

N-Channel 30V (D-S) MOSFET

PRODUCT SUMMARY		
V _{DS} (V)	R _{DS(on)} (Ω)	I _D (A) ^a
30	0.024 at V _{GS} = 10 V	10.9
	0.030 at V _{GS} = 4.5 V	9.7

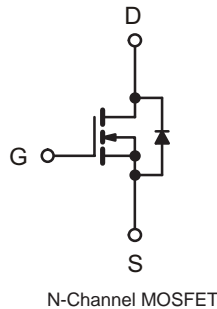
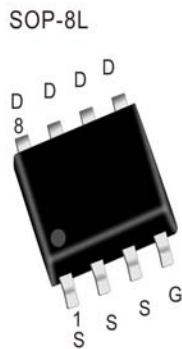
Features

- Low Gate Charge
- RoHS Compliant

Applications

- Notebook PC
- System Power
- Load Switch

Pin Configuration



Packing Information

Device	Marking	Reel Size	Tape Width	Quantity
EC4128	13D .XXX	12"	13mm	3000pcs

Absolute Maximum Ratings (T_J=25 °C 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	10.9	A
I _{DM}	Pulse Drain Current	30	A
P _D	Maximum Power Dissipation	5	W
T _i	Junction Temperature	150	°C
T _{stg}	Storage Temperature	-55~+150	°C
T _L	Lead Temperature for Soldering Purposes(1/8" from case for 10 s)	260	°C
Thermal Resistance Ratings			
R _{thJA}	Maximum Junction-to-Ambient t ≤ 10 s	53	°C/W
R _{thJF}	Maximum Junction-to-Foot (Drain) Steady State	25	°C/W

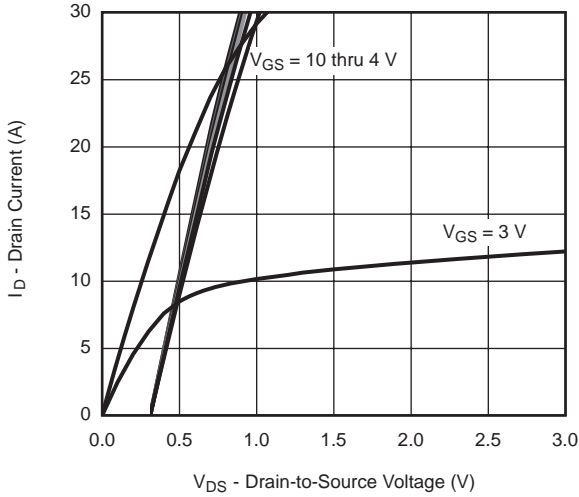
Notes:

- T_C = 25 °C.
- Surface Mounted on 1" x 1" FR4 board.
- t = 10 s.
- Maximum under Steady State conditions is 85 °C/W.

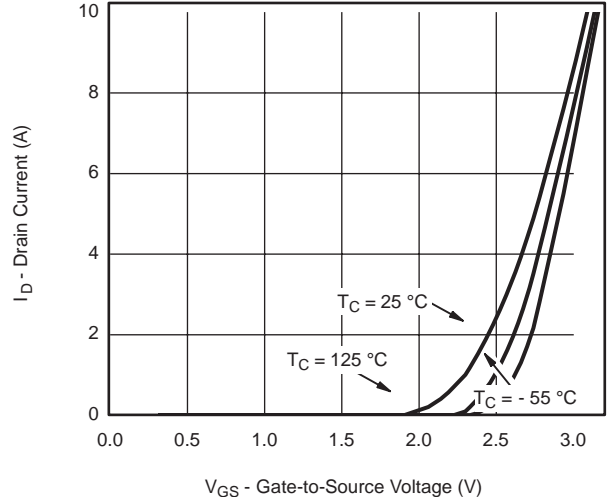
Electrical Characteristics (T_J = 25°C Unless Otherwise Specified)

