

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

$V_{DS}$	$R_{DS(on)MAX}$	$I_D$
30V	68 mΩ@4.5V	3.6A
	85 mΩ@2.5V	3.4A

### Features

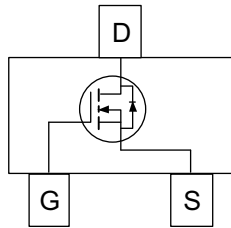
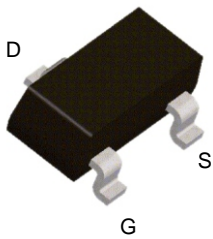
- Low Gate Charge
- RoHS Compliant

### Applications

- DC/DC Converter for Portable Devices
- Load Switch

### Pin Configuration

SOT23-3L



### Packing Information

Device	Marking	Reel Size	Tape Width	Quantity
ECG2300	13D .XXX	7"	8mm	3000pcs

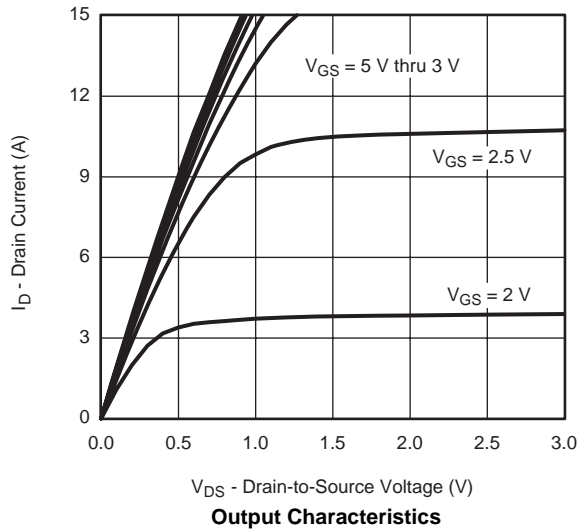
### Absolute Maximum Ratings (T<sub>J</sub>=25 °C Unless Otherwise Noted)

Symbol	Parameter	Value	Unit
$V_{DS}$	Drain-Source Voltage	30	V
$V_{GS}$	Gate-Source Voltage	±12	V
$I_D$	Drain Current -Continuous	3.6	A
$I_{DM}$	Drain Current - Pulse	15	A
<b>Power Dissipation, Temperature and Thermal Resistance</b>			
$P_D$	Power Dissipation	1.7	W
$R_{\theta JA}$	Thermal Resistance from Junction to Ambient (note1)	100	°C/W
	Thermal Resistance from Junction to Ambient (note2)	140	°C/W
$T_j$	Junction Temperature	150	°C
$T_{stg}$	Storage Temperature	-55~+150	°C
$T_L$	Lead Temperature	260	°C

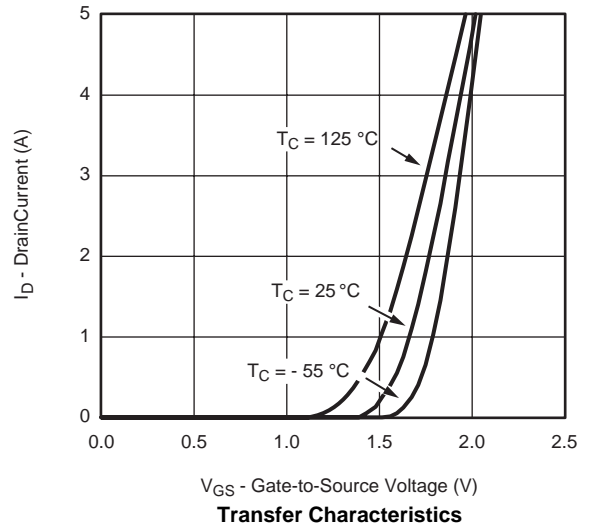
**N-ch MOSFET ELECTRICAL CHARACTERISTICS (T<sub>J</sub>=25°C unless otherwise specified)**

