

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

Product summary		
$V_{DS}$	100	V
$R_{DS(ON)}$ (at $V_{GS}=10V$ ) Typ.	95	m $\Omega$
$R_{DS(ON)}$ (at $V_{GS}=4.5V$ ) Typ.	100	m $\Omega$
$I_D$ ( $T_A=25^{\circ}C$ )	4	A

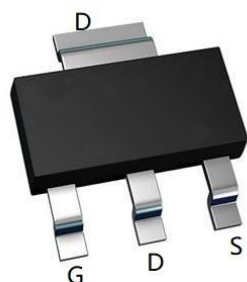
### Features

- High density cell design for low  $R_{DS(ON)}$
- Trench Power MV MOSFET technology
- RoHS Compliant

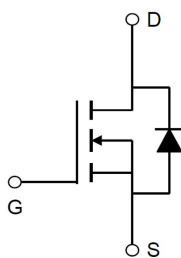
### Applications

- DC-DC Converters
- Power management functions

### Pin Configuration



SOT-223



### Packing Information

Device	Marking	Reel Size	Quantity(Min. Package)
ECDC04N10A	1004	13"	2500pcs

### 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 at $V_{GS}=10V$	$T_A=25^{\circ}C$	4
		$T_A=70^{\circ}C$	3.2
$I_{DM}$	Pulse Drain Current Tested <sup>A</sup>	16	A
$P_D$	Power Dissipation	$T_C=25^{\circ}C$	2.5
$T_J, T_{STG}$	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>B</sup>	50	$^{\circ}C/W$

**Electrical Characteristics (at  $T_J = 25^\circ\text{C}$  Unless Otherwise Noted)**

Symbol	Parameter	Condition	Min.	Typ.	Max.	Units
Static Parameters						
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	V <sub>GS</sub> =10V,I <sub>D</sub> =4A	--	95	110	mΩ
		V <sub>GS</sub> =4.5V,I <sub>D</sub> =3.2A	--	100	120	mΩ
V <sub>SD</sub>	Forward Voltage	I <sub>SD</sub> =4A,V <sub>GS</sub> =0V	--	--	1.2	V
Dynamic Parameters						
C <sub>iss</sub>	Input Capacitance	V <sub>GS</sub> =0V,V <sub>DS</sub> =50V f=1MHZ	--	800	--	pF
C <sub>oss</sub>	Output Capacitance		--	40	--	pF
C <sub>rss</sub>	Reverse Transfer Capacitance		--	32	--	pF
Switching Parameters						
Q <sub>g</sub>	Total Gate Charge	V <sub>DS</sub> =50V,I <sub>D</sub> =4A V <sub>GS</sub> =10V	--	16	--	nC
Q <sub>gs</sub>	Gate-Source Charge		--	2.5	--	nC
Q <sub>gd</sub>	Gate-Drain Charge		--	2.6	--	nC
t <sub>D(on)</sub>	Turn-on Delay Time	V <sub>DD</sub> =50V R <sub>L</sub> =6.4Ω,R <sub>GEN</sub> =3Ω, V <sub>GS</sub> =10V	--	6	--	nS
t <sub>r</sub>	Turn-on Rise Time		--	41	--	nS
t <sub>D(off)</sub>	Turn-off Delay Time		--	25	--	nS
t <sub>f</sub>	Turn-off Fall Time		--	8	--	nS

