

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

DESCRIPTION

SMS8820 uses advanced trench technology to provide excellent $R_{DS(ON)}$ and low gate charge. It is ESD-protected. This device is suitable for the use as a uni-directional or bi-directional load switch, facilitated by its common-drain configuration.

FEATURES

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

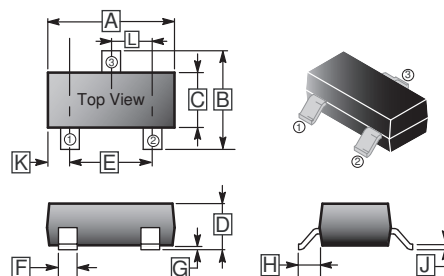
MARKING

8820

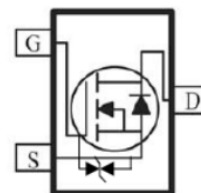
PACKAGE INFORMATION

Package	MPQ	Leader Size
SOT-23	3K	7 inch

SOT-23



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	2.70	3.10	G	0.09	0.18
B	2.10	2.65	H	0.35	0.65
C	1.20	1.40	J	0.08	0.20
D	0.89	1.17	K	0.6 REF.	
E	1.78	2.04	L	0.95 BSC.	
F	0.30	0.50			



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}	± 12	V
Continuous Drain Current	I_D	7	A
Pulsed Drain Current ¹	I_{DM}	25	A
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	417	$^{\circ}\text{C} / \text{W}$
Junction and Storage Temperature Range	T_J, T_{STG}	150, -55~150	$^{\circ}\text{C}$
Lead Temperature for Soldering Purposes @ 1/8" from case for 10s	T_L	260	$^{\circ}\text{C}$

Notes:

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

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

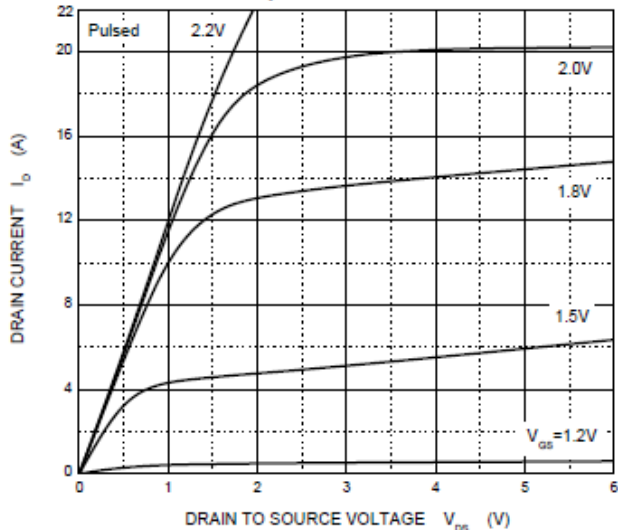
Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Static						
Drain-Source Breakdown Voltage	BV_{DSS}	20	-	-	V	$V_{GS}=0, I_D=250\mu\text{A}$
Drain-Source Leakage Current	I_{DSS}	-	-	1	μA	$V_{DS}=16\text{V}, V_{GS}=0$
Gate-Source Leakage Current	I_{GSS}	-	-	± 10	μA	$V_{DS}=0, V_{GS}=\pm 10\text{V}$
Gate-Threshold Voltage ¹	$V_{GS(th)}$	0.5	-	1.1	V	$V_{DS}=V_{GS}, I_D=250\mu\text{A}$
Static Drain-Source On-Resistance ¹	$R_{DS(ON)}$	-	-	21	m Ω	$V_{GS}=10\text{V}, I_D=7\text{A}$
		-	-	24		$V_{GS}=4.5\text{V}, I_D=6.6\text{A}$
		-	-	28		$V_{GS}=3.8\text{V}, I_D=6\text{A}$
		-	-	32		$V_{GS}=2.5\text{V}, I_D=5.5\text{A}$
		-	-	50		$V_{GS}=1.8\text{V}, I_D=2\text{A}$
Forward Transconductance ¹	g_{fs}	9	-	-	S	$V_{DS}=5\text{V}, I_D=7\text{A}$
Diode Forward Voltage ¹	V_{SD}	-	-	1	V	$I_S=1\text{A}, V_{GS}=0$
Dynamic Parameters ²						
Input Capacitance	C_{iss}	-	650	-	pF	$V_{GS}=0$ $V_{DS}=10\text{V}$ $f=1\text{MHz}$
Output Capacitance	C_{oss}	-	140	-		
Reverse Transfer Capacitance	C_{rss}	-	60	-		
Total gate charge	Q_g	-	8	-	nC	$V_{GS}=4.5\text{V}$ $V_{DS}=10\text{V}$ $I_D=6\text{A}$
Gate-source charge	Q_{gs}	-	2.5	-		
Gate-drain charge	Q_{gd}	-	3	-		
Switching Parameters ²						
Turn-on Delay Time	$T_{d(on)}$	-	0.5	-	nS	$V_{DD}=10\text{V}$ $V_{GS}=5\text{V}$ $R_{GEN}=3\Omega$ $R_L=1.5\Omega$
Rise Time	T_r	-	1	-		
Turn-off Delay Time	$T_{d(off)}$	-	12	-		
Fall Time	T_f	-	4	-		

