

## P-Channel 30V (D-S) MOSFET

PRODUCT SUMMARY		
V <sub>DS</sub> (V)	R <sub>DS(on)</sub> (Ω)	I <sub>D</sub> (A) <sup>d</sup>
- 30	0.024 at V <sub>GS</sub> = - 10 V	- 11.4
	0.035 at V <sub>GS</sub> = - 4.5 V	- 9.4

### Features

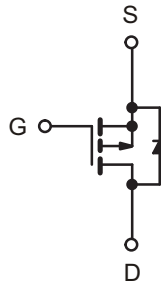
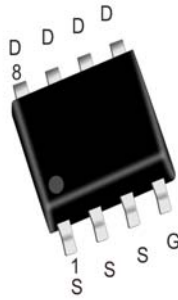
- Low Gate Charge
- RoHS Compliant

### Applications

- Load Switches
- Battery Switch

### Pin Configuration

SOP-8L



P-Channel MOSFET

### Packing Information

Device	Marking	Reel Size	Tape Width	Quantity
ECG4435	13D .XXX	12"	13mm	3000pcs

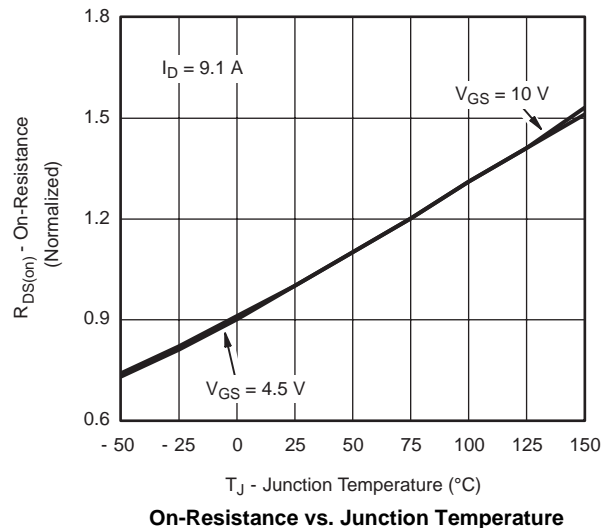
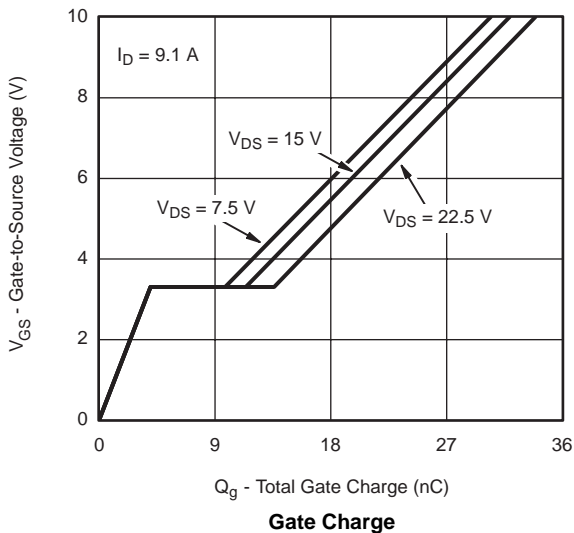
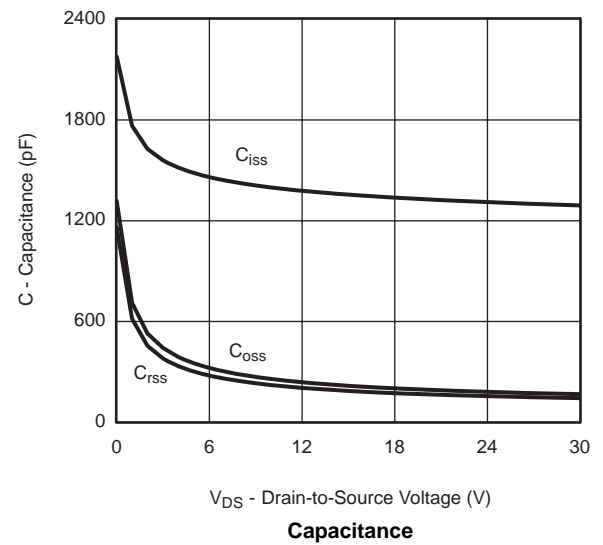
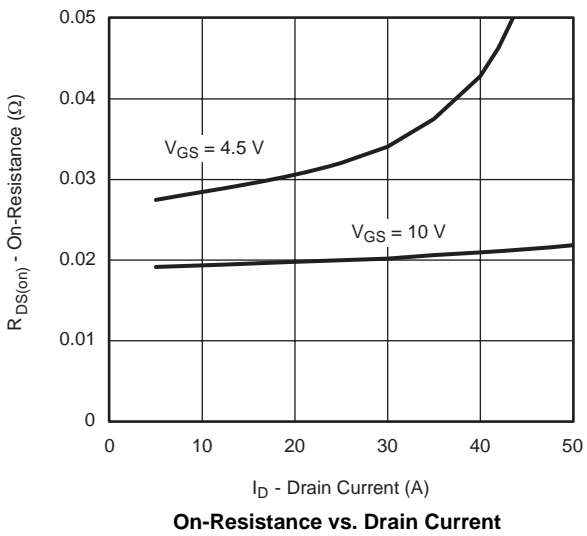
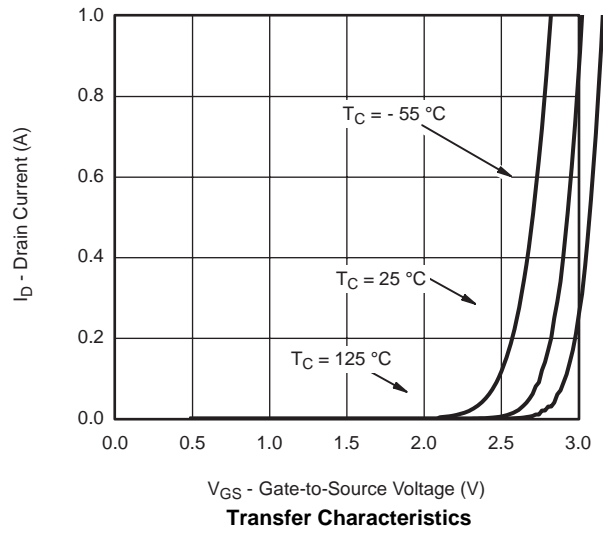
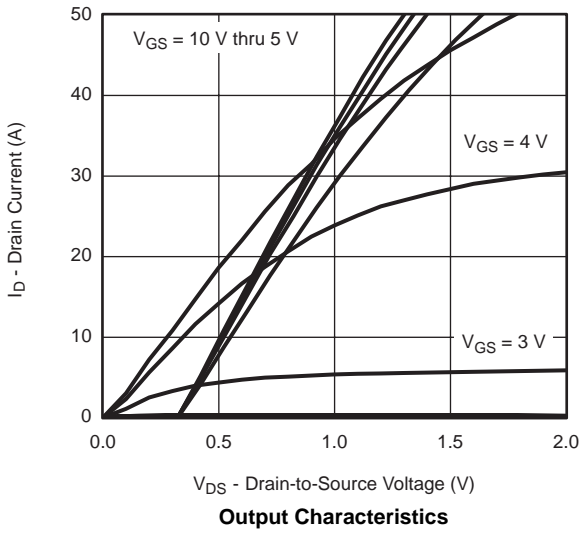
### Absolute Maximum Ratings (T<sub>J</sub>=25 °C Unless Otherwise Noted)