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
<b>Static</b>						
Drain-source breakdown voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> = -250μA	30			V
Zero gate voltage drain current	I <sub>DSS</sub>	V <sub>DS</sub> = 20V, V <sub>GS</sub> = 0V			1	μA
Gate-body leakage current	I <sub>GSS</sub>	V <sub>GS</sub> = ±12V, V <sub>DS</sub> = 0V			±100	nA
Gate threshold voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250μA	0.6		1.5	V
Drain-source on-resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 2.9A		65	68	mΩ
		V <sub>GS</sub> = 2.5V, I <sub>D</sub> = 2.6A		70	85	mΩ
Diode forward voltage	V <sub>SD</sub>	I <sub>S</sub> = 2.5A, V <sub>GS</sub> = 0V		0.8	1.2	V
<b>Dynamic</b>						
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> = 15V, V <sub>GS</sub> = 0V, f = 1MHz		320		pF
Output Capacitance	C <sub>oss</sub>			45		
Reverse Transfer Capacitance	C <sub>rss</sub>			19		
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> = 15V, V <sub>GS</sub> = 10V, I <sub>D</sub> = 3.1A		6.5	10	nC
Gate-Source Charge	Q <sub>gs</sub>	V <sub>DS</sub> = 15V, V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 3.1A		3	4.5	
Gate-Drain Charge	Q <sub>gd</sub>			0.8		
Gate Resistance	R <sub>g</sub>		f = 1MHz	0.6	3.2	
Turn-on Delay Time	t <sub>d(on)</sub>	V <sub>DD</sub> = 15V, R <sub>L</sub> = 6Ω I <sub>D</sub> ≈ 2.5A, V <sub>GEN</sub> = 4.5V, R <sub>g</sub> = 1Ω		10	15	ns
Rise Time	t <sub>r</sub>			15	25	
Turn-Off Delay Time	t <sub>d(off)</sub>			20	30	
Fall Time	t <sub>f</sub>			11	20	

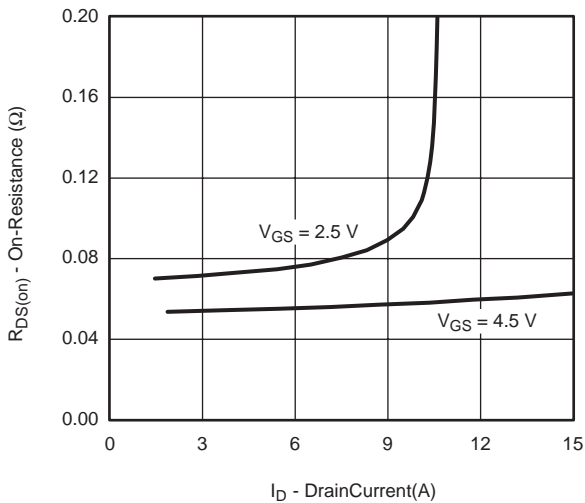
## MOSFET TYPICAL CHARACTERISTICS(25°C, unless otherwise noted)