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 _S = 0V			±100	nA
Gate threshold voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250 μA	1.0		2.5	V
Drain-source on-resistance(note1)	R _{DS(on)}	V _{GS} = 10V, I _D = 7.8A		20	24	mΩ
		V _{GS} = 4.5V, I _D = 7A		24	30	mΩ
Forward transconductance(note1)	g _{FS}	V _{DS} = 10V, I _D = 7.8A		17		S
Diode forward voltage(note1)	V _{SD}	I _S = 6.3A, V _{GS} = 0V		0.8	1.2	V
DYNAMIC						
Input capacitance	C _{iss}	V _{DS} = 15V, V _{GS} = 0V, f = 1MHz		435		pF
Output capacitance	C _{oss}			95		pF
Reverse transfer capacitance	C _{rss}			42		pF
SWITCHING PARAMETERS (note 2)						
Turn-on delay time	t _{d(on)}	V _{GS} = 4.5V, V _{DD} = 15V, R _L = 2.4Ω, R _G = 1Ω, I _D = 6.3A		15	25	ns
Turn-on rise time	t _r			12	20	ns
Turn-off delay time	t _{d(off)}			13	20	ns
Turn-off fall time	t _f			10	15	ns
Total Gate Charge	Q _g	V _{DS} = 15V, V _{GS} = 4.5V, I _D = 7.8A		3.8	6	nC
Gate-Source Charge	Q _{gs}			1.4		nC
Gate-Drain Charge	Q _{gd}			1.1		nC

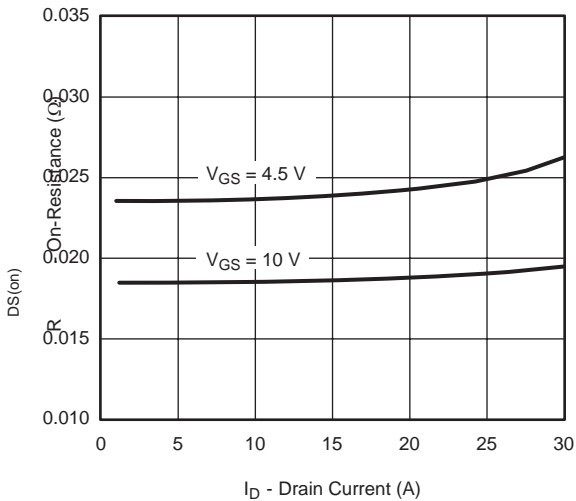
MOSFET TYPICAL CHARACTERISTICS (25°C, unless otherwise noted)