Symbol	Parameter	Value	Unit
<b>P-MOSFET</b>			
V <sub>DS</sub>	Drain-Source Voltage	-30	V
V <sub>GS</sub>	Gate-Source Voltage	±20	V
I <sub>D</sub>	Continuous Drain Current	-11.4	A
I <sub>DM</sub>	Pulse Drain Current	-50	A
P <sub>D</sub>	Maximum Power Dissipation	5.0	W
T <sub>J</sub>	Junction Temperature	150	°C
T <sub>stg</sub>	Storage Temperature	-55~+150	°C
T <sub>L</sub>	Lead Temperature for Soldering Purposes(1/8" from case for 10 s)	260	°C
<b>Thermal Resistance Ratings</b>			
R <sub>thJA</sub>	Maximum Junction-to-Ambient	t ≤10 s	°C/W
R <sub>thJF</sub>	Maximum Junction-to-Foot (Drain)	Steady State	°C/W

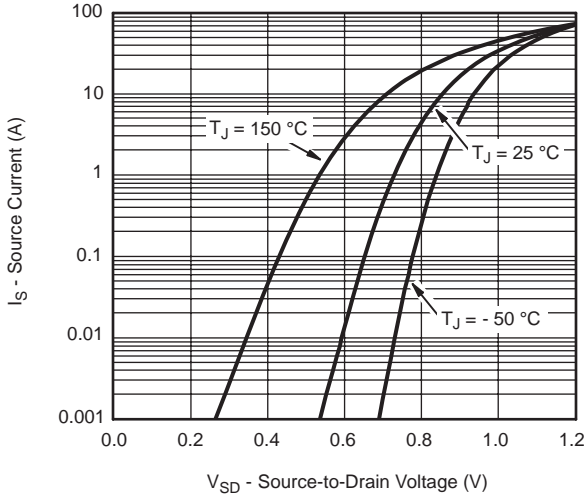
**Electrical Characteristics (T<sub>J</sub> = 25°C Unless Otherwise Specified)**

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
<b>STATIC PARAMETERS</b>						
Drain-source breakdown voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> = - 250 μA	-30			V
Zero gate voltage drain current	I <sub>DSS</sub>	V <sub>DS</sub> = -30V, V <sub>GS</sub> = 0V			-1	μA
Gate-body leakage current	I <sub>GSS</sub>	V <sub>GS</sub> = ±20V, V <sub>DS</sub> = 0V			±10.0	nA
Gate threshold voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = - 250 μA	-1		-3	V
Drain-source on-resistance(note1)	R <sub>DS(on)</sub>	V <sub>GS</sub> = -10V, I <sub>D</sub> = -9.1A		19.5	24	mΩ
		V <sub>GS</sub> = -4.5V, I <sub>D</sub> = -6.9A		28	35	mΩ
Forward transconductance(note1)	g <sub>FS</sub>	V <sub>DS</sub> = -10V, I <sub>D</sub> = -9.1A		23		S
Diode forward voltage(note1)	V <sub>SD</sub>	I <sub>S</sub> = -2A, V <sub>GS</sub> = 0V		-0.75	-1.2	V
<b>DYNAMIC</b>						
Input capacitance	C <sub>iss</sub>	V <sub>DS</sub> = -15V, V <sub>GS</sub> = 0V, f = 1MHz		1350		pF
Output capacitance	C <sub>oss</sub>			215		pF
Reverse transfer capacitance	C <sub>rss</sub>			185		pF
<b>SWITCHING PARAMETERS (note 2)</b>						
Turn-on delay time	t <sub>d(on)</sub>	V <sub>GS</sub> = -10V, V <sub>DD</sub> = -15V, R <sub>L</sub> = 15Ω, R <sub>G</sub> = 1Ω, I <sub>D</sub> = -1A		10	15	ns
Turn-on rise time	t <sub>r</sub>			8	15	ns
Turn-off delay time	t <sub>d(off)</sub>			45	70	ns
Turn-off fall time	t <sub>f</sub>			12	25	ns
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> = -15V, V <sub>GS</sub> = -4.5V, I <sub>D</sub> = -9.1A		15	25	nC
Gate-Source Charge	Q <sub>gs</sub>			4		nC
Gate-Drain Charge	Q <sub>gd</sub>			7.5		nC

