

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

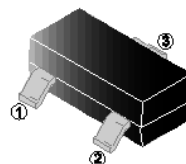
FEATURES

- Fast Switching
- Green Device Available
- ESD : 3KV

SOT-23

APPLICATIONS

- POWER Management in Note
- Portable Equipment
- Battery Powered System
- DC/DC Converter
- Load Switch
- LCD Display inverter
- DSC



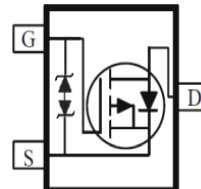
MARKING

01XX

01 : Product Type Marking Code
XX : Serial Code

PACKAGE INFORMATION

Package	MPQ	Leader Size
SOT-23	3K	7 inch



ORDER INFORMATION

Part Number	Type
SMS04P02-C	Lead (Pb)-free and Halogen-free

ABSOLUTE MAXIMUM RATINGS ($T_A=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	± 8	V
Continuous Drain Current	I_D	-4	A
Pulsed Drain Current ¹	I_{DM}	-16	A
Power Dissipation	P_D	0.89	W
Operating Junction & Storage Temperature	T_J, T_{STG}	-55~150	$^\circ\text{C}$
Thermal Resistance Ratings			
Thermal Resistance Junction-ambient	$R_{\theta JA}$	140	$^\circ\text{C/W}$

ELECTRICAL CHARACTERISTICS ($T_J=25^\circ C$ unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Drain-Source Breakdown Voltage	BV _{DSS}	-20	-	-	V	V _{GS} =0V, I _D = -250μA
Gate-Threshold Voltage	V _{GS(th)}	-0.3	-	-1	V	V _{DS} =V _{GS} , I _D = -250μA
Gate-Source Leakage Current	I _{GSS}	-	-	±10	μA	V _{DS} =0V, V _{GS} = ±8V
Drain-Source Leakage Current	I _{DSS}	-	-	-1	μA	V _{GS} =0V, V _{DS} = -20V
Static Drain-Source On-Resistance	R _{DS(ON)}	-	-	55	mΩ	V _{GS} = -4.5V, I _D = -4A
		-	-	63		V _{GS} = -2.5V, I _D = -4A
		-	-	73		V _{GS} = -1.8V, I _D = -2A
		-	-	110		V _{GS} = -1.5V, I _D = -1A
Forward Transconductance	g _{fs}	-	22	-	S	V _{DS} = -5V, I _D = -4A
Total Gate Charge	Q _g	-	11.1	-	nC	V _{GS} = -4.5V V _{DS} = -10V I _D = -4A
Gate-Source Charge	Q _{gs}	-	3.1	-		
Gate-Drain Charge	Q _{gd}	-	2.4	-		
Turn-on Delay Time	T _{d(on)}	-	6	-	nS	V _{GS} = -4.5V V _{DD} = -10V I _D = -1A R _G =2.5Ω
Rise Time	T _r	-	5	-		
Turn-off Delay Time	T _{d(off)}	-	16	-		
Fall Time	T _f	-	3	-		
Input Capacitance	C _{iss}	-	989	-	pF	V _{GS} =0V V _{DS} = -10V f=1MHz
Output Capacitance	C _{oss}	-	167	-		
Reverse Transfer Capacitance	C _{rss}	-	75.5	-		
Source-Drain Diode						
Continuous Current	I _S	-	-	-2.2	A	V _G =V _D =0V, Force Current
Diode Forward Voltage	V _{SD}	-	-	-1	V	V _{GS} =0V, I _S = -1A

Notes:

1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. The data tested by pulsed , pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.

