

## N-Channel 100V(D-S) MOSFET

Product summary		
$V_{DS}$	100	V
$R_{DS(ON)}$ (at $V_{GS}=10V$ ) Typ.	110	m $\Omega$
$R_{DS(ON)}$ (at $V_{GS}=4.5V$ ) Typ.	160	m $\Omega$
$I_D$ ( $T_A=25^\circ C$ )	3	A

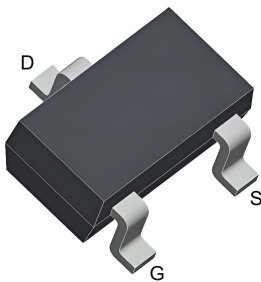
### Features

- Split Gate Trench MOSFET technology
- High density cell design for low  $R_{DS(ON)}$

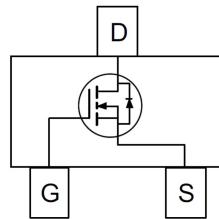
### Applications

- DC-DC Converters
- Power management functions

### Pin Configuration



SOT-23



### Packing Information

Device	Package	Reel Size	Quantity(Min. Package)
ECDA03G10A	SOT-23	7"	3000pcs

### Absolute Maximum Ratings (at $T_A=25^\circ C$ Unless Otherwise Noted)

Symbol	Parameter	Rating	Units
$V_{DS}$	Drain-Source Voltage	100	V
$V_{GS}$	Gate-Source Voltage	$\pm 20$	V
$I_D$	Continuous Drain Current <sup>A</sup>	$T_A=25^\circ C$	3
		$T_A=70^\circ C$	2.4
$I_{DM}$	Pulse Drain Current Tested <sup>B</sup>	12	A
$P_D$	Power Dissipation <sup>A</sup>	$T_A=25^\circ C$	1.2
$T_J, T_{STG}$	Junction and Storage Temperature Range	-55 to +150	$^\circ C$

### Thermal Characteristics

Symbol	Parameter	Typical	Units
$R_{\theta JA}$	Thermal Resistance-Junction to ambient <sup>A</sup>	104	$^\circ C/W$

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

Symbol	Parameter	Condition	Min.	Typ.	Max.	Units
<b>Static Parameters</b>						
BV <sub>DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V, I <sub>D</sub> =250uA	100	--	--	V
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>DS</sub> =100V, V <sub>GS</sub> =0V	--	--	1	uA
I <sub>GSS</sub>	Gate-Body Leakage Current	V <sub>DS</sub> =0V, V <sub>GS</sub> =±20V	--	--	±100	nA
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250uA	1.0	1.8	3.0	V
R <sub>DS(ON)</sub>	Drain-Source On-State Resistance <sup>B</sup>	V <sub>GS</sub> =10V, I <sub>D</sub> =3A	--	110	140	mΩ
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =2A	--	160	200	Ω
V <sub>SD</sub>	Diode Forward Voltage	I <sub>S</sub> =3A, V <sub>GS</sub> =0V	--	--	1.3	V
<b>Dynamic Parameters <sup>C</sup></b>						
C <sub>iss</sub>	Input Capacitance	V <sub>GS</sub> =0V, V <sub>DS</sub> =50V f=1MHZ	--	206	--	pF
C <sub>oss</sub>	Output Capacitance		--	29	--	pF
C <sub>rss</sub>	Reverse Transfer Capacitance		--	1.4	--	pF
Q <sub>g</sub>	Total Gate Charge	V <sub>DS</sub> =50V, I <sub>D</sub> =3A V <sub>GS</sub> =10V	--	4.3	--	nC
Q <sub>gs</sub>	Gate-Source Charge		--	1.5	--	nC
Q <sub>gd</sub>	Gate-Drain Charge		--	1.1	--	nC
t <sub>D(on)</sub>	Turn-on Delay Time	V <sub>DD</sub> =50V I <sub>D</sub> =3A, R <sub>GEN</sub> =2Ω, V <sub>GS</sub> =10V	--	14.7	--	ns
t <sub>r</sub>	Turn-on Rise Time		--	3.5	--	ns
t <sub>D(off)</sub>	Turn-off Delay Time		--	20.9	--	ns
t <sub>f</sub>	Turn-off Fall Time		--	2.7	--	ns
t <sub>rr</sub>	Reverse recovery time	I <sub>F</sub> =3A, di/dt=100A/us	--	32	--	ns
Q <sub>rr</sub>	Reverse recovery charge		--	39	--	nC

