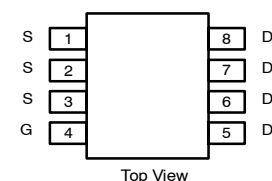
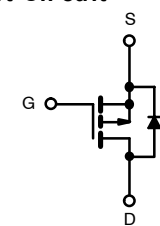
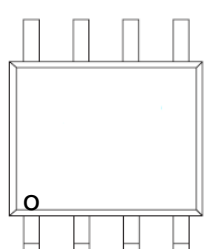


# SOP-8 Plastic-Encapsulate MOSFETS

## SI9435

### P-Channel Enhancement Mode Power MOSFET

<p><b>Description</b></p> <p>The SI9435 uses advanced trench technology to provide excellent <math>R_{DS(ON)}</math>, low gate charge and operation with gate voltages as low as 4.5V.</p> <p><b>General Features</b></p> <ul style="list-style-type: none"> <li>● <math>V_{DS} = -30V</math></li> <li>● <math>R_{DS(ON)} &lt; 85m\Omega @ V_{GS} = -4.5V \quad I_D = -4.2A</math></li> <li>● <math>R_{DS(ON)} &lt; 57m\Omega @ V_{GS} = -10V \quad I_D = -5.3A</math></li> <li>● High power and current handing capability</li> <li>● Lead free product is acquired</li> <li>● Surface mount package</li> </ul> <p><b>Application</b></p> <ul style="list-style-type: none"> <li>● Battery Switch</li> <li>● Load switch</li> <li>● Power management</li> </ul>	<p><b>SOP-8</b></p>  <p style="text-align: center;">Top View</p> <p><b>Equivalent Circuit</b></p>  <p><b>MARKING</b></p>  <p>Y :year code    W :week code</p>
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#### Absolute Maximum Ratings ( $T_A=25^\circ C$ unless otherwise noted)

Parameter		Symbol	Limit	Unit
Drain-Source Voltage		$V_{DS}$	-30	V
Gate-Source Voltage		$V_{GS}$	$\pm 20$	V
Continuous Drain Current ( $T_J = 150^\circ C$ )	$T_A = 25^\circ C$	$I_D$	-5.3	A
Drain Current-Pulsed <sup>(Note 1)</sup>		$I_{DM}$	-20	A
Maximum Power Dissipation		$P_D$	2.0	W
Operating Junction and Storage Temperature Range		$T_J, T_{STG}$	-55 To 150	$^\circ C$

#### Thermal Characteristic

Thermal Resistance, Junction-to-Ambient <sup>(Note 2)</sup>	$R_{\theta JA}$	50	$^\circ C/W$
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# SOP-8 Plastic-Encapsulate MOSFETS

