

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

FEATURES

- Low Gate Charge
- Simple Drive Requirement
- Green Device Available
- ESD Susceptibility 2KV

MARKING



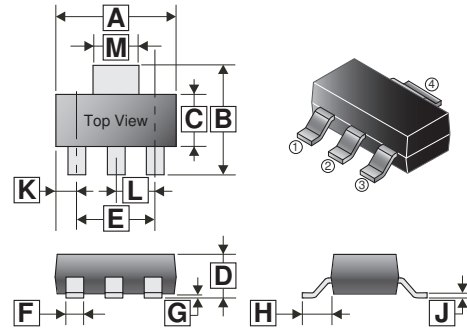
PACKAGE INFORMATION

Package	MPQ	Leader Size
SOT-223	2.5K	13 inch

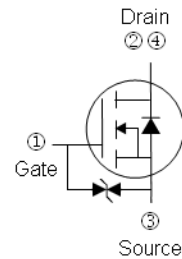
ORDER INFORMATION

Part Number	Type
SSM1N25E-C	Lead (Pb)-free and Halogen-free

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	1.42	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



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

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V_{DS}	250	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current @ $V_{GS}=10\text{V}$ ¹	I_D	$T_A=25^\circ\text{C}$	1
		$T_A=70^\circ\text{C}$	0.8
Pulsed Drain Current ²	I_{DM}	4	A
Total Power Dissipation ³	P_D	2.8	W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55~150	$^\circ\text{C}$
Thermal Resistance Ratings			
Thermal Resistance from Junction to Ambient ¹	$R_{\theta JA}$	$t \leq 10\text{sec}$	45
		Steady State	62.5

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

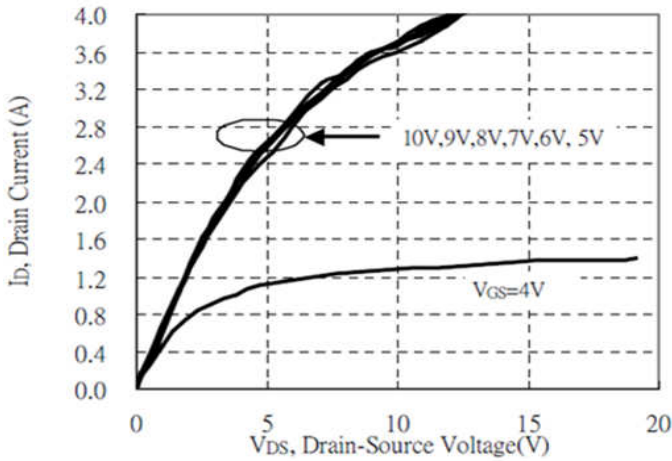
Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions	
Drain-Source Breakdown Voltage	BV _{DSS}	250	-	-	V	V _{GS} =0, I _D =250μA	
Breakdown Voltage Temperature Coefficient	ΔBV _{DSS} /ΔT _J	-	0.3	-	V/°C	Reference to 25°C, I _D =1mA	
Gate-Threshold Voltage	V _{GS(th)}	1.5	-	3.5	V	V _{DS} =V _{GS} , I _D =250μA	
Forward Transconductance	g _{fs}	-	1.8	-	S	V _{DS} =15V, I _D =1A	
Gate-Source Leakage Current	I _{GSS}	-	-	±10	μA	V _{GS} = ±20V	
Drain-Source Leakage Current	T _J =25°C	I _{DSS}	-	-	1	μA	V _{DS} =200V, V _{GS} =0
	T _J =85°C		-	-	25		
Static Drain-Source On-Resistance ²	R _{DS(ON)}	-	-	1.78	Ω	V _{GS} =10V, I _D =1A	
Total Gate Charge ²	Q _g	-	4.47	-	nC	V _{DS} =200V V _{GS} =10V I _D =1A	
Gate-Source Charge	Q _{gs}	-	1	-			
Gate-Drain ("Miller") Charge	Q _{gd}	-	1.45	-			
Turn-on Delay Time ²	T _{d(on)}	-	11.8	-	nS	V _{DD} =125V V _{GS} =10V R _G =6Ω I _D =1A	
Rise Time	T _r	-	10.7	-			
Turn-off Delay Time	T _{d(off)}	-	12.9	-			
Fall Time	T _f	-	6.9	-			
Input Capacitance	C _{iSS}	-	214	-	pF	V _{DS} =25V V _{GS} =0 f=1MHz	
Output Capacitance	C _{oss}	-	16.2	-			
Reverse Transfer Capacitance	C _{rss}	-	8	-			
Source-Drain Diode							
Diode Forward Voltage ²	V _{SD}	-	0.8	1.2	V	I _S =1A, V _{GS} =0, T _J =25°C	
Reverse Recovery Time	T _{rr}	-	78	-	nS	I _F =1A, dI/dt=100A/μs, T _J =25°C	
Reverse Recovery Charge	Q _{rr}	-	325	-	nC		

