

**SuperMOS – SOT-223 100V  $BV_{DSS}$ , 125m $\Omega$   $R_{DS(ON)}$ , 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,  $R_{DS(ON)}=125m\Omega(TYP.) @V_{GS}=10V$
- $R_{DS(ON)}=135m\Omega(TYP.) @V_{GS}=4.5V$
- High density cell design for low  $R_{DS(on)}$
- Material: Halogen free
- Reliable and rugged
- Avalanche Rated
- Low leakage current

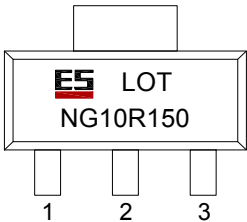
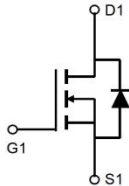
**3. Applications**

- PWM applications 100% UIS TESTED
- Load switch
- Power management in portable/desktop PCs
- DC/DC conversion

**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	$V_{GS}$	$\pm 20$	V
Continuous Drain Current	$I_D$	$T_A=25^\circ\text{C}$	4
		$T_A=100^\circ\text{C}$	2.3
Maximum Power Dissipation	$P_D$	3.1	W
Pulsed Drain Current	$I_{DM}$	16	A
Avalanche Current, Single Pulsed <sup>a</sup>	$I_{AS}$	9	A
Avalanche Energy, Single Pulsed <sup>a</sup>	$E_{AS}$	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:

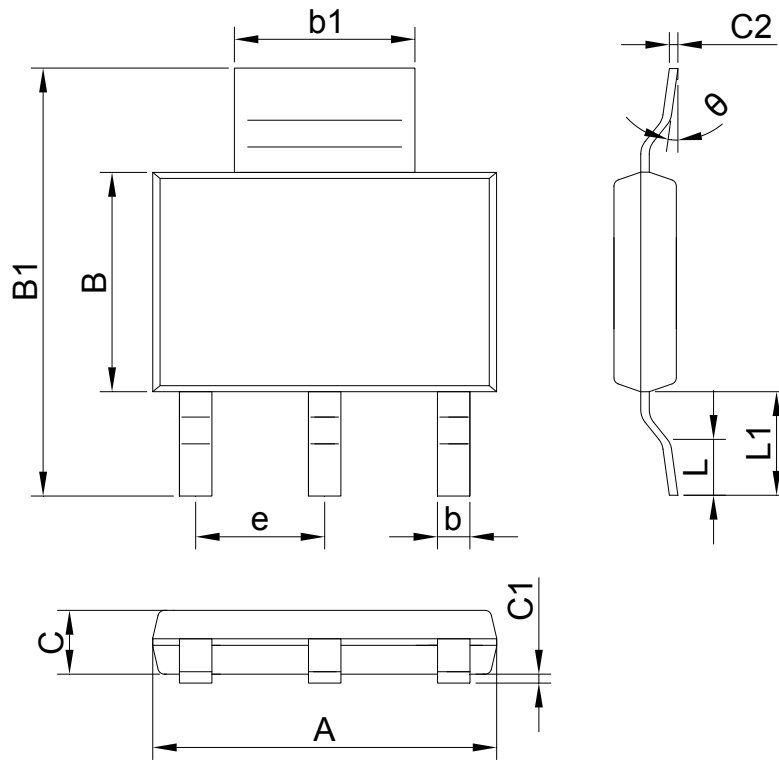
a: EAS condition:  $T_J=25^\circ\text{C}$ ,  $V_{DD}=100\text{V}$ ,  $V_G=10\text{V}$ ,  $L=0.3\text{mH}$ ,  $R_g=25\Omega$

## Electrical Characteristics

At TA = 25°C unless otherwise specified

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
<b>OFF CHARACTERISTICS</b>						
Drain-to-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0V, I_D=250\mu A$	100			V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=100V, V_{GS}=0V$			1	$\mu A$
Gate-to-source Leakage Current	$I_{GSS}$	$V_{DS}=0V, V_{GS}=\pm 20V$			$\pm 100$	nA
<b>ON CHARACTERISTICS</b>						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{GS}=V_{DS}, I_D=250\mu A$	1.0	1.7	2.5	V
Drain-to-source On-resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=4A$		125	150	m $\Omega$
		$V_{GS}=4.5V, I_D=3A$		135	180	
<b>CHARGES, CAPACITANCES AND GATE RESISTANCE</b>						
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		
<b>BODY DIODE CHARACTERISTICS</b>						
Forward Voltage	$V_{SD}$	$V_{GS}=0V, I_S=4A$			1.5	V

7. 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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