## SI9435

### Electrical Characteristics ( $T_A=25^{\circ}\text{C}$ unless otherwise noted)

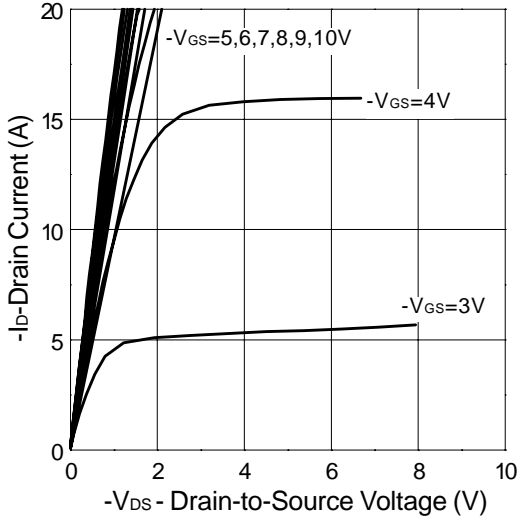
Parameter	Symbol	Condition	Min	Typ	Max	Unit
<b>Off Characteristics</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0V, I_D=-250\mu A$	-30	-33	-	V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=-24V, V_{GS}=0V$	-	-	-1	$\mu A$
Gate-Body Leakage Current	$I_{GSS}$	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	$\pm 100$	nA
<b>On Characteristics</b> (Note 3)						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1	-	-3.0	V
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS}=-10V, I_D=-5.3A$	-	51	57	m $\Omega$
		$V_{GS}=-4.5V, I_D=-4.2A$	-	75	85	m $\Omega$
Forward Transconductance	$g_{FS}$	$V_{DS}=-15V, I_D=-5.3A$	10	-	-	S
<b>Dynamic Characteristics</b> (Note 4)						
Input Capacitance	$C_{iss}$	$V_{DS}=-15V, V_{GS}=0V,$ $F=1.0\text{MHz}$	-	845	-	PF
Output Capacitance	$C_{oss}$		-	120	-	PF
Reverse Transfer Capacitance	$C_{rss}$		-	80	-	PF
<b>Switching Characteristics</b> (Note 4)						
Turn-on Delay Time	$t_{d(on)}$	$V_{DD}=-25V, I_D=-2A,$ $V_{GS}=-10V, R_{GEN}=6\Omega$ $R_L=12.5\Omega$	-	17	-	nS
Turn-on Rise Time	$t_r$		-	18	-	nS
Turn-Off Delay Time	$t_{d(off)}$		-	60	-	nS
Turn-Off Fall Time	$t_f$		-	27	-	nS
Total Gate Charge	$Q_g$	$V_{DS}=-15V, I_D=-4.6A$ $V_{GS}=-10V$	-	22	-	nC
Gate-Source Charge	$Q_{gs}$		-	4.5	-	nC
Gate-Drain Charge	$Q_{gd}$		-	2	-	nC
<b>Drain-Source Diode Characteristics</b>						
Diode Forward Voltage	$V_{SD}$	$V_{GS}=0V, I_S=-2.0A$	-	-	-1.2	V

### Notes:

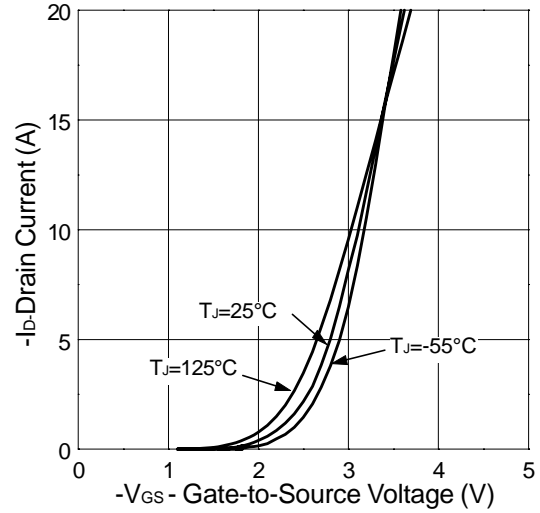
1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board,  $t \leq 10$  sec.
3. Pulse Test: Pulse Width  $\leq 300\mu s$ , Duty Cycle  $\leq 2\%$ .
4. Guaranteed by design, not subject to production