Notes:

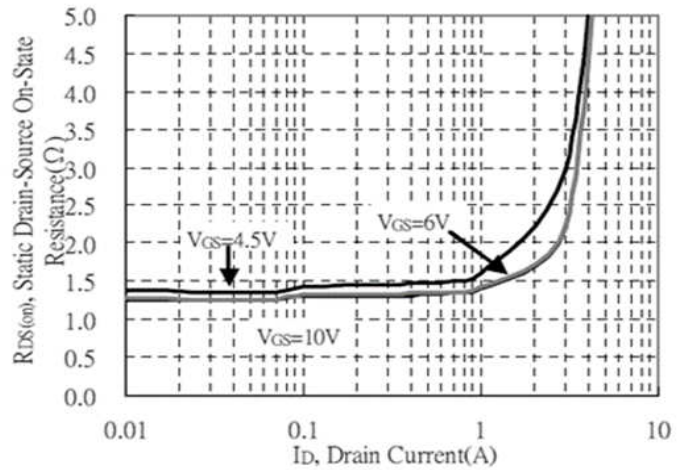
1. Surface mounted on a FR-4 board with a 1 inch² copper pad. R_{θJA} is 120°C/W when the device is mounted on the minimum copper pad.
2. The data tested by pulsed, pulse width ≤ 300μs, duty cycle ≤ 2%.
3. The power dissipation is limited by 150°C junction temperature.
4. The data is theoretically the same as I_D and I_{DM}, in real applications, should be limited by total power dissipation.

