N-Channel 30V (D-S) MOSFET

PRODUCT SUMMARY		
V_{DS} (V)	$R_{DS(on)}$ (Ω)	I_D (A)[a]
30	0.0039 at V_{GS} = 10 V	30.5
	0.0055 at V_{GS} = 4.5 V	25.6

Features

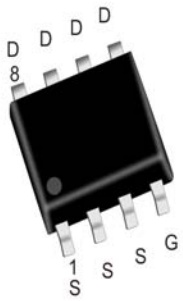
- Low Gate Charge
- RoHS Compliant

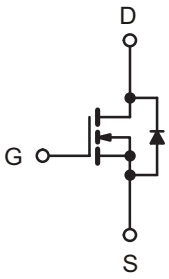
Applications

- Low-Side DC/DC Conversion
- Notebook PC
- Gaming

Pin Configuration

SOP-8L





N-Channel MOSFET

Packing Information

Device	Marking	Reel Size	Tape Width	Quantity
EC4166	13D .XXX	12”	13mm	3000pcs

Absolute Maximum Ratings (TJ=25℃ Unless Otherwise Noted)

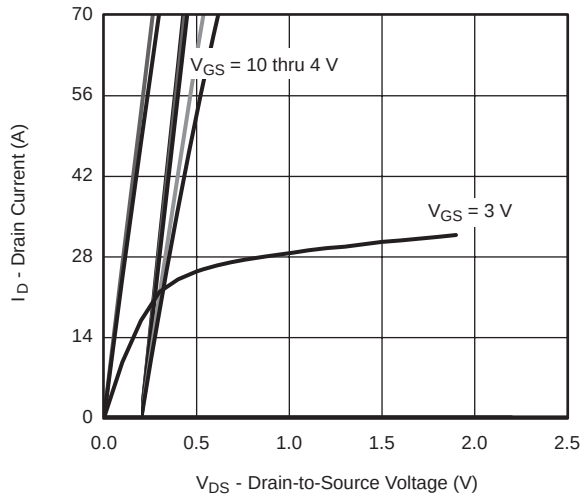
Symbol	Parameter		Value	Unit
P-MOSFET				
V_{DS}	Drain-Source Voltage		30	V
V_{GS}	Gate-Source Voltage		±20	V
I_D	Continuous Drain Current		30.5	A
I_{DM}	Pulse Drain Current		70	A
P_D	Maximum Power Dissipation		5.9	W
T_j	Junction Temperature		150	℃
T_{stg}	Storage Temperature		-55~+150	℃
T_L	Lead Temperature for Soldering Purposes(1/8’’ from case for 10 s)		260	℃
Thermal Resistance Ratings				
R_{thJA}	Maximum Junction-to-Ambient	t ≤10 s	41	℃/W
R_{thJF}	Maximum Junction-to-Foot (Drain)	Steady State	19	℃/W

Notes:
a. Based on T_C = 25 °C.

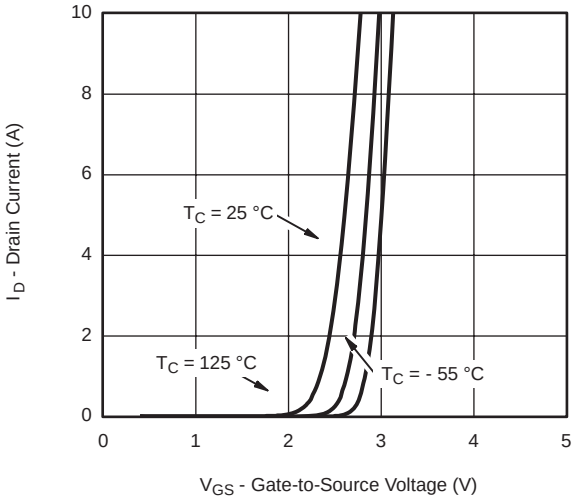
Electrical Characteristics (T_J =25℃ Unless Otherwise Specified)

