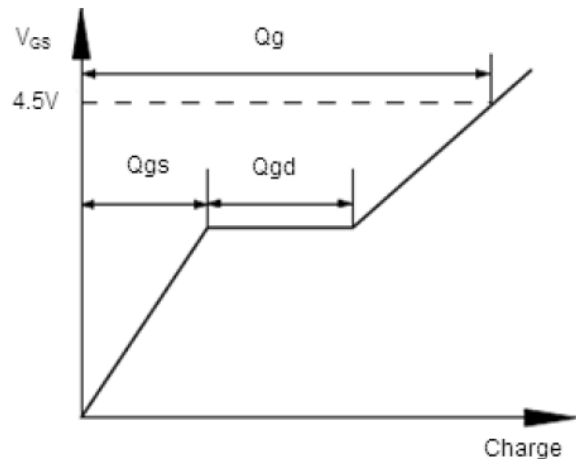


Fig.11 Gate Charge Waveform