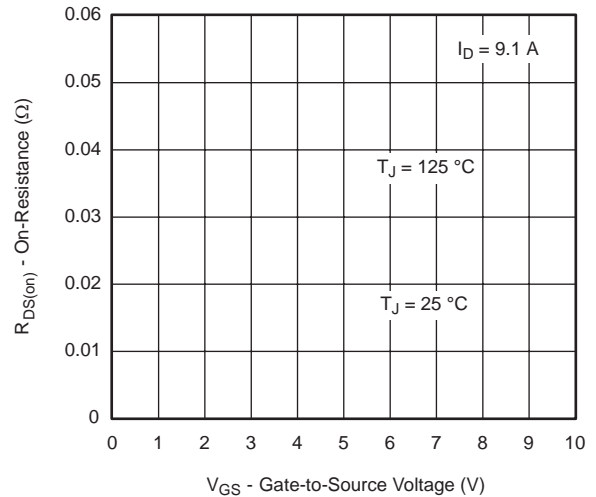
**MOSFET TYPICAL CHARACTERISTICS (25°C, unless otherwise noted)**



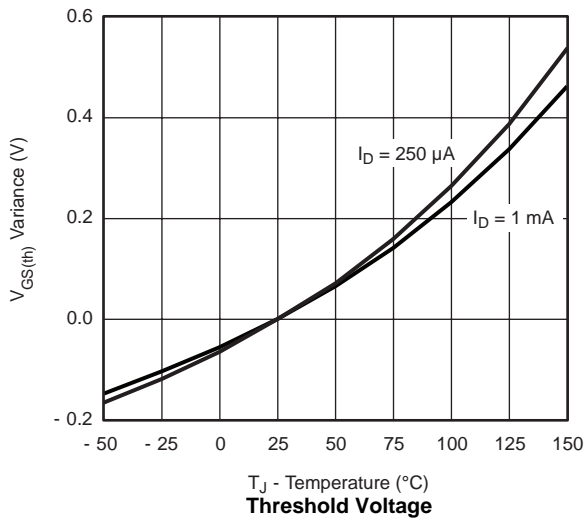
## MOSFET TYPICAL CHARACTERISTICS (25°C, unless otherwise noted)



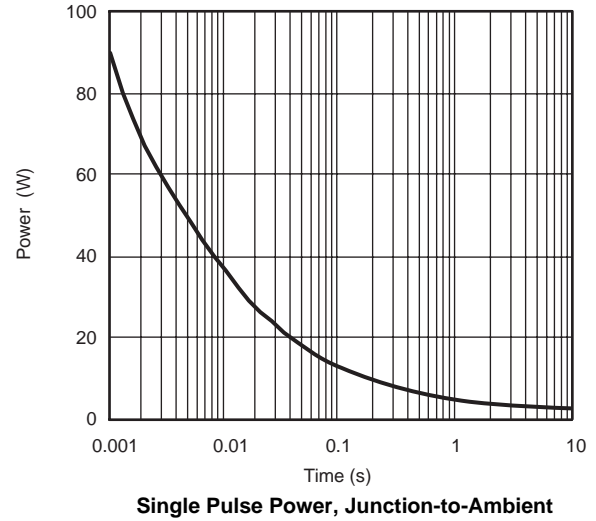
**Source-Drain Diode Forward Voltage**



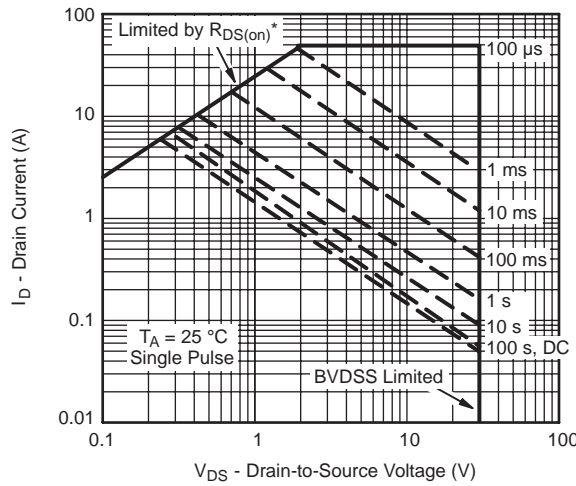
**On-Resistance vs. Gate-to-Source Voltage**