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
STATIC PARAMETERS						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS} =0V, I_D= 250 μA	30			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =30V,V_{GS} = 0V			1	μA
Gate-body leakage current	I_{GSS}	V_{GS} =±20V, V_{DS} = 0V			±100	nA
Gate threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D = 250 μA	1.2		2.4	V
Drain-source on-resistance(note1)	$R_{DS(on)}$	V_{GS} =10V I_D = 15A		3.2	3.9	mΩ
		V_{GS} =4.5V, I_D = 10A		4.5	5.5	mΩ
Forward transconductance(note1)	g_{FS}	V_{DS}= 15V,I_D= 15A		65		S
Diode forward voltage(note1)	V_{SD}	I_S=3A, V_{GS} = 0V		0.74	1.1	V
DYNAMIC						
Input capacitance	C_{iss}	V_{DS} =15V,V_{GS} =0V,f =1MHz		2730		pF
Output capacitance	C_{oss}			540		pF
Reverse transfer capacitance	C_{rss}			205		pF
SWITCHING PARAMETERS (note 2)						
Turn-on delay time	$t_{d(on)}$	V_{GS}=4.5V,V_{DD}= 15V, R_L=1.5Ω,R_G=1Ω, I_D=10A		30	50	ns
Turn-on rise time	t_r			19	35	ns
Turn-off delay time	$t_{d(off)}$			35	60	ns
Turn-off fall time	t_f			15	30	ns
Total Gate Charge	Q_g	V_{DS} =15V,V_{GS} =4.5V, I_D =10A		21.5	33	nC
Gate-Source Charge	Q_{gs}			6.9		nC
Gate-Drain Charge	Q_{gd}			7.1		nC

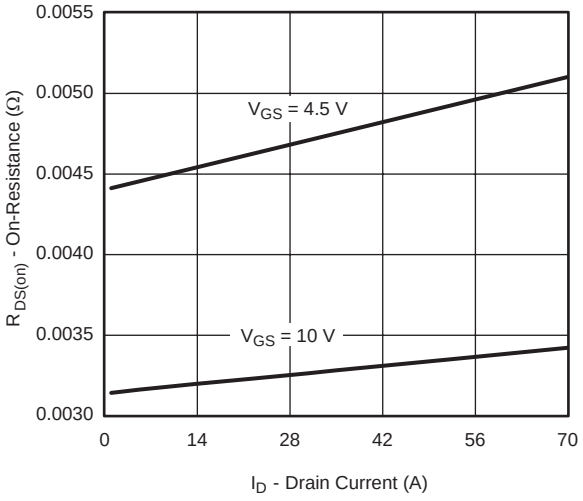
MOSFET TYPICAL CHARACTERISTICS (25°C, unless otherwise noted)