CHARACTERISTIC CURVES

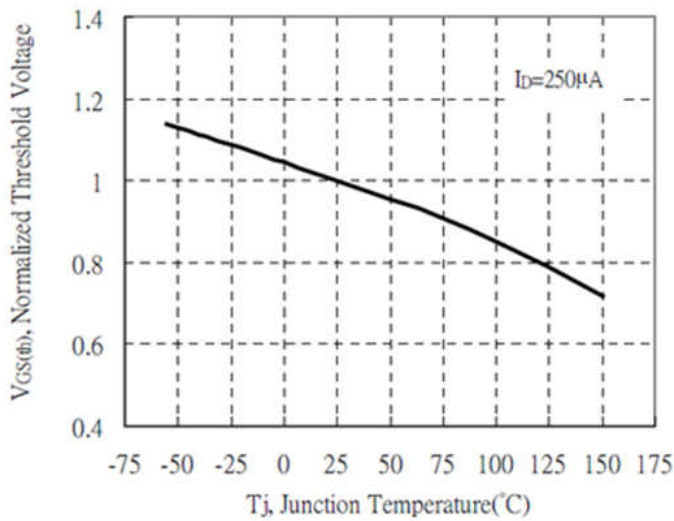
Typical Output Characteristics



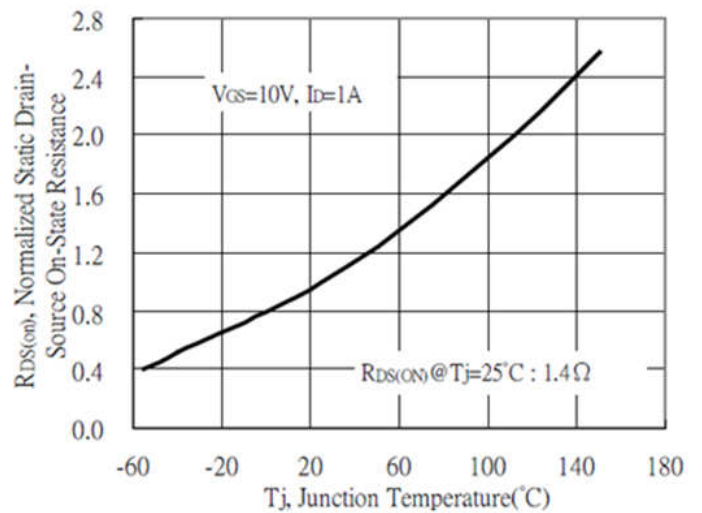
Static Drain-Source On-State resistance vs Drain Current



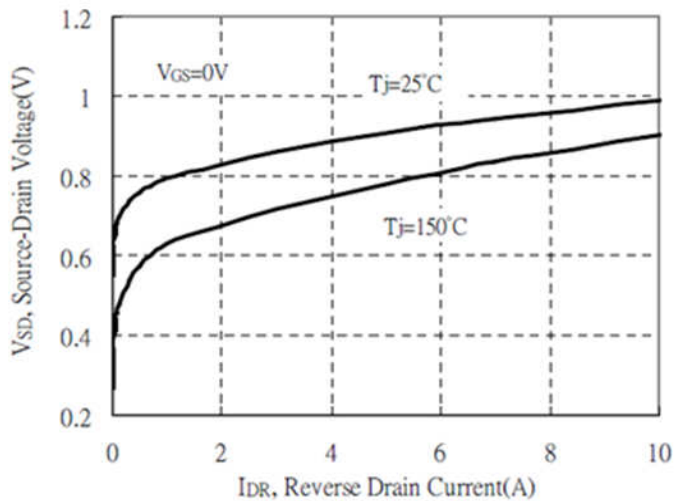
Threshold Voltage vs Junction Temperature



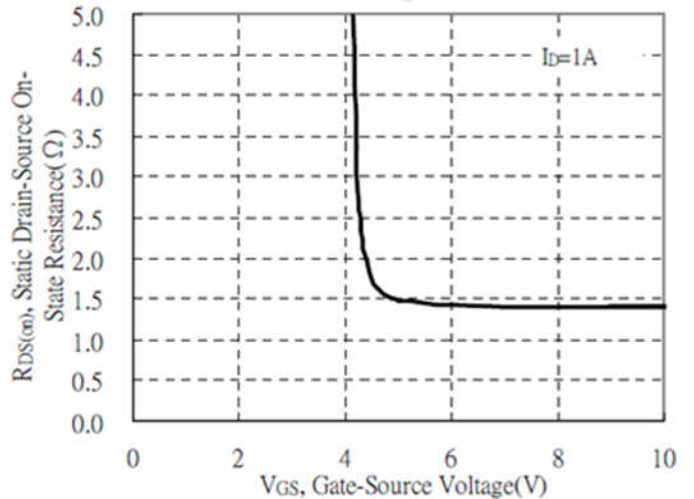
Drain-Source On-State Resistance vs Junction Temperature



