

RoHS Compliant Product
A Suffix of "-C" specifies halogen & lead-free

DESCRIPTION

The SMS3110-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 small power switching and load switch applications.

The SMS3110-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

3110

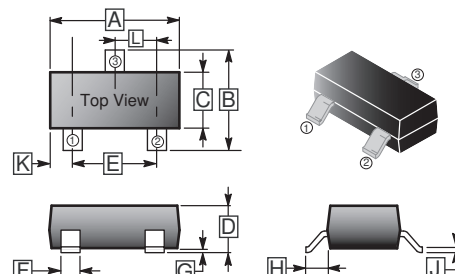
PACKAGE INFORMATION

Package	MPQ	Leader Size
SOT-23	3K	7 inch

ORDER INFORMATION

Part Number	Type
SMS3110-C	Lead (Pb)-free and Halogen-free

SOT-23

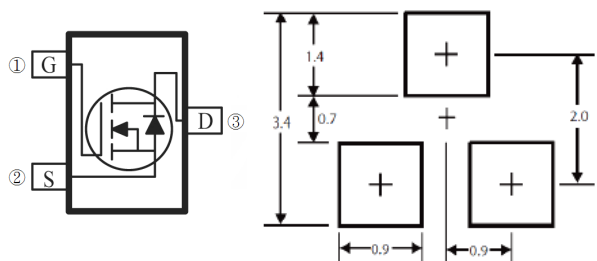


REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	2.65	3.10	G	0	0.18
B	2.10	3.00	H	0	0.55 REF.
C	1.10	1.80	J	0.05	0.26
D	0	1.40	K	0.60	REF.
E	1.70	2.30	L	0.95	TYP.
F	0.28	0.55			

MAXIMUM RATINGS

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current @ $V_{GS}=10V$ ¹	$T_A=25^\circ C$	1.2	A
	$T_A=70^\circ C$	1	
Pulsed Drain Current ³	I_{DM}	5	A
Power Dissipation	P_D	1	W
Operating Junction & Storage Temperature Range	T_J, T_{STG}	-55~150	$^\circ C$
Thermal Resistance Ratings			
Thermal Resistance from Junction-Ambient ¹	$R_{\theta JA}$	125	$^\circ C/W$
Thermal Resistance from Junction-Ambient ²		80	

Mounting Pad Layout



*Dimensions in millimeters

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions	
Drain-Source Breakdown Voltage	BV _{DSS}	100	-	-	V	V _{GS} =0, I _D =250μA	
Gate-Threshold Voltage	V _{GS(th)}	1	-	2.5	V	V _{DS} =V _{GS} , I _D =250μA	
Forward Transconductance	g _{fs}	-	2.4	-	S	V _{DS} =5V, I _D =1A	
Gate-Source Leakage Current	I _{GSS}	-	-	±100	nA	V _{GS} = ±20V, V _{DS} =0	
Drain-Source Leakage Current	I _{DSS}	T _J =25°C	-	-	1	μA	V _{DS} =80V, V _{GS} =0
		T _J =55°C	-	-	5		
Static Drain-Source On-Resistance ⁴	R _{DS(ON)}	-	260	310	mΩ	V _{GS} =10V, I _D =1A	
		-	270	320		V _{GS} =4.5V, I _D =0.5A	
Gate Resistance	R _g	-	2.8	5.6	Ω	V _{DS} =0V, V _{GS} =0V, f=1MHz	
Total Gate Charge	Q _g	-	9.7	-	nC	I _D =1A V _{DS} =80V V _{GS} =10V	
Gate-Source Charge	Q _{gs}	-	1.6	-			
Gate-Drain Charge	Q _{gd}	-	1.7	-			
Turn-on Delay Time	T _{d(on)}	-	1.6	-	nS	V _{DD} =50V I _D =1A V _{GS} =10V R _G =3.3Ω	
Rise Time	T _r	-	19	-			
Turn-off Delay Time	T _{d(off)}	-	13.6	-			
Fall Time	T _f	-	19	-			
Input Capacitance	C _{iss}	-	508	-	pF	V _{GS} =0 V _{DS} =15V f=1MHz	
Output Capacitance	C _{oss}	-	29	-			
Reverse Transfer Capacitance	C _{rss}	-	16.4	-			
Source-Drain Diode							
Forward on Voltage ⁴	V _{SD}	-	-	1.2	V	I _S =1A, V _{GS} =0, T _J =25°C	
Continuous Source Current ¹	I _S	-	-	1.2	A		
Pulsed Source Current ³	I _{SM}	-	-	5	A		
Reverse Recovery Time	t _{rr}	-	14	-	nS	I _F =1A, dI/dt=100A/μs	
Reverse Recovery Charge	Q _{rr}	-	9.3	-	nC	T _J =25°C	

Notes:

- The data tested by surface mounted on 1inch² FR-4 Board with 2oz copper.
- When mounted on Min. copper pad.
- Pulse width limited by maximum junction temperature, Pulse Width≤300μs, Duty Cycle≤2%.
- Pulse Test: Pulse Width≤300μs, Duty Cycle≤2%.

