

NCE0106R-ES

Rev-1.3

SuperMOS – SOT-223 100V BV_{DSS} , 120m Ω $R_{DS(ON)}$, N-channel MOSFET

1. Description

The NCE0106R-ES is N-Channel enhancement MOS Field Effect Transistor. Uses advanced technology and design to provide excellent $R_{DS(ON)}$ with low gate charge. Device is suitable for use in DC-DC conversion, power switch and charging circuit. Standard Product NCE0106R-ES is Pb-free.

2. Features

- 100V, $R_{DS(ON)}=120m\Omega$ (TYP.) @ $V_{GS}=10V$
 $R_{DS(ON)}=130m\Omega$ (TYP.) @ $V_{GS}=4.5V$
- High density cell design for low $R_{DS(on)}$
- Material: Halogen free
- Reliable and rugged
- Avalanche Rated
- Low leakage current

3. Applications

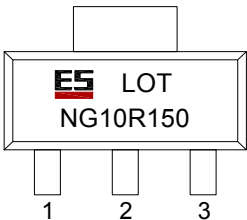
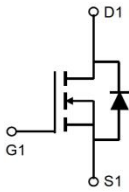
- PWM applications
- Load switch
- Power management in portable/desktop PCs
- DC/DC conversion

100% UIS TESTED

4. Ordering Information

Part Number	Package	Marking	Material	Packing	Quantity per reel	Flammability Rating	Reel Size
NCE0106R-ES	SOT-223	NG10R150/lot	Halogen free	Tape & Reel	1,000 PCS	UL 94V-0	13 inches

5. Pin Configuration and Functions

Pin	Function	Outline	Circuit Diagram
1	Gate		
3	Source		
2	Drain		

6. Specification

Absolute Maximum Rating & Thermal Characteristics

Ratings at 25 °C ambient temperature unless otherwise specified.

Parameter		Symbol	Limit	Unit
Drain-Source Voltage		BV_{DSS}	100	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current	$T_A=25^{\circ}\text{C}$	I_D	4	A
	$T_A=100^{\circ}\text{C}$		2.3	
Maximum Power Dissipation		P_D	3.1	W
Pulsed Drain Current		I_{DM}	16	A
Avalanche Current, Single Pulsed ^a		I_{AS}	9	A
Avalanche Energy, Single Pulsed ^a		E_{AS}	12	mJ
Operating Junction Temperature		T_J	150	°C
Lead Temperature		T_L	260	°C
Storage Temperature Range		T_{stg}	-55 to 150	°C

Thermal resistance ratings

Single Operation				
Parameter	Symbol	Typical	Maximum	Unit
Junction-to-Ambient Thermal Resistance	$R_{\theta JA}$		40	°C/W

Note:

a: EAS condition: $T_J=25^{\circ}\text{C}$, $V_{DD}=100\text{V}$, $V_G=10\text{V}$, $L=0.3\text{mH}$, $R_g=25\Omega$

Electrical Characteristics

At TA = 25°C unless otherwise specified

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
OFF CHARACTERISTICS						
Drain-to-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250uA	100			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =100V, V _{GS} =0V			1	uA
Gate-to-source Leakage Current	I _{GSS}	V _{DS} =0V, V _{GS} =±20V			±100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	V _{GS(TH)}	V _{GS} =V _{DS} , I _D =250uA	1.0	1.7	2.5	V
Drain-to-source On-resistance	R _{DS(on)}	V _{GS} =10V, I _D =4A		120	150	mΩ
		V _{GS} =4.5V, I _D =3A		130	180	
CHARGES, CAPACITANCES AND GATE RESISTANCE						
Input Capacitance	C _{ISS}	V _{GS} =0V, f=1MHz, V _{DS} =25V		650		pF
Output Capacitance	C _{OSS}			30		
Reverse Transfer Capacitance	C _{RSS}			25		
BODY DIODE CHARACTERISTICS						
Forward Voltage	V _{SD}	V _{GS} =0V, I _S =4A			1.5	V