### Typical Characteristics

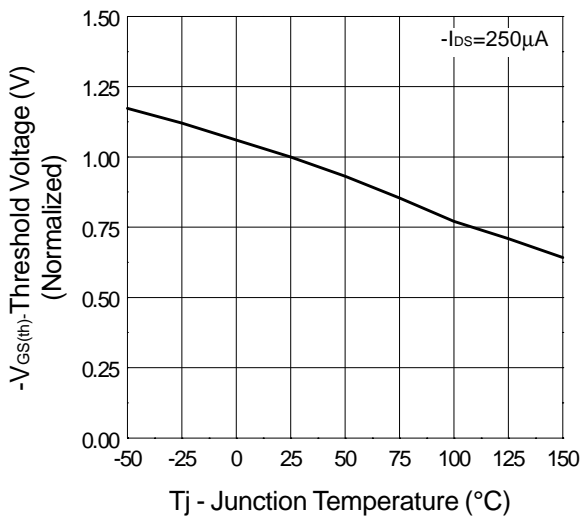
Output Characteristics



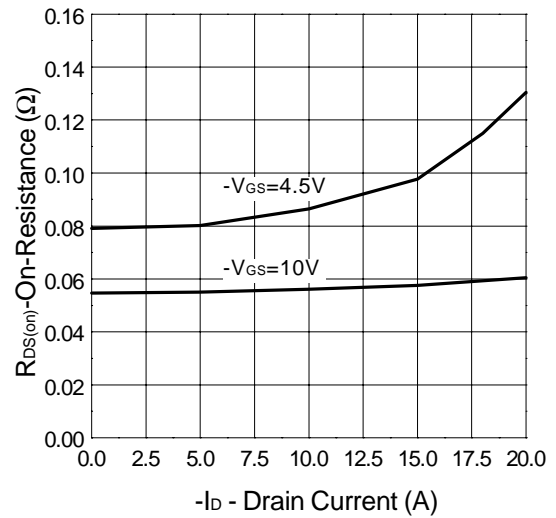
Transfer Characteristics



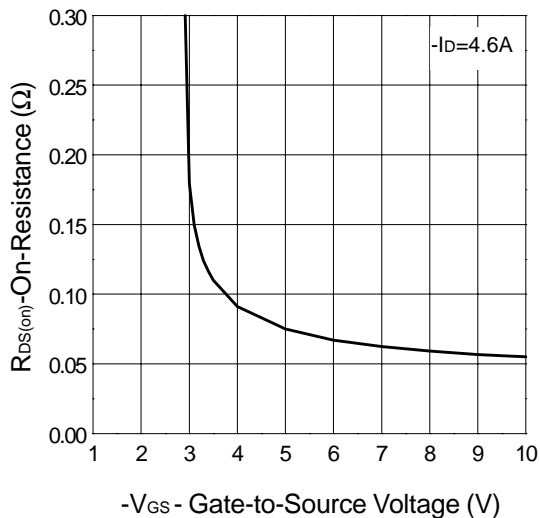
Threshold Voltage vs. Junction Temperature



