

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

DESCRIPTION

The SMS3072-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 SMS3072-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

3072

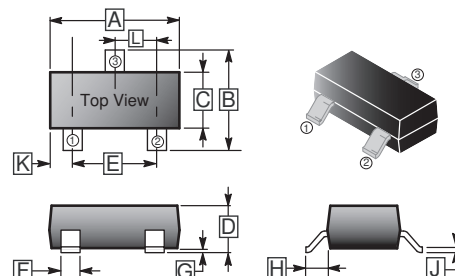
PACKAGE INFORMATION

Package	MPQ	Leader Size
SOT-23	3K	7 inch

ORDER INFORMATION

Part Number	Type
SMS3072-C	Lead (Pb)-free and Halogen-free

SOT-23

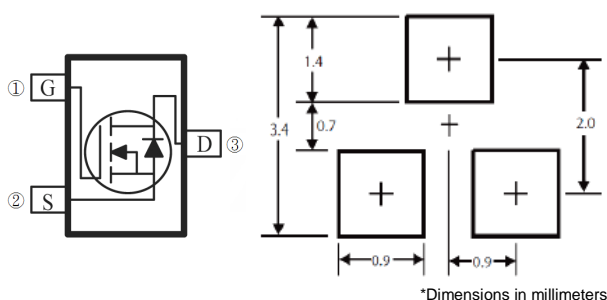


REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	2.65	3.10	G	0	0.18
B	2.10	3.00	H	0.55	REF.
C	1.10	1.80	J	0.05	0.26
D	0	1.40	K	0.60	REF.
E	1.70	2.30	L	0.95	TYP.
F	0.28	0.55			

MAXIMUM RATINGS

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current @ $V_{GS}=10V$ ¹	$T_A=25^\circ C$	3	A
	$T_A=70^\circ C$	2.3	
Pulsed Drain Current ³	I_{DM}	14	A
Power Dissipation @ $T_A=25^\circ C$	$T < 10sec$	1.2	W
	Steady State	0.73	
Operating Junction & Storage Temperature Range	T_J, T_{STG}	-55~150	$^\circ C$
Thermal Resistance Ratings			
Thermal Resistance from Junction-Ambient ¹	$R_{\theta JA}$	$T \leq 10sec, 105$	$^\circ C/W$
		Steady State, 170	
Thermal Resistance from Junction-Ambient ²		305	

Mounting Pad Layout



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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions	
Drain-Source Breakdown Voltage	BV _{DSS}	30	-	-	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}	-	6.7	-	S	V _{DS} =5V, I _D =3A	
Gate-Source Leakage Current	I _{GSS}	-	-	±100	nA	V _{GS} = ±20V	
Drain-Source Leakage Current	I _{DSS}	T _J =25°C	-	-	1	μA	V _{DS} =24V, V _{GS} =0
		T _J =55°C	-	-	5		
Static Drain-Source On-Resistance ⁴	R _{DS(ON)}	-	30	55	mΩ	V _{GS} =10V, I _D =3A	
		-	40	75		V _{GS} =4.5V, I _D =2A	
Total Gate Charge	Q _g	-	3.82	-	nC	I _D =3A V _{DS} =15V V _{GS} =4.5V	
Gate-Source Charge	Q _{gs}	-	1.15	-			
Gate-Drain Charge	Q _{gd}	-	1.43	-			
Turn-on Delay Time	T _{d(on)}	-	0.8	-	nS	V _{DS} =15V I _D =3A V _{GS} =10V R _G =3.3Ω	
Rise Time	T _r	-	17	-			
Turn-off Delay Time	T _{d(off)}	-	8.8	-			
Fall Time	T _f	-	17.6	-			
Input Capacitance	C _{iss}	-	220	-	pF	V _{GS} =0 V _{DS} =15V f=1MHz	
Output Capacitance	C _{oss}	-	38	-			
Reverse Transfer Capacitance	C _{rss}	-	32	-			
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	-	-	3	A		
Pulsed Source Current ³	I _{SM}	-	-	14	A		
Reverse Recovery Time	t _{rr}	-	19	-	nS	I _F =3A, dI/dt=100A/μs	
Reverse Recovery Charge	Q _{rr}	-	1.04	-	nC	T _J =25°C	

Notes:

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

CHARACTERISTIC CURVES

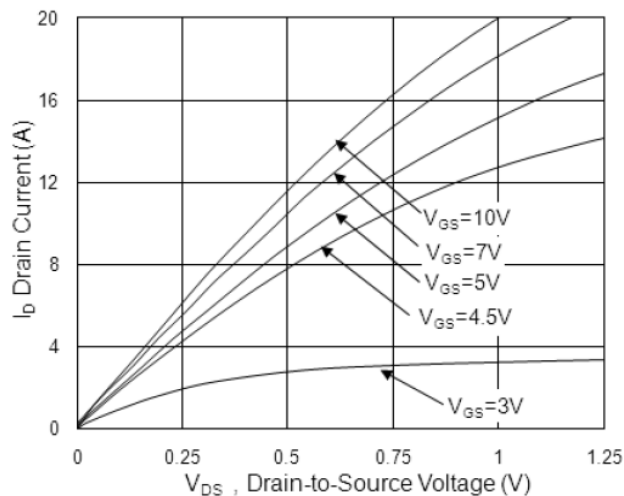


Fig.1 Typical Output Characteristics

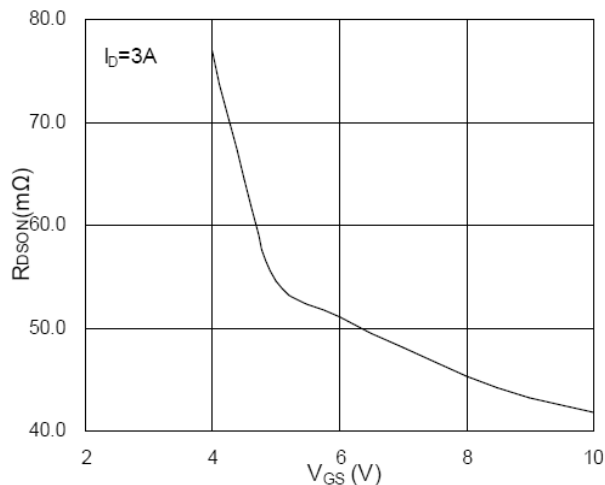


Fig.2 On-Resistance vs. G-S Voltage

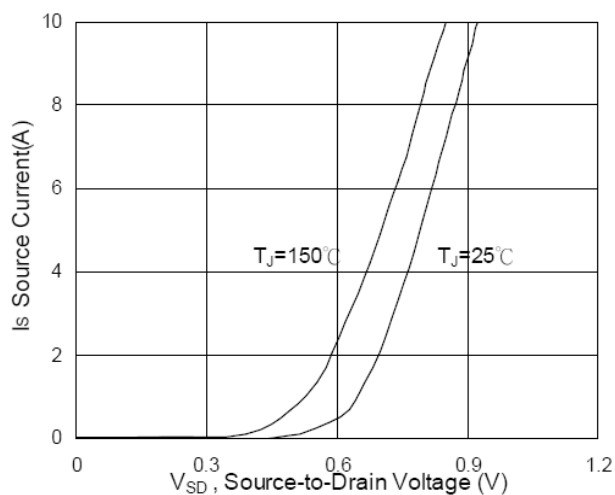


Fig.3 Forward Characteristics of Reverse

