

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

## DESCRIPTION

The SSM3400-C provide the designer with the best combination of fast switching, ruggedized device design, low on-resistance and cost-effectiveness. The SOT-223 package is universally preferred for all commercial-industrial surface mount applications and suited for low voltage applications such as DC/DC converters.

## FEATURES

- Lower Gate Charge
- Simple Drive Requirement
- Fast Switching Characteristic

## MARKING

3400

## PACKAGE INFORMATION

Package	MPQ	Leader Size
SOT-223	2.5K	13 inch

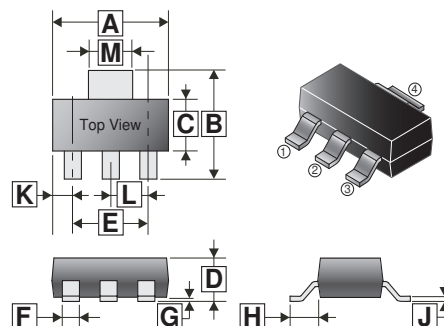
## ORDER INFORMATION

Part Number	Type
SSM3400-C	Lead (Pb)-free and Halogen-free

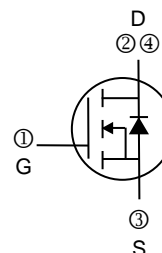
## ABSOLUTE MAXIMUM RATINGS ( $T_A=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	$V_{DS}$	30	V
Gate-Source Voltage	$V_{GS}$	$\pm 12$	V
Continuous Drain Current <sup>1</sup> @ $V_{GS}=4.5V$	$I_D$	6.4	A
Pulsed Drain Current <sup>3</sup>	$I_{DM}$	30	A
Power Dissipation <sup>1</sup>	$P_D$	1.5	W
<small><math>T_A=25^\circ\text{C}</math></small>			
Operating Junction & Storage Temperature	$T_J, T_{STG}$	-55~150	$^\circ\text{C}$
Thermal Resistance Rating			
Thermal Resistance Junction-Ambient <sup>1</sup>	$R_{\theta JA}$	85	$^\circ\text{C/W}$
Thermal Resistance Junction-Case <sup>1</sup>	$R_{\theta JC}$	36	

## SOT-223



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	5.90	6.70	G	-	0.18
B	6.70	7.30	H	2.00	REF.
C	3.30	3.80	J	0.20	0.40
D	1.40	1.90	K	1.10	REF.
E	4.45	4.75	L	2.30	REF.
F	0.60	0.85	M	2.80	3.20