A. Pulse Test: Pulse Width  $\leq 300\mu s$ , Duty cycle  $\leq 2\%$ .

B. Device mounted on FR-4 PCB, 1 inch x 1 inch x 0.062 inch.

## Typical Characteristics

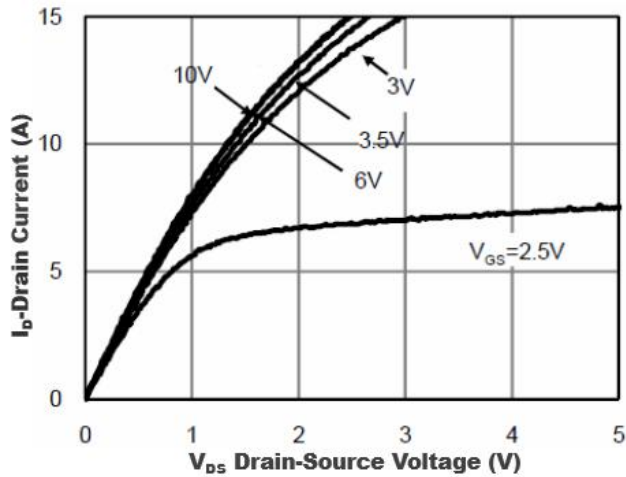


Figure1. Output Characteristics

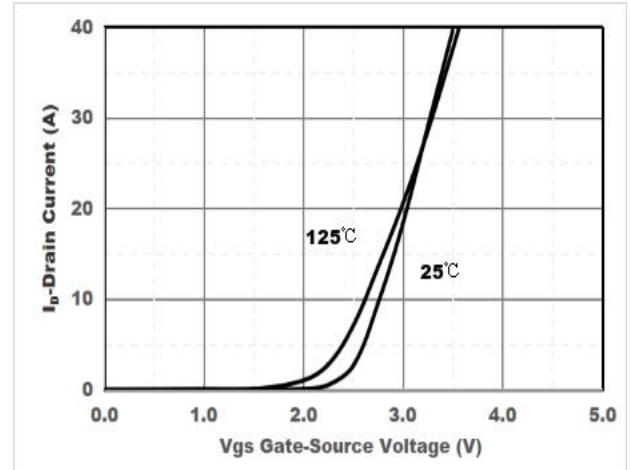


Figure2. Transfer Characteristics

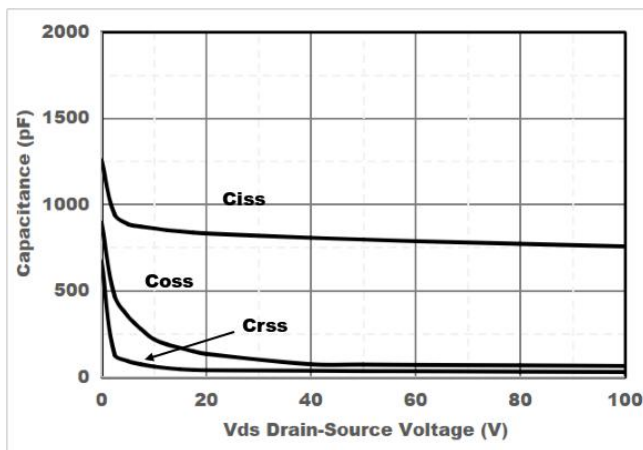


Figure3. Capacitance Characteristics

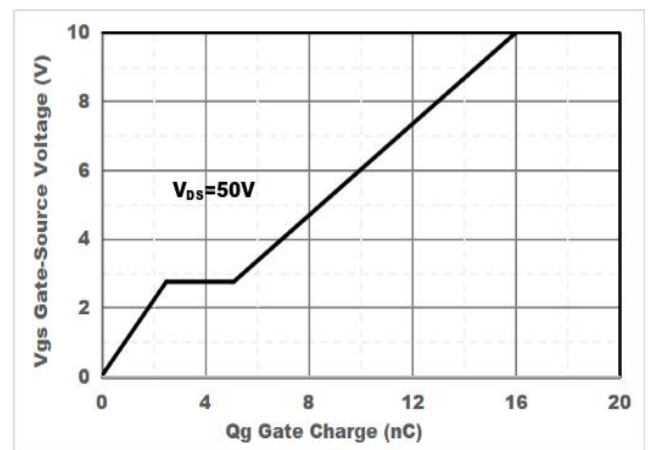


Figure4. Gate Charge

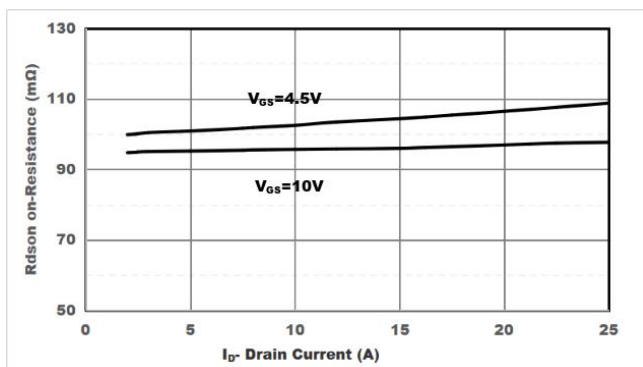


Figure5. Drain-Source on Resistance

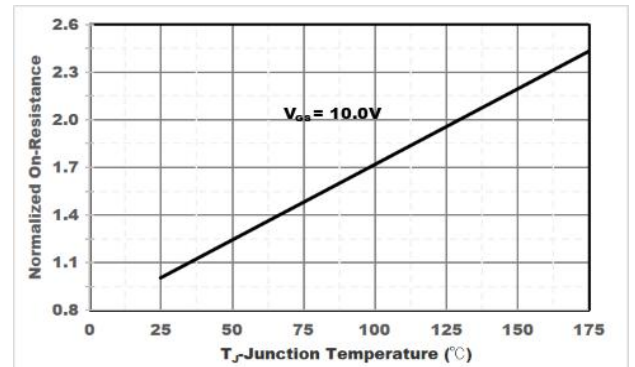


Figure6. Drain-Source on Resistance

