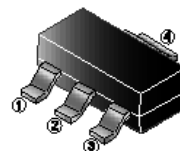


RoHS Compliant Product
A Suffix of "-C" specifies halogen & lead-free

DESCRIPTION

The SSM452-C provide the designer with the best combination of fast switching, low on-resistance and cost-effectiveness.

SOT-223



FEATURES

- Simple Drive Requirement
- Lower On-resistance
- Fast Switching

MARKING

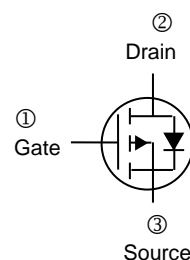


PACKAGE INFORMATION

Package	MPQ	Leader Size
SOT-223	2.5K	13 inch

ORDER INFORMATION

Part Number	Type
SSM452-C	Lead (Pb)-free and Halogen-free



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

Parameter	Symbol	Ratings	Unit	
Drain-Source Voltage	V_{DS}	-30	V	
Gate-Source Voltage	V_{GS}	± 20		
Continuous Drain Current ¹	I_D	$T_A=25^\circ\text{C}$	-4.5	A
		$T_A=70^\circ\text{C}$	-3.5	
Pulsed Drain Current ²	I_{DM}	-23		
Total Power Dissipation ³	P_D	1.5	W	
Maximum Junction-Ambient ¹	$R_{\theta JA}$	85	$^\circ\text{C/W}$	
Maximum Junction-Case ¹	$R_{\theta JC}$	45		
Operating Junction & Storage Temperature Range	T_J, T_{STG}	-55~150	$^\circ\text{C}$	

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Drain-Source Breakdown Voltage	BV_{DSS}	-30	-	-	V	$V_{GS}=0, I_D = -250\mu\text{A}$
Breakdown Voltage Temperature Coefficient	$\frac{\Delta BV_{DSS}}{\Delta T_J}$	-	-0.023	-	V/ $^\circ\text{C}$	Reference to 25°C , $I_D = -1\text{mA}$
Gate Threshold Voltage	$V_{GS(TH)}$	-1	-1.6	-2.5	V	$V_{DS}=V_{GS}, I_D = -250\mu\text{A}$
Forward Transconductance	g_{fs}	-	11	-	S	$V_{DS} = -4\text{V}, I_D = -5\text{A}$
Gate-Source Leakage Current	I_{GSS}	-	-	± 100	nA	$V_{GS} = \pm 20\text{V}$
Drain-Source Leakage Current	I_{DSS}	-	-	-1	μA	$V_{DS} = -24\text{V}, V_{GS} = 0, T_J = 25^\circ\text{C}$
		-	-	-5		$V_{DS} = -24\text{V}, V_{GS} = 0, T_J = 75^\circ\text{C}$
Drain-Source On Resistance ²	$R_{DS(ON)}$	-	42	55	m Ω	$V_{GS} = -10\text{V}, I_D = -4\text{A}$
		-	75	95		$V_{GS} = -4.5\text{V}, I_D = -3\text{A}$
Total Gate Charge	Q_g	-	6.4	-	nC	$V_{GS} = -4.5\text{V}$ $V_{DS} = -15\text{V}$ $I_D = -4\text{A}$
Gate-Source Charge	Q_{gs}	-	2.3	-		
Gate-Drain Charge	Q_{gd}	-	1.9	-		
Turn-on Delay Time	$T_{d(on)}$	-	2.8	-	nS	$V_{DS} = -15\text{V}$ $V_{GS} = -10\text{V}$ $I_D = -4\text{A}$ $R_G = 3.3\Omega$
Rise Time	T_r	-	8.4	-		
Turn-off Delay Time	$T_{d(off)}$	-	39	-		
Fall Time	T_f	-	6	-		
Input Capacitance	C_{iss}	-	583	-	pF	$V_{DS} = -15\text{V}$ $V_{GS} = 0$ $f = 1\text{MHz}$
Output Capacitance	C_{oss}	-	100	-		
Reverse Transfer Capacitance	C_{rss}	-	80	-		
Source-Drain Diode						
Forward on Voltage ²	V_{SD}	-	-	-1.2	V	$V_{GS} = 0, I_S = -1\text{A}$
Continuous Source Current ^{1,4}	I_S	-	-	-4.5	A	$V_{DS} = V_G = 0, \text{Force Current}$
Pulsed Source Current ^{2,4}	I_{SM}	-	-	-23		
Reverse Recovery Time	T_{rr}	-	7.8	-	nS	$I_F = -4\text{A}$
Reverse Recovery Charge	Q_{rr}	-	2.5	-	nC	$dI/dt = 100\text{A}/\mu\text{s}$

Notes:

- The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.
- The data tested by pulsed, pulse width $\leq 300\mu\text{s}$, Duty cycle $\leq 2\%$.
- The power dissipation is limited by 150°C junction temperature.
- The data is theoretically the same as I_D and I_{DM} , in real applications, should be limited by total power dissipation.