**ELECTRICAL CHARACTERISTICS** (T<sub>J</sub>=25°C unless otherwise specified)

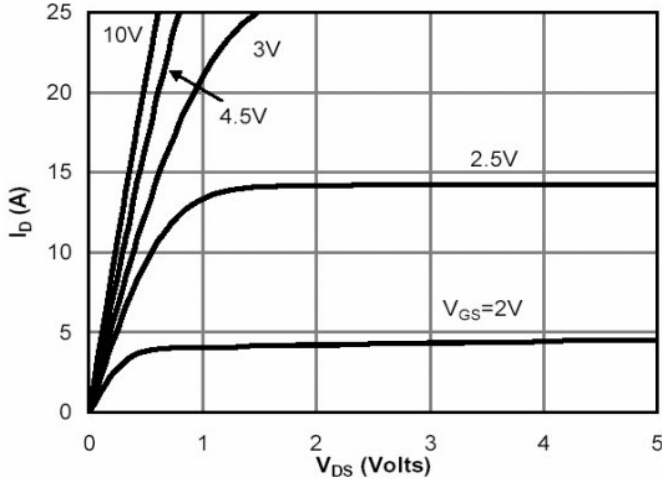
Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	30	-	-	V	V <sub>GS</sub> =0, I <sub>D</sub> =250μA
Gate-Threshold Voltage	V <sub>GS(th)</sub>	0.5	-	1.4	V	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA
Gate-Source Leakage Current	I <sub>GSS</sub>	-	-	±100	nA	V <sub>GS</sub> = ±12V, V <sub>DS</sub> =0
Drain-Source Leakage Current	I <sub>DSS</sub>	-	-	1	μA	V <sub>DS</sub> =24V, V <sub>GS</sub> =0
Forward Transfer conductance	g <sub>fs</sub>	-	15	-	S	V <sub>DS</sub> =5V, I <sub>D</sub> =5A
Static Drain-Source On-Resistance <sup>3</sup>	R <sub>DS(ON)</sub>	-	-	36	mΩ	V <sub>GS</sub> =4.5V, I <sub>D</sub> =6.4A
		-	-	45		V <sub>GS</sub> =2.5V, I <sub>D</sub> =4A
Total Gate Charge	Q <sub>g</sub>	-	9.5	-	nC	I <sub>D</sub> =6.4A V <sub>DS</sub> =15V V <sub>GS</sub> =4.5V
Gate-Source Charge	Q <sub>gs</sub>	-	1.5	-		
Gate-Drain Charge	Q <sub>gd</sub>	-	3	-		
Turn-on Delay Time	T <sub>d(on)</sub>	-	3.3	-	nS	V <sub>DS</sub> =15V V <sub>GS</sub> =10V R <sub>GEN</sub> =3Ω R <sub>L</sub> =2.7Ω
Rise Time	T <sub>r</sub>	-	4.8	-		
Turn-off Delay Time	T <sub>d(off)</sub>	-	26.3	-		
Fall Time	T <sub>f</sub>	-	4.1	-		
Input Capacitance	C <sub>iss</sub>	-	823	-	pF	V <sub>GS</sub> =0 V <sub>DS</sub> =15V f =1MHz
Output Capacitance	C <sub>oss</sub>	-	98	-		
Reverse Transfer Capacitance	C <sub>rss</sub>	-	79	-		
<b>Source-Drain Diode</b>						
Forward on Voltage <sup>3</sup>	V <sub>SD</sub>	-	-	1	V	I <sub>S</sub> =1A, V <sub>GS</sub> =0
Reverse Recovery Time	T <sub>rr</sub>	-	16	-	nS	I <sub>S</sub> =5A, V <sub>GS</sub> =0V, di/dt=100A/μs
Reverse Recovery Charge	Q <sub>rr</sub>	-	8.9	-	nC	
Continuous Source Current <sup>1</sup>	I <sub>S</sub>	-	-	6.4	A	

Notes:

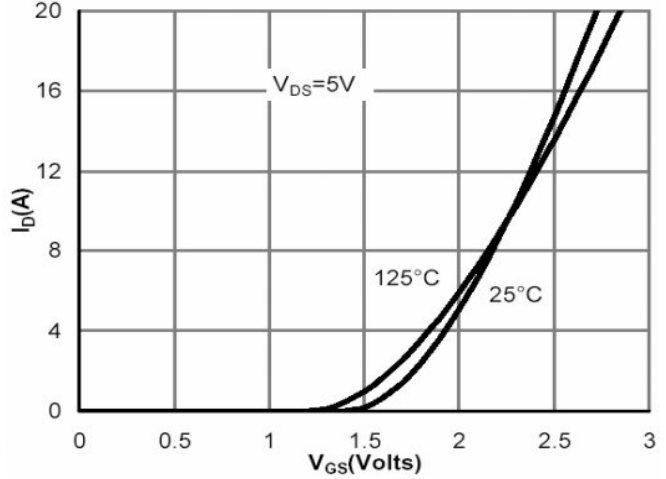
- The data tested by surface mounted on a 1 inch<sup>2</sup> FR4 board with 2OZ copper.
- Pulse width limited by maximum junction temperature.
- Pulse Width≤300μs, Duty Cycle ≤2%.