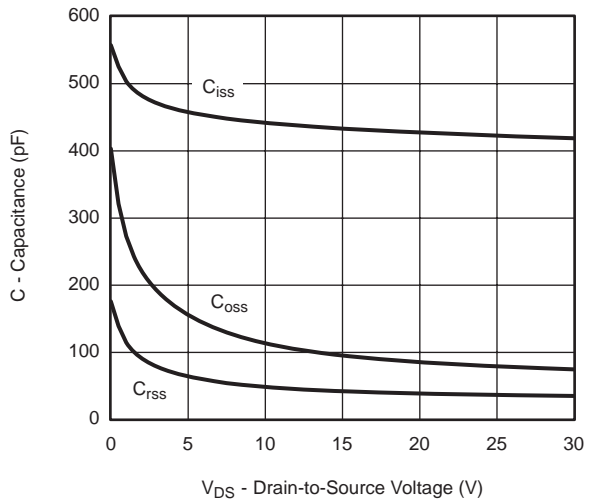
Output Characteristics



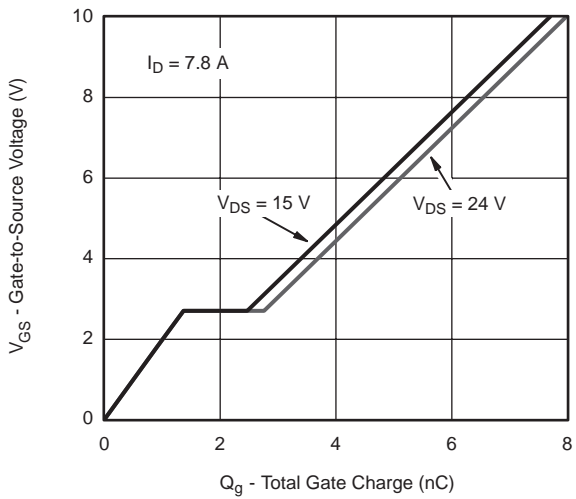
Transfer Characteristics



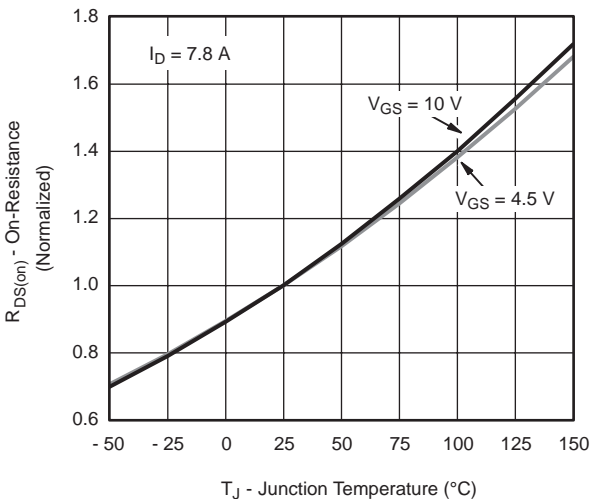
On-Resistance vs. Drain Current



Capacitance

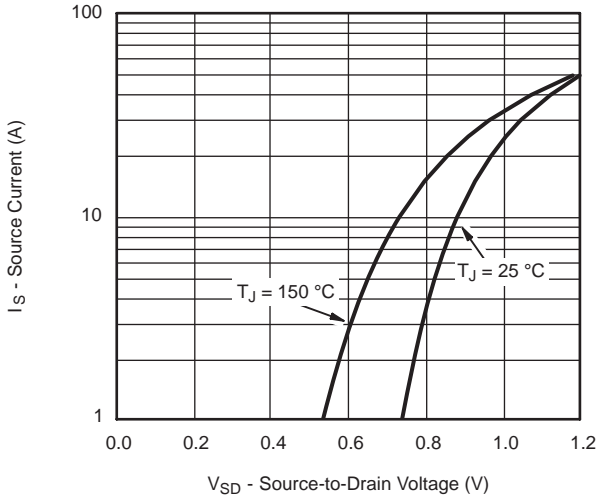


Gate Charge

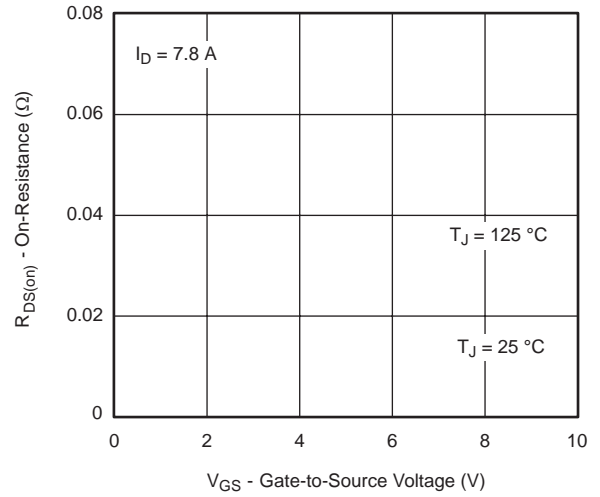


On-Resistance vs. Junction Temperature

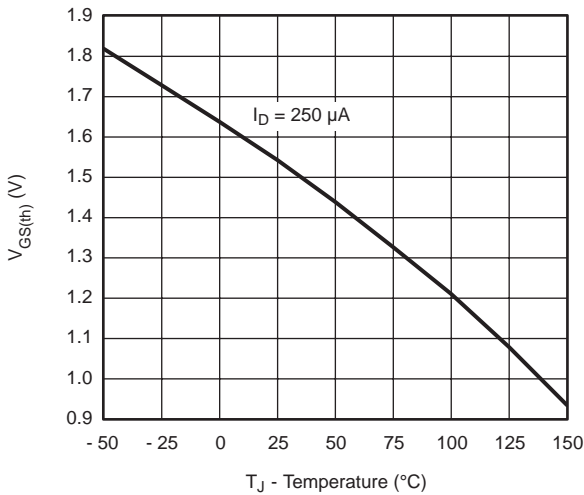
MOSFET TYPICAL CHARACTERISTICS (25°C, unless otherwise noted)