Notes:

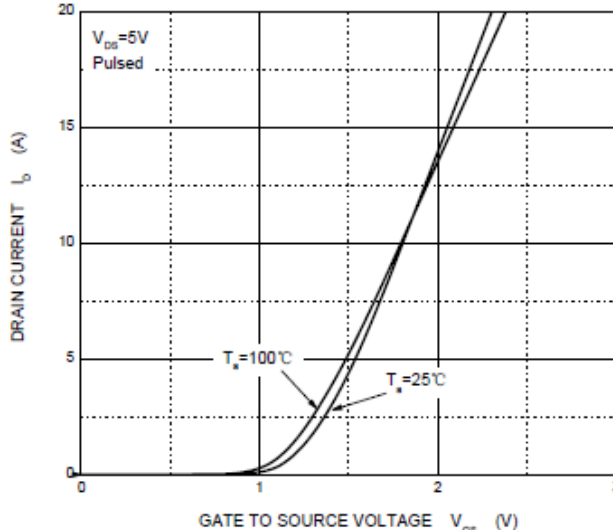
1. Pulse Test : Pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 0.5\%$.
2. Guaranteed by design, not subject to production testing.

CHARACTERISTIC CURVES

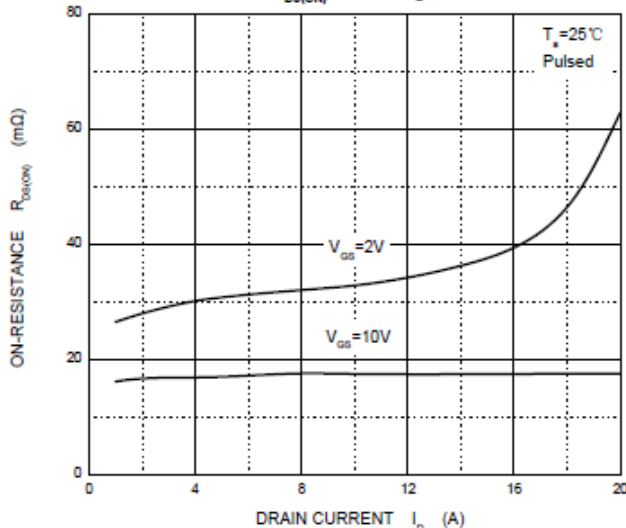
Output Characteristics



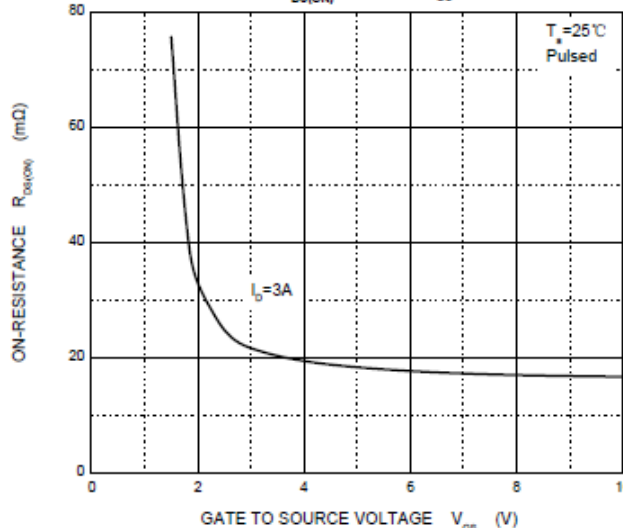
Transfer Characteristics



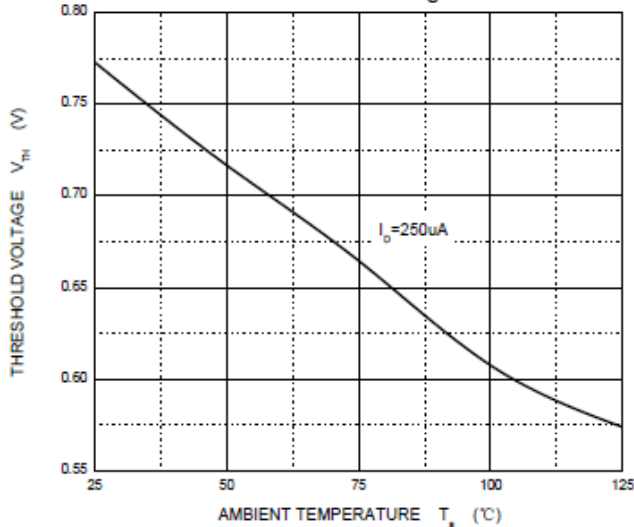
$R_{DS(ON)}$ — I_D



$R_{DS(ON)}$ — V_{GS}



Threshold Voltage



I_S — V_{SD}