**CHARACTERISTIC CURVES**

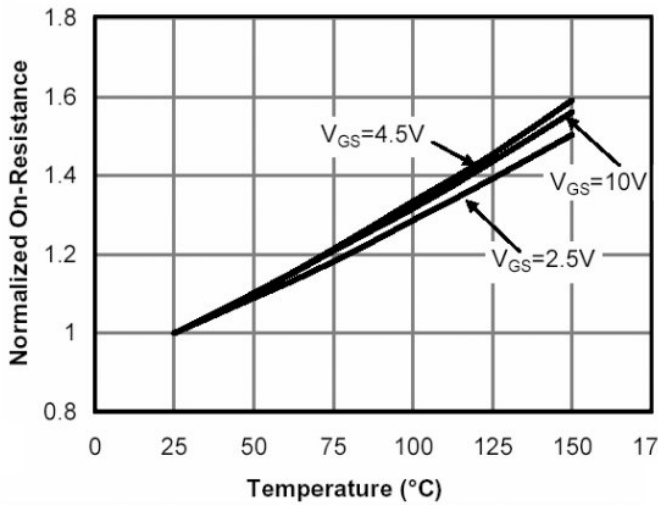
Typical Output Characteristics



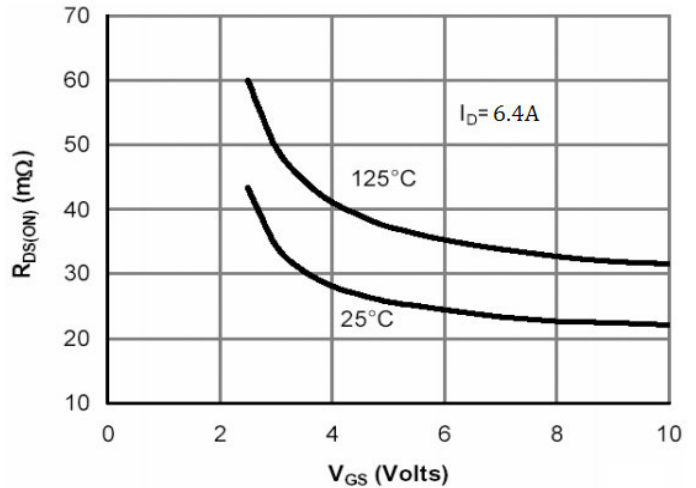
Typical Transfer Characteristics



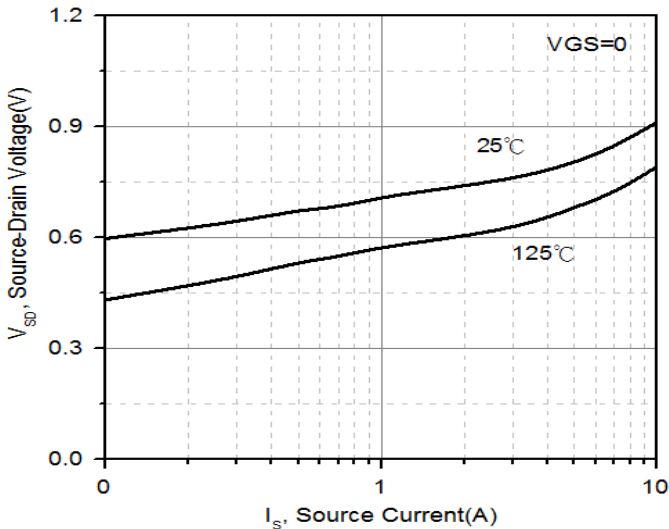
Drain-Source On-State Resistance vs Junction Temperature



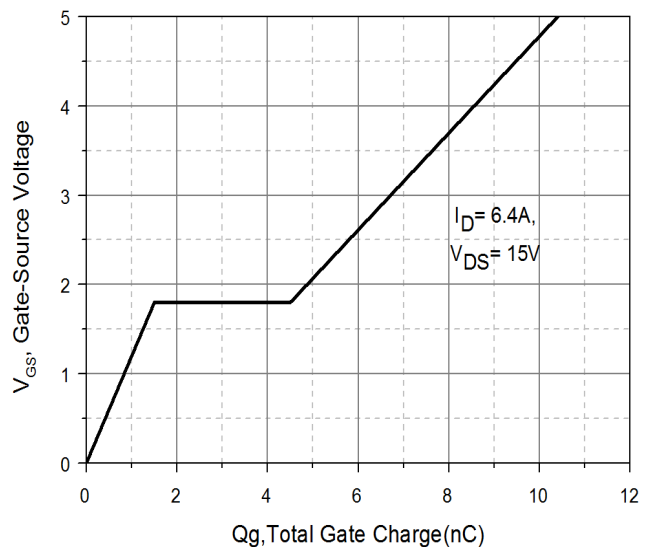
Static Drain-Source On-State Resistance vs Gate-Source Voltage