A. The data tested by surface mounted on a 1 inch x 1 inch FR-4 board with 20Z copper.

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

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

Typical Characteristics

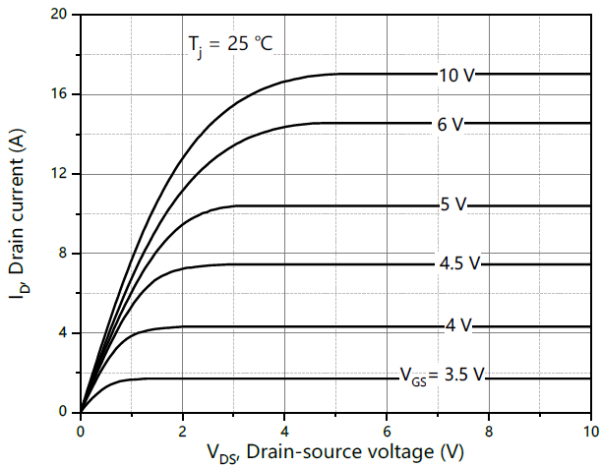


Figure1. Output Characteristics

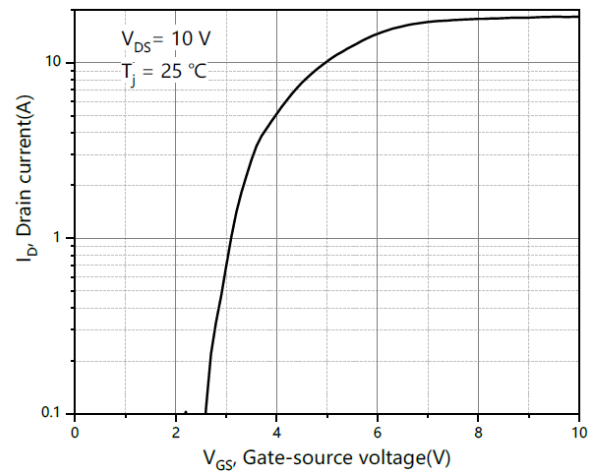


Figure2. Transfer Characteristics

