

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

## DESCRIPTION

The SMS8810 provide the designer with the best combination of fast switching, ruggedized device design, low on-resistance and cost-effectiveness. The SOT-23 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

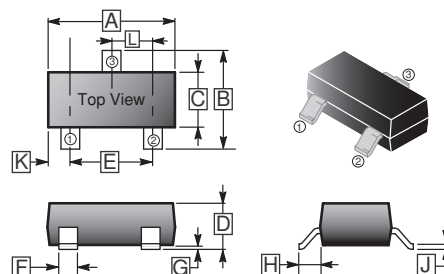
## MARKING

8810

## PACKAGE INFORMATION

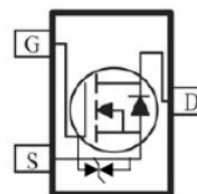
Package	MPQ	Leader Size
SOT-23	3K	7 inch

## SOT-23



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	2.80	3.04	G	0.09	0.18
B	2.10	2.55	H	0.45	0.60
C	1.20	1.40	J	0.08	0.177
D	0.89	1.15	K	0.6 REF.	
E	1.78	2.04	L	0.89	1.02
F	0.30	0.50			

## Top View



## 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	$V_{GS}$	$\pm 12$	V
Continuous Drain Current	$I_D$	7	A
Pulsed Drain Current <sup>1</sup>	$I_{DM}$	30	A
Thermal Resistance Junction-Ambient	$R_{\theta JA}$	417	$^\circ\text{C} / \text{W}$
Operating Junction & Storage Temperature	$T_J, T_{STG}$	150, -55~150	$^\circ\text{C}$
Lead Temperature for Soldering Purposes(1/8" from case for 10 s)	$T_L$	260	$^\circ\text{C}$

Note:

1. Repetitive rating : Pulse width limited by junction temperature.

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

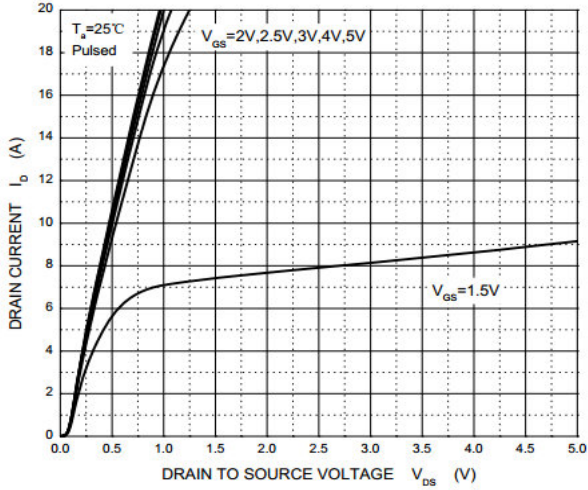
Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
<b>Static</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	20	-	-	V	$V_{GS}=0, I_D=250\mu\text{A}$
Drain-Source Leakage Current	$I_{DSS}$	-	-	1	$\mu\text{A}$	$V_{DS}=16\text{V}, V_{GS}=0$
Gate-Source Leakage Current	$I_{GSS}$	-	-	$\pm 1$	$\mu\text{A}$	$V_{GS}= \pm 4.5\text{V}, V_{DS}=0$
		-	-	$\pm 10$		$V_{GS}= \pm 8\text{V}, V_{DS}=0$
Gate-Threshold Voltage <sup>1</sup>	$V_{GS(th)}$	0.4	-	1	V	$V_{DS}=V_{GS}, I_D=250\mu\text{A}$
Forward Transconductance <sup>1</sup>	$g_{fs}$	9	-	-	S	$V_{DS}=5\text{V}, I_D=7\text{A}$
Diode Forward Voltage <sup>1</sup>	$V_{SD}$	-	-	1	V	$I_S=1\text{A}, V_{GS}=0$
Static Drain-Source On-Resistance <sup>1</sup>	$R_{DS(ON)}$	-	-	20	mΩ	$V_{GS}=10\text{V}, I_D=7\text{A}$
		-	-	22		$V_{GS}=4.5\text{V}, I_D=6.6\text{A}$
		-	-	24		$V_{GS}=3.8\text{V}, I_D=6\text{A}$
		-	-	26		$V_{GS}=2.5\text{V}, I_D=5.5\text{A}$
		-	-	35		$V_{GS}=1.8\text{V}, I_D=5\text{A}$
<b>Dynamic Parameters <sup>2</sup></b>						
Input Capacitance	$C_{iss}$	-	1150	-	pF	$V_{GS}=0$ $V_{DS}=10\text{V}$ $f=1.0\text{MHz}$
Output Capacitance	$C_{oss}$	-	185	-		
Reverse Transfer Capacitance	$C_{rss}$	-	145	-		
Total gate charge	$Q_g$	-	15	-	nC	$V_{GS}=4.5\text{V}$ $V_{DS}=10\text{V}$ $I_D=7\text{A}$
Gate-source charge	$Q_{gs}$	-	0.8	-		
Gate-drain charge	$Q_{gd}$	-	3.2	-		
<b>Switching Parameters <sup>2</sup></b>						
Turn-on Delay Time	$T_{d(on)}$	-	6	-	nS	$V_{DD}=10\text{V}$ $V_{GEN}=5\text{V}$ $R_{GEN}=3\Omega$ $R_L=1.35\Omega$
Rise Time	$T_r$	-	13	-		
Turn-off Delay Time	$T_{d(off)}$	-	52	-		
Fall Time	$T_f$	-	16	-		