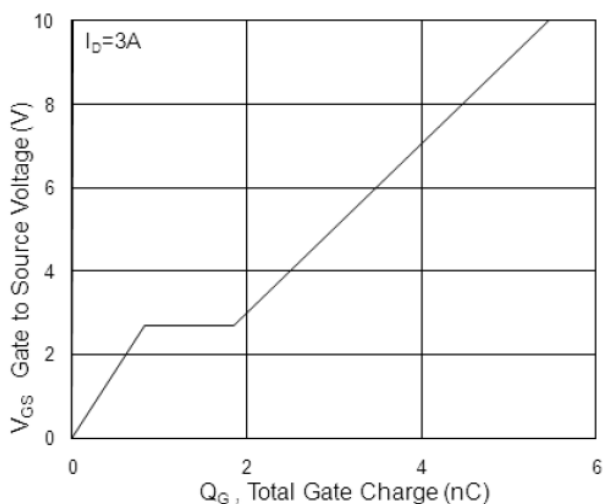


Fig.4 Gate-charge Characteristics

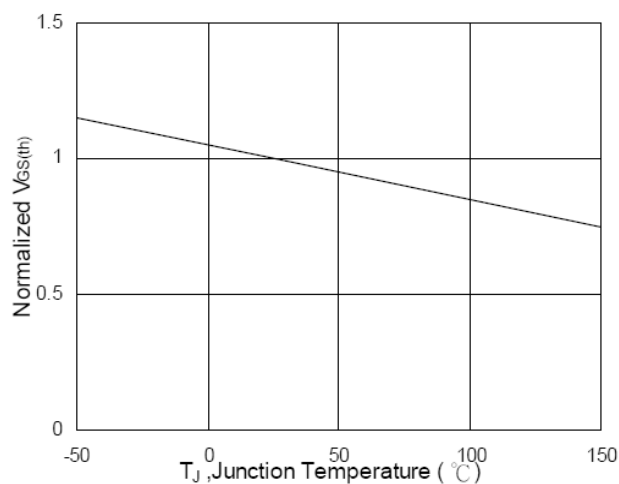


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

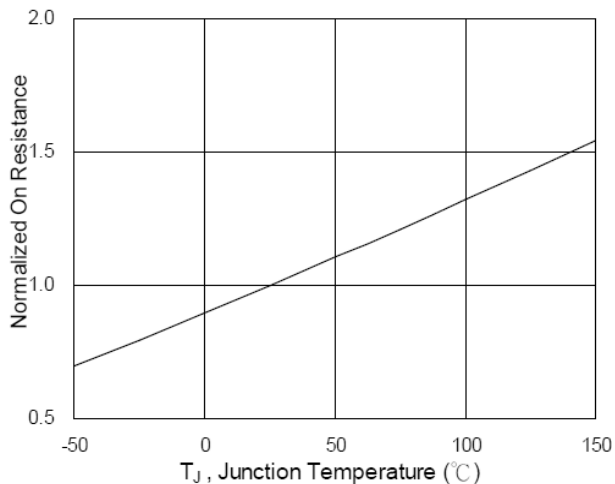


Fig.6 Normalized $R_{DS(ON)}$ vs. T_J

CHARACTERISTIC CURVES

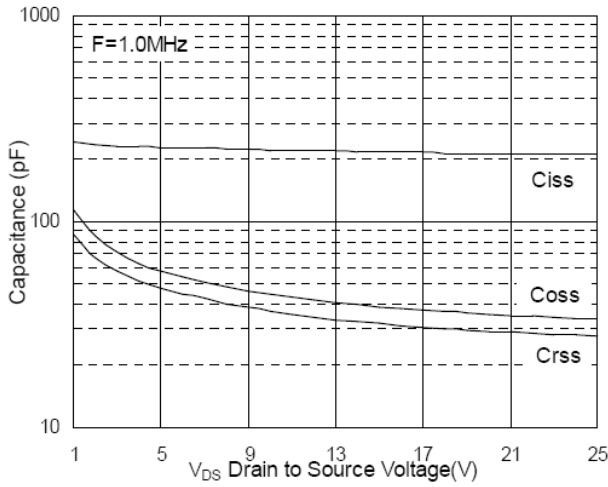