Source Current vs Source-Drain Voltage

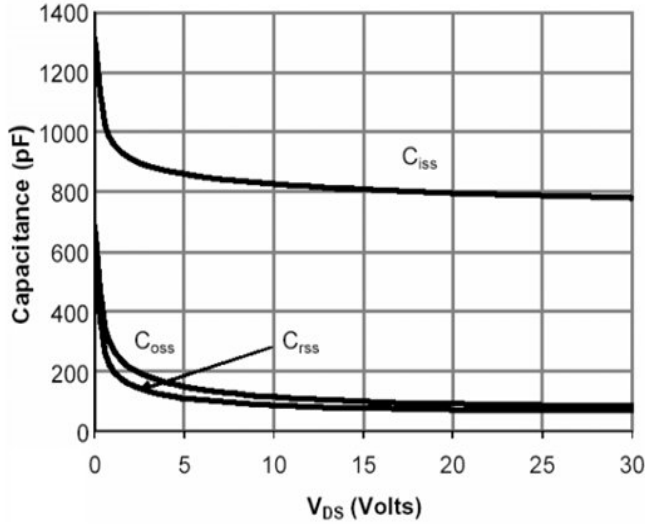


Gate Charge Characteristics

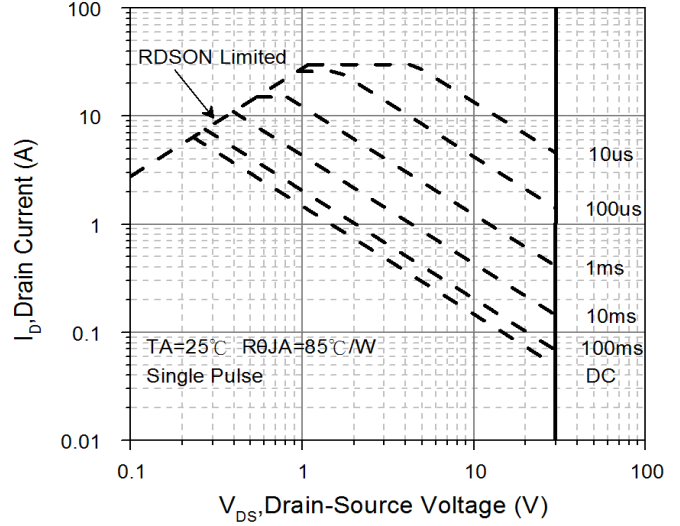


**CHARACTERISTIC CURVES**

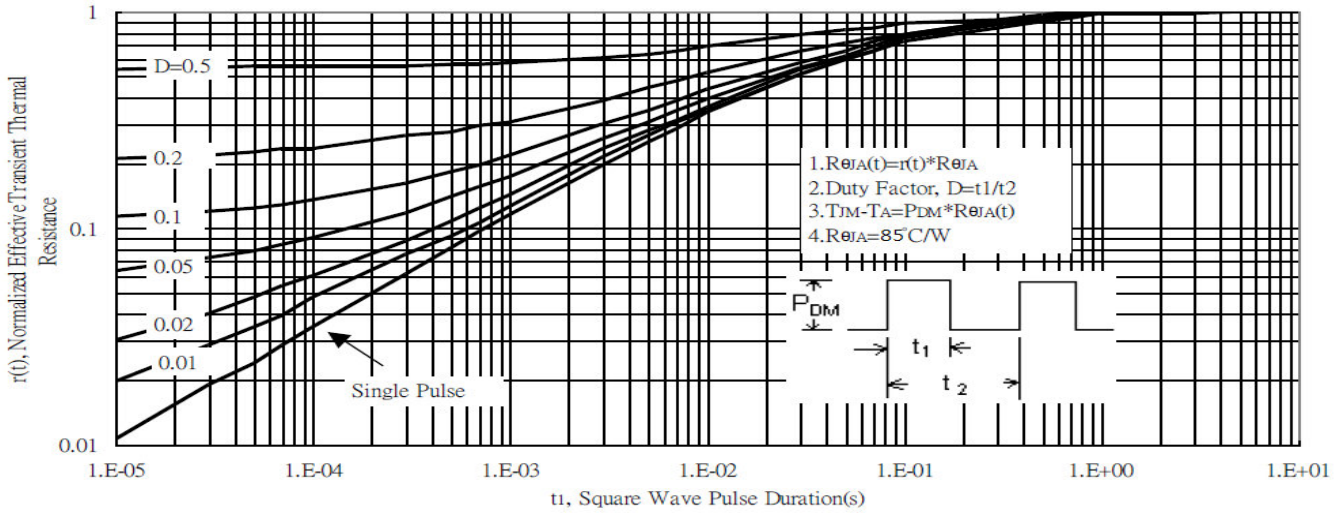
Capacitance vs Drain-to-Source Voltage