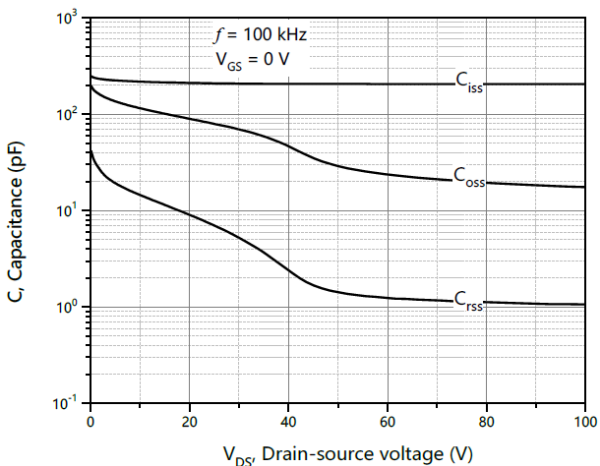


Figure3. Capacitance Characteristics

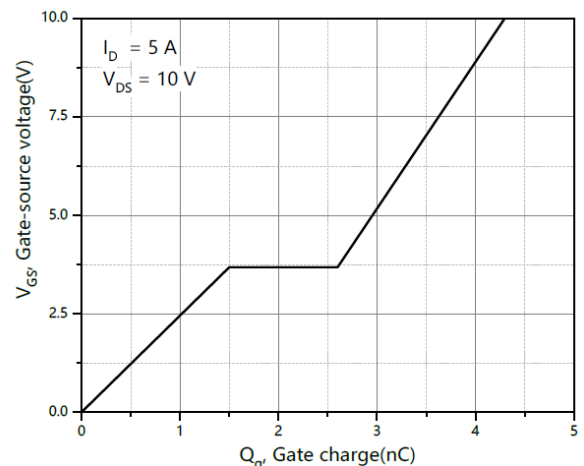


Figure4. Gate Charge

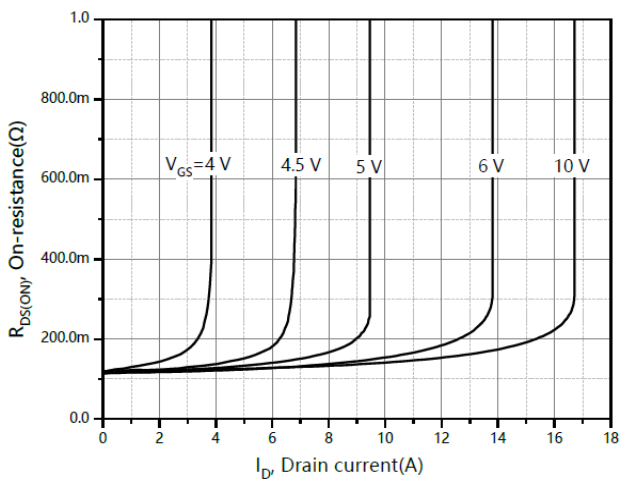


Figure5. : On-Resistance vs. Drain Current and Gate Voltage

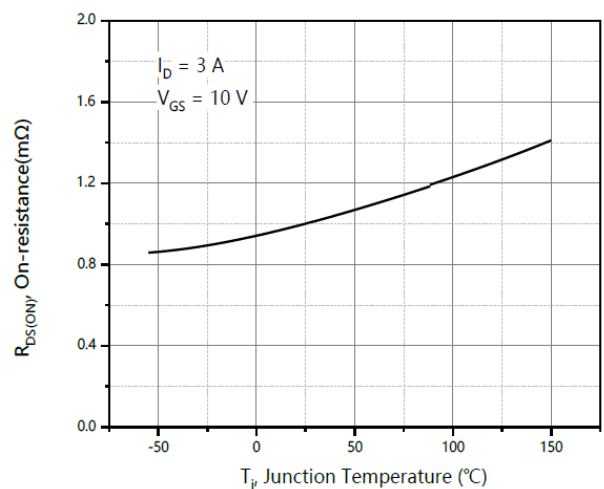


Figure6. Normalized On-Resistance

Typical Characteristics

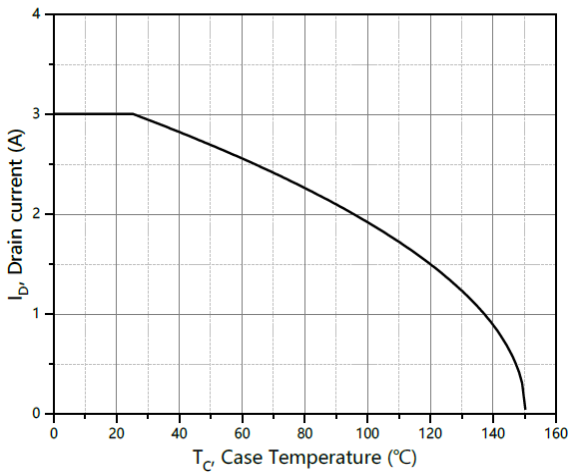


