

SuperMOS – SOT-23 30V BV_{DSS} , 515m Ω $R_{DS(ON)}$, N-channel MOSFET

1. Description

The NX3008NBK,215(ES) is N-Channel enhancement MOS Field Effect Transistor. Uses advanced trench 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 NX3008NBK,215(ES) is Pb-free.

2. Features

- 30V, $R_{DS(ON)}$ =515m Ω (Typ.) @ V_{GS} =4.5V
 $R_{DS(ON)}$ =615m Ω (Typ.) @ V_{GS} =2.5V
 $R_{DS(ON)}$ =850m Ω (Typ.) @ V_{GS} =1.8V
- High density cell design for low $R_{DS(on)}$
- Material: Halogen free
- Reliable and rugged
- Avalanche Rated
- Low leakage current
- ESD Protection - HBM : 2kV

3. Applications

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

4. Ordering Information

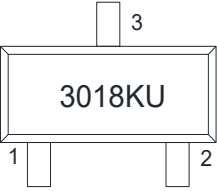
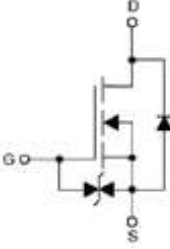
Part Number	Package	Marking	Material	Packing	Quantity per reel	Flammability Rating	Reel Size
NX3008NBK,215(ES)	SOT-23	3018KU	Halogen free	Tape & Reel	3,000 PCS	UL 94V-0	7 inches

5. Pin Configuration and Functions

Pin	Function	Outline	Circuit Diagram
1	Gate		
2	Source		

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3	Drain		
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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}	30	V
Gate-Source Voltage		V_{GS}	± 10	V
Continuous Drain Current	$T_A=25^{\circ}\text{C}$	I_D	0.5	A
	$T_A=100^{\circ}\text{C}$		0.3	
Maximum Power Dissipation	$T_A=25^{\circ}\text{C}$	P_D	0.35	W
Pulsed Drain Current		I_{DM}	2	A
Operating Junction Temperature		T_J	150	$^{\circ}\text{C}$
Lead Temperature		T_L	260	$^{\circ}\text{C}$
Storage Temperature Range		T_{stg}	-55 to 150	$^{\circ}\text{C}$

Thermal resistance ratings

Single Operation					
Parameter		Symbol	Typical	Maximum	Unit
Junction-to-Ambient Thermal Resistance	$t \leq 10\text{s}$	$R_{\theta JA}$		357	$^{\circ}\text{C/W}$

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	30			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =30V, V _{GS} =0V			1	uA
Gate-to-source Leakage Current	I _{GSS}	V _{DS} =0V, V _{GS} =±10V			±10	uA
ON CHARACTERISTICS						
Gate Threshold Voltage	V _{GS(TH)}	V _{GS} =V _{DS} , I _D =250uA	0.4	0.7	1.2	V
Drain-to-source On-resistance	R _{DS(on)}	V _{GS} =4.5V, I _D =0.2A		515	650	mΩ
		V _{GS} =2.5V, I _D =0.15A		615	800	
		V _{GS} =1.8V, I _D =0.10A		850	1000	
CHARGES, CAPACITANCES AND GATE RESISTANCE						
Input Capacitance	C _{ISS}	V _{GS} =0V, f=1MHz, V _{DS} =15V		27		pF
Output Capacitance	C _{OSS}			6		
Reverse Transfer Capacitance	C _{RSS}			3		
Total Gate Charge	Q _{G(TOT)}	V _{GS} =4.5V, V _{DS} =15V, I _D =0.5A		1.6		nC
Gate-to-Source Charge	Q _{GS}			0.2		
Gate-to-Drain Charge	Q _{GD}			0.5		
SWITCHING CHARACTERISTICS						
Turn-On Delay Time	t _{d(ON)}	V _{GS} =4.5V, V _{DD} =15V, I _D =0.5A, R _G =10Ω		2		ns
Rise Time	t _r			14		
Turn-Off Delay Time	t _{d(OFF)}			6		
Fall Time	t _f			9		
BODY DIODE CHARACTERISTICS						
Forward Voltage	V _{SD}	V _{GS} =0V, I _S =0.5A			1.2	V