CHARACTERISTIC CURVES

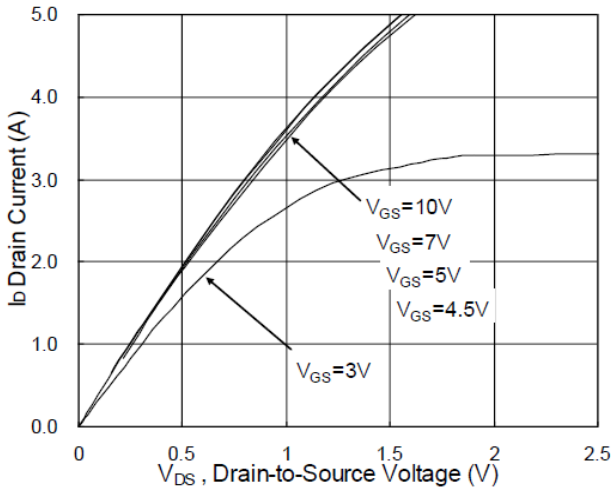


Fig.1 Typical Output Characteristics

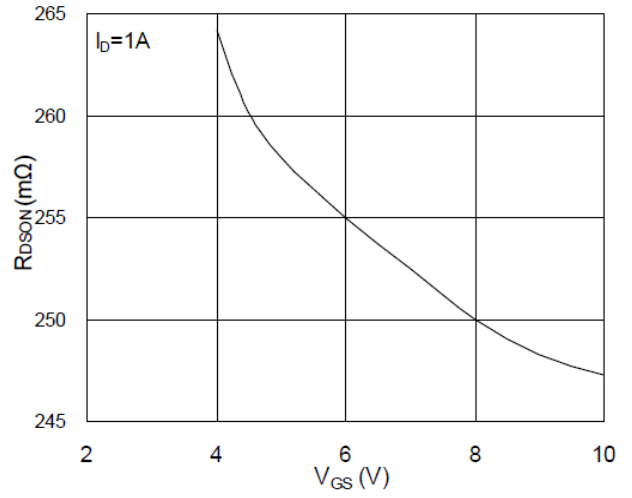


Fig.2 On-Resistance vs. Gate-Source

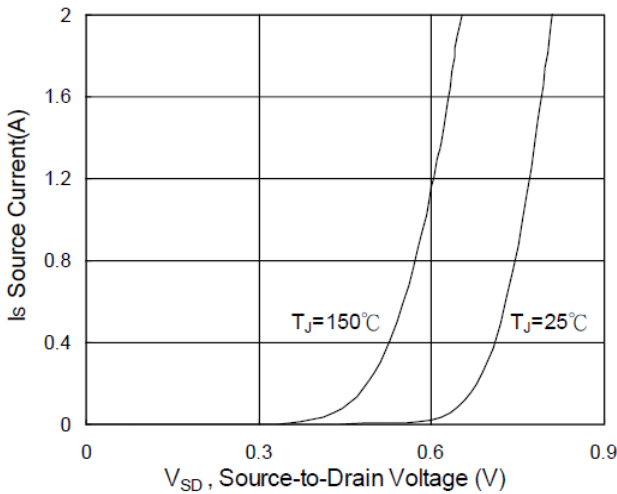


Fig.3 Forward Characteristics of Reverse

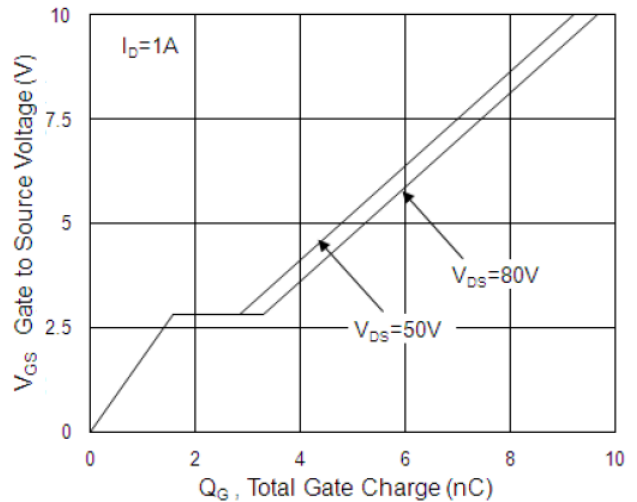