**Threshold Voltage**



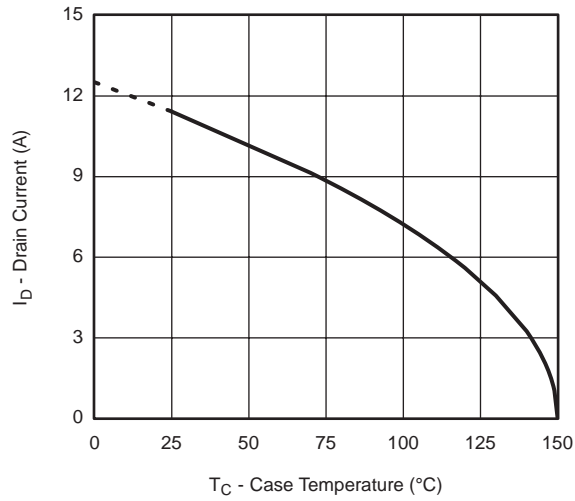
**Single Pulse Power, Junction-to-Ambient**



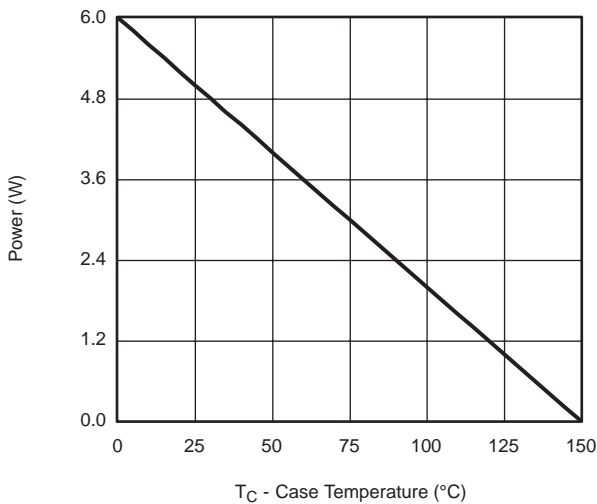
\*  $V_{GS} >$  minimum  $V_{GS}$  at which  $R_{DS(on)}$  is specified

**Safe Operating Area**

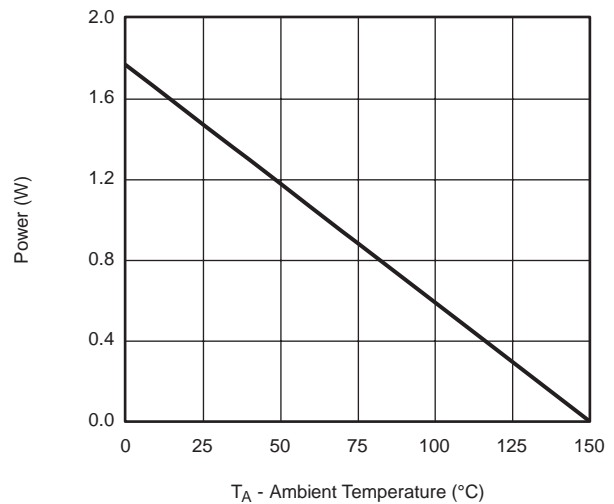
**MOSFET TYPICAL CHARACTERISTICS (25°C, unless otherwise noted)**



