

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

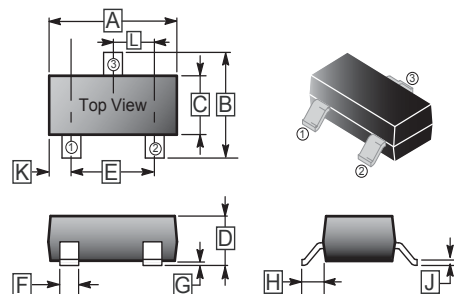
**SC-59**

**DESCRIPTION**

The miniature surface mount MOSFETs utilize a high cell density trench process To provide low  $R_{DS(on)}$  and to ensure minimal power loss and heat dissipation. Typical applications are DC-DC converters and 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 thermal impedance copper leadframe SC-59 saves board space.
- Fast switching speed.
- High performance trench technology.



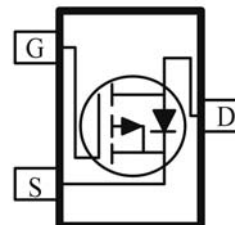
**PRODUCT SUMMARY**

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$V_{DS}(V)$	$R_{DS(on)} (\Omega)$	$I_D(A)$
-30	0.112@ $V_{GS} = -10V$	-2.5
	0.172@ $V_{GS} = -4.5V$	-2.0

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 AND THERMAL DATA ( $T_A = 25^\circ C$  unless otherwise specified)**

PARAMETER	SYMBOL	RATING	UNIT
Drain-Source Voltage	$V_{DS}$	-30	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Continuous Drain Current <sup>A</sup>	$I_D$	$T_A = 25^\circ C$	-2.5
		$T_A = 70^\circ C$	-1.7
Pulsed Drain Current <sup>B</sup>	$I_{DM}$	$\pm 12$	A
Continuous Source Current (Diode Conduction) <sup>A</sup>	$I_S$	-1.25	A
Power Dissipation <sup>A</sup>	$P_D$	$T_A = 25^\circ C$	-1.3
		$T_A = 70^\circ C$	-0.8
Operating Junction and Storage Temperature Range	$T_J, T_{STG}$	-55 ~ 150	$^\circ C$
THERMAL RESISTANCE DATA			
Maximum Junction to Ambient <sup>A</sup>	$R_{\theta JA}$	$t \leq 5$ sec	100
		Steady-State	166

**Notes**

- Surface Mounted on 1" x 1" FR4 Board.
- 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
<b>Static</b>						
Gate-Threshold Voltage	$V_{GS(th)}$	-1	-	-	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	$\mu\text{A}$	$V_{DS} = -24\text{V}, V_{GS} = 0\text{V}$
		-	-	-50		$V_{DS} = -24\text{V}, V_{GS} = 0\text{V}, T_J = 55^\circ\text{C}$
On-State Drain Current <sup>A</sup>	$I_{D(ON)}$	10	-	-	A	$V_{DS} = -5\text{V}, V_{GS} = -10\text{V}$
Drain-Source On-Resistance <sup>A</sup>	$R_{DS(ON)}$	-	-	112	m $\Omega$	$V_{GS} = -10\text{V}, I_D = -2.5\text{A}$
		-	-	172		$V_{GS} = -4.5\text{V}, I_D = -2.0\text{A}$
Forward Transconductance <sup>A</sup>	$g_{FS}$	-	5	-	S	$V_{DS} = -4.5\text{V}, I_D = -2.5\text{A}$
Diode Forward Voltage	$V_{SD}$	-	-	-1.2	V	$I_S = -0.75\text{A}, V_{GS} = 0\text{V}$
<b>Dynamic <sup>b</sup></b>						
Total Gate Charge	$Q_g$	-	4.5	-	nC	$I_D = -2.5\text{A}$
Gate-Source Charge	$Q_{gs}$	-	1.4	-		$V_{DS} = -30\text{V}$
Gate-Drain Charge	$Q_{gd}$	-	2.4	-		$V_{GS} = -5\text{V}$
Turn-On Delay Time	$T_{d(on)}$	-	9	-	nS	$I_D = -1\text{A}, V_{DD} = -30\text{V}$ $V_{GEN} = -10\text{V}$ $R_L = 30\Omega$
Rise Time	$T_r$	-	12	-		
Turn-Off Delay Time	$T_{d(off)}$	-	25	-		
Fall Time	$T_f$	-	14	-		

**Notes**

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