

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

DESCRIPTION

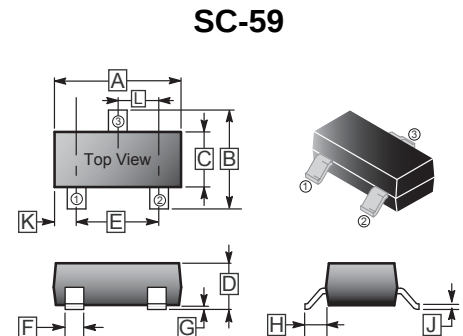
These miniature surface mount MOSFETs utilize High Cell Density process. Low $R_{DS(on)}$ assures minimal power loss and conserves energy, making this device ideal for use in power management circuitry. Typical applications are power switch, power management in portable and battery-powered products such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

FEATURES

- Low $R_{DS(on)}$ provides higher efficiency and extends battery life.
- Low gate charge
- Fast switching
- Miniature SC-59 surface mount package saves board space.

PRODUCT SUMMARY

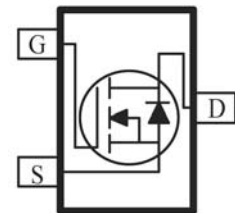
SMG2398N		
$V_{DS}(V)$	$R_{DS(on)} (m\Omega)$	$I_D(A)$
60	194@ $V_{GS}=10V$	2.2
	273@ $V_{GS}=4.5V$	1.8



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($T_A=25^\circ C$ UNLESS OTHERWISE NOTED)

Parameter		Symbol	Ratings	Unit
			Maximum	
Drain-Source Voltage		V_{DS}	60	V
Gate-Source Voltage		V_{GS}	± 20	V
Continuous Drain Current ¹	$I_D @ T_A=25^\circ C$	I_D	2.2	A
	$I_D @ T_A=70^\circ C$		1.7	A
Pulsed Drain Current ²		I_{DM}	± 15	A
Continuous Source Current (Diode Conduction) ¹		I_S	1.7	A
Power Dissipation ¹	$P_D @ T_A=25^\circ C$	P_D	1.3	W
	$P_D @ T_A=70^\circ C$		0.8	W
Operating Junction and Storage Temperature Range		T_J, T_{stg}	-55 ~ 150	$^\circ C$

THERMAL RESISTANCE RATINGS

Parameter		Symbol	Maximum	Unit
Maximum Junction to Ambient ¹	$t \leq 5 \text{ sec}$	$R_{\theta JA}$	100	$^\circ C / W$
	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}	-	-	± 100	nA	$V_{DS} = 0\text{V}$, $V_{GS} = \pm 20\text{V}$
Zero Gate Voltage Drain Current	I_{DSS}	-	-	1	μA	$V_{DS} = 48\text{V}$, $V_{GS} = 0\text{V}$
		-	-	50		$V_{DS} = 48\text{V}$, $V_{GS} = 0\text{V}$, $T_J = 55^\circ\text{C}$
On-State Drain Current ¹	$I_{D(on)}$	10	-	-	A	$V_{DS} = 5\text{V}$, $V_{GS} = 10\text{V}$
Drain-Source On-Resistance ¹	$R_{DS(ON)}$	-	-	194	m Ω	$V_{GS} = 10\text{V}$, $I_D = 2.2\text{A}$
		-	-	273		$V_{GS} = 4.5\text{V}$, $I_D = 1.8\text{A}$
Forward Transconductance ¹	g_{fs}	-	8	-	S	$V_{DS} = 4.5\text{V}$, $I_D = 2.2\text{A}$
Diode Forward Voltage	V_{SD}	-	-	1.2	V	$I_S = 1.7\text{A}$, $V_{GS} = 0\text{V}$
DYNAMIC ²						
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	-		$I_F = 1.7\text{A}$, $di/dt = 100\text{ A / } \mu\text{S}$

Notes

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