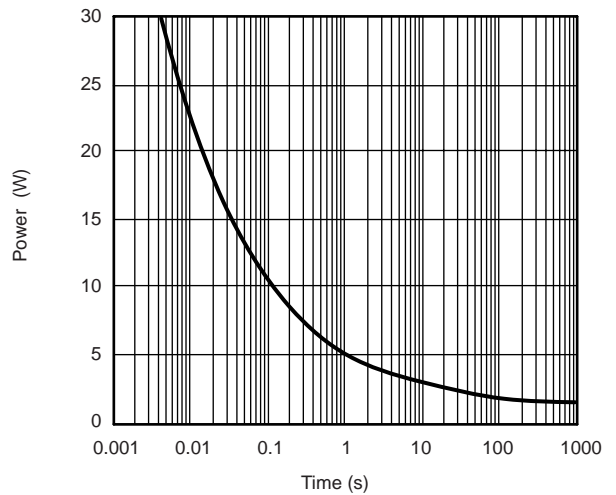
Source-Drain Diode Forward Voltage



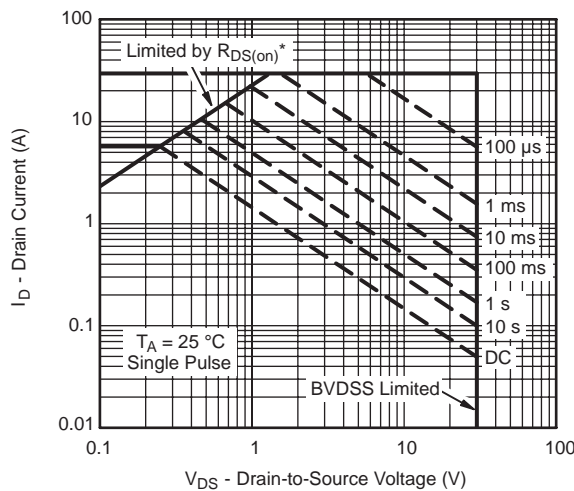
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage



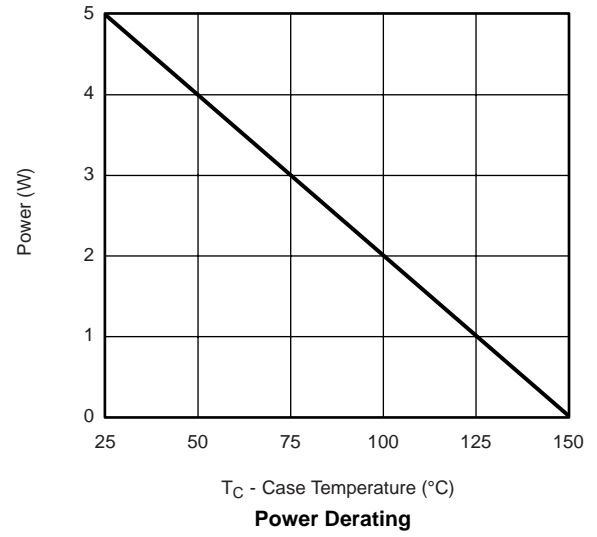
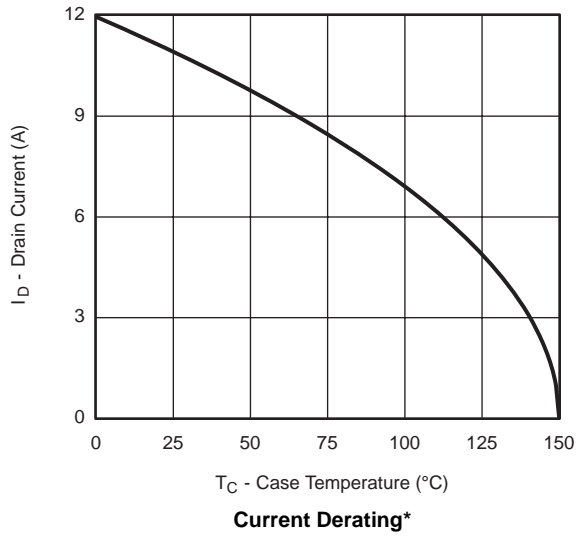
Single Pulse Power