Fig.4 Gate-Charge Characteristics

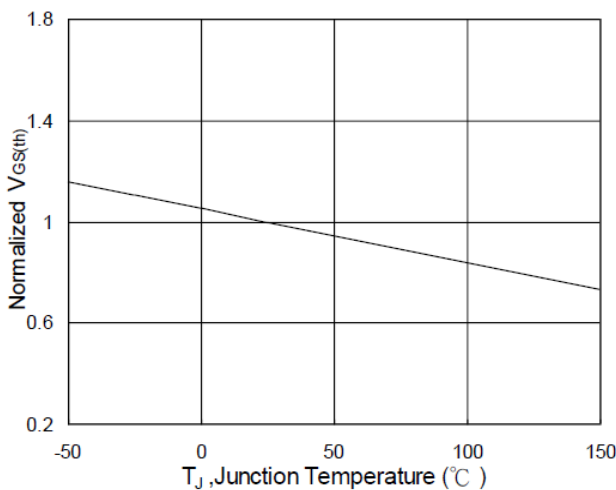


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

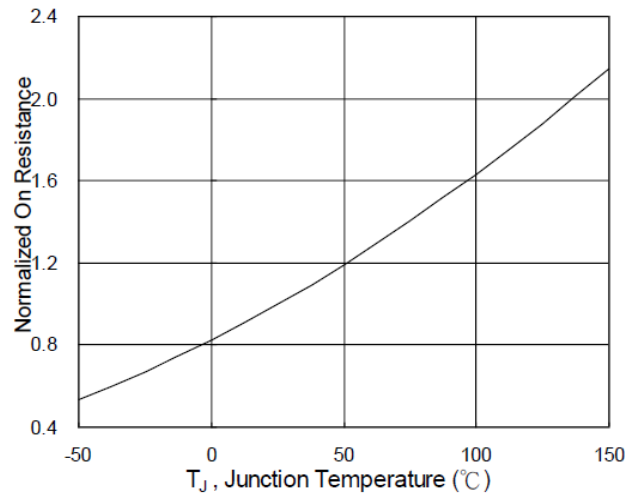


Fig.6 Normalized $R_{DS(ON)}$ vs. T_J

CHARACTERISTIC CURVES

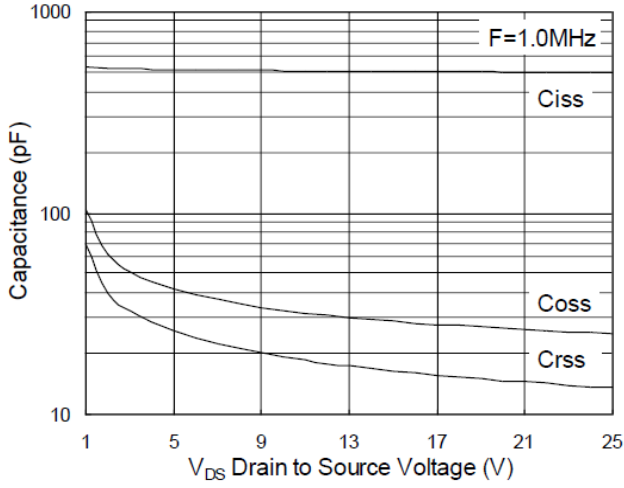


Fig.7 Capacitance