CHARACTERISTIC CURVES

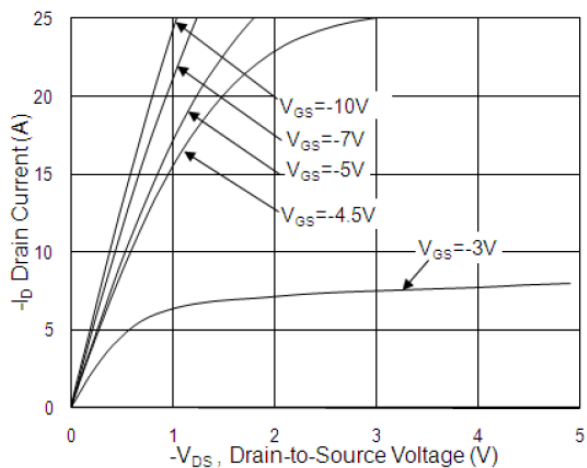


Fig.1 Typical Output Characteristics

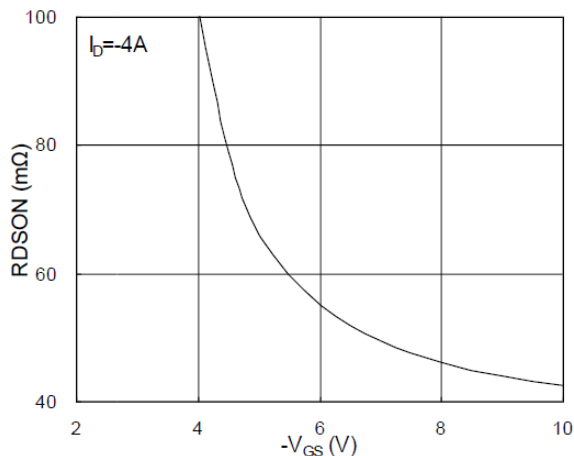


Fig.2 On-Resistance v.s Gate-Source

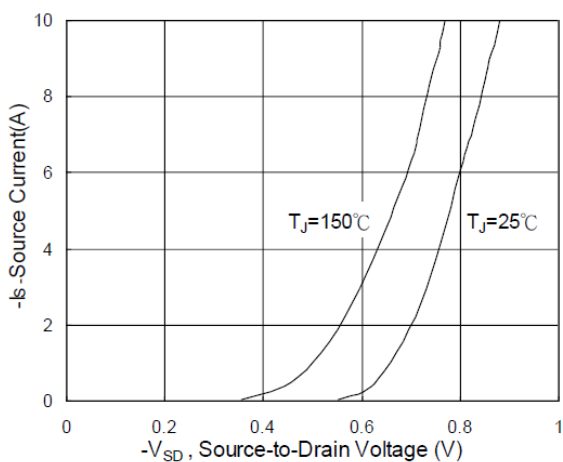


Fig.3 Forward Characteristics Of Reverse

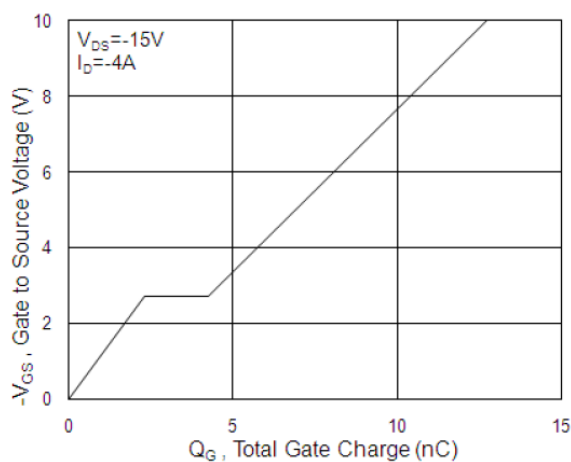


Fig.4 Gate Charge Characteristics

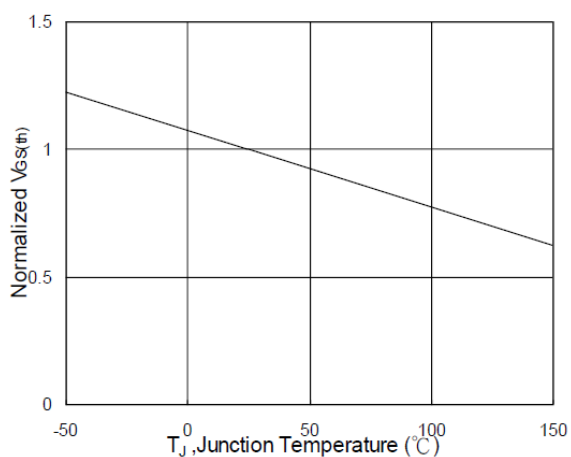


Fig.5 Normalized $V_{GS(th)}$ v.s T_J

