

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

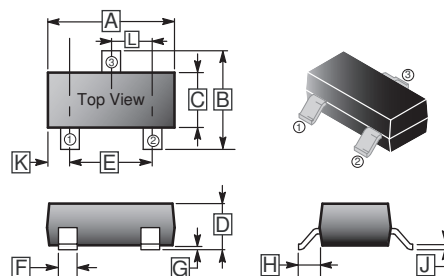
MARKING

8820

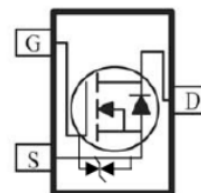
PACKAGE INFORMATION

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°C unless otherwise specified)

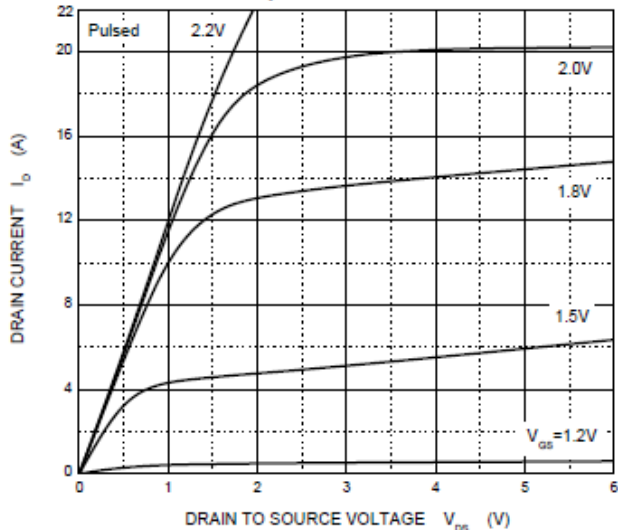
Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Static						
Drain-Source Breakdown Voltage	BV _{DSS}	20	-	-	V	V _{GS} =0, I _D =250μA
Drain-Source Leakage Current	I _{DSS}	-	-	1	μA	V _{DS} =16V, V _{GS} =0
Gate-Source Leakage Current	I _{GSS}	-	-	±10	μA	V _{DS} =0, V _{GS} = ±10V
Gate-Threshold Voltage ¹	V _{GS(th)}	0.5	-	1.1	V	V _{DS} =V _{GS} , I _D =250μA
Static Drain-Source On-Resistance ¹	R _{DS(ON)}	-	-	21	mΩ	V _{GS} =10V, I _D =7A
		-	-	24		V _{GS} =4.5V, I _D =6.6A
		-	-	28		V _{GS} =3.8V, I _D =6A
		-	-	32		V _{GS} =2.5V, I _D =5.5A
		-	-	50		V _{GS} =1.8V, I _D =2A
Forward Transconductance ¹	g _{fs}	9	-	-	S	V _{DS} =5V, I _D =7A
Diode Forward Voltage ¹	V _{SD}	-	-	1	V	I _S =1A, V _{GS} =0
Dynamic Parameters ²						
Input Capacitance	C _{iSS}	-	650	-	pF	V _{GS} =0 V _{DS} =10V f=1MHz
Output Capacitance	C _{oSS}	-	140	-		
Reverse Transfer Capacitance	C _{rSS}	-	60	-		
Total gate charge	Q _g	-	8	-	nC	V _{GS} =4.5V V _{DS} =10V I _D =6A
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} =10V V _{GS} =5V R _{GEN} =3Ω R _L =1.5Ω
Rise Time	T _r	-	1	-		
Turn-off Delay Time	T _{d(off)}	-	12	-		
Fall Time	T _f	-	4	-		

Notes:

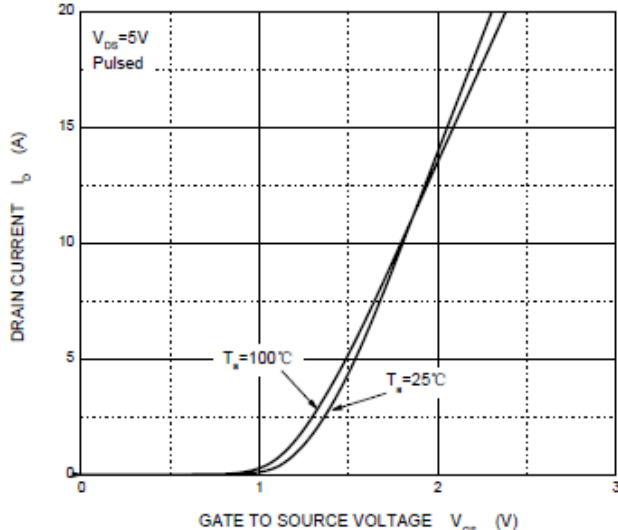
1. Pulse Test : Pulse width≤300μs, duty cycle≤0.5%.
2. Guaranteed by design, not subject to production testing.

CHARACTERISTIC CURVES

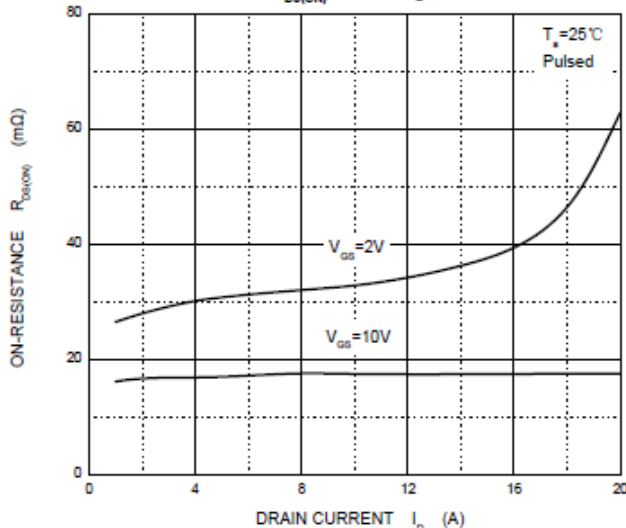
Output Characteristics



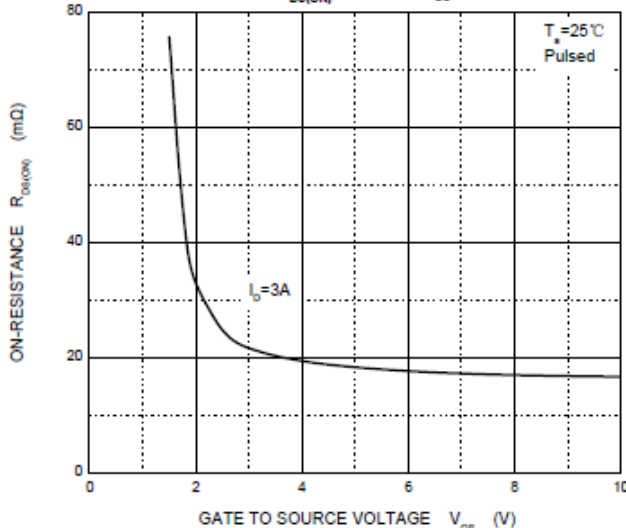
Transfer Characteristics



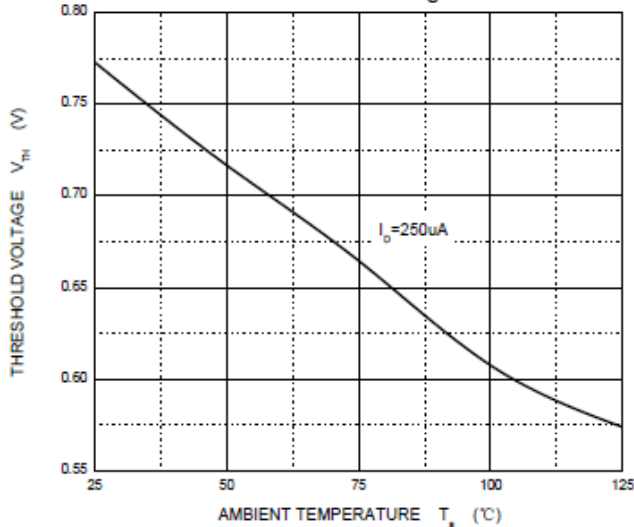
$R_{DS(ON)}$ — I_D



$R_{DS(ON)}$ — V_{GS}



Threshold Voltage



I_S — V_{SD}

