

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

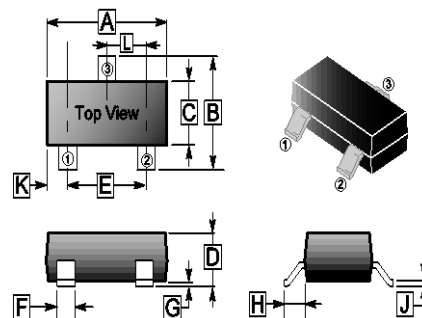
FEATURES

- Low On-Resistance
- Low Gate Threshold Voltage
- Low Input Capacitance
- Fast Switching Speed
- Low Input/ Output Leakage
- ESD Protected Up to 2kV(HBM)

MECHANICAL DATA

- Case: SOT-23
- Case Material: Molded Plastic.
UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020C
- Terminals: Solderable per MIL-STD-202, Method 208
- Lead Free Plating(Matte Tin Finish Annealed over Alloy 42 leadframe)
- Terminal Connections: See Diagram

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	0.89	1.40	K	0.60 REF.	
E	1.70	2.30	L	0.95 TYP.	
F	0.28	0.55			

MARKING

H03

SS

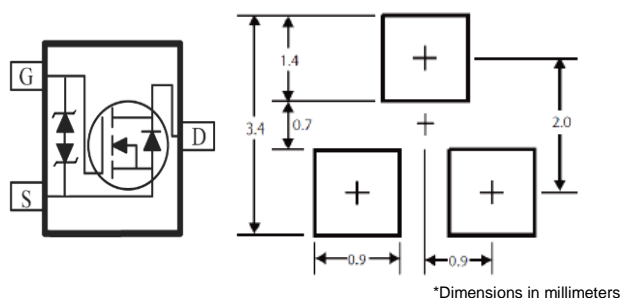
PACKAGE INFORMATION

Package	MPQ	Leader Size
SOT-23	3K	7 inch

ORDER INFORMATION

Part Number	Type
SMS318-C	Lead (Pb)-free and Halogen-free

Mounting Pad Layout



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

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	50	V
Continuous Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	I_D	220	mA
Power Dissipation	P_D	350	mW
Thermal Resistance, Junction-Ambient	$R_{\theta JA}$	357	$^\circ\text{C/W}$
Junction & Storage Temperature Range	T_J, T_{STG}	150, -55~150	$^\circ\text{C}$

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	50	-	-	V	$V_{GS}=0, I_D=250\mu\text{A}$
Gate Threshold Voltage	$V_{GS(th)}$	0.5	-	1.5	V	$V_{DS}=V_{GS}, I_D=1\text{mA}$
Forward Transconductance	g_{fs}	120	-	-	mS	$V_{DS}=10\text{V}, I_D=0.22\text{A}$
Gate-Body Leakage Current	I_{GSS}	-	-	± 10	μA	$V_{GS}=\pm 16\text{V}, V_{DS}=0$
Zero Gate Voltage Drain Current	I_{DSS}	-	-	0.5	μA	$V_{GS}=0, V_{DS}=50\text{V}$
		-	-	100	nA	$V_{GS}=0, V_{DS}=30\text{V}$
Static Drain-Source On Resistance ¹	$R_{DS(ON)}$	-	-	3.5	Ω	$V_{GS}=10\text{V}, I_D=0.22\text{A}$
		-	-	6		$V_{GS}=4.5\text{V}, I_D=0.22\text{A}$
Total Gate Charge	Q_g	-	1.39	-	nC	$V_{DS}=25\text{V},$ $V_{GS}=10\text{V},$ $I_D=0.3\text{A}$
Gate-Source Charge	Q_{gs}	-	0.31	-		
Gate-Drain ("Miller") Charge	Q_{gd}	-	0.17	-		
Turn-On Delay Time	$T_{d(on)}$	-	3.2	-	nS	$V_{DD}=30\text{V}$ $V_{GS}=10\text{V}$ $I_D=0.29\text{A}$ $R_{GEN}=6\Omega$
Rise Time	T_r	-	2.6	-		
Turn-Off Delay Time	$T_{d(off)}$	-	17	-		
Fall Time	T_f	-	39.5	-		
Input Capacitance	C_{iss}	-	27	-	pF	$V_{DS}=25\text{V}$ $V_{GS}=0$ $f=1\text{MHz}$
Output Capacitance	C_{oss}	-	13	-		
Reverse Transfer Capacitance	C_{rss}	-	6	-		
Drain-source body diode characteristics						
Body Diode Forward Voltage ¹	V_{SD}	-	-	1.4	V	$V_{GS}=0, I_S=0.44\text{A}$