7. Typical Characteristic

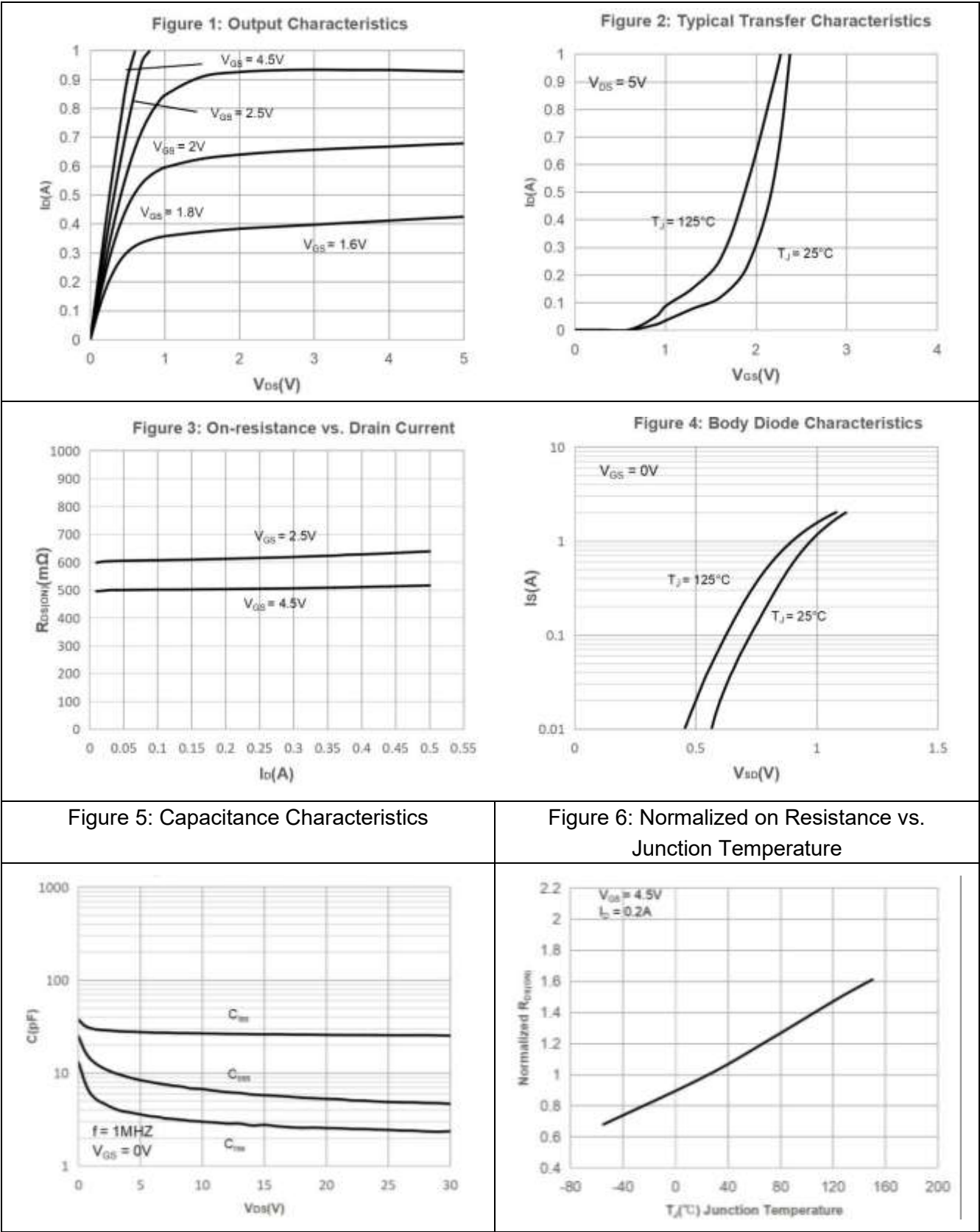
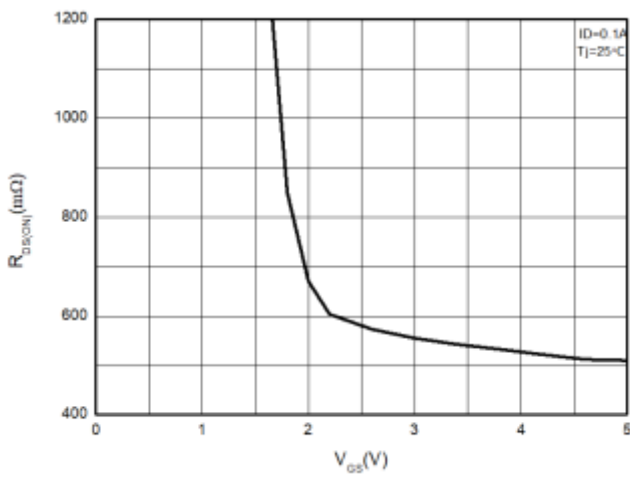