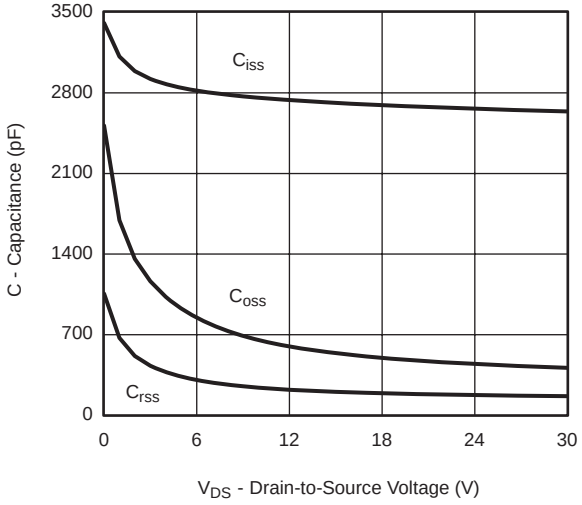
Output Characteristics



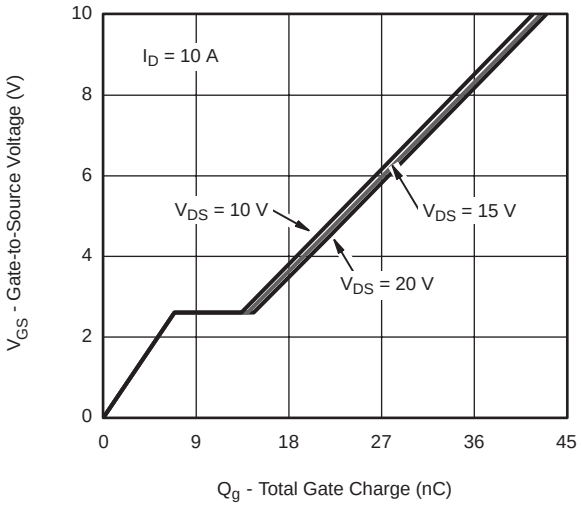
Transfer Characteristics



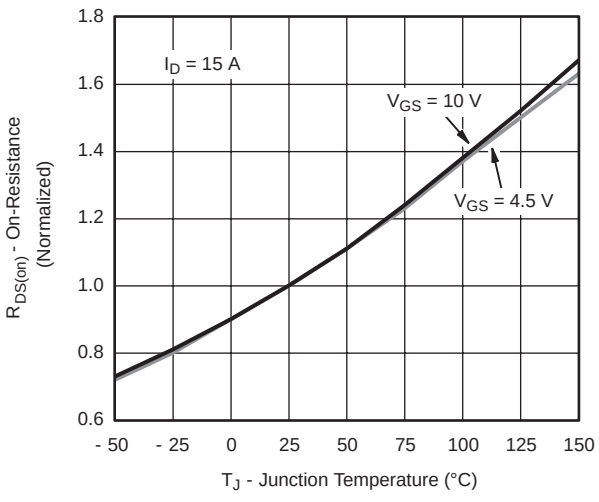
On-Resistance vs. Drain Current and Gate Voltage



Capacitance

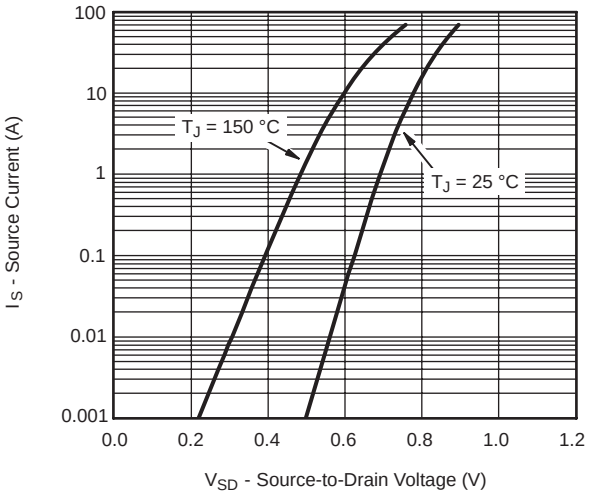


Gate Charge

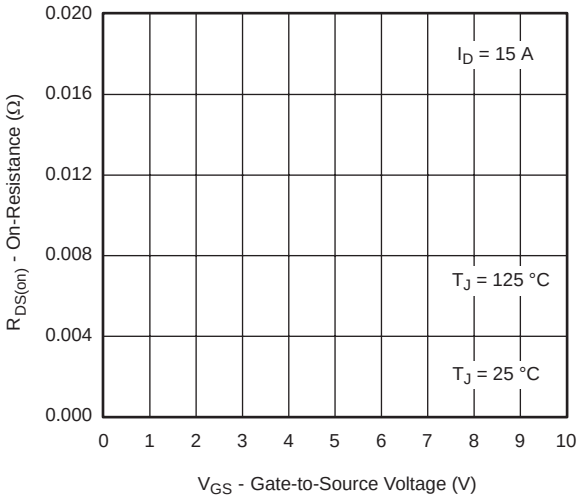


On-Resistance vs. Junction Temperature

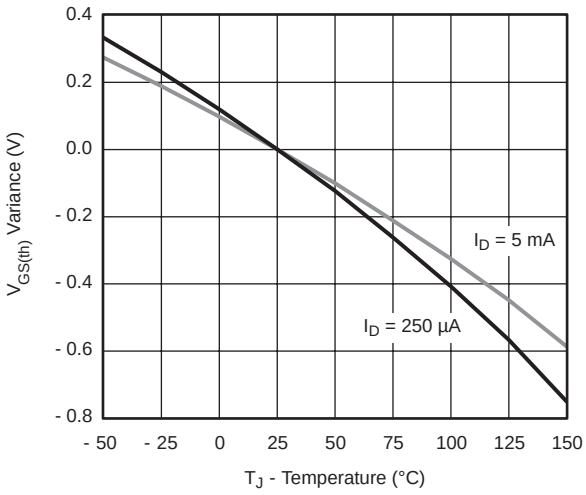
MOSFET TYPICAL CHARACTERISTICS (25°C, unless otherwise noted)