Note:

1. Pulse Test; Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$.

CHARACTERISTIC CURVES

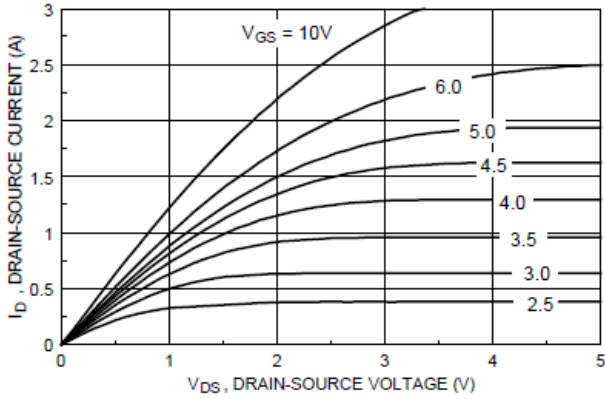


Figure 1. On-Region Characteristics.

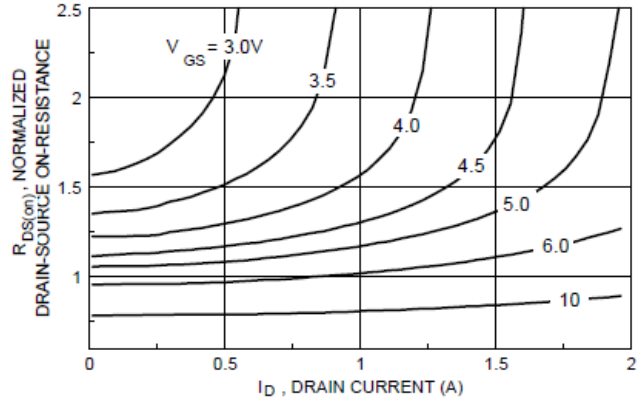


Figure 2. On-Resistance Variation with Gate Voltage and Drain Current.

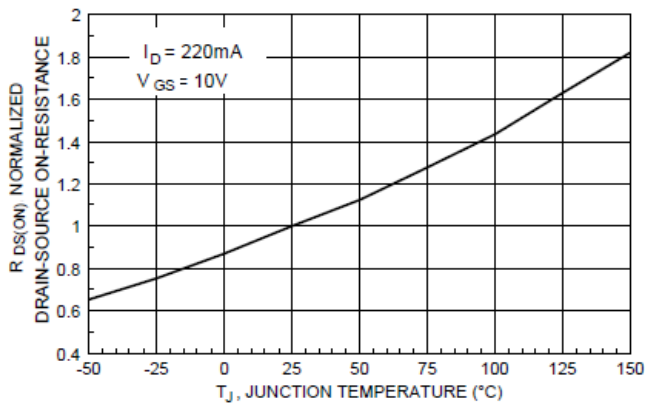


Figure 3. On-Resistance Variation with Temperature.

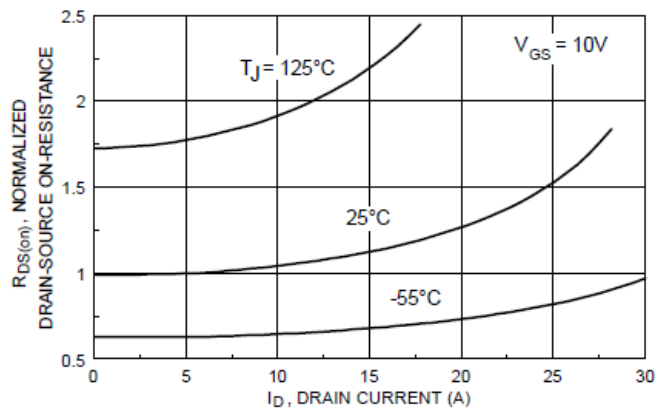


Figure 4. On-Resistance Variation with Drain Current and Temperature.

