

## N-Channel 20V (D-S) MOSFET

$V_{DS}$	$R_{DS(on)MAX}$	$I_D$
20V	0.045Ω@4.5V	2.5A
	0.059Ω@2.5V	

### Features

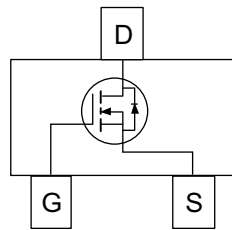
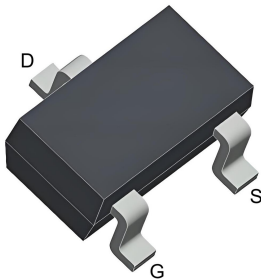
- Low Gate Charge
- RoHS Compliant

### Applications

- Load Switch
- Power management

### Pin Configuration

SOT-23



### Packing Information

Device	Reel Size	Tape Width	Quantity
ECG2302B	7"	8mm	3000pcs

### Absolute Maximum Ratings (TA=25 °C Unless Otherwise Noted)

Symbol	Parameter	Value	Unit
$V_{DS}$	Drain-Source Voltage	20	V
$V_{GS}$	Gate-Source Voltage	±8	V
$I_D$	Drain Current -Continuous	2.5	A
$I_{DM}$	Drain Current - Pulse <sup>A</sup>	10	A
<b>Power Dissipation, Temperature and Thermal Resistance</b>			
$P_D$	Power Dissipation <sup>B</sup>	0.7	W
$R_{θJA}$	Thermal Resistance from Junction to Ambient <sup>B</sup>	178	°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
Static						
Drain-source breakdown voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> = 250μA	20			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> = ±8V, 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	0.5	0.6	1.0	V
Drain-source on-resistance <sup>C</sup>	R <sub>DS(on)</sub>	V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 0.5A		45	60	mΩ
		V <sub>GS</sub> = 2.5V, I <sub>D</sub> = 0.5A		59	80	mΩ
Diode forward voltage	V <sub>SD</sub>	I <sub>S</sub> = 1.0A, V <sub>GS</sub> = 0V		0.7	1.3	V
Dynamic <sup>D</sup>						
Input Capacitance	C <sub>iSS</sub>	V <sub>DS</sub> = 10V, V <sub>GS</sub> = 0V, f = 1MHz		300		pF
Output Capacitance	C <sub>oss</sub>			120		
Reverse Transfer Capacitance	C <sub>rSS</sub>			80		
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> = 10V, V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 3.6A		4.0	10	nC
Gate-Source Charge	Q <sub>gs</sub>			0.65		
Gate-Drain Charge	Q <sub>gd</sub>			1.5		
Gate Resistance	R <sub>g</sub>	f = 1MHz	0.5	1.0	2.0	Ω
Turn-on Delay Time	t <sub>d(on)</sub>	V <sub>DD</sub> = 10V, R <sub>L</sub> = 2.8Ω I <sub>D</sub> ≈ 3.6A, V <sub>GEN</sub> = 4.5V, R <sub>g</sub> = 6Ω		7	15	ns
Rise Time	t <sub>r</sub>			55	80	
Turn-Off Delay Time	t <sub>d(off)</sub>			16	60	
Fall Time	t <sub>f</sub>			10	25	