Fig.7 Capacitance

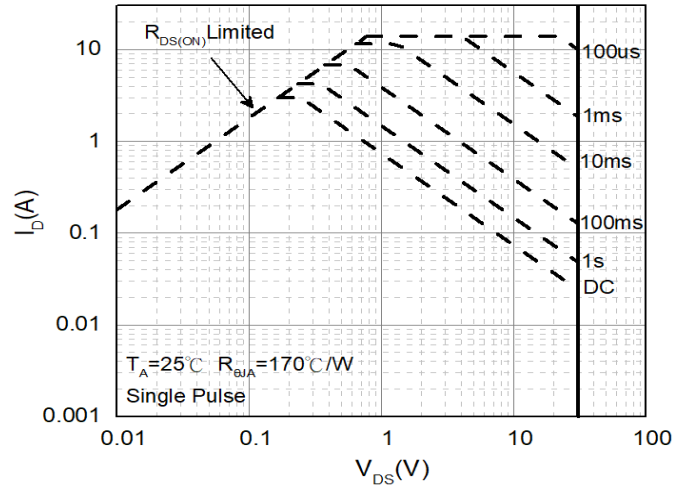


Fig.8 Safe Operating Area

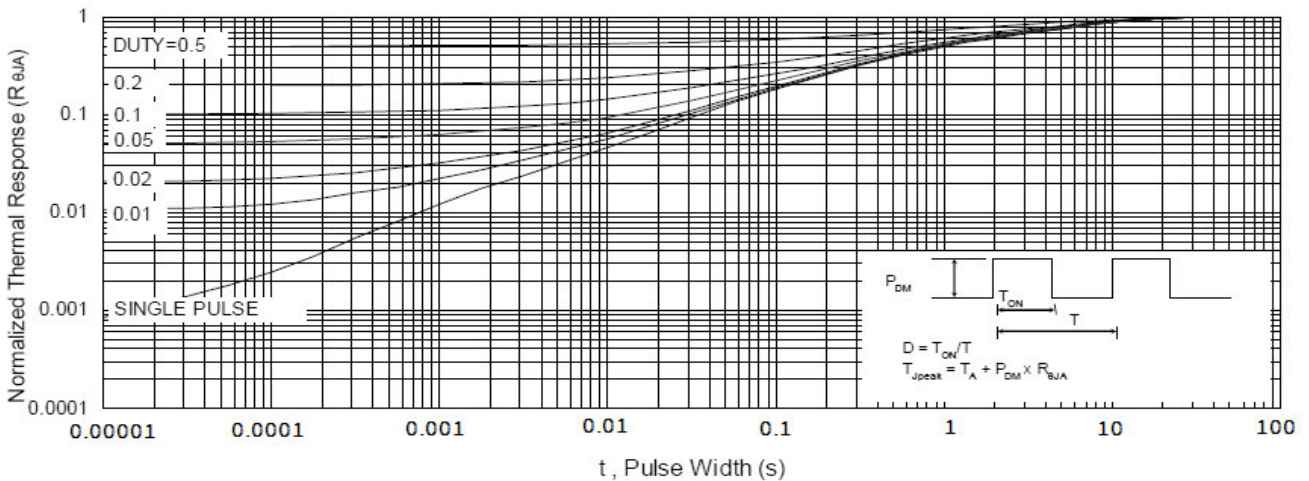


Fig.9 Normalized Maximum Transient Thermal Impedance

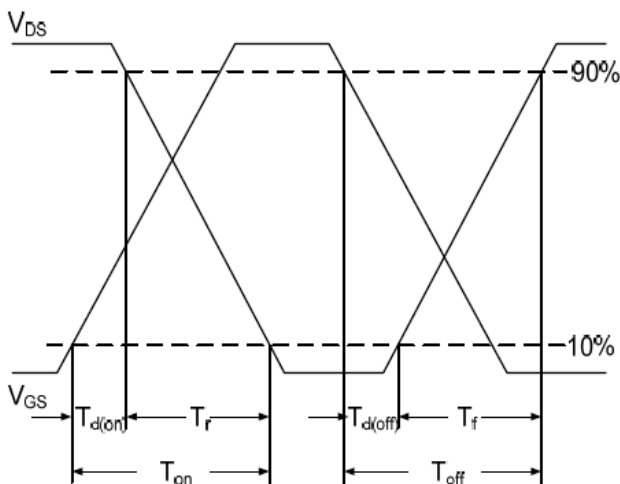


Fig.10 Switching Time Waveform

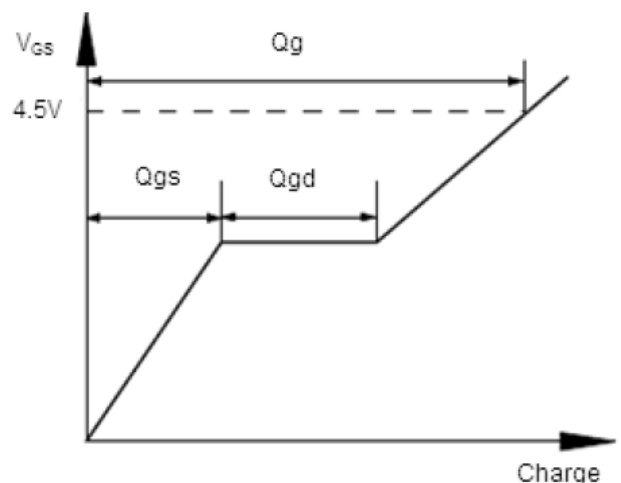


Fig.11 Gate Charge Waveform