7. Typical Characteristic

Figure 1: Output Characteristics

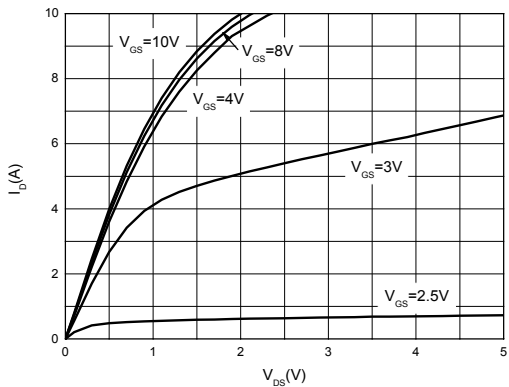


Figure 2: Transfer Characteristics

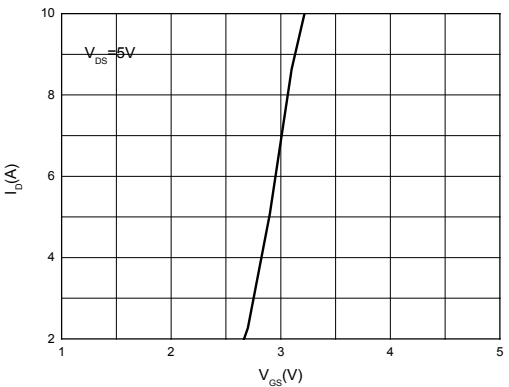


Figure 3: On-resistance vs Drain Current

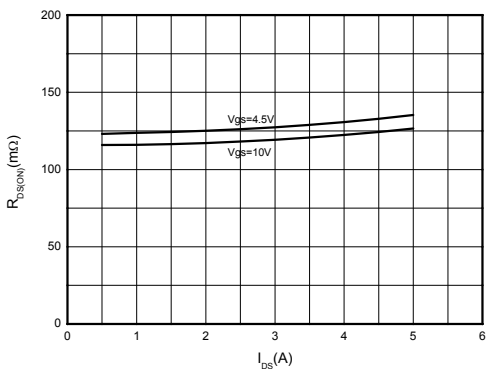


Figure 4: Body Diode Characteristics

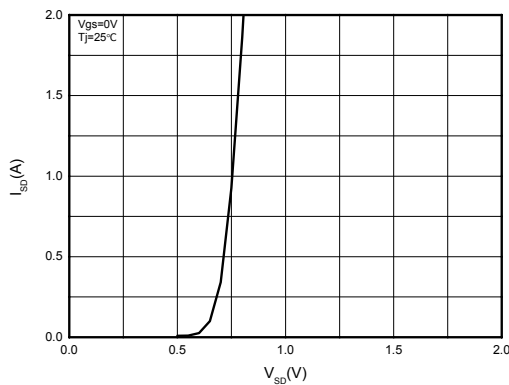


Figure 5: Capacitance Characteristics

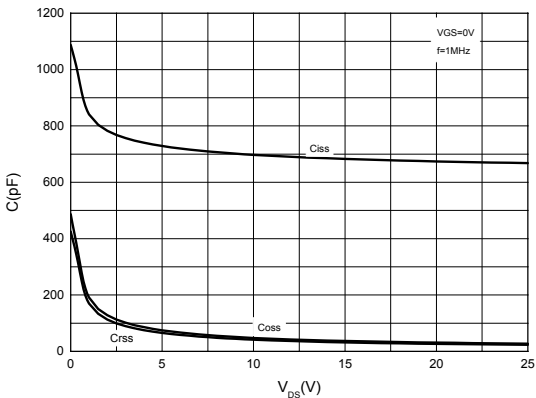


Figure 6: On-resistance vs Gate to Source