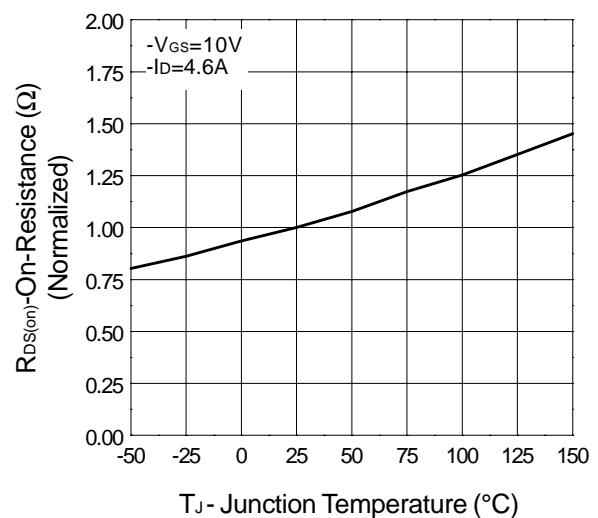
On-Resistance vs. Drain Current



On-Resistance vs. Gate-to-Source Voltage



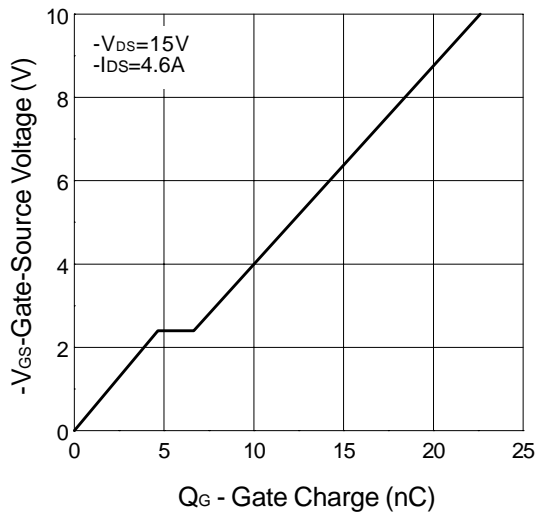
On-Resistance vs. Junction Temperature



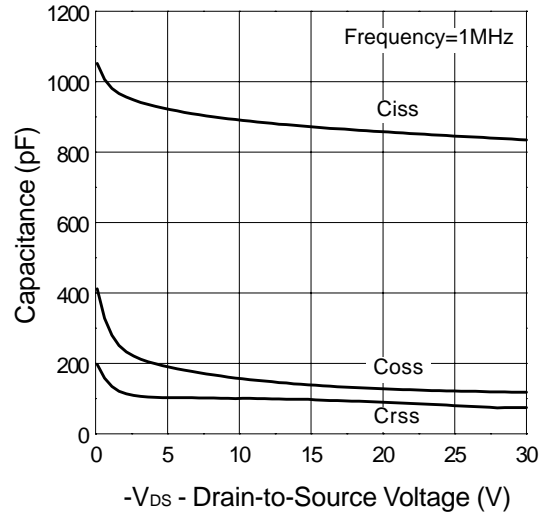
# SOP-8 Plastic-Encapsulate MOSFETS

## SI9435

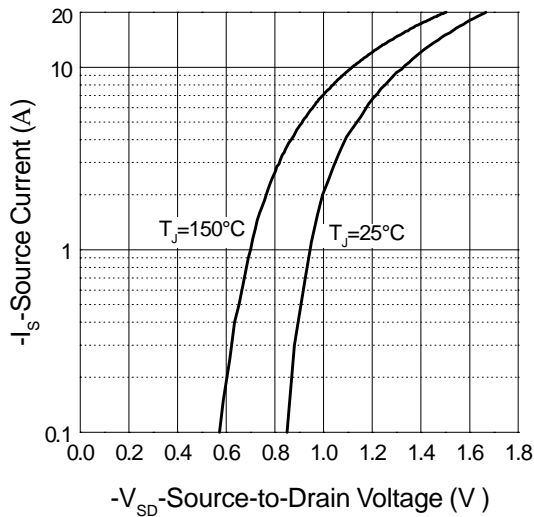
Gate Charge



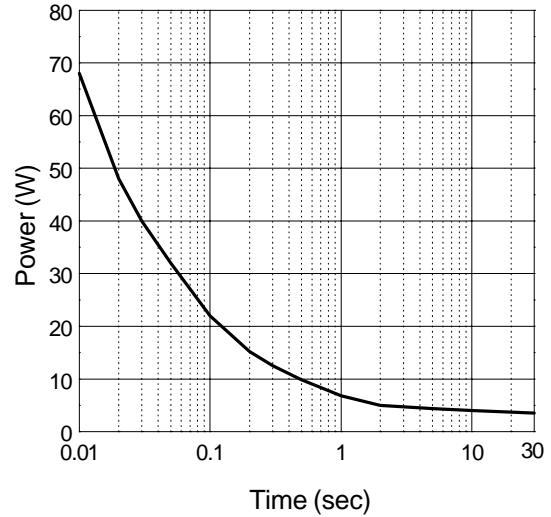
Capacitance



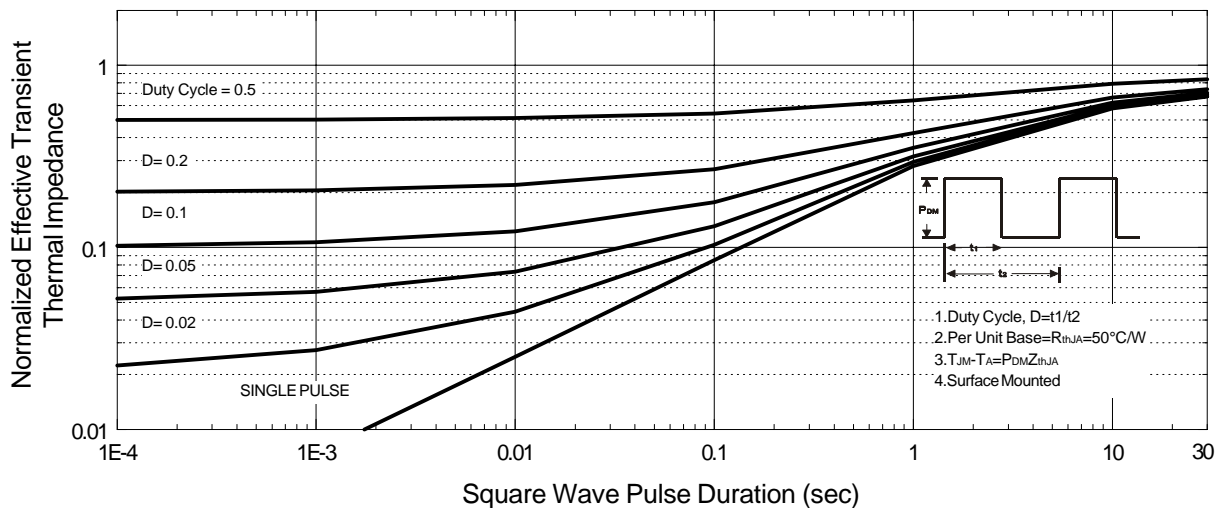
Source-Drain Diode Forward Voltage



Single Pulse Power