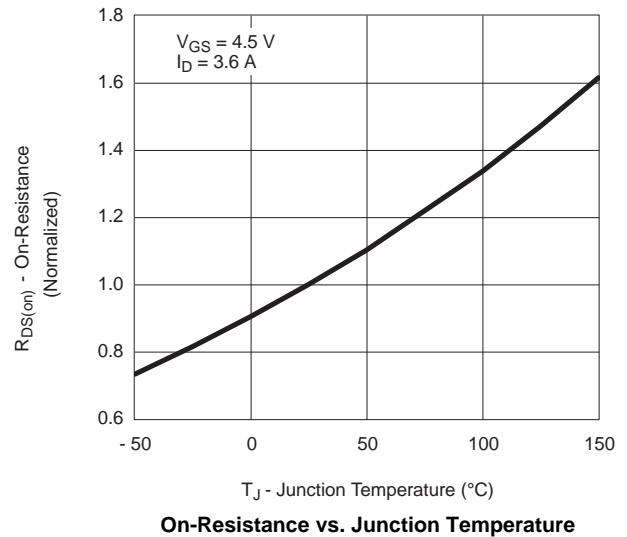
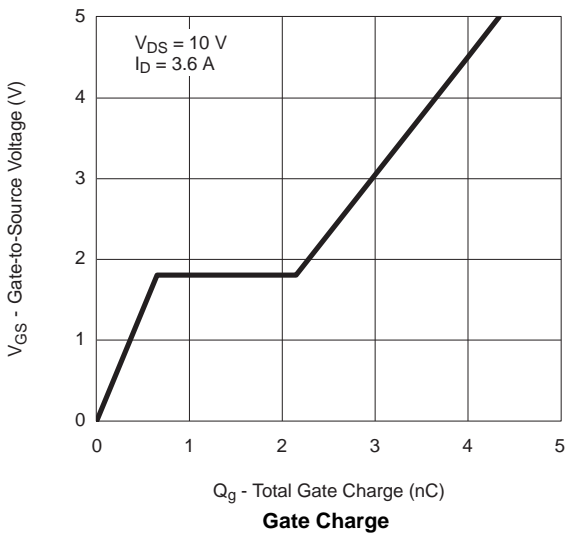
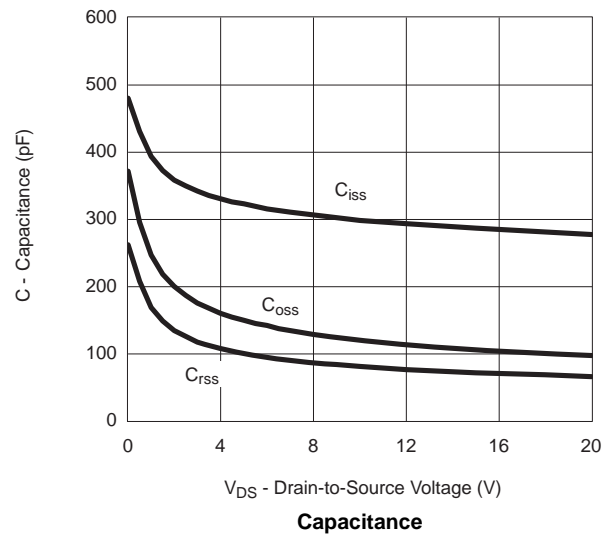
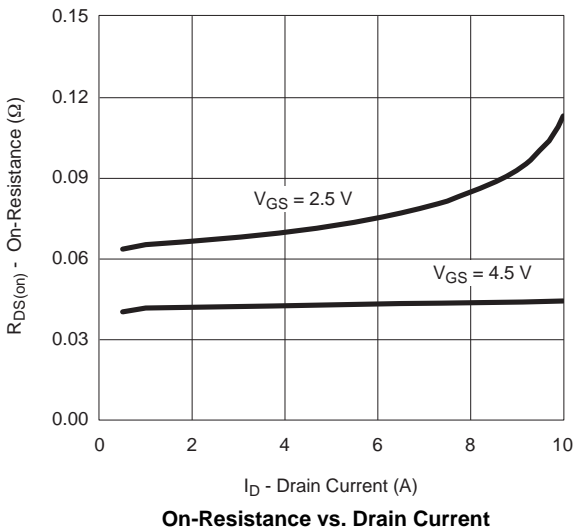
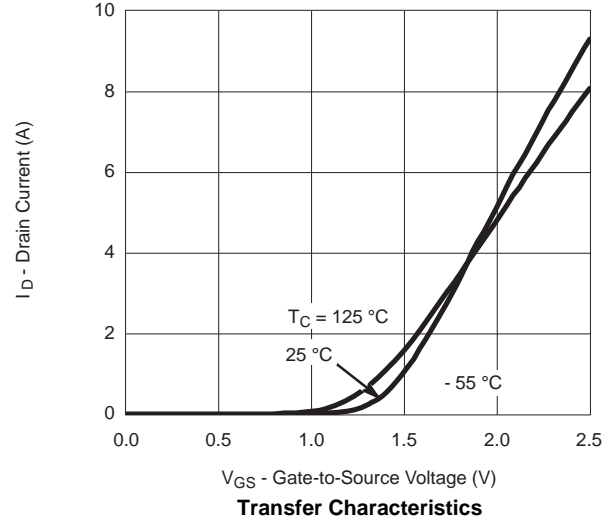
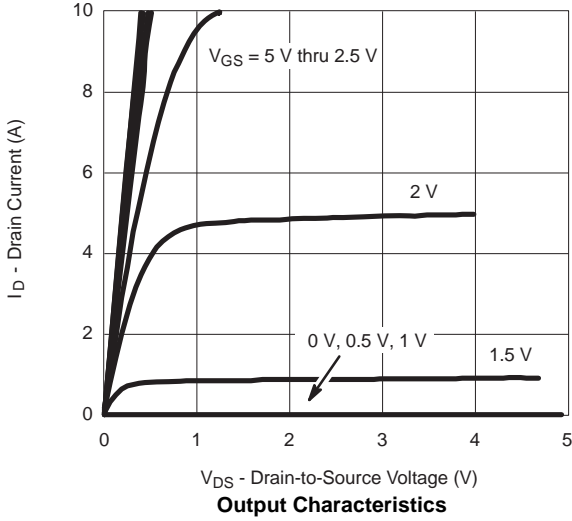
A. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.