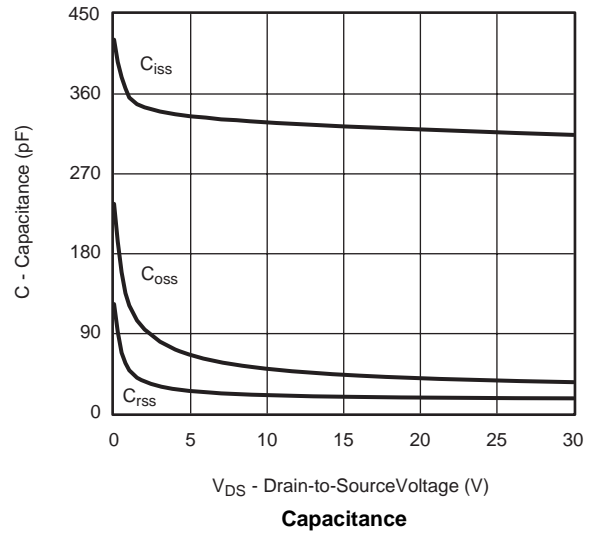
**Output Characteristics**



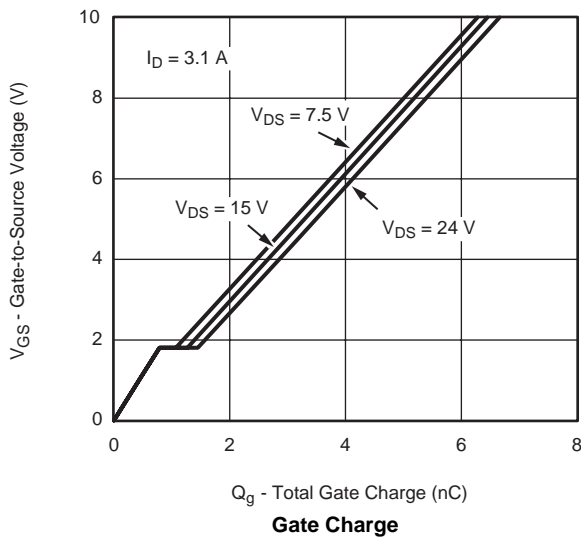
**Transfer Characteristics**



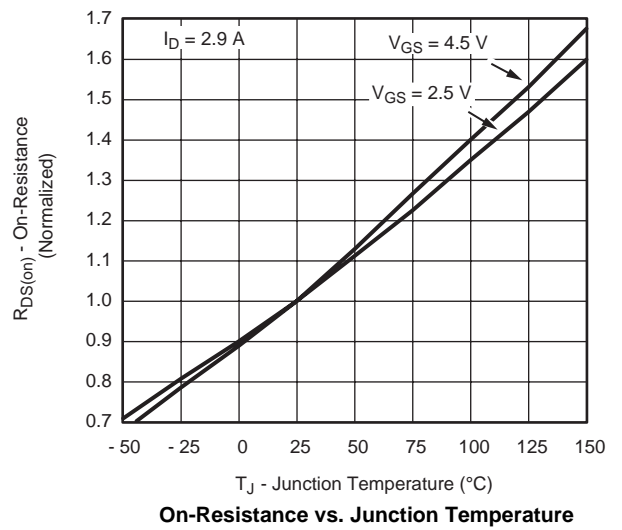
**On-Resistance vs. Drain Current and Gate Voltage**



**Capacitance**

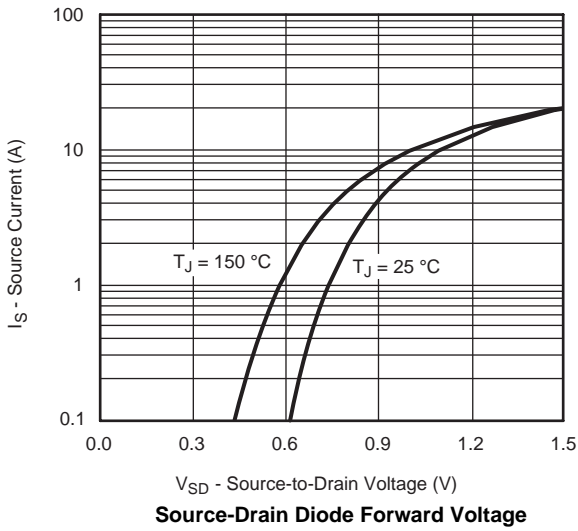


**Gate Charge**

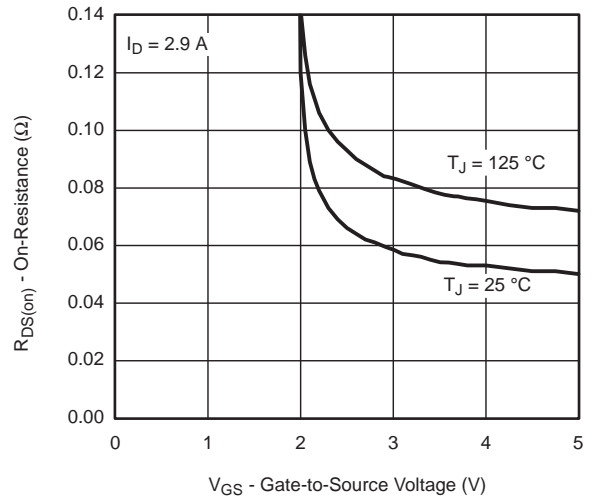


**On-Resistance vs. Junction Temperature**

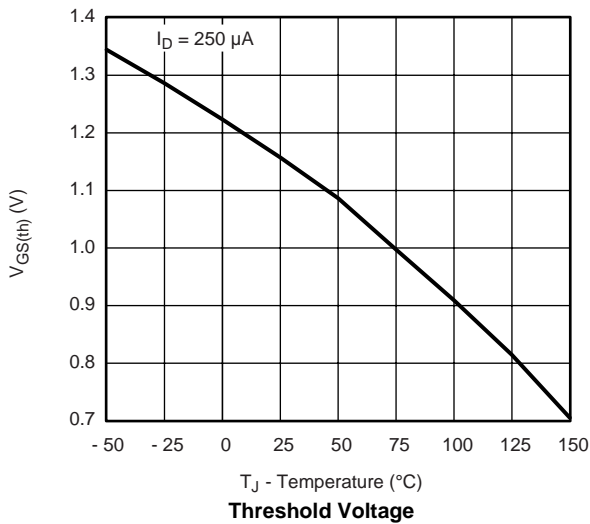
## MOSFET TYPICAL CHARACTERISTICS(25°C, unless otherwise noted)



