

BSS123NH6433XTMA1

Rev-1.2

SuperMOS – SOT-23 100V BV_{DSS} , 2.70Ω $R_{DS(ON)}$, N-channel MOSFET

1. Description

The BSS123NH6433XTMA1 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 BSS123NH6433XTMA1 is Pb-free.

2. Features

- 100V, $R_{DS(ON)}=2.70\Omega$ (Typ.) @ $V_{GS}=10V$
 $R_{DS(ON)}=2.95\Omega$ (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

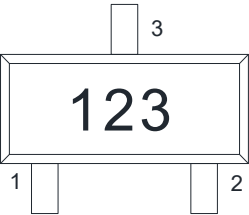
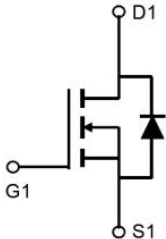
3. Applications

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

4. Ordering Information

Part Number	Package	Marking	Material	Packing	Quantity per reel	Flammability Rating	Reel Size
BSS123NH6433XTMA1	SOT-23	123	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		
3	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	0.29	A
	$T_A=70^{\circ}\text{C}$		0.20	
Maximum Power Dissipation		P_D	0.35	W
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	$t \leq 10\text{s}$	$R_{\theta JA}$		357	°C/W

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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			100	nA
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	1.8	2.5	V
Drain-to-source On-resistance	R _{DS(on)}	V _{GS} =10V, I _D =0.2A		2.7	3.5	Ω
		V _{GS} =4.5V, I _D =0.18A		2.95	4.2	
CHARGES, CAPACITANCES AND GATE RESISTANCE						
Input Capacitance	C _{ISS}	V _{GS} =0V, f=1MHz, V _{DS} =25V		29		pF
Output Capacitance	C _{OSS}			2.8		
Reverse Transfer Capacitance	C _{RSS}			2.0		
Gate Resistance	R _g	f=1MHz		1.3		Ω
BODY DIODE CHARACTERISTICS						
Forward Voltage	V _{SD}	V _{GS} =0V, I _S =0.2A	0.45		1.5	V