B. The data tested by surface mounted on a 1 inch x 1 inch FR-4 board with 2OZ copper.

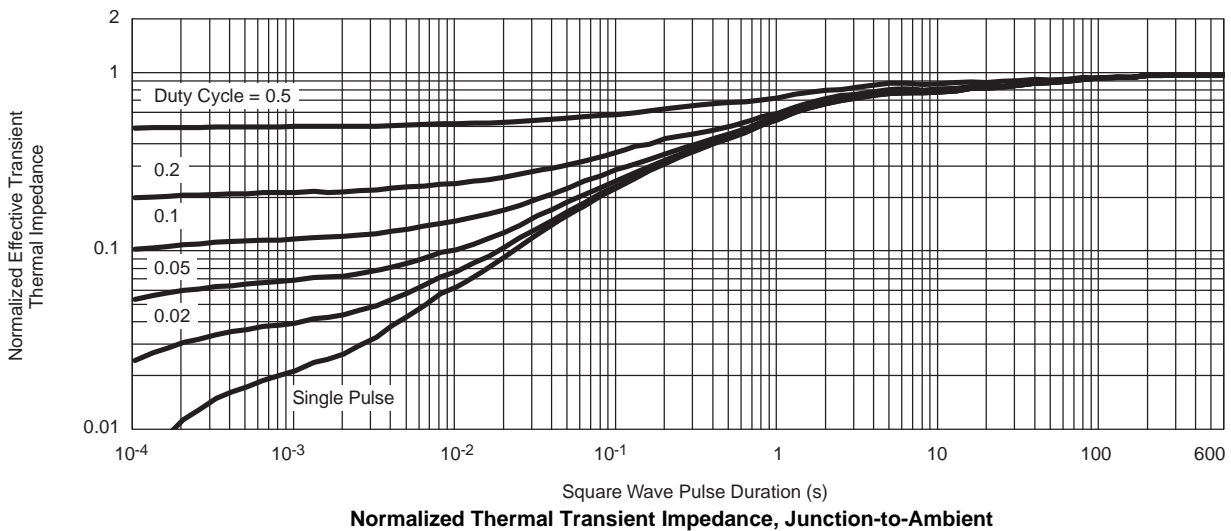
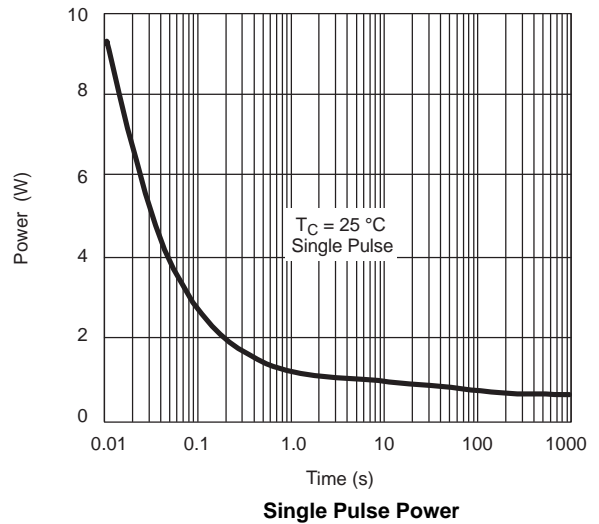