CHARACTERISTIC CURVES

FIG. 1-Output Characteristics

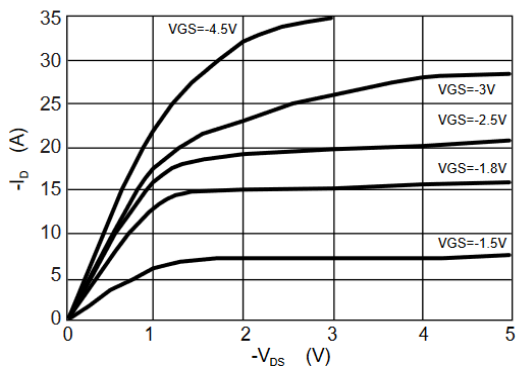


FIG. 2-Transfer Characteristics

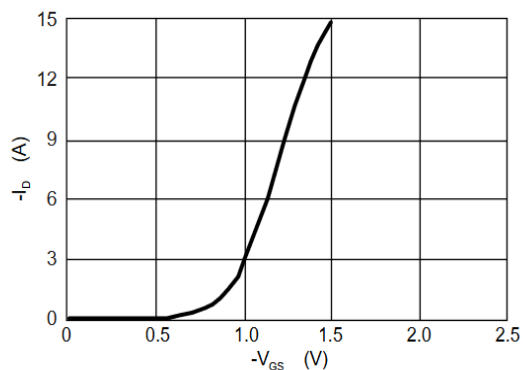


FIG. 3- $R_{DS(ON)}$ vs I_D

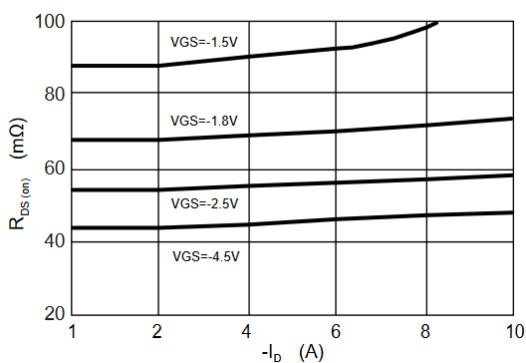


FIG. 4-Normalized $R_{DS(ON)}$ vs T_J

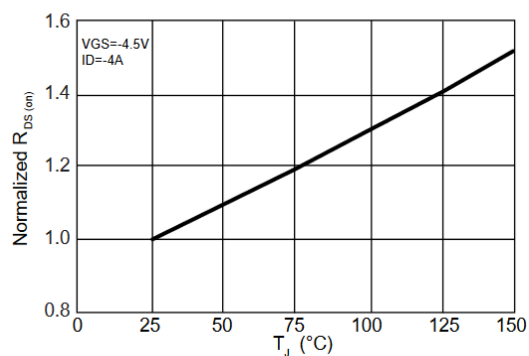


FIG. 5- I_S vs V_{SD}

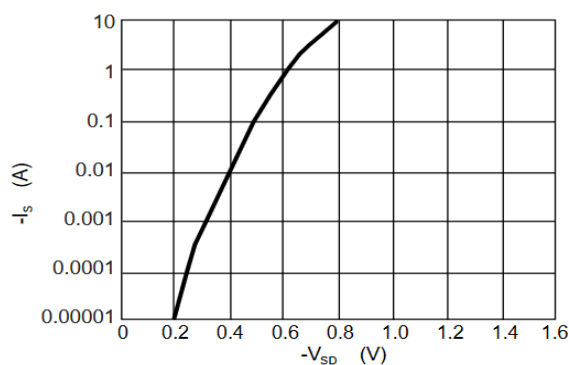


FIG. 6- I_D vs T_A

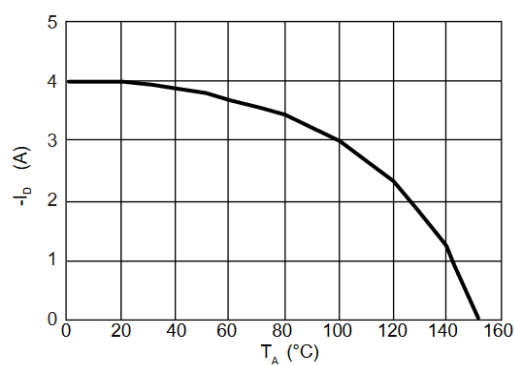


FIG. 7-Switching Time Waveform

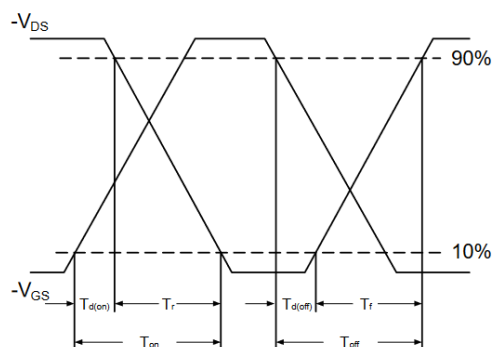
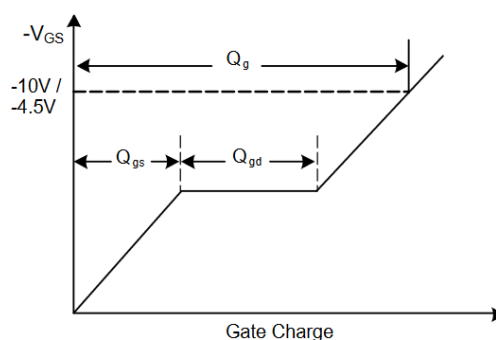
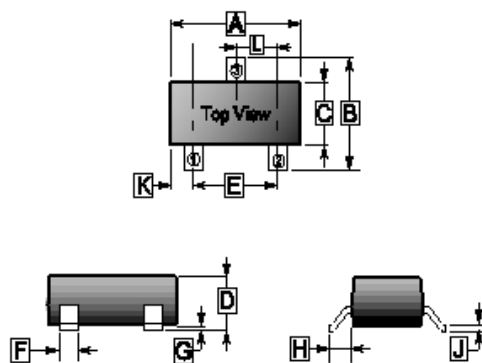


FIG. 8-Gate Charge Waveform



PACKAGE OUTLINE DIMENSIONS

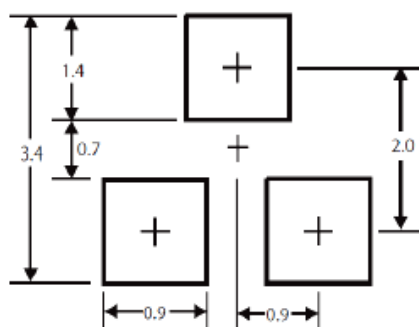
SOT-23



REF.	Millimeter	
	Min.	Max.
A	2.65	3.10
B	2.10	3.00
C	1.10	1.80
D	0.89	1.45
E	1.70	2.30
F	0.28	0.55
G	0	0.18
H	0.55 REF.	
J	0.05	0.26
K	0.60 REF.	
L	0.95 TYP.	

MOUNTING PAD LAYOUT

SOT-23



*Dimensions in millimeters