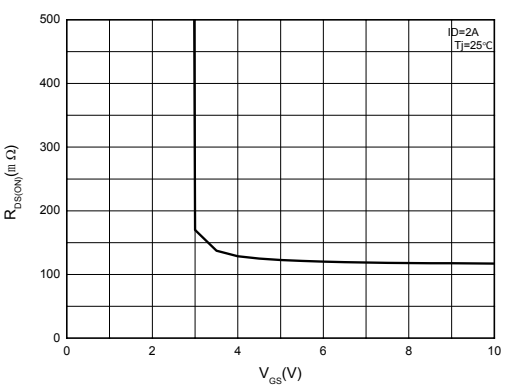
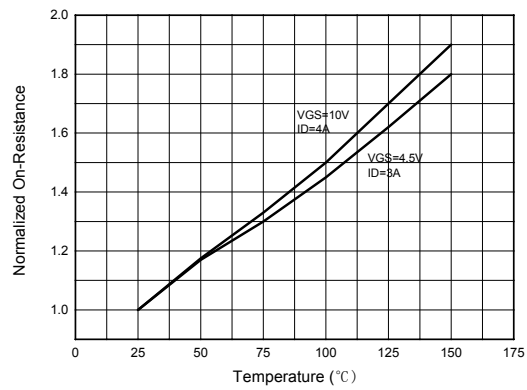
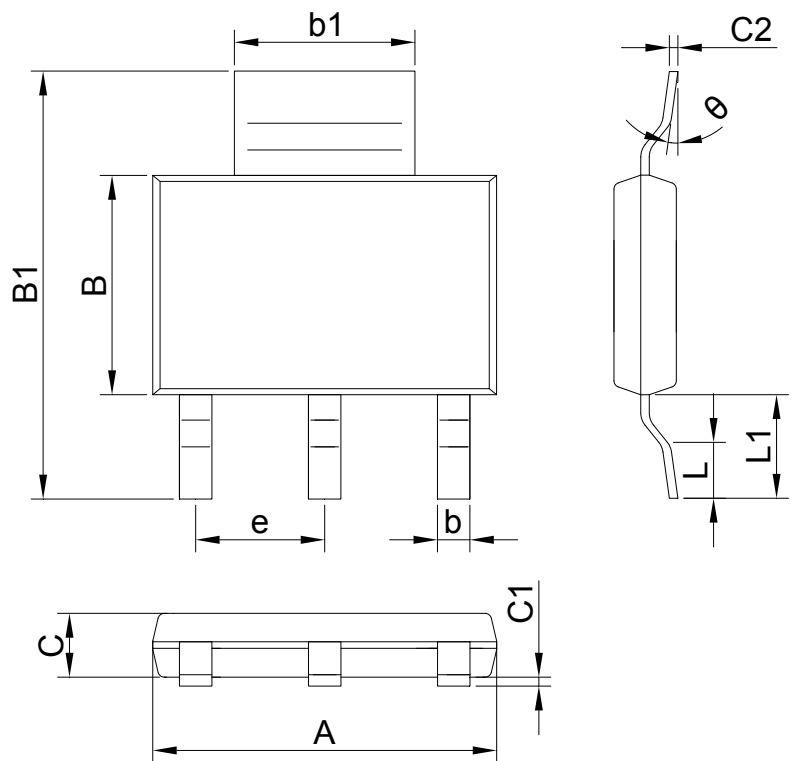


Figure7: Normalized On-Resistance vs

Temperature



8. Dimension (SOT-223)



COMMON DIMENSIONS CUNITS MEASURE=MILLIMETER					
SYMBOL	MIN	MAX	SYMBOL	MIN	MAX
A	6.40	6.60	C	1.45	1.65
e	2.286 BSC		C1	0.03	0.15
b	0.66	0.76	C2	0.20	0.35
b1	2.95	3.05	L	0.76	1.16
B	3.40	3.60	L1	1.70	1.80
B1	6.85	7.15	θ	0°	8°

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