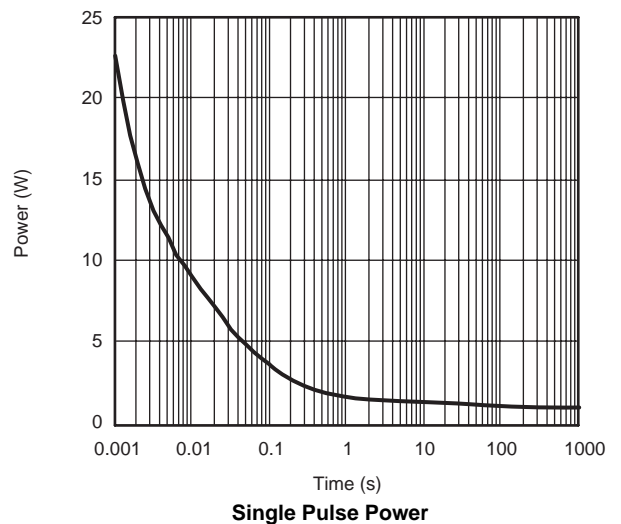
**Source-Drain Diode Forward Voltage**



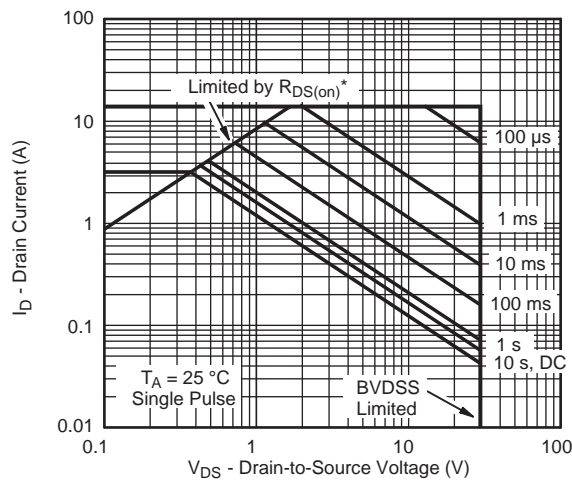
**On-Resistance vs. Gate-to-Source Voltage**



**Threshold Voltage**



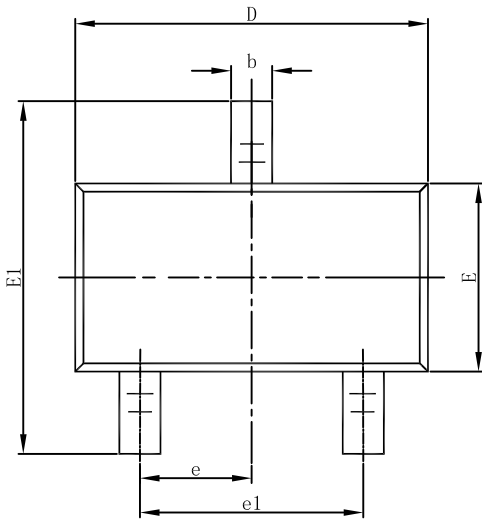
**Single Pulse Power**



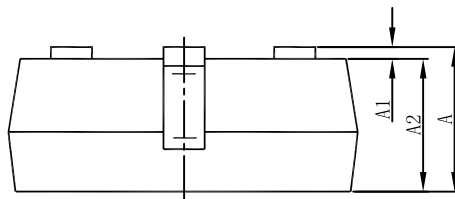
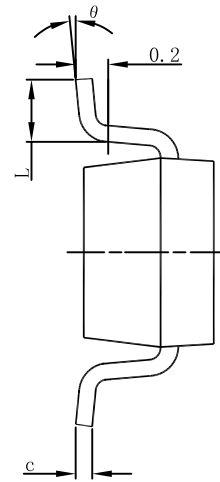
\*  $V_{GS} >$  minimum  $V_{GS}$  at which  $R_{DS(on)}$  is specified

**Safe Operating Area, Junction-to-Ambient**

### SOT23-3L Package Information



Top View



Side View

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°