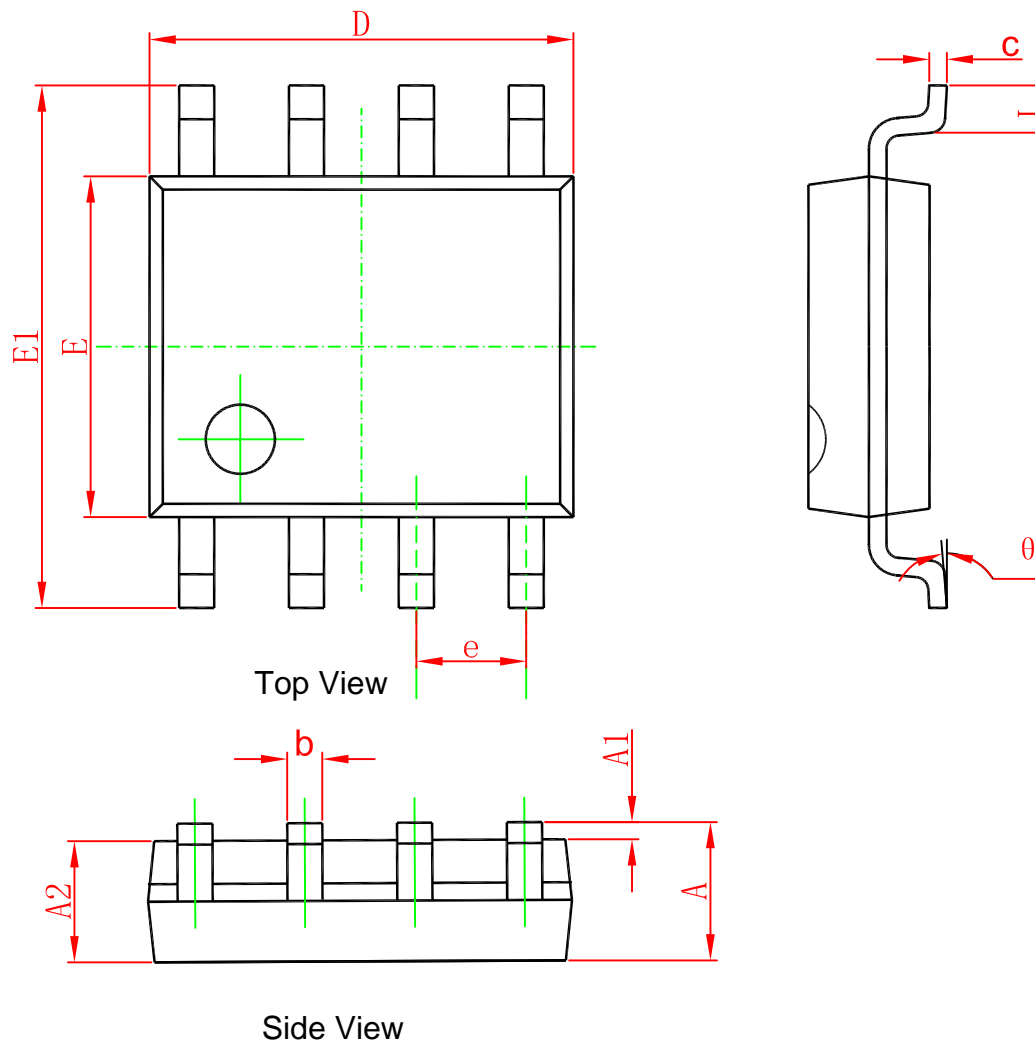
* $V_{GS} >$ minimum V_{GS} at which $R_{DS(on)}$ is specified

Safe Operating Area, Junction-to-Ambient

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



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
θ	0°	8°	0°	8°