

## Features

- Low On-Resistance
- Low Gate Threshold Voltage
- Low Input Capacitance
- Fast Switching Speed
- **Lead Free By Design/RoHS Compliant (Note 2)**
- **ESD Protected Gate**
- **"Green" Device (Note 4)**
- **Qualified to AEC-Q101 standards for High Reliability**

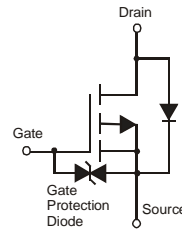


ESD protected

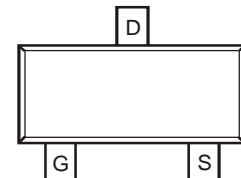


TOP VIEW

SC59



EQUIVALENT CIRCUIT



Internal Schematic

## Mechanical Data

- Case: SC59
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture sensitivity: Level 1 per J-STD-020C
- Terminals: Finish — Matte Tin annealed over Copper leadframe. Solderable per MIL-STD-202, Method 208
- Terminal Connections: See Diagram
- Weight: 0.014 grams (approximate)

## Maximum Ratings @T<sub>A</sub> = 25°C unless otherwise specified

Characteristic	Symbol	Value	Unit
Drain-Source Voltage	V <sub>DSS</sub>	-30	V
Gate-Source Voltage	V <sub>GSS</sub>	±20	V
Drain Current (Note 1) Steady State	I <sub>D</sub>	-0.7	A
Pulsed Drain Current (Note 3)	I <sub>DM</sub>	-2.8	A

## Thermal Characteristics @T<sub>A</sub> = 25°C unless otherwise specified

Characteristic	Symbol	Value	Unit
Total Power Dissipation (Note 1)	P <sub>d</sub>	500	mW
Thermal Resistance, Junction to Ambient	R <sub>θJA</sub>	250	°C/W
Operating and Storage Temperature Range	T <sub>j</sub> , T <sub>STG</sub>	-65 to +150	°C

## Electrical Characteristics @T<sub>A</sub> = 25°C unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
<b>OFF CHARACTERISTICS (Note 5)</b>						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	-30	—	—	V	V <sub>GS</sub> = 0V, I <sub>D</sub> = -250μA
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	—	—	-10	μA	V <sub>DS</sub> = -30V, V <sub>GS</sub> = 0V
Gate-Body Leakage	I <sub>GSS</sub>	—	—	±10	μA	V <sub>GS</sub> = ±20V, V <sub>DS</sub> = 0V
<b>ON CHARACTERISTICS (Note 5)</b>						
Gate Threshold Voltage	V <sub>GS(th)</sub>	-1.0	—	-3.0	V	V <sub>DS</sub> = -10V, I <sub>D</sub> = -1.0mA
Static Drain-Source On-Resistance	R <sub>DS(ON)</sub>	—	0.20 0.35	0.25 0.45	Ω	V <sub>GS</sub> = -10V, I <sub>D</sub> = -0.4A V <sub>GS</sub> = -4.5V, I <sub>D</sub> = -0.4A
Forward Transfer Admittance	Y <sub>fs</sub>	—	1	—	S	V <sub>DS</sub> = -10V, I <sub>D</sub> = -0.4A
Diode Forward Voltage (Note 5)	V <sub>SD</sub>	—	-0.8	-1.1	V	V <sub>GS</sub> = 0V, I <sub>S</sub> = -0.7A
<b>DYNAMIC CHARACTERISTICS</b>						
Input Capacitance	C <sub>iss</sub>	—	160	—	pF	V <sub>DS</sub> = -10V, V <sub>GS</sub> = 0V f = 1.0MHz
Output Capacitance	C <sub>oss</sub>	—	120	—	pF	
Reverse Transfer Capacitance	C <sub>rss</sub>	—	50	—	pF	
<b>SWITCHING CHARACTERISTICS</b>						
Turn-On Delay Time	t <sub>D(ON)</sub>	—	10	—	ns	V <sub>DD</sub> = -10V, I <sub>D</sub> = -0.4A, V <sub>GS</sub> = -5.0V, R <sub>GEN</sub> = 50Ω
Turn-Off Delay Time	t <sub>D(OFF)</sub>	—	25	—	ns	
Turn-On Rise Time	t <sub>r</sub>	—	25	—	ns	
Turn-Off Fall Time	t <sub>f</sub>	—	40	—	ns	

- Notes:
1. Device mounted on FR-4 PCB.
  2. No purposefully added lead.
  3. Pulse width ≤10μS, Duty Cycle ≤1%.