Normalized Thermal Transient Impedance, Junction to Ambient

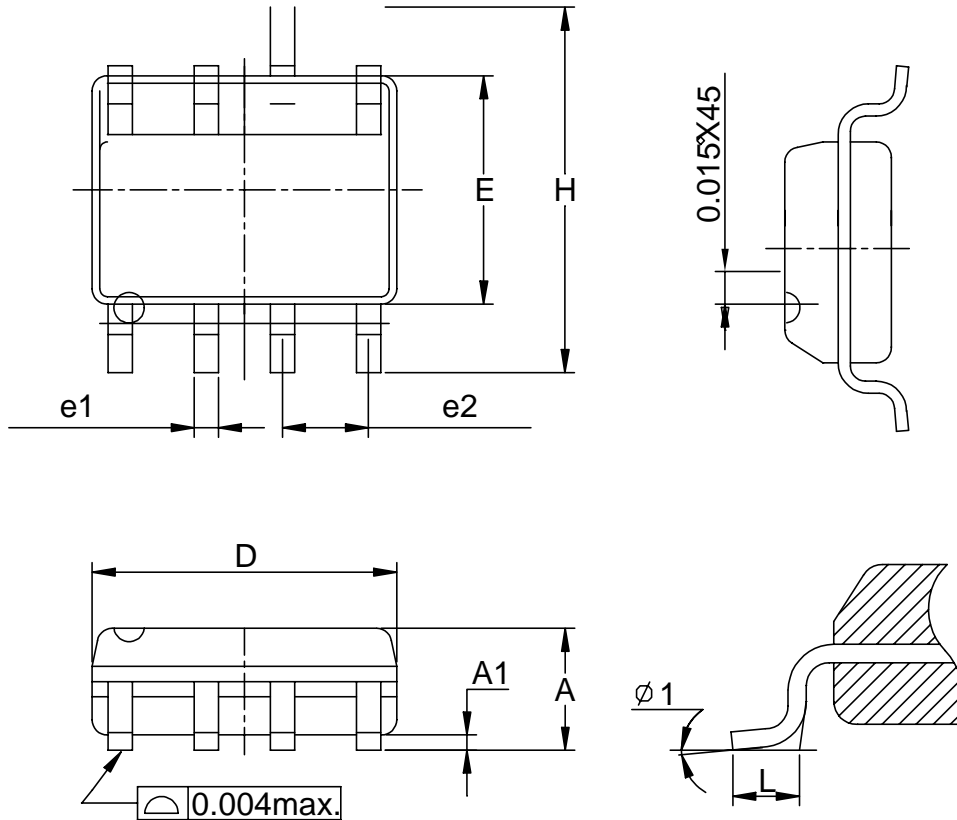


# SOP-8 Plastic-Encapsulate MOSFETS

**SI9435**

## Packaging Information

SOP-8 pin ( Reference JEDEC Registration MS-012)



Dim	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	1.35	1.75	0.053	0.069
A1	0.10	0.25	0.004	0.010
D	4.80	5.00	0.189	0.197
E	3.80	4.00	0.150	0.157
H	5.80	6.20	0.228	0.244
L	0.40	1.27	0.016	0.050
e1	0.33	0.51	0.013	0.020
e2	1.27BSC		0.50BSC	
φ 1	8°		8°	