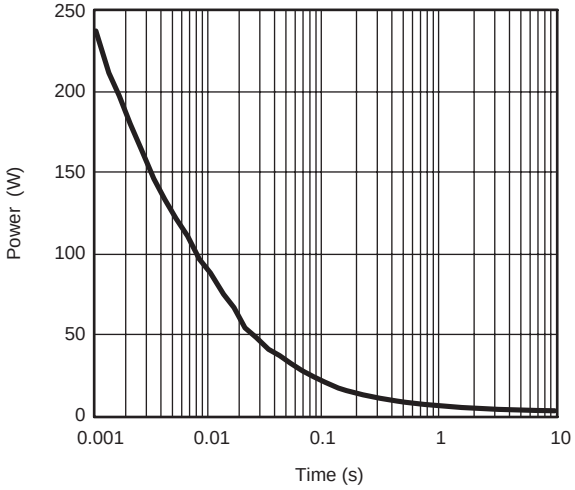
Source-Drain Diode Forward Voltage



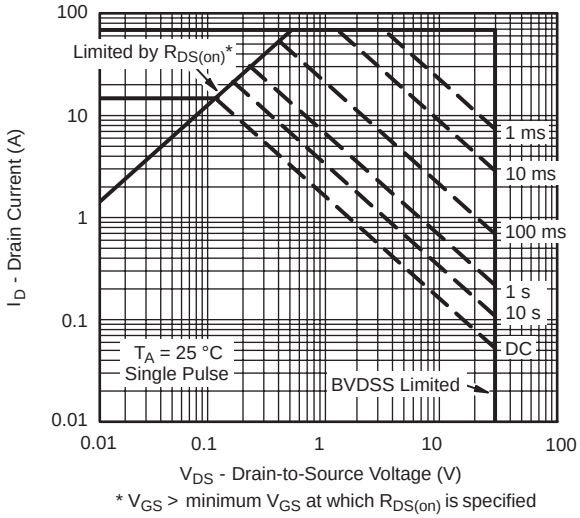
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage



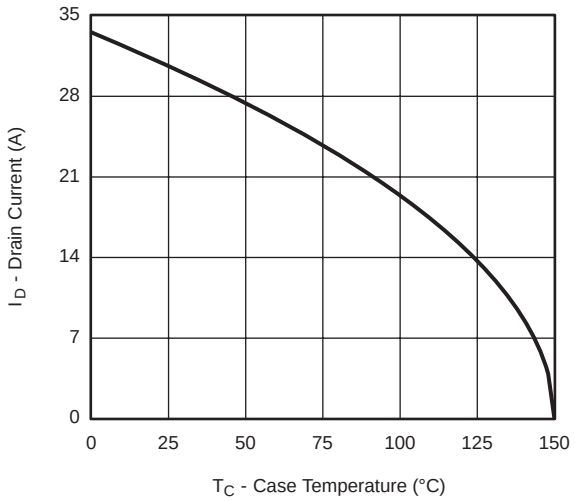
Single Pulse Power



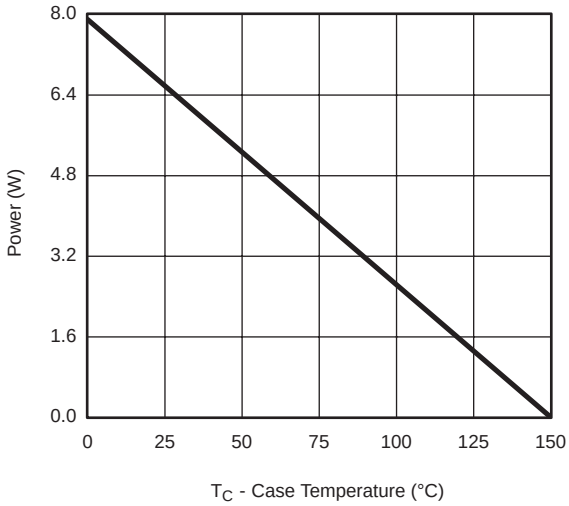
* V_{GS} > minimum V_{GS} at which $R_{DS(on)}$ is specified