Note:

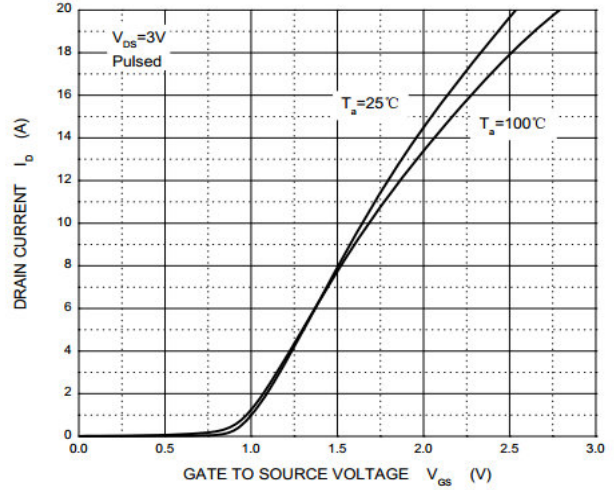
1. Pulse Test : Pulse Width  $\leq 300\mu\text{s}$ , Duty Cycle  $\leq 0.5\%$ .
2. Guaranteed by design, not subject to production testing.

**CHARACTERISTIC CURVES**

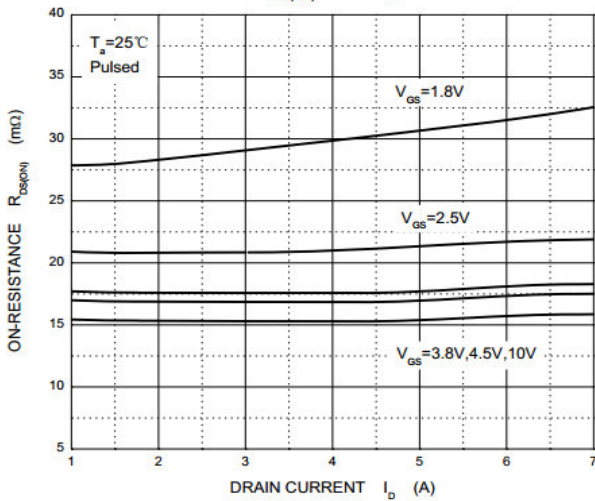
**Output Characteristics**



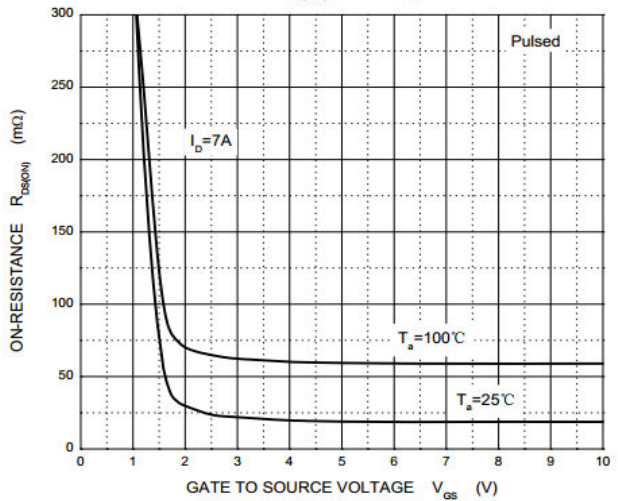
**Transfer Characteristics**



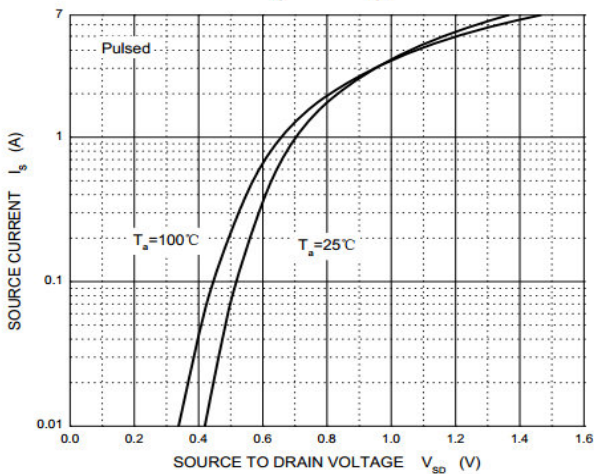
**$R_{DS(ON)}$  —  $I_D$**



**$R_{DS(ON)}$  —  $V_{GS}$**



**$I_S$  —  $V_{SD}$**



**Threshold Voltage**