7. Typical Characteristic

Figure 1: Output Characteristics

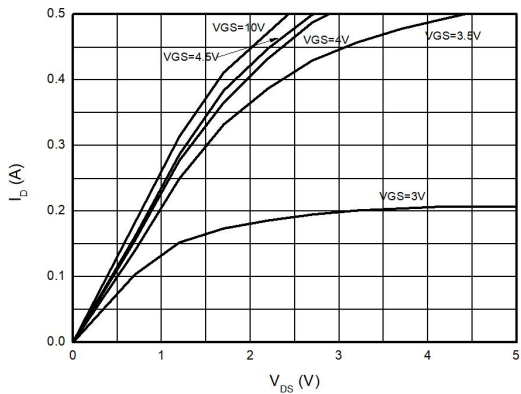


Figure 2: Transfer Characteristics

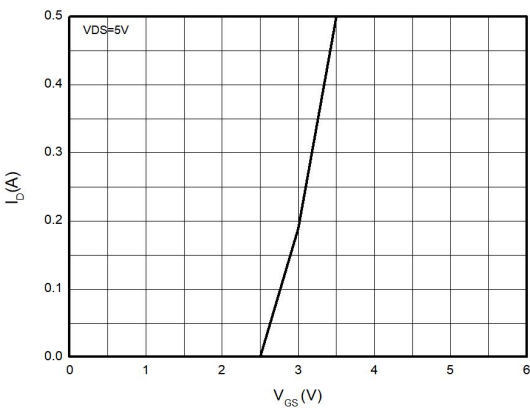


Figure 3: On-resistance vs Drain Current

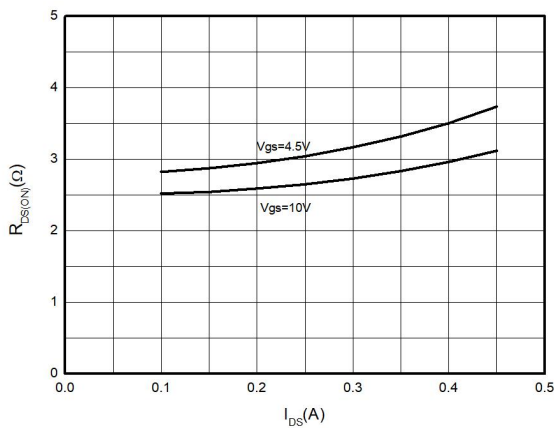


Figure 4: Body Diode Characteristics

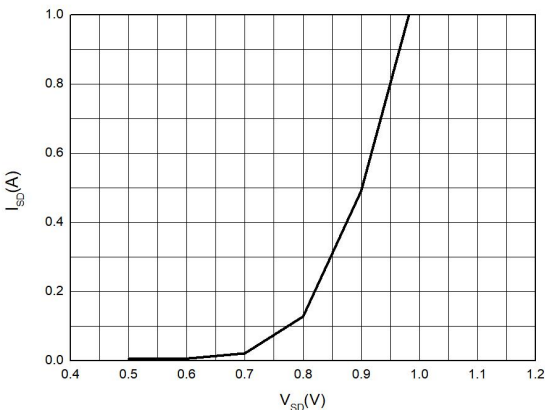


Figure 5: Capacitance Characteristics

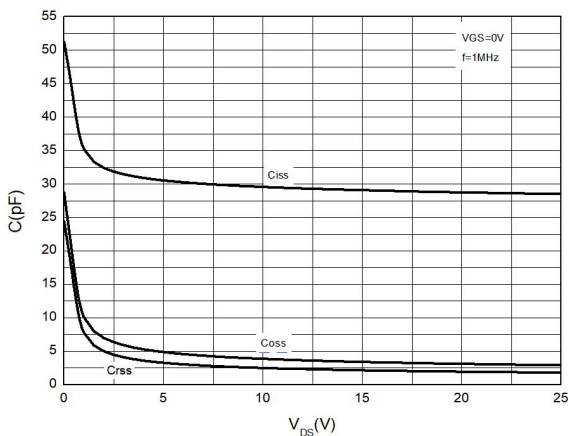
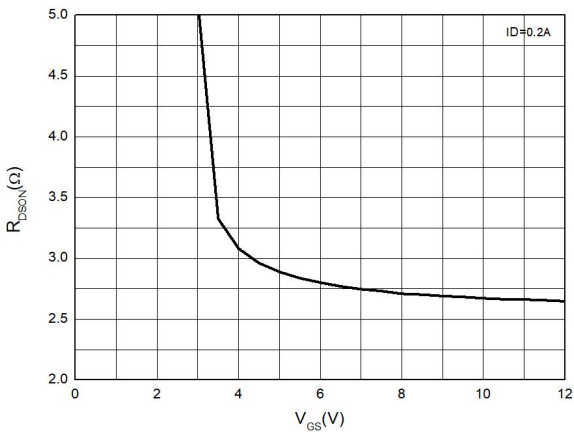