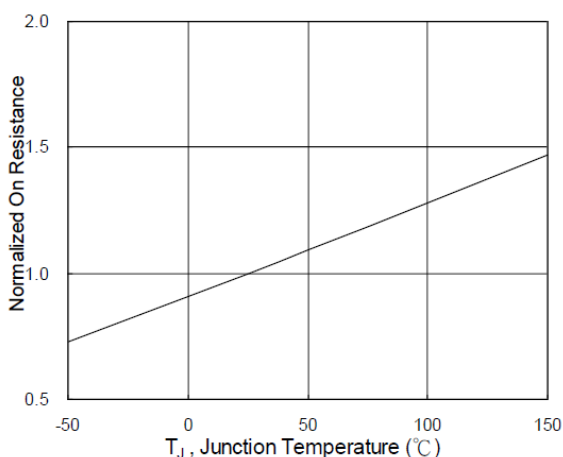


Fig.6 Normalized $R_{DS(ON)}$ v.s T_J

CHARACTERISTIC CURVES

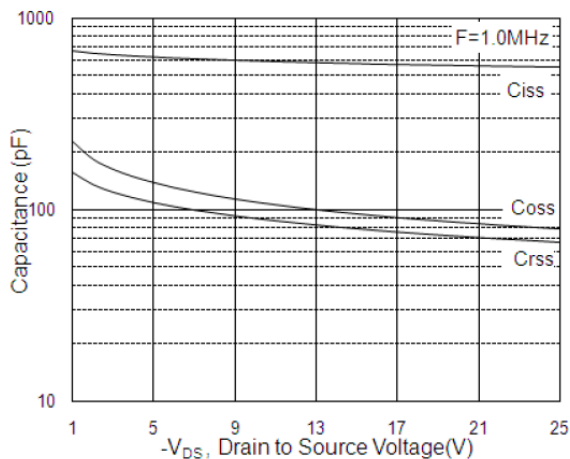


Fig.7 Capacitance

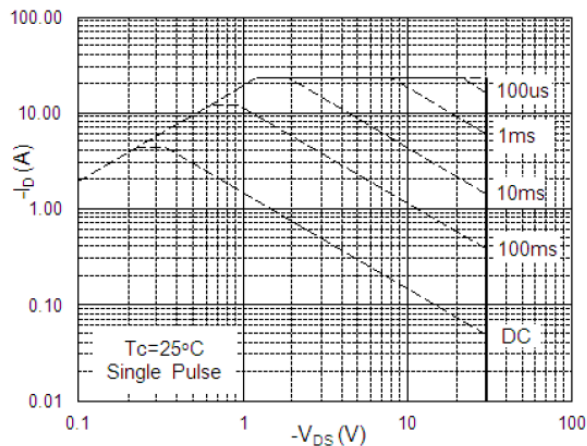


Fig.8 Safe Operating Area

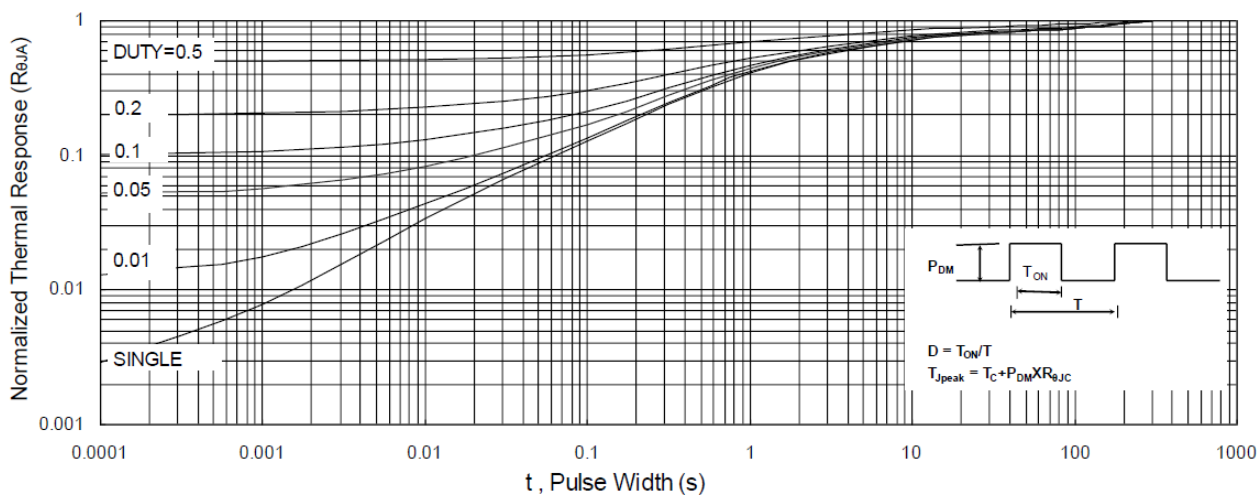


Fig.9 Normalized Maximum Transient Thermal Impedance

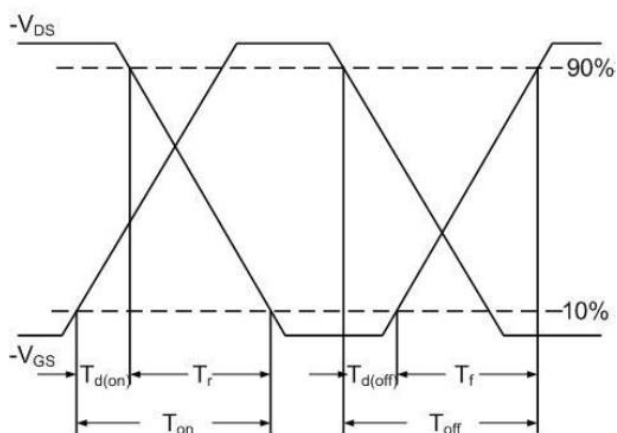


Fig.10 Switching Time Waveform

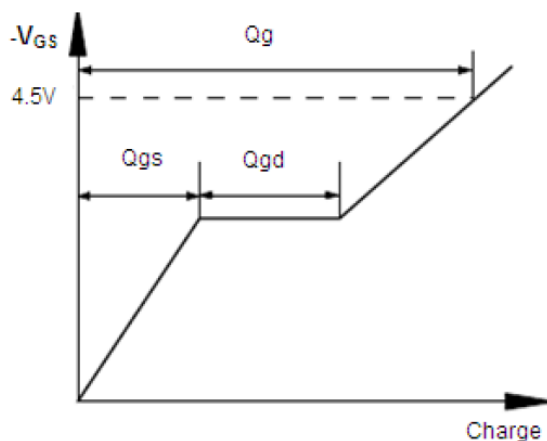