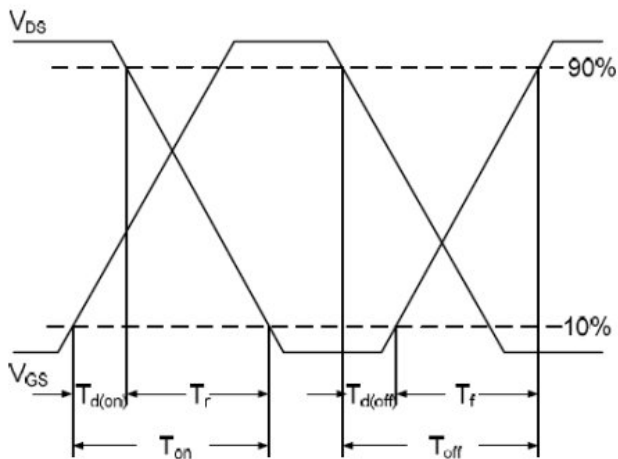
Safe Operating Area



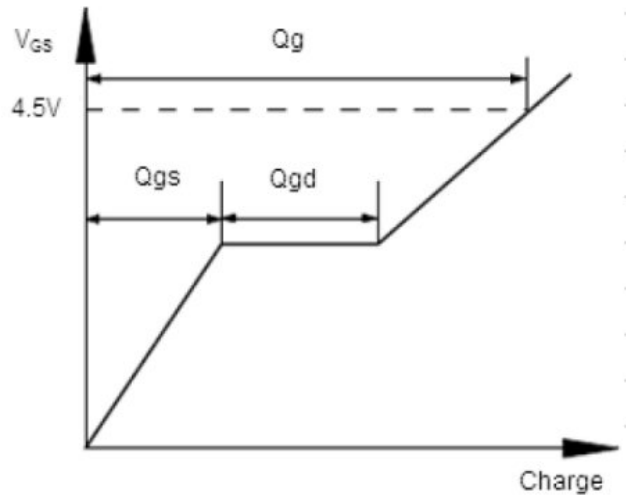
Transient Thermal Response Curves



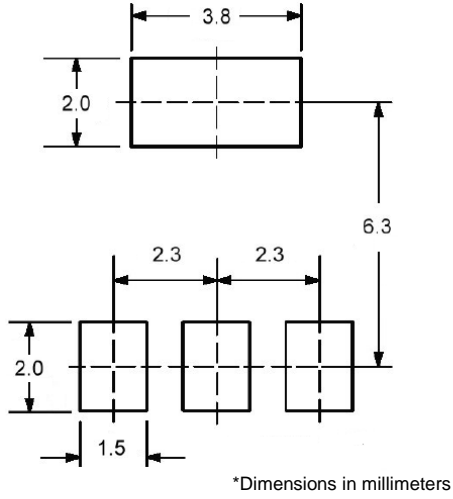
Switching Time Waveform



Gate Charge Waveform



### CHARACTERISTIC CURVES



Mounting Pad Layout