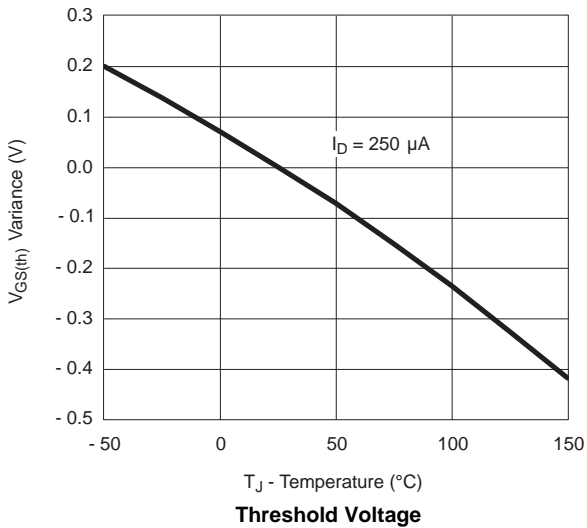
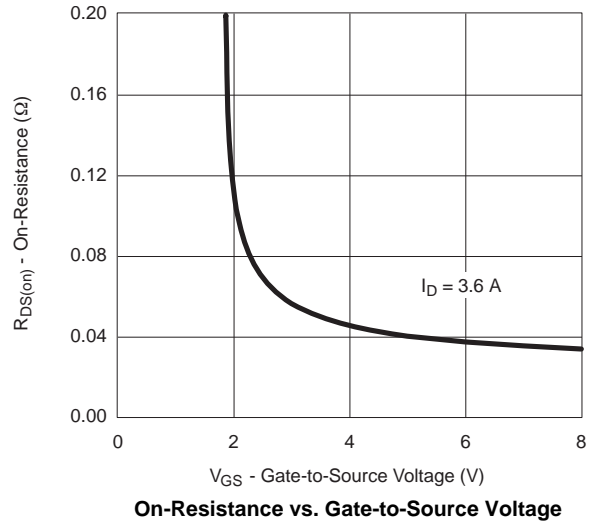
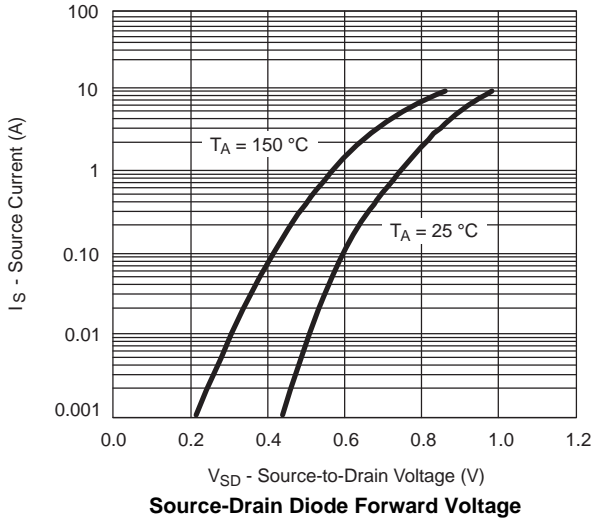
C. Pulse Test: Pulse Width ≤ 300us, Duty cycle ≤ 2%.