## Typical Characteristics

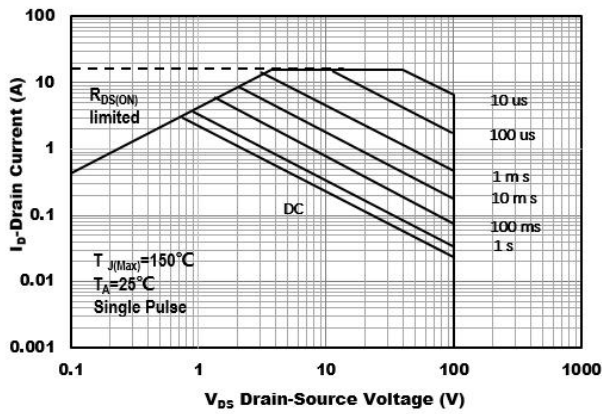


Figure7. Safe Operation Area

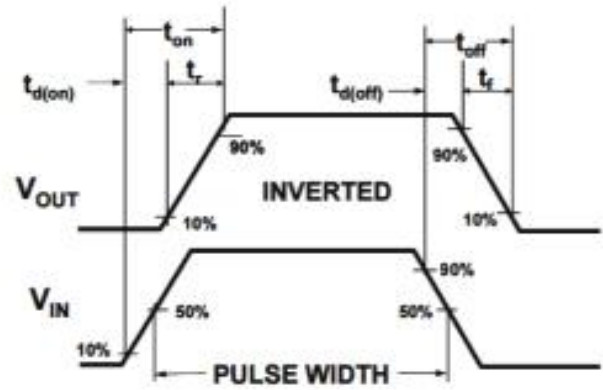
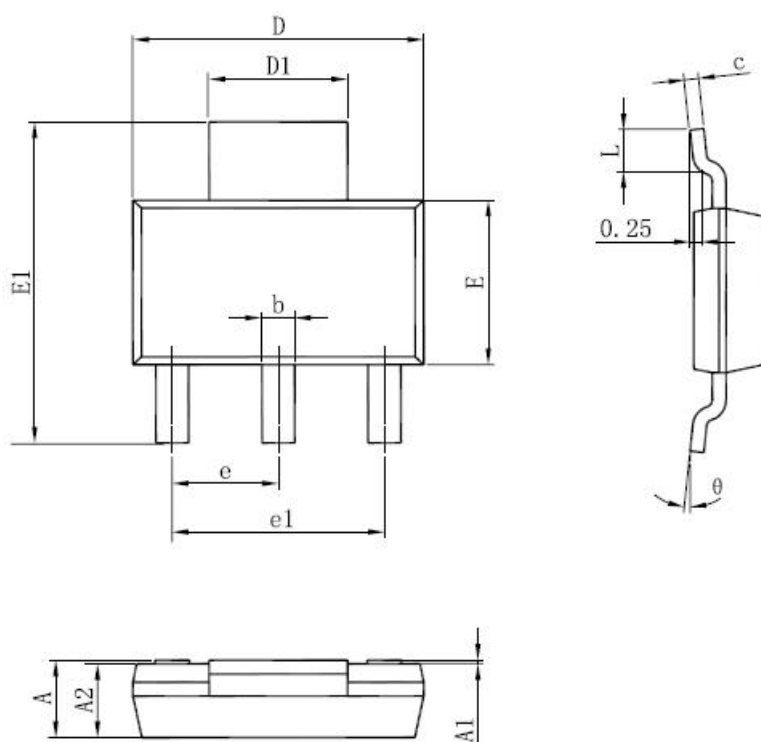


Figure8. Switching wave

## SOT-223 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.520	1.800	0.060	0.071
A1	0.000	0.100	0.000	0.004
A2	1.500	1.700	0.059	0.067
b	0.660	0.820	0.026	0.032
c	0.250	0.350	0.010	0.014
D	6.200	6.400	0.244	0.252
D1	2.900	3.100	0.114	0.122
E	3.300	3.700	0.130	0.146
E1	6.830	7.070	0.269	0.278
e	2.300(BSC)		0.091(BSC)	
e1	4.500	4.700	0.177	0.185
L	0.900	1.150	0.035	0.045
θ	0°	10°	0°	10°