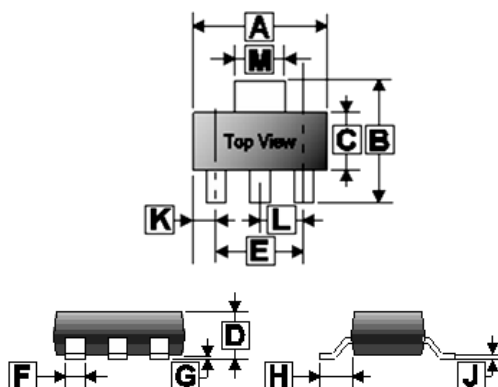


Fig.11 Gate Charge Waveform

PACKAGE OUTLINE DIMENSIONS

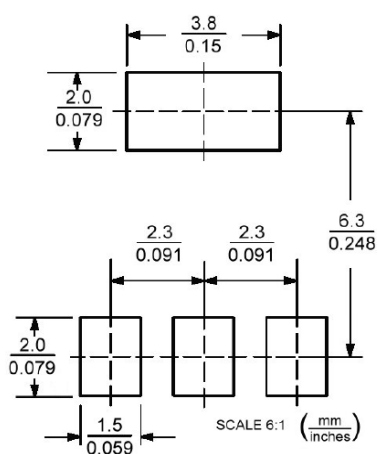
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REF.	Millimeter	
	Min.	Max.
A	5.90	6.70
B	6.70	7.30
C	3.30	3.80
D	1.40	1.90
E	4.60 REF.	
F	0.60	0.85
G	-	0.18
H	2.00 REF.	
J	0.20	0.40
K	1.10 REF.	
L	2.30 REF.	
M	2.80	3.20

MOUNTING PAD LAYOUT

SOT-223



*Dimensions in millimeters