

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

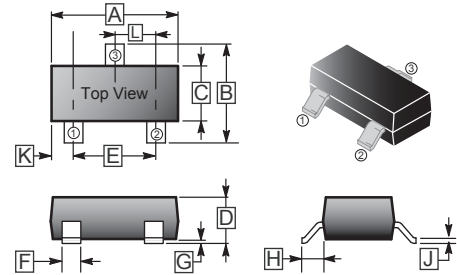
**DESCRIPTION**

These miniature surface mount MOSFETs utilize High Cell Density process. Low R<sub>DS(on)</sub> assures minimal power loss and conserves energy, making this device ideal for use in power management circuitry. Typical applications are power switch, power management in portable and battery-powered products such as computers, printers, PCMCIA cards, cellular and cordless telephones.

**FEATURES**

- Low R<sub>DS(on)</sub> provides higher efficiency and extends battery life.
- Low gate charge
- Fast switching
- Miniature SC-59 surface mount package saves board space.

**SC-59**



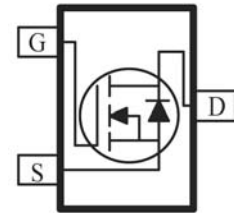
**PRODUCT SUMMARY**

SMG2398N		
V <sub>DS</sub> (V)	R <sub>DS(on)</sub> (mΩ)	I <sub>D</sub> (A)
60	194@V <sub>GS</sub> = 10V	2.2
	273@V <sub>GS</sub> = 4.5V	1.8

REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	2.70	3.10	G	0.10	REF.
B	2.25	3.00	H	0.40	REF.
C	1.30	1.70	J	0.10	0.20
D	1.00	1.40	K	0.45	0.55
E	1.70	2.30	L	0.85	1.15
F	0.35	0.50			

**PACKAGE INFORMATION**

Package	MPQ	LeaderSize
SC-59	3K	7' inch



**ABSOLUTE MAXIMUM RATINGS(T<sub>A</sub>=25°C UNLESS OTHERWISE NOTED)**

Parameter	Symbol	Ratings	Unit
		Maximum	
Drain-Source Voltage	V <sub>DS</sub>	60	V
Gate-Source Voltage	V <sub>GS</sub>	±20	V
Continuous Drain Current <sup>1</sup>	I <sub>D</sub>	I <sub>D</sub> @ T <sub>A</sub> =25°C	2.2
		I <sub>D</sub> @ T <sub>A</sub> =70°C	1.7
Pulsed Drain Current <sup>2</sup>	I <sub>DM</sub>	±15	A
Continuous Source Current (Diode Conduction) <sup>1</sup>	I <sub>S</sub>	1.7	A
Power Dissipation <sup>1</sup>	P <sub>D</sub>	P <sub>D</sub> @ T <sub>A</sub> =25°C	1.3
		P <sub>D</sub> @ T <sub>A</sub> =70°C	0.8
Operating Junction and Storage Temperature Range	T <sub>J</sub> , T <sub>stg</sub>	-55 ~ 150	°C

**THERMAL RESISTANCE RATINGS**

Parameter	Symbol	Maximum	Unit
Maximum Junction to Ambient <sup>1</sup>	R <sub>θJA</sub>	t ≤ 5 sec	100
		Steady State	166

Notes

- 1 Surface Mounted on 1" x 1" FR4 Board.
- 2 Pulse width limited by maximum junction temperature.

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Gate-Threshold Voltage	$V_{GS(th)}$	1.0	-	-	V	$V_{DS}=V_{GS}$ , $I_D=250\mu\text{A}$
Gate-Body Leakage	$I_{GSS}$	-	-	$\pm 100$	nA	$V_{DS}=0\text{V}$ , $V_{GS}=\pm 20\text{V}$
Zero Gate Voltage Drain Current	$I_{DSS}$	-	-	1	$\mu\text{A}$	$V_{DS}=48\text{V}$ , $V_{GS}=0\text{V}$
		-	-	50		$V_{DS}=48\text{V}$ , $V_{GS}=0\text{V}$ , $T_J=55^\circ\text{C}$
On-State Drain Current <sup>1</sup>	$I_{D(on)}$	10	-	-	A	$V_{DS}=5\text{V}$ , $V_{GS}=10\text{V}$
Drain-Source On-Resistance <sup>1</sup>	$R_{DS(ON)}$	-	-	194	m $\Omega$	$V_{GS}=10\text{V}$ , $I_D=2.2\text{A}$
		-	-	273		$V_{GS}=4.5\text{V}$ , $I_D=1.8\text{A}$
Forward Transconductance <sup>1</sup>	$g_{fs}$	-	8	-	S	$V_{DS}=4.5\text{V}$ , $I_D=2.2\text{A}$
Diode Forward Voltage	$V_{SD}$	-	-	1.2	V	$I_S=1.7\text{A}$ , $V_{GS}=0\text{V}$
<b>DYNAMIC <sup>2</sup></b>						
Total Gate Charge	$Q_g$	-	4.0	-	nC	$V_{DS}=30\text{V}$ , $V_{GS}=5\text{V}$ , $I_D=2.2\text{A}$
Gate-Source Charge	$Q_{gs}$	-	4.0	-		
Gate-Drain Charge	$Q_{gd}$	-	2.0	-		
Turn-on Delay Time	$T_{d(on)}$	-	10	-	nS	$V_{DD}=30\text{V}$ , $V_{GEN}=10\text{V}$ , $R_L=30\Omega$ , $I_D=1\text{A}$
Rise Time	$T_r$	-	10	-		
Turn-off Delay Time	$T_{d(off)}$	-	20	-		
Fall Time	$T_f$	-	10	-		
Source-Drain Reverse Recovery Time	$T_{RR}$	-	50	-		

Notes

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