Figure7. Drain current

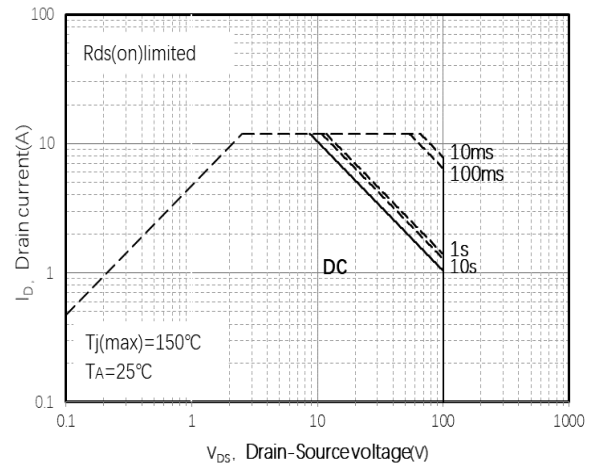


Figure8.Safe Operation Area

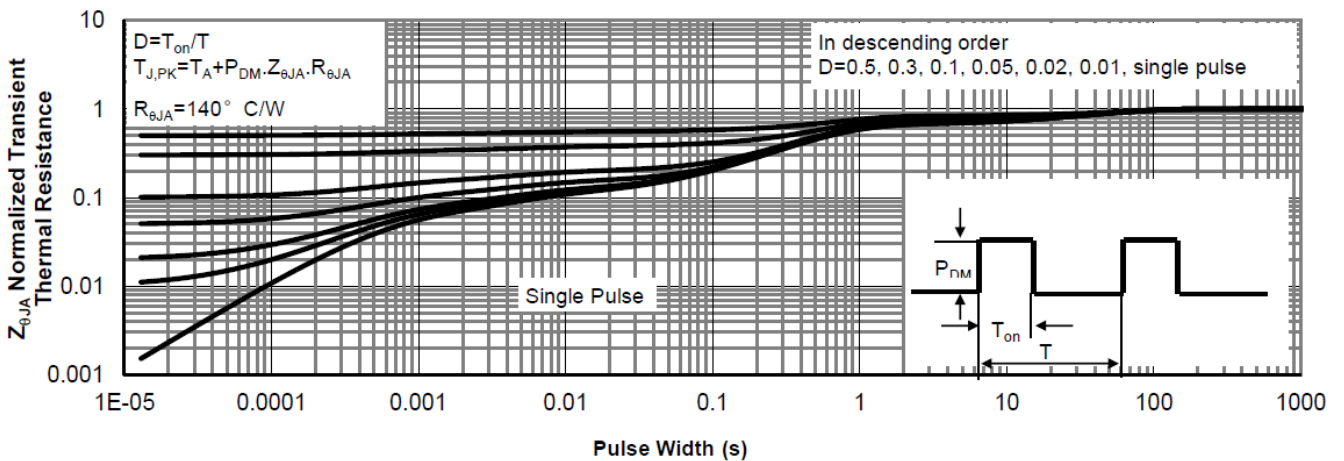


Figure9.Normalized Maximum Transient thermal impedance

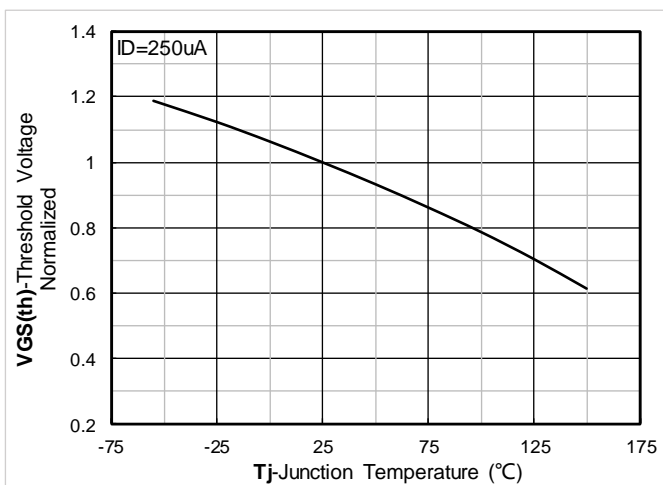
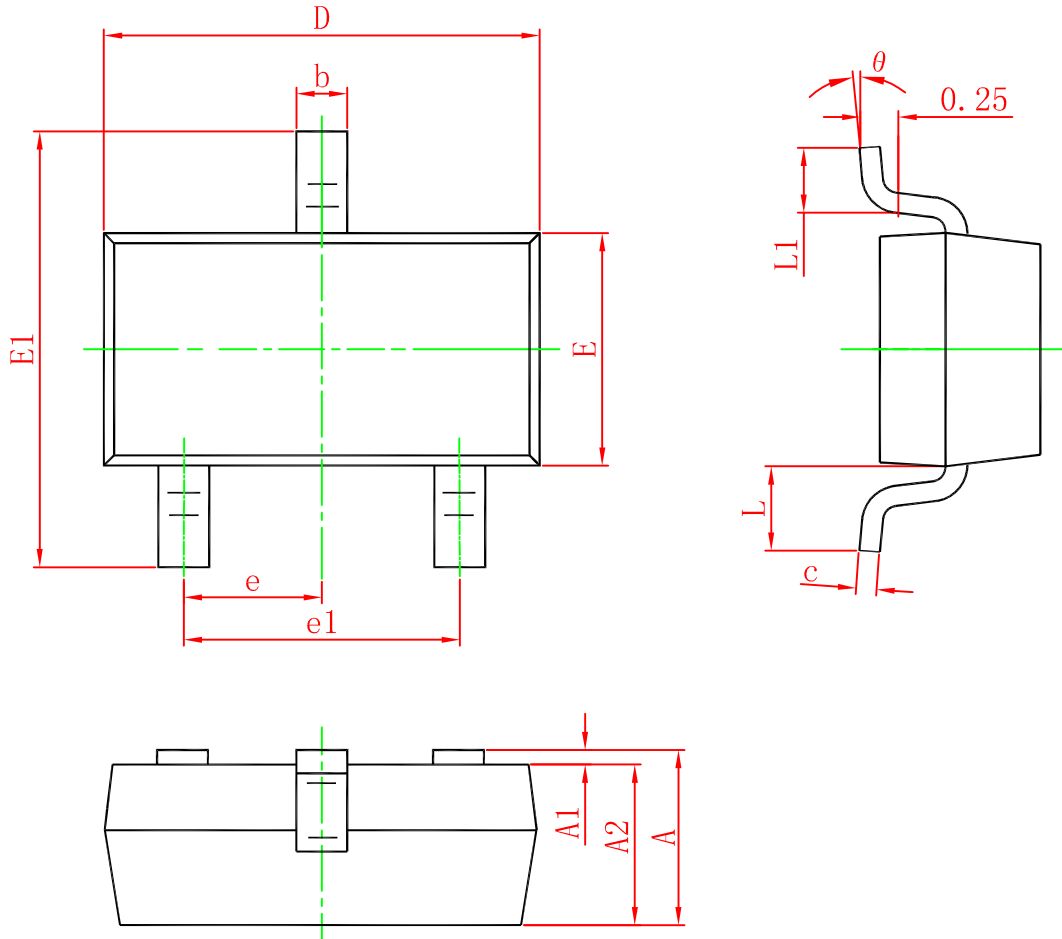


Figure10. Normalized Threshold voltage

## 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°