D. Guaranteed by design, not subject to production testing.

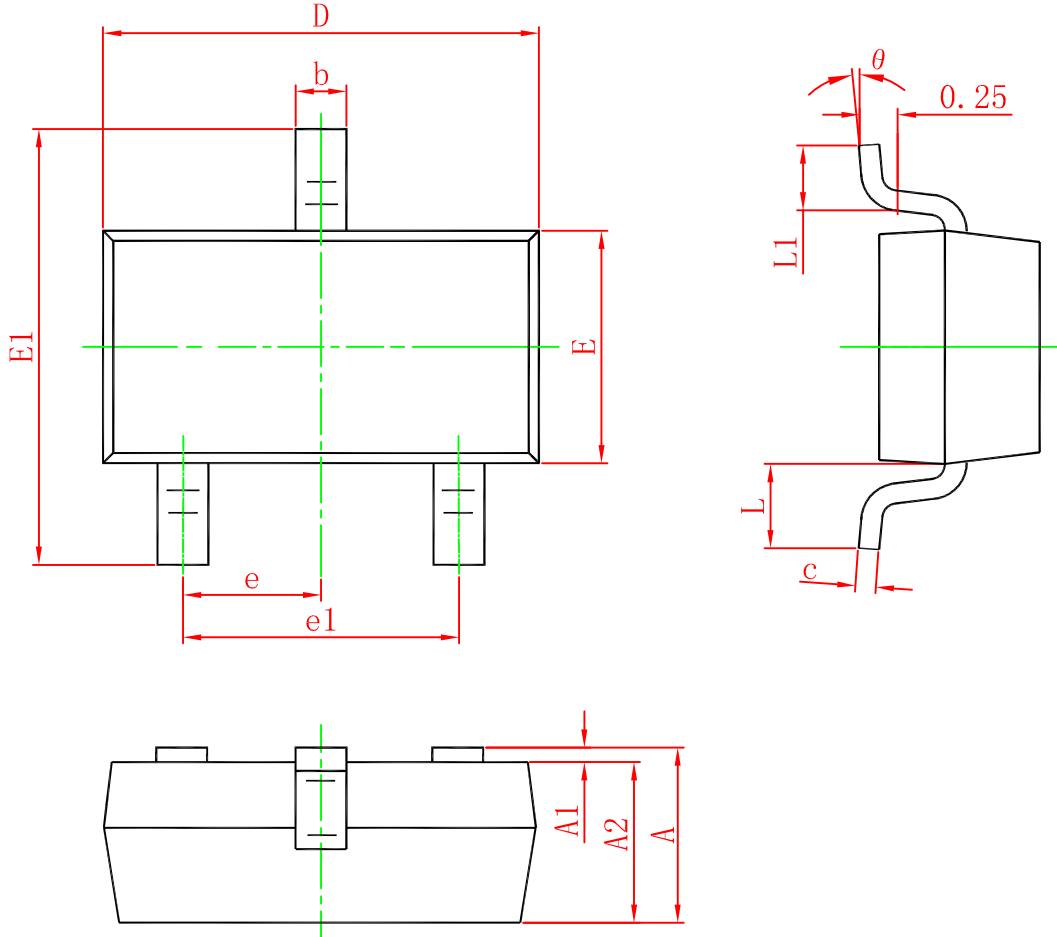
**MOSFET TYPICAL CHARACTERISTICS(25°C, unless otherwise noted)**



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



### SOT-23 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP.		0.037 TYP.	
e1	1.800	2.000	0.071	0.079
L	0.550 REF.		0.022 REF.	
L1	0.300	0.500	0.012	0.020
$\theta$	0°	8°	0°	8°