Reverse Drain Current vs Source-Drain Voltage

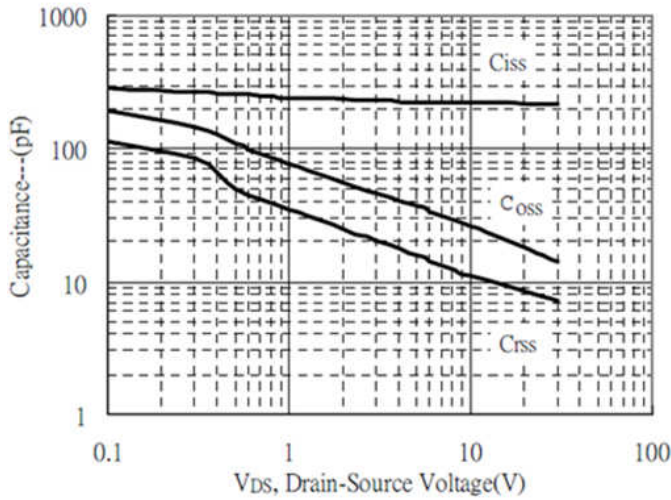


Static Drain-Source On-State Resistance vs Gate-Source Voltage

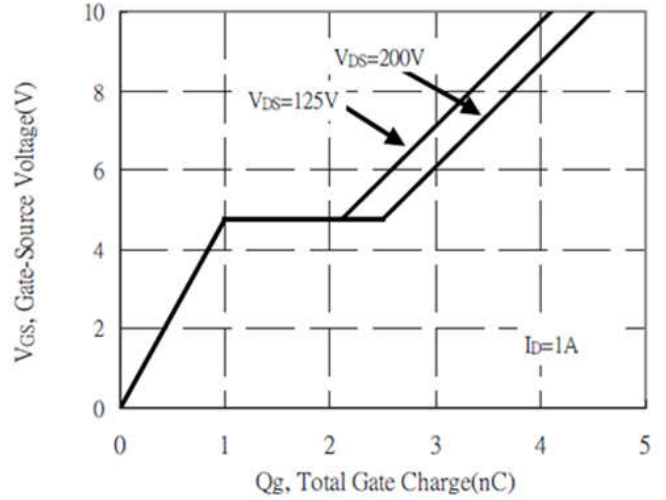


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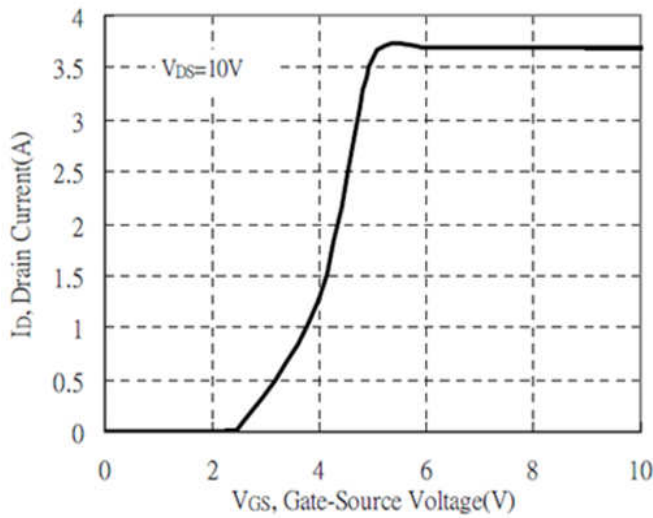
Capacitance vs Drain-to-Source Voltage



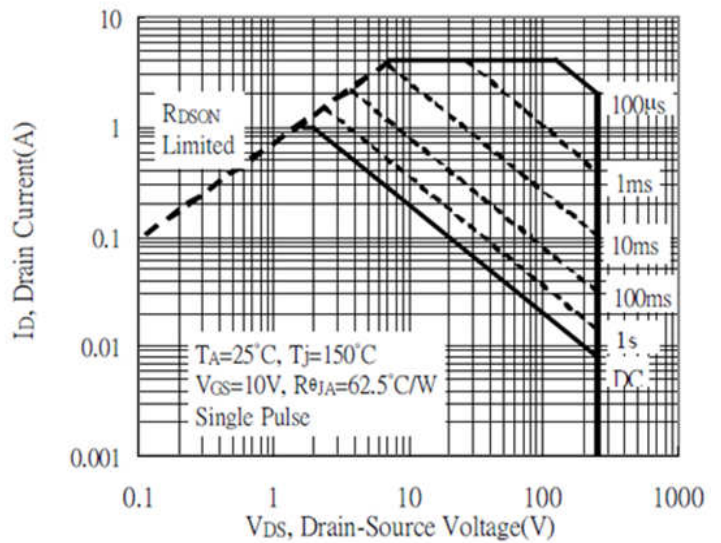
Gate Charge Characteristics



Typical Transfer Characteristics



Maximum Safe Operating Area



Transient Thermal Response Curves