Figure 6: On-resistance vs Gate to Source

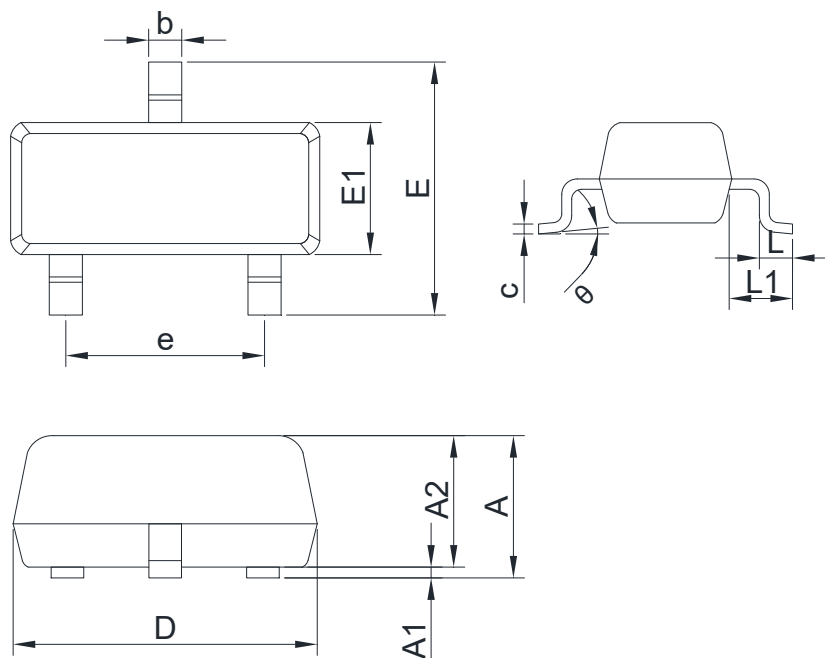


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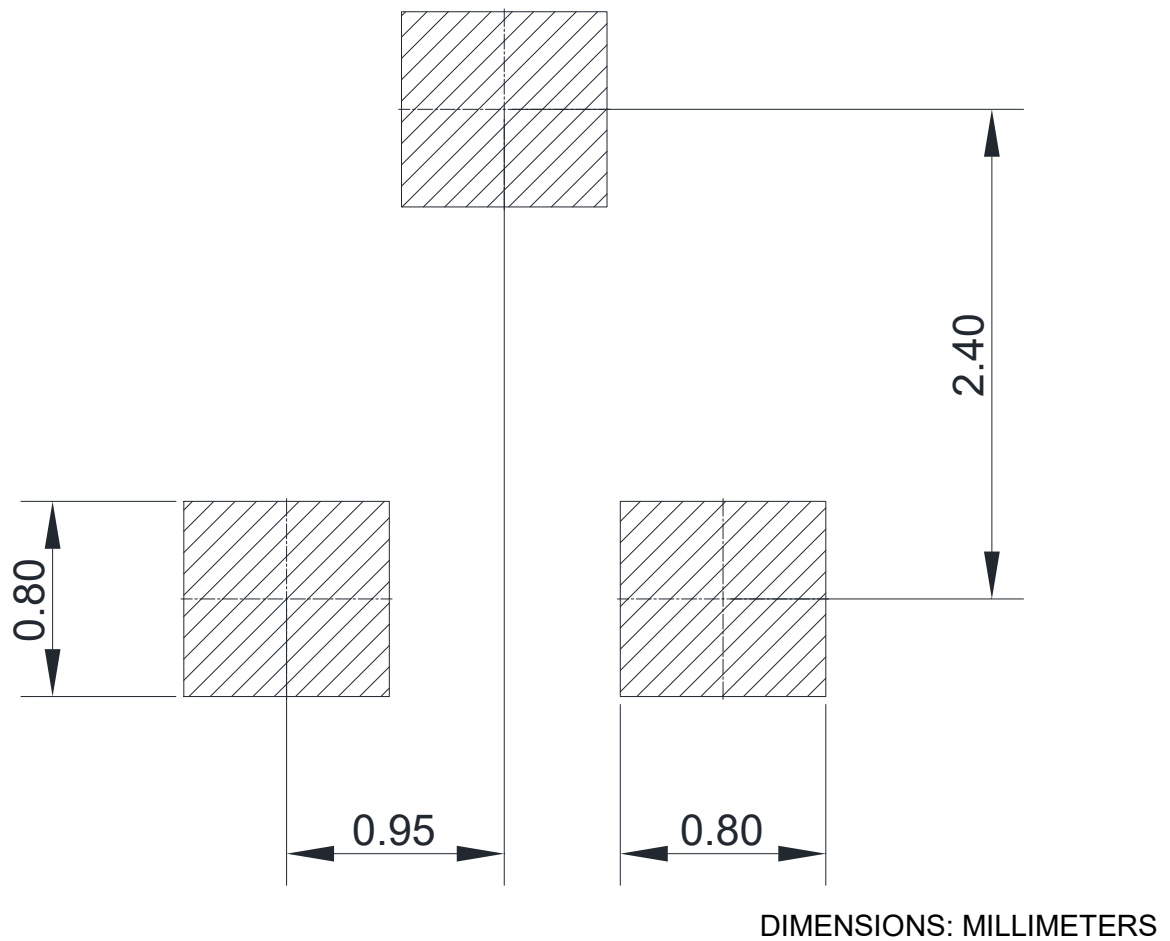
8. Dimension (SOT-23)

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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