**Current Derating\***

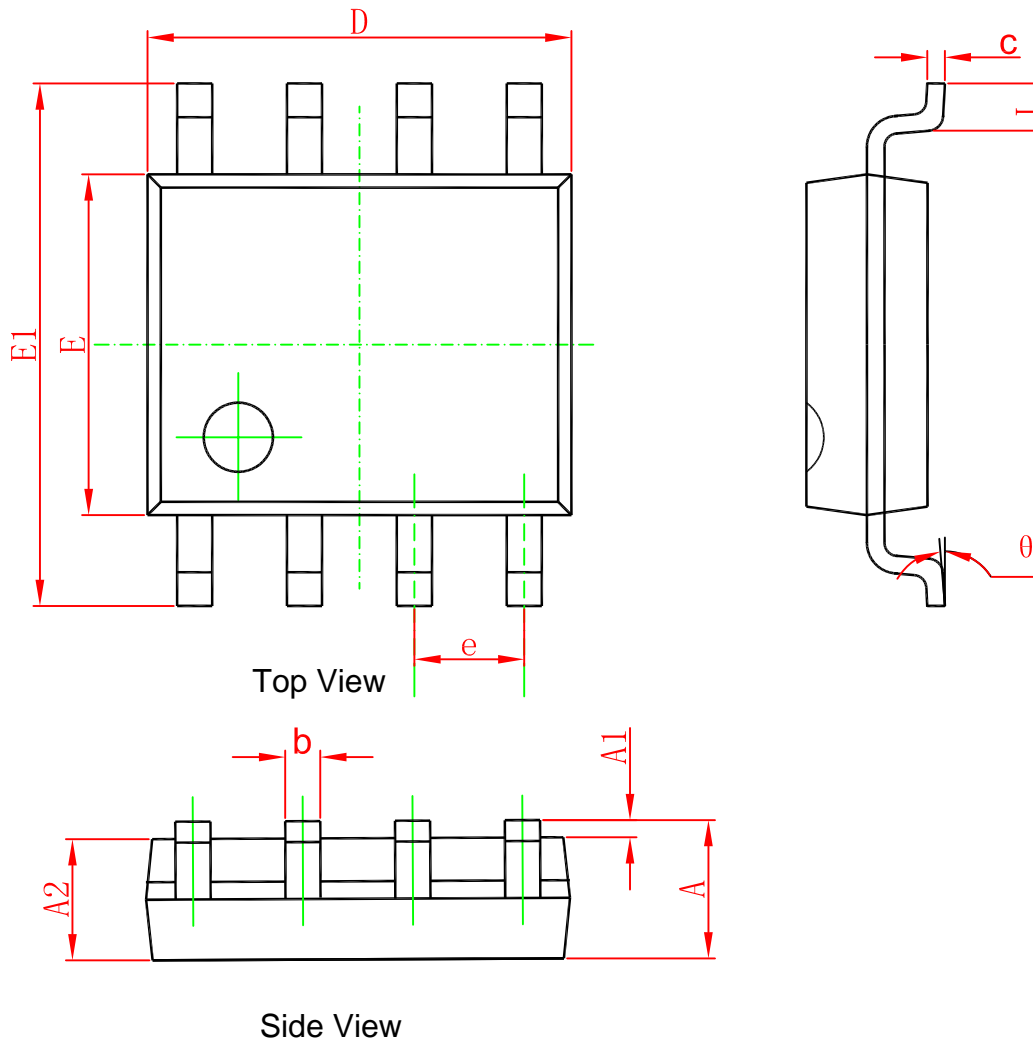


$T_C$  - Case Temperature (°C)  
**Power, Junction-to-Foot**



$T_A$  - Ambient Temperature (°C)  
**Power Derating, Junction-to-Ambient**

## SOP-8L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.006	0.010
D	4.700	5.100	0.185	0.200
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.270 (BSC)		0.050 (BSC)	
L	0.400	1.270	0.016	0.050
$\theta$	0°	8°	0°	8°