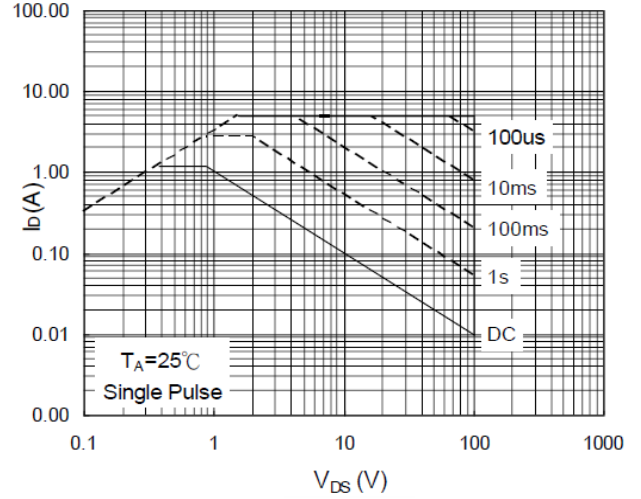


Fig.8 Safe Operating Area

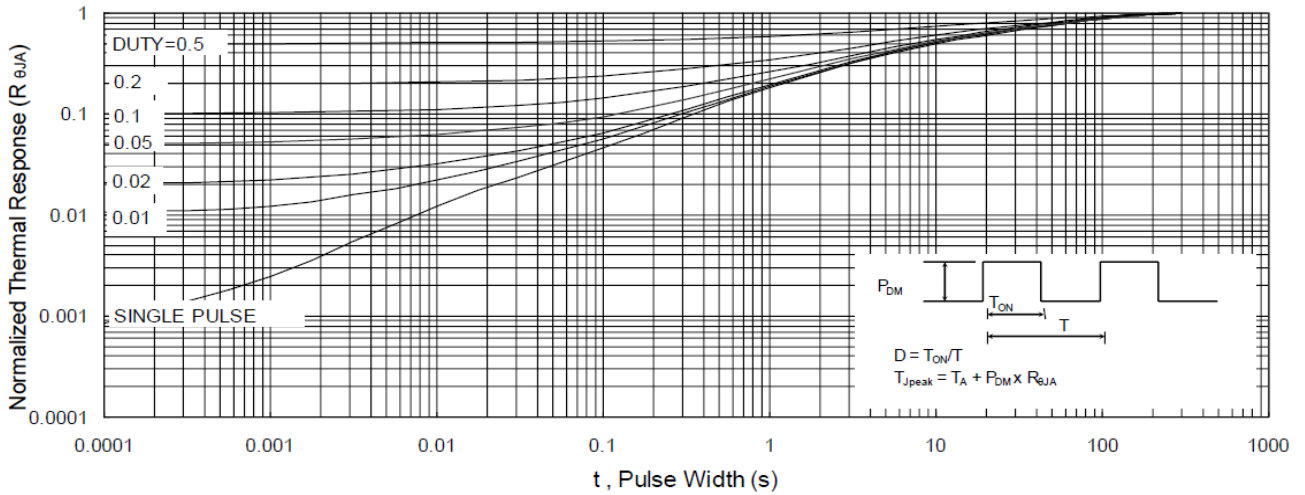


Fig.9 Normalized Maximum Transient Thermal Impedance

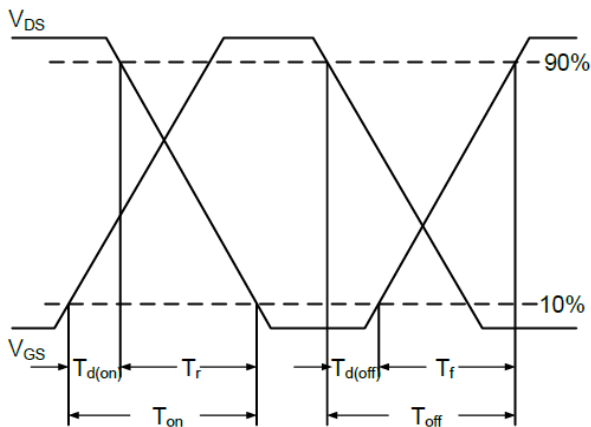


Fig.10 Switching Time Waveform

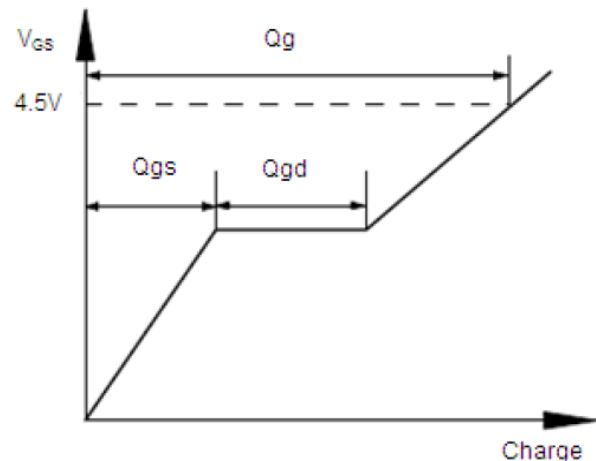


Fig.11 Gate Charge Waveform