Safe Operating Area, Junction-to-Ambient

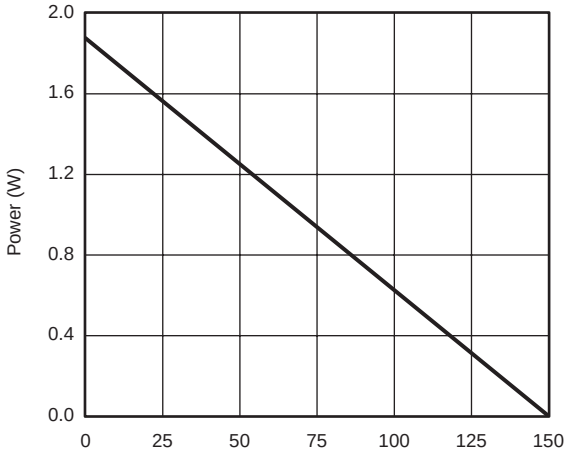
MOSFET TYPICAL CHARACTERISTICS (25°C, unless otherwise noted)



Current Derating*

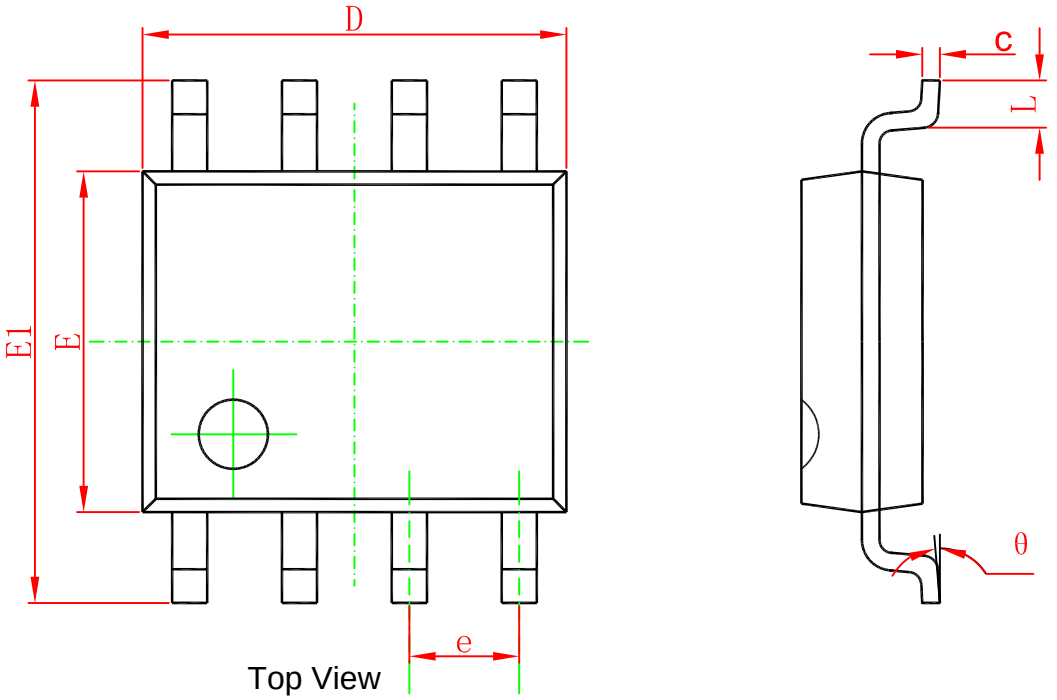


Power Derating, Junction-to-Foot

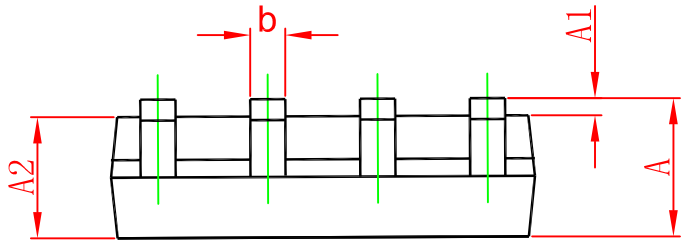


Power, Junction-to-Ambient

SOP-8L Package Information



Top View



Side View

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
θ	0°	8°	0°	8°