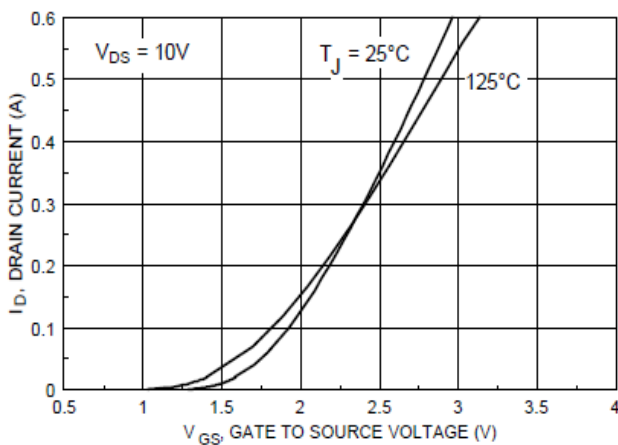


Figure 5. Transfer Characteristics.

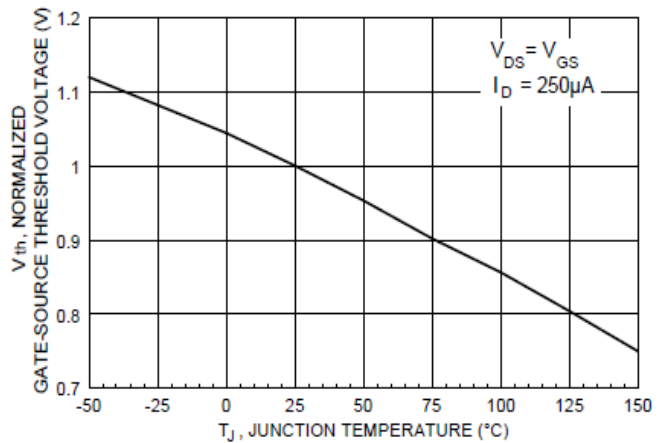


Figure 6. Gate Threshold Variation with Temperature.

CHARACTERISTIC CURVES

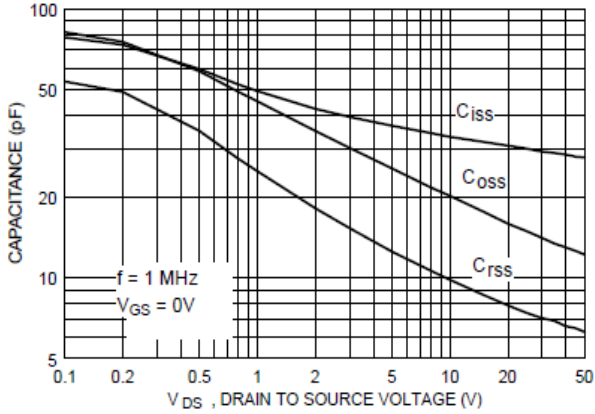


Figure 7. Capacitance Characteristics.

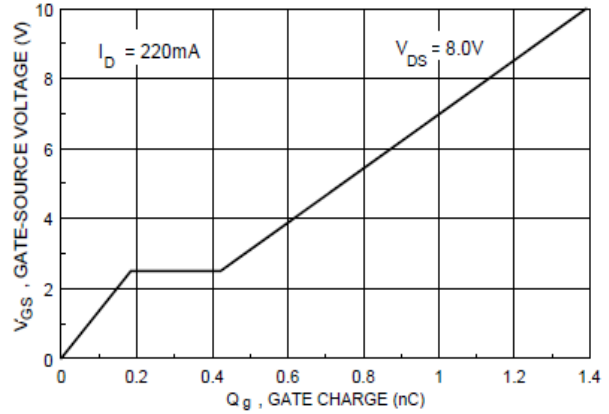


Figure 8. Gate Charge Characteristics.

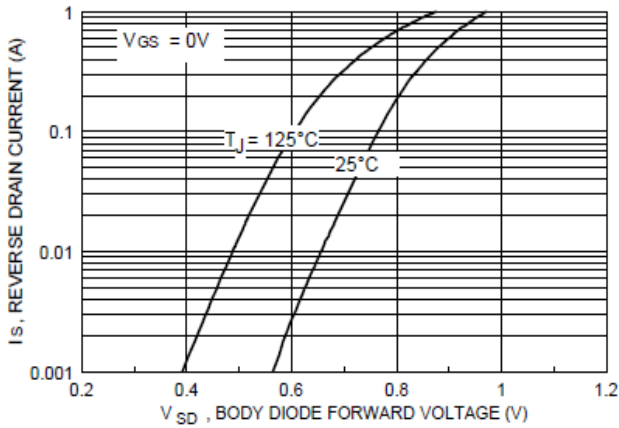


Figure 9. Body Diode Forward Voltage Variation with Current and Temperature

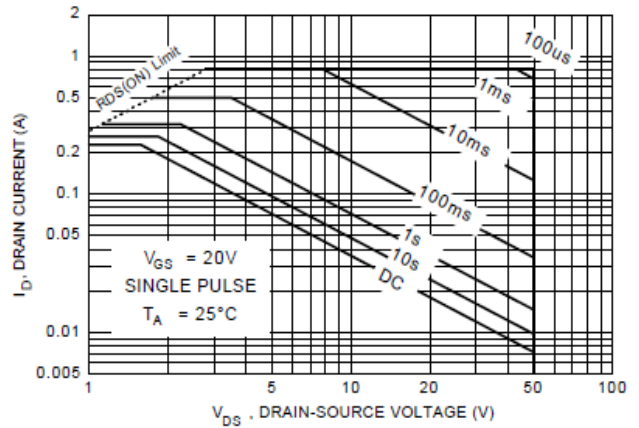


Figure 10. Maximum Safe Operating Area

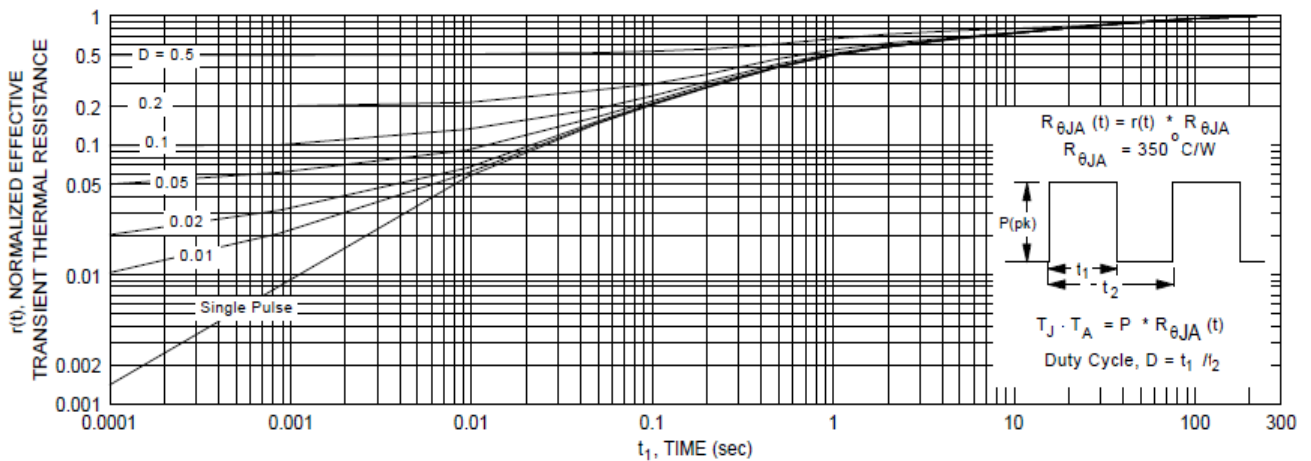


Figure 11. Transient Thermal Response Curve