Figure 7: On-resistance vs. Gate to Source

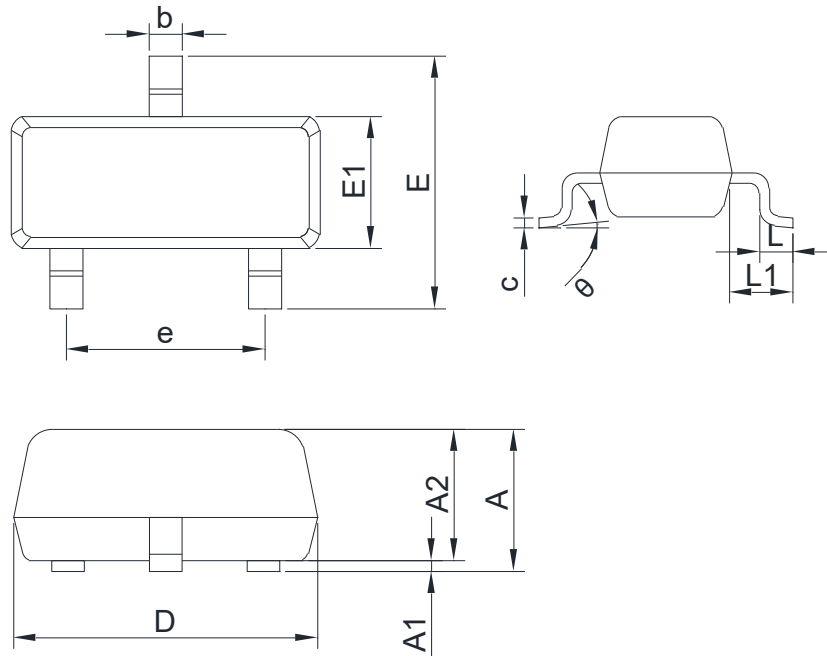


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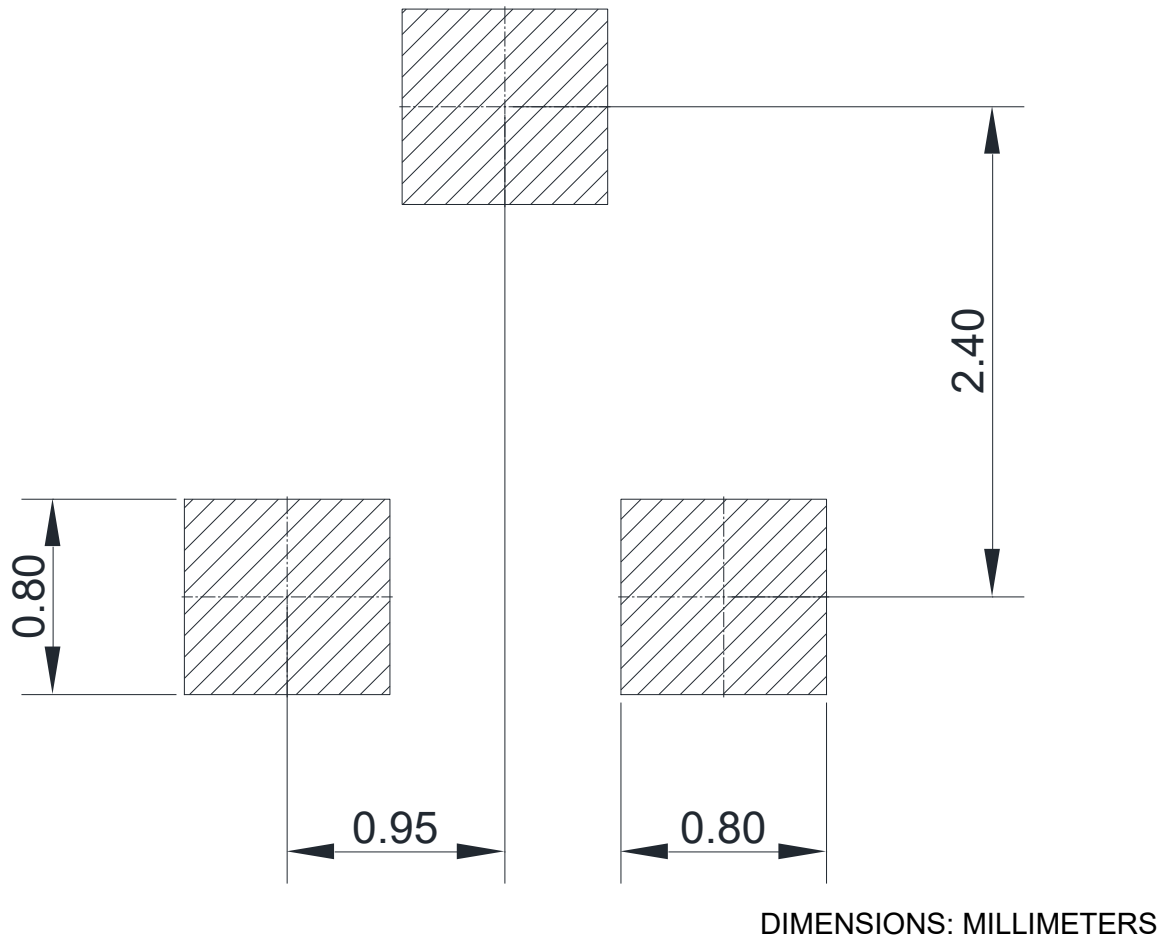
8. Dimension (SOT-23)

POD(Z)



COMMON DIMENSIONS CUNITS MEASURE=MILLIMETER					
SYMBOL	MIN	MAX	SYMBOL	MIN	MAX
A	0.90	1.20	E	2.25	2.55
A1	0.00	0.10	E1	1.20	1.40
A2	0.90	1.10	e	1.80	2.00
b	0.30	0.50	L	0.30	0.50
c	0.07	0.18	L1	0.475	0.625
D	2.80	3.04	θ	0°	